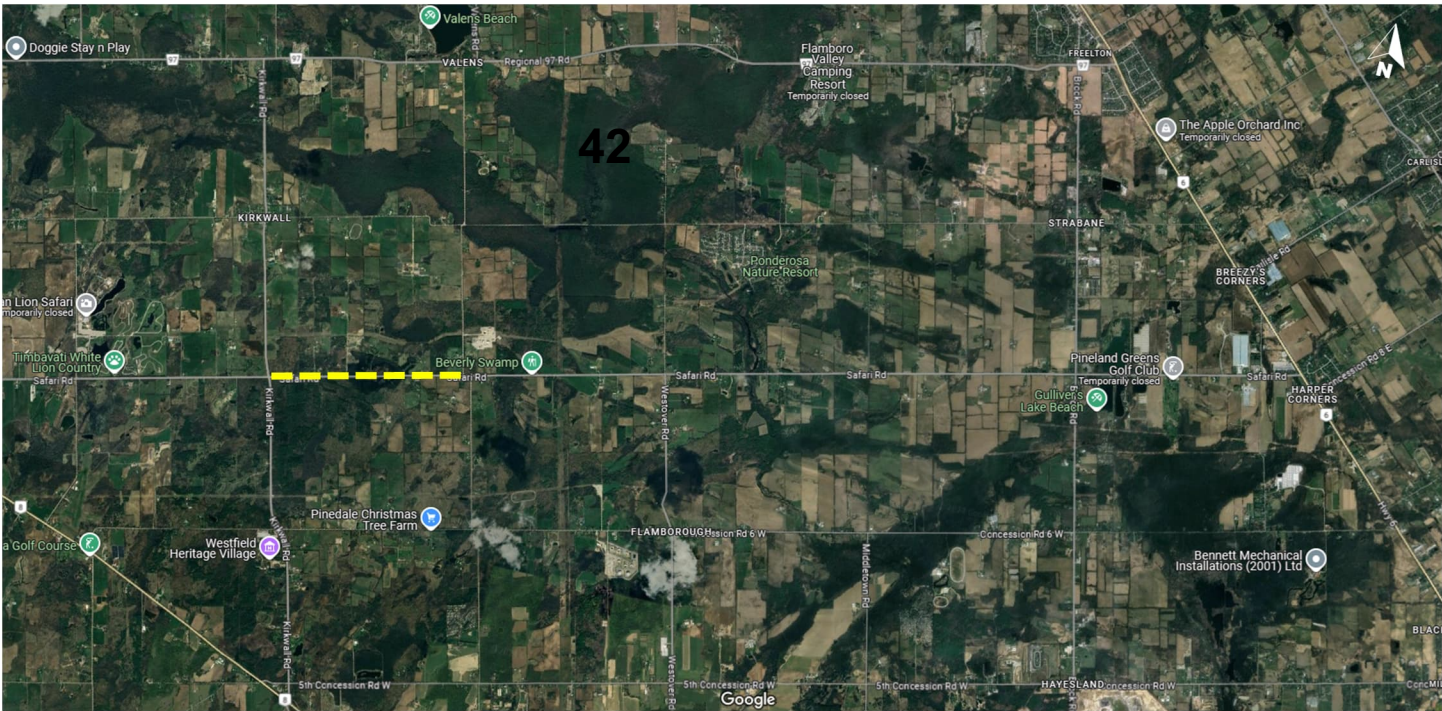


APPENDIX 1
TRAFFIC IMPACT STUDY





Safari Road Schedule 'B' Municipal Class EA

Traffic Impact Study

March 9, 2026

Prepared for:





Safari Road Schedule 'B' Municipal Class EA

Transportation Assessment

City of Hamilton

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RVA 247372

March 9, 2026

SAFARI ROAD SCHEDULE 'B' MUNICIPAL CLASS EA TRANSPORTATION ASSESSMENT

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1.0 INTRODUCTION

Due to prolonged flooding, a section of Safari Road, between Kirkwall Road and Valens Road, has been closed for almost five years. With this closure, a detour has been put in place directing traffic to Regional Road 97, via Brock Road and Kirkwall Road, which is primarily for truck traffic. A result of this extended road closure, R.V. Anderson Associates Limited (RVA) has been retained by the City of Hamilton to conduct a Transportation Assessment to assess the potential permanent closure of Safari Road (i.e., closed to through traffic), between Kirkwall Road and Valens Road, as part of a Schedule 'B' Municipal Class Environment Assessment (EA). This report summarizes this assessment and has been structured in a format similar to a traditional Traffic Impact Study (TIS).

2.0 STUDY AREA

With the current and potential permanent closure of Safari Road between Kirkwall Road and Valens Road, the road network shown in **Figure 1** encompasses the roadways that have been identified as potentially being impacted. The potentially impacted roadways include:

- › Safari Road
- › Regional Road 97
- › Kirkwall Road
- › Westover Road
- › Brock Road
- › 8th Concession Road West
- › Concession Road 6 West
- › Valens Road
- › Middletown Road



Figure 1: Study Area

It should be noted that the yellow dotted line depicted in **Figure 1**, is the section of Safari Road between Kirkwall Road and Valens Road, which is currently closed to through traffic.

2.1 Existing Road Network

The following **Figure 2** is an excerpt from the City's Official Plan (OP), Schedule 'C' – Rural Functional Road Classification, which identifies the following roads as arterial roadways:

- › Safari Road
- › Regional Road 97
- › Kirkwall Road
- › Westover Road
- › Brock Road

With an arterial road classification, these roads are intended to serve as critical transportation links, designed to carry higher volumes of traffic between major destinations.

The following **Figure 2** also identified the following roads as collector roadways:

- › 8th Concession Road West
- › Concession Road 6 West
- › Valens Road
- › Middletown Road

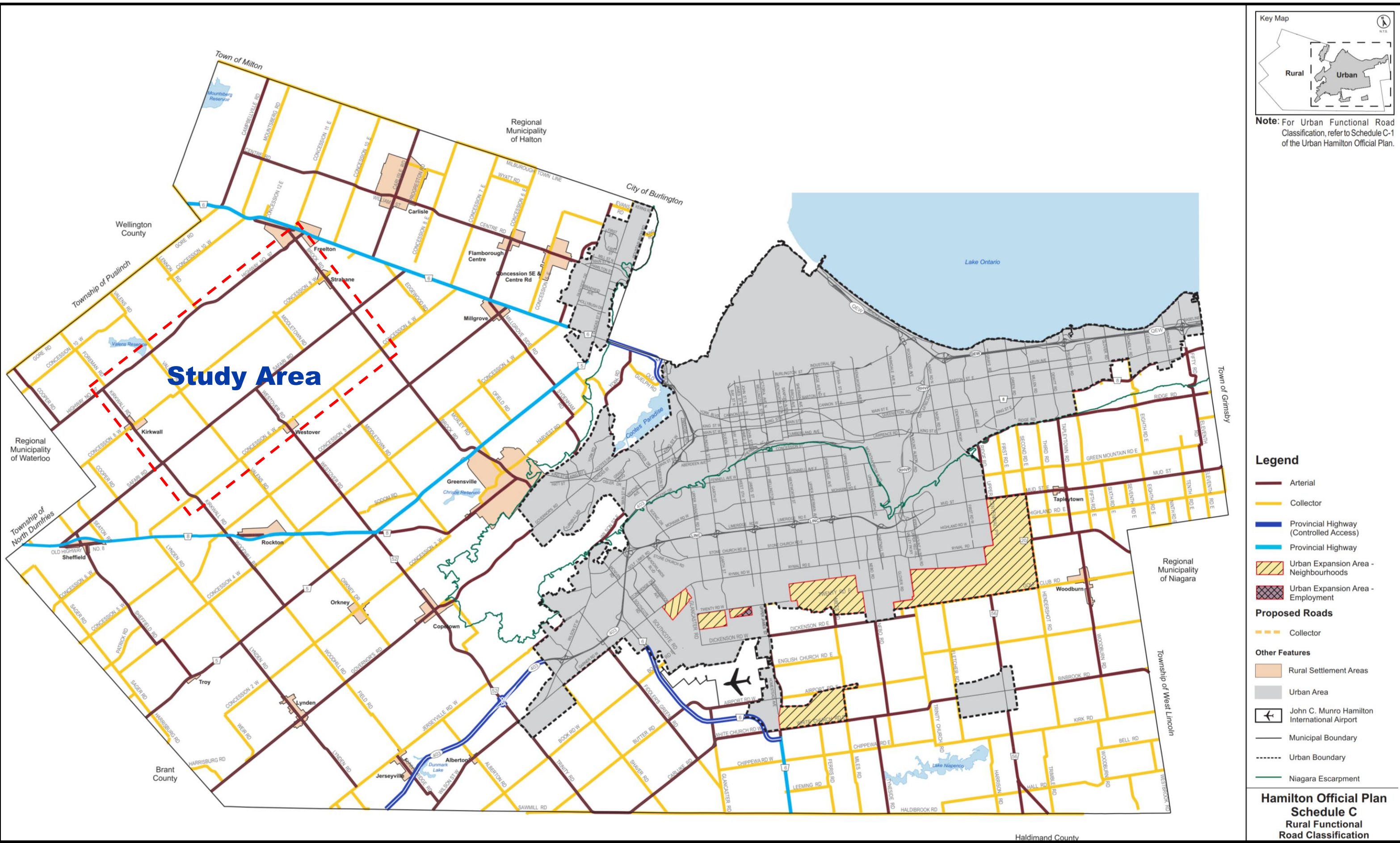
With a collector road classification, these roads are links between local and higher-order arterial roadways. They typically have less capacity than arterial roadways, as they can be narrower and have more driveway connections. Collector roadways are also not intended to support regular heavy vehicle traffic.

All study area roadways are two lanes (i.e., one travel lane per direction) with a rural cross-section (e.g., paved or unpaved shoulders and ditching for drainage), and generally have a speed limit of 70 km/h; however, posted speed limits can vary between 50 km/h to 80 km/h within the study area, depending on surrounding land uses and / or road conditions.

With respect to designated truck routes, the following **Figure 3** is an excerpt from the City's Truck Route Master Plan (TRMP), which identifies the following study area roadways as truck routes:

- › Safari Road
- › Regional Road 97
- › Kirkwall Road
- › Westover Road
- › Brock Road

The purpose of these truck routes is to improve the efficiency of goods movement, improve the quality of life by reducing truck traffic through residential areas and they are generally safer for truck traffic, as these roads have wider travel lanes, paved shoulders and are better maintained.



Key Map

Note: For Urban Functional Road Classification, refer to Schedule C-1 of the Urban Hamilton Official Plan.

Legend

- Arterial
- Collector
- Provincial Highway (Controlled Access)
- Provincial Highway
- Urban Expansion Area - Neighbourhoods
- Urban Expansion Area - Employment

Proposed Roads

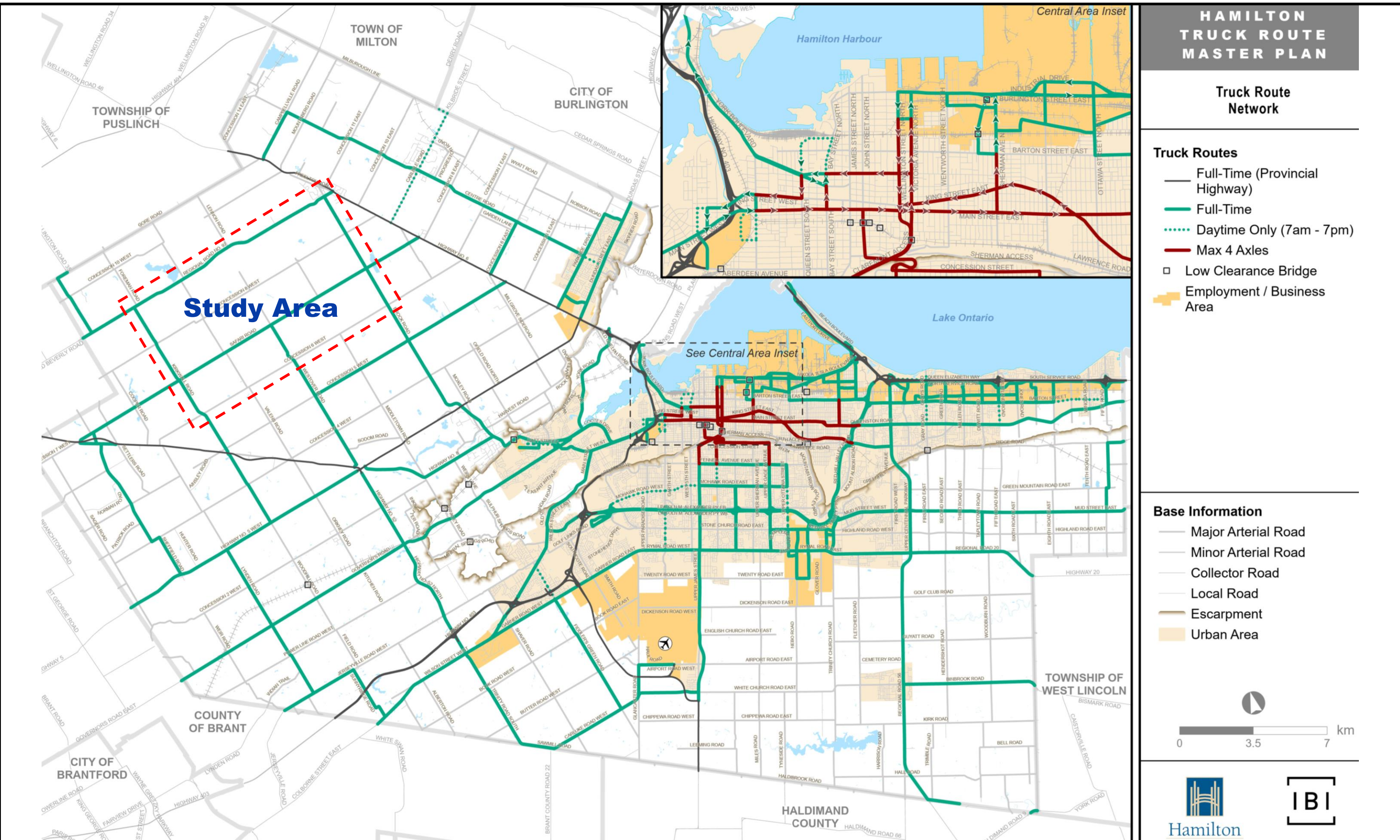
- Collector

Other Features

- Rural Settlement Areas
- Urban Area
- John C. Munro Hamilton International Airport
- Municipal Boundary
- Urban Boundary
- Niagara Escarpment

Hamilton Official Plan Schedule C Rural Functional Road Classification

Figure 2: Official Plan, Schedule 'C' – Rural Functional Road Classification



HAMILTON TRUCK ROUTE MASTER PLAN

Truck Route Network

- Truck Routes**
- Full-Time (Provincial Highway)
 - Full-Time
 - Daytime Only (7am - 7pm)
 - Max 4 Axles
 - Low Clearance Bridge
 - Employment / Business Area

- Base Information**
- Major Arterial Road
 - Minor Arterial Road
 - Collector Road
 - Local Road
 - Escarpment
 - Urban Area



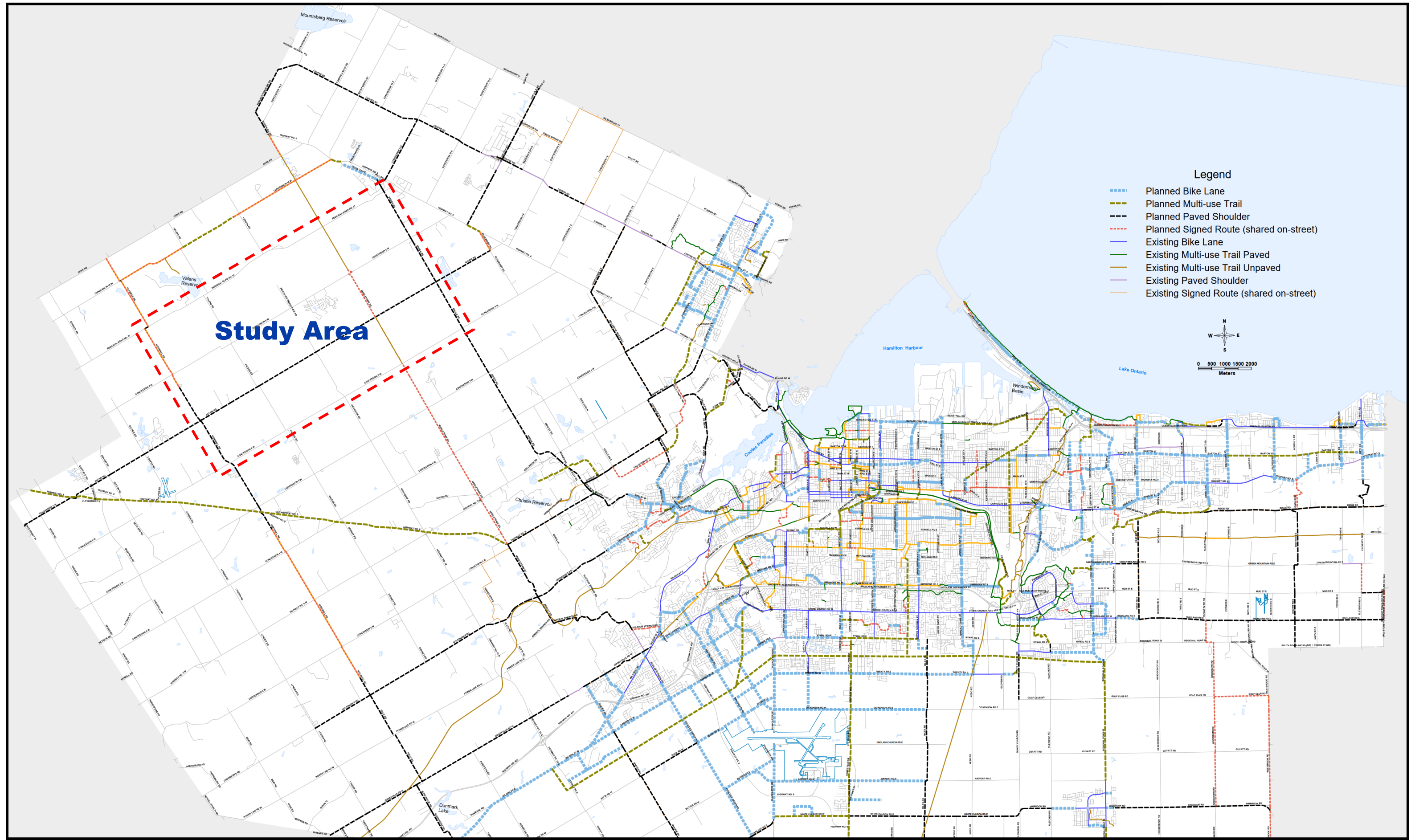
Figure 3: Truck Route Master Plan – Truck Route Network

2.2 Existing Transit and Active Transportation

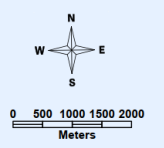
The subject section of Safari Road between Kirkwall Road and Valens Road, in addition to the surrounding road network, is well within the City of Hamilton's designated rural area. As such, there is no transit service, sidewalks or dedicated cycling facilities within the study area. However, Safari Road, Kirkwall Road and Brock Road are planned to have paved shoulders (currently, paved shoulders are not provided), as identified in the City's *Transportation Master Plan – Map 1A: Planned Cycling Network*. It should also be noted that sections of Middletown Road are closed to vehicular traffic, and are signed trails (e.g., the Lafarge 2000 Trail), with future plans to provide shared cycling facilities along Middletown Road.

The following **Figure 4** is an excerpt from the City's TMP depicting existing and future active transportation plans, and as shown in **Figure 4**, if Safari Road is permanently closed, it will have a significant impact on east-west cycling routes. Therefore, consideration should be given to providing an alternative east-west cycling route, such as, providing paved shoulders along Concession Road 6 West.

With respect to transit, the following **Figure 5** is an excerpt from the City's *Transportation Master Plan – Map 2: Rapid Transit Map & Inter-Regional Connections*, and as shown in **Figure 5**, there are no foreseeable plans to provide transit within the vicinity of Safari Road.



- Legend**
- Planned Bike Lane
 - Planned Multi-use Trail
 - Planned Paved Shoulder
 - Planned Signed Route (shared on-street)
 - Existing Bike Lane
 - Existing Multi-use Trail Paved
 - Existing Multi-use Trail Unpaved
 - Existing Paved Shoulder
 - Existing Signed Route (shared on-street)



Study Area

Figure 4: TMP – Existing and Planning Cycling Network

Map 2: Rapid Transit Map & Inter-Regional Connections

Legend

- Future Regional Express Bus
- Proposed Frequent Regional Express Bus
- Lakeshore West Rail Line
- Rapid Transit
- Blast Network
- Rapid Transit
- Future GO Station
- GO Station
- Transit Hub

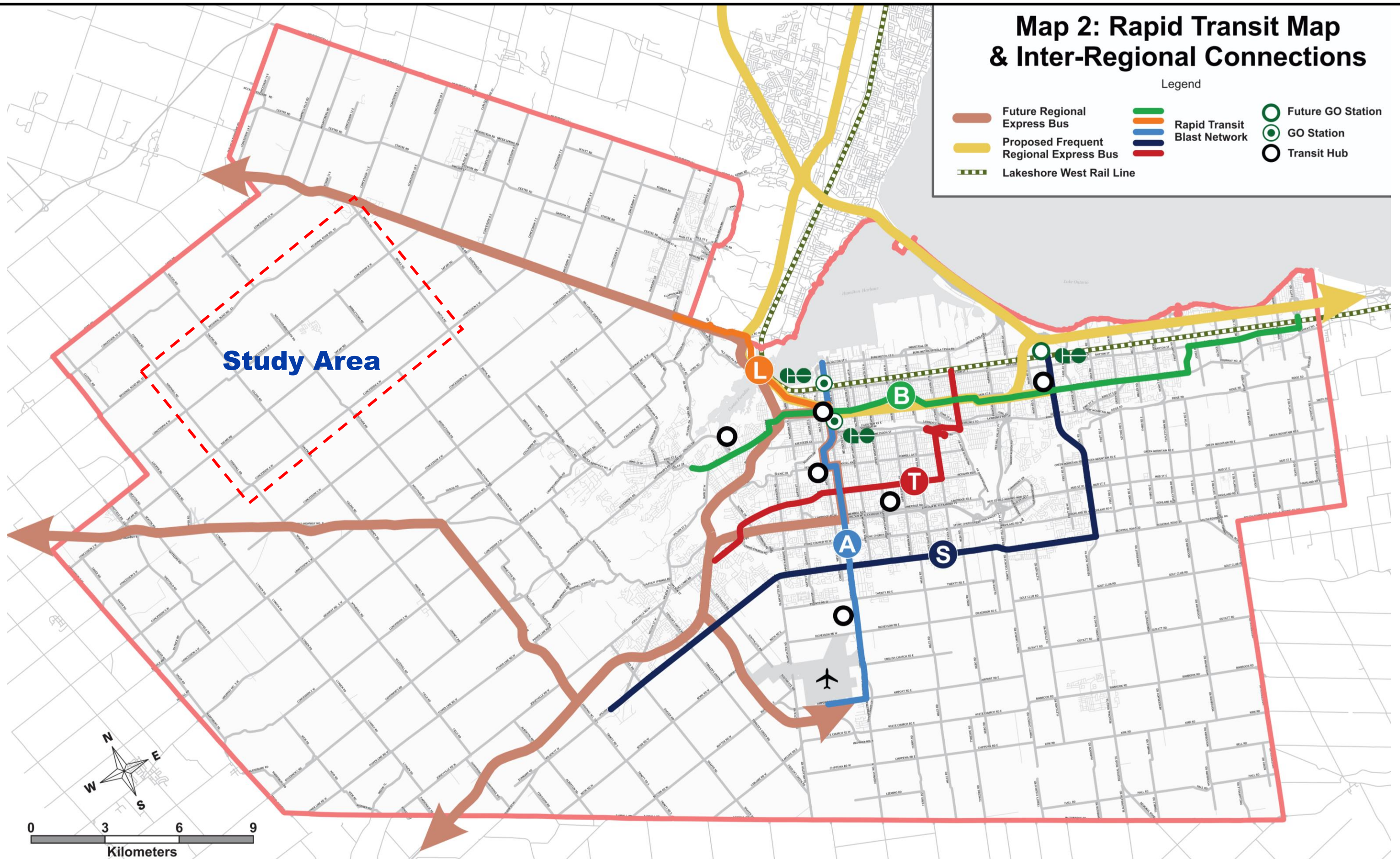


Figure 5: TMP – Existing and Planning Rapid Transit

2.3 Planned Road Network

With respect to the City's TMP, there are no conceptual links, future road connections or future road widenings within the vicinity of Safari Road. The majority of new road infrastructure is planned to occur south of the current urban area of the City of Hamilton, in the vicinity of the John C. Munro Hamilton International Airport. There are also some planned road improvements within and near the Waterdown community.

The following **Figure 6** is an excerpt from the City's TMP depicting planned network improvements.

2.4 Existing Intersection Configuration

All study area intersections, with the exception of the Safari/Kirkwall and Regional Road 97/Kirkwall intersections, are STOP controlled with a single lane approach that accommodates all movements.

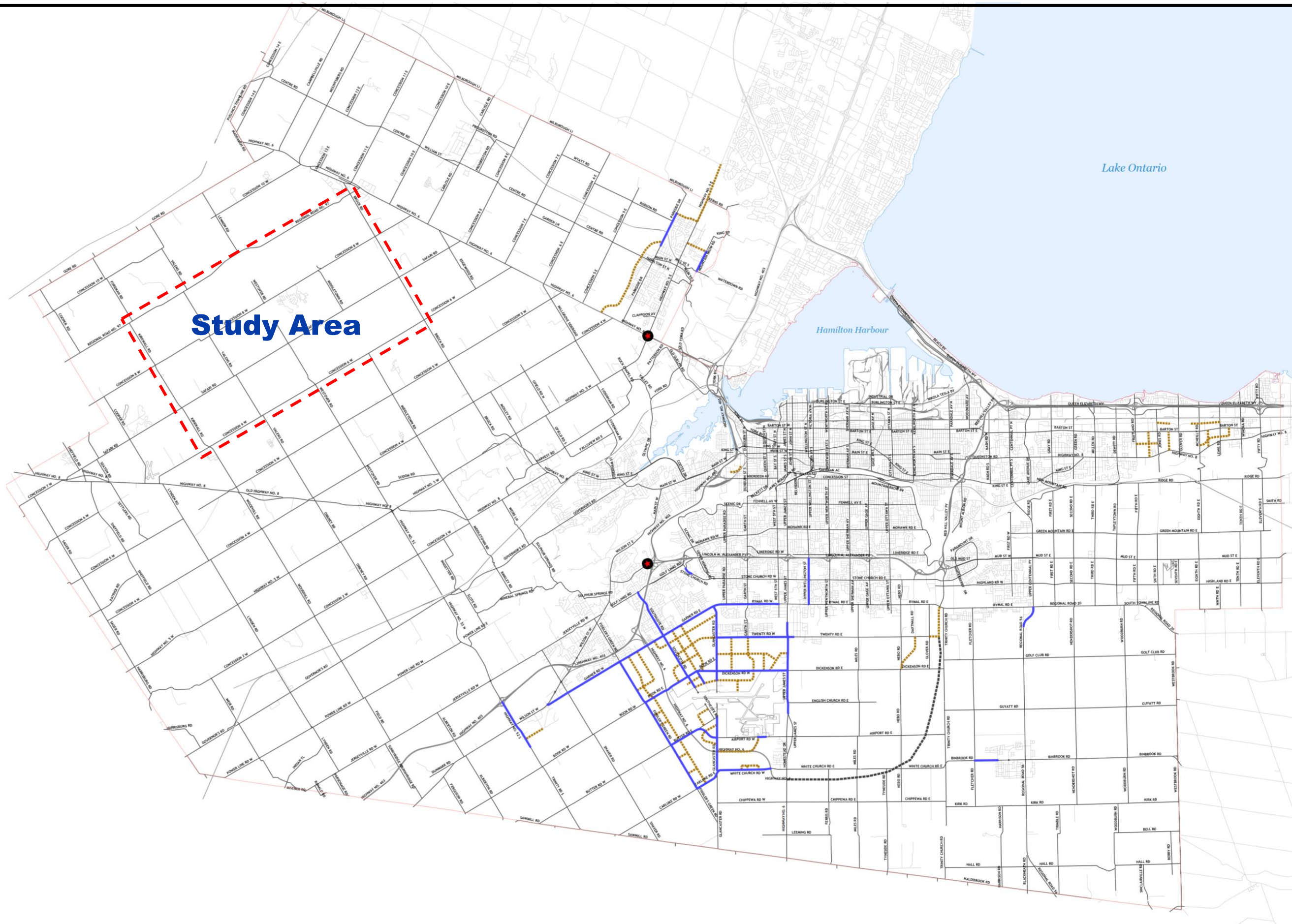
The Safari/Kirkwall intersection is four-legged All-Way STOP controlled intersection with auxiliary right-turn lanes for the eastbound and southbound approaches, and an auxiliary left-turn lane for the northbound approach. The westbound approach at this location consists of a single lane that accommodates all movements.

The Regional Road 97/Kirkwall intersection is a three-legged intersection with STOP control provided on the minor approach only (i.e., Kirkwall Road), and an auxiliary right-turn lane is provided for the eastbound approach. All other approaches at this location consist of a single lane that accommodates all movements.

Study area intersections where All-Way STOP control is provided include:

- › Kirkwall/8th Concession
- › Safari/Brock
- › Safari/Kirkwall
- › Brock/8th Concession
- › Concession Road 6/Westover
- › Valens/8th Concession
- › Brock/Concession Road 6

All other intersection control within the study area is STOP control on the minor approaches only.



- Legend
- MTO Interchange Improvement
 - Road Expansion
 - Future Road Connections
 - Conceptual Link
 - Railway
 - Existing Road Network
 - Major Lake
 - Municipal Boundary

Study Area

Lake Ontario

Hamilton Harbour

Source Date:
April 27, 2018

N.T.S.

PLANNING AND ECONOMIC DEVELOPMENT DEPARTMENT
TRANSPORTATION PLANNING

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Figure 6: TMP – Planned Road Network Improvements

3.0 EXISTING TRAFFIC CONDITIONS

Due to prolonged flooding, the subject section of Safari Road, between Kirkwall Road and Valens Road, has been closed for almost five years. With this closure, a detour has been put in place directing traffic to Regional Road 97, via Brock Road and Kirkwall Road, which is primarily for truck traffic. The surrounding study area road network also provides parallel routes around the closed section of Safari Road, such as 8th Concession Road and Concession Road 6 West, via Valens Road, Westover Road or Middletown Road, etc.

The signed detour route appears to be suitable for truck traffic, which is to be expected, as Brock Road, Regional Road 97 and Kirkwall Road are all designated truck routes. Alternative detour routes within the vicinity of Safari Road (e.g., 8th Concession, Concession Road 6 W, Valens Road, Middletown Road, etc.) have narrow lane widths and do not appear to be suitable for truck traffic; however, alternative parallel routes can be used for auto traffic, and they are suggested routes using GPS mapping software (e.g., Google Maps does not suggest Brock Road to Regional Road 97 to Kirkwall Road, to navigate around the current road closure).

During weekday morning and afternoon peak hours, RVA conducted site observations throughout the study area on Thursday, October 31st, 2024. These site visits were intended to collect observational data on general transportation context, including areas with operational constraints, if any, and other qualitative findings that may be of use to the study. Based on these observations, traffic volumes at study area intersections were observed to be nominal, with no prevailing operational concerns (e.g., notable queues or delays were not observed or experienced during field observations).

The following **Figure 7** depicts the current signed detour.

4.0 COLLISION AND SAFETY ANALYSIS

As documented in a report titled *Development of Traffic Control Plan for Re-Opening of Safari Road*, prepared by CIMA+ and dated January 23, 2023, there have been no reported collisions along Safari Road, between Kirkwall Road and Valens Road, in the seven-year timeframe of 2015 to 2022. This report also noted that beyond Kirkwall Road and Valens Road, Safari Road experienced 52 collisions between 2015 and 2022, where 24 were Property Damage Only (PDO), 20 were non-reportable (e.g., no injuries and the estimate damage was less than \$5,000), seven (7) collisions resulted in injury, and one (1) was fatal. The fatal collision was reported on Safari Road near Middletown Road on June 15, 2022. The incident, which was labelled as an approaching collision, involved a westbound passenger van and an eastbound motorcycle that was reported intoxicated. Most reported collisions were single motor vehicle collisions with attributes such as wild animal, ran off the road, ditch, tree, and skidding/sliding.

5.0 BACKGROUND TRAFFIC

The *Hamilton Model – Scenario Assessment Report (March 2024)* was referenced to establish future background traffic in the broader road network. In particular, the review considered the screenline analysis for the Puslinch/Waterloo area, as shown in Figure 8.

The modelled results show a substantial increase in intercity traffic traversing the screenline. Using the 2016 base year traffic as the datum, the screenline experiences a 31% increase by 2031, a 40% increase by 2041, and a 73% increase by 2051.

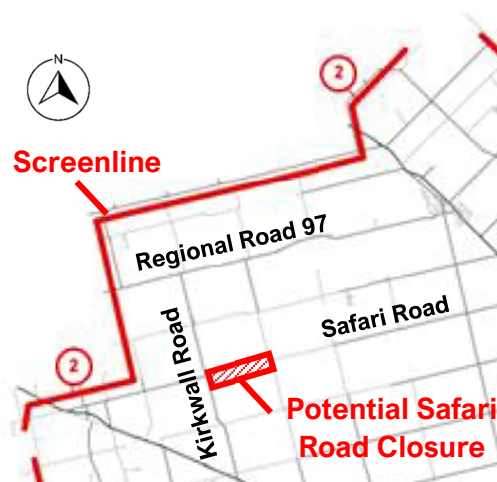


Figure 8: Hamilton Model Screenline

However, based on a review of the land uses surrounding the study area, it can be reasonably assumed that the principal portion of the screenline traffic is originating from or destined to the urban Hamilton area. As such, it is expected that this traffic will be primarily accommodated by the higher order roadways of Highway 8 or Highway 6. In the event that these corridors are approaching capacity conditions, screenline traffic would disperse throughout the lower-order rural roadways such as Safari Road and Kirkwall Road, etc., if Safari Road is available to through traffic.

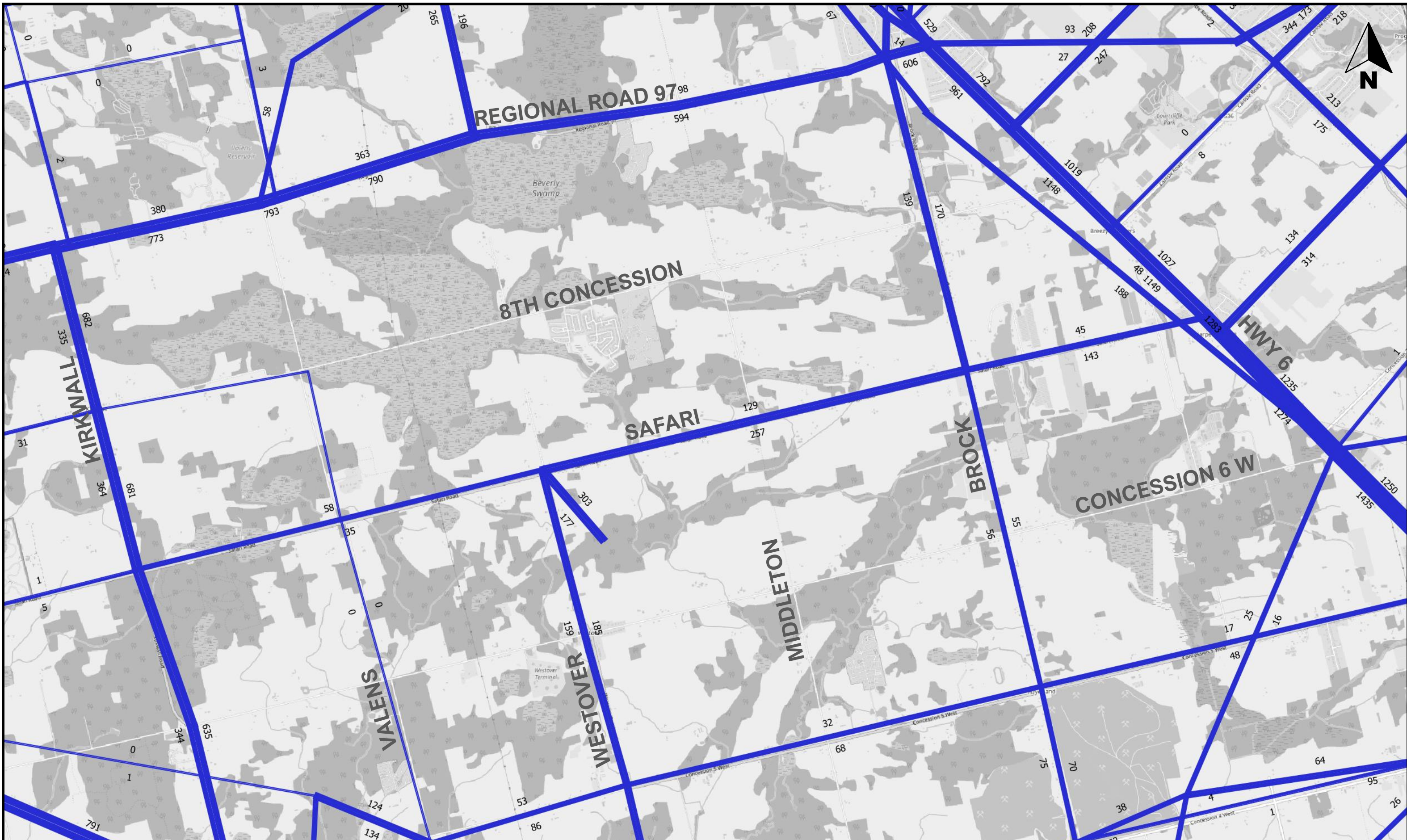
6.0 PROJECTED DETOUR TRAFFIC

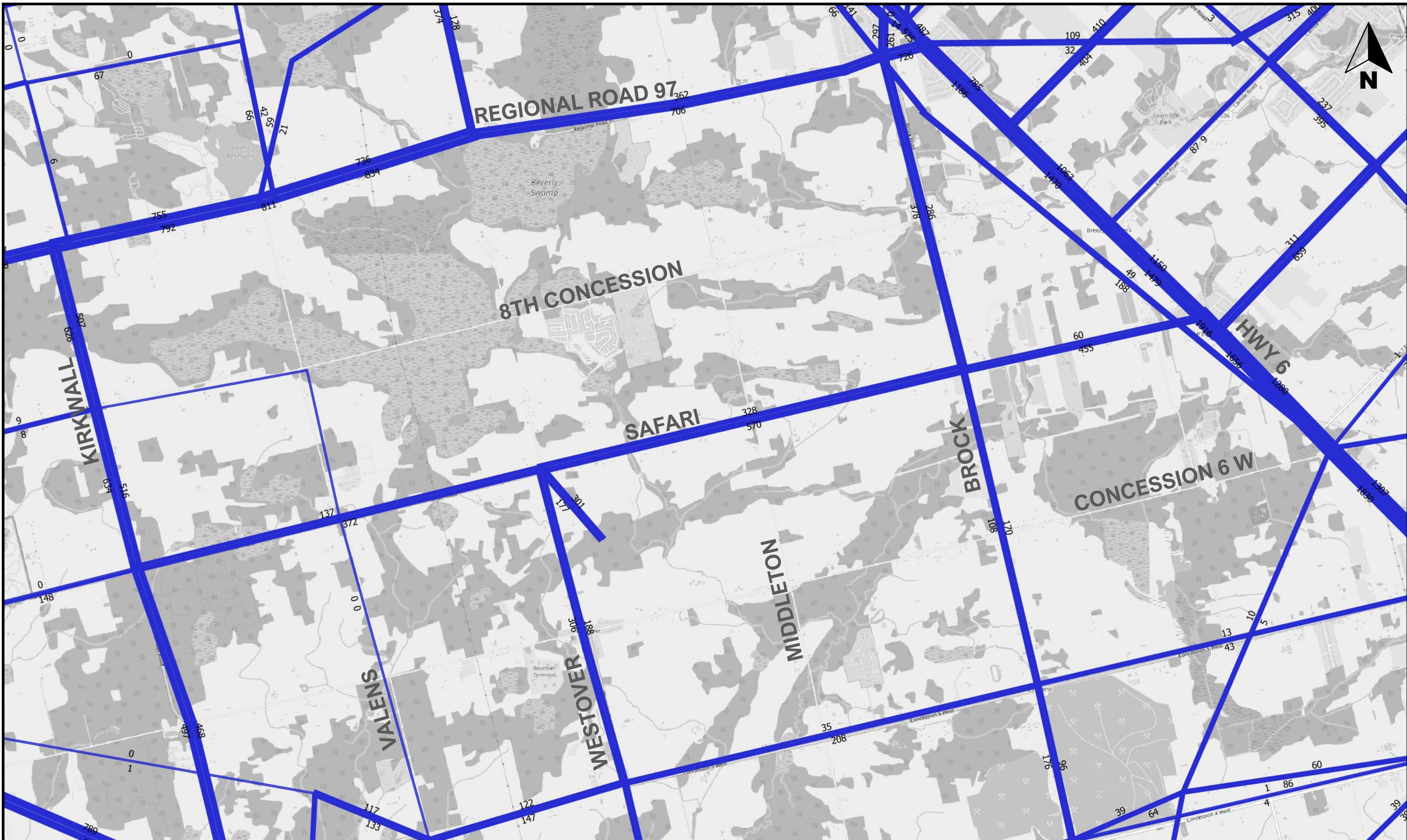
Given the subject section of Safari Road, between Kirkwall Road and Valens Road, has been closed for almost five years, relevant traffic data that predates the closure of Safari Road, is not available. However, the following **Figures 9, 10 and 11** depict output data from the Region's EMME travel demand model (i.e., the Hamilton Model), including projected volumes along Safari Road for the 2031, 2041 and 2051 planning horizon years, assuming Safari Road is open to through traffic.

As shown in **Figure 9**, Safari Road is projected to carry volumes of approximately 35 veh/h to 58 veh/h per direction (i.e. a total of 93 veh/h two-way), during the peak AM commuter hour, between Kirkwall Road and Valens Road, for the 2031 horizon year. Subsequently shown in **Figure 10** and **Figure 11**, the projected two-way volumes along the subject section of Safari Road are approximately 260 veh/h and 510 veh/h during the peak AM commuter hour, of which 200 veh/h and 372 veh/h are in the peak direction, for the 2041 and 2051 horizon years, respectively.

For planning purposes, a common practice is to consider mitigation strategies when lane volumes are approaching or exceeding the capacity thresholds. A rural arterial has a two-way capacity of approximately 1,500 veh/h during peak commuter hours.

Based on the foregoing, an approximate two-way total of 90 veh/h to 510 veh/h will require an alternative travel route during peak hours if Safari Road is permanently closed. Based on the current detour route of Brock Road, Regional Road 97, and Kirkwall Road, this adds approximately 8.5 kilometres of travel distance and 5 minutes of travel time.





7.0 EVALUATION OF FUTURE TRAFFIC

As described in the previous section, if Safari Road is permanently closed, an approximate two-way total of 90 veh/h to 510 veh/h will require an alternative route, of which 35 veh/h to 372 veh/h are in the peak eastbound direction.

Detouring traffic to routes that are directly adjacent to Safari Road (e.g., 8th Concession and Concession 6 W), the Hamilton EMME model projects negligible vehicle volumes on these routes, as shown in **Figures 9, 10 and 11** (i.e., these routes do not appear to be modelled, which is indicative of low link volumes). It should be noted that the parallel routes, 8th Concession and Concession 6 W, are both classified as rural collector roadways, which according to the TAC Geometric Design Guide, typical traffic volumes per day is less than 5,000 AADT, equating to two-way volumes of approximately 625 veh/h during peak commuter hours, or approximately 315 veh/h per direction, per lane. As such, splitting projected Safari Road traffic volumes between 8th Concession and Concession 6 W (e.g., splitting 372 veh/h in half, to add approximately 185 veh/h in the peak direction, to both adjacent collector routes), the overall road network is projected to have sufficient capacity, to accommodate the permanently detoured traffic.

With respect to the current signed detour route, that utilizes Brock Road, Regional Road 97 and Kirkwall Road, projected two-way AM peak hour traffic volumes are 1,150 veh/h to 1,570 veh/h, as shown in **Figures 9, 10 and 11**, of which approximately 790 veh/h to 830 veh/h are in the peak direction. These projected volumes are near / potentially over the capacity of a rural arterial roadway, and therefore, continuing to detour traffic from Safari Road towards Regional Road 97, there is the potential to over saturate the current signed detour. However, distributing volumes between area collector roadways (e.g., 8th Concession, Concession 6 W and Concession 5 W), in addition to Regional Road 97, the area road network can potentially support the permanent closure of Safari Road, between Kirkwall Road and Valens Road.

Alternatively, if Safari Road was reopened, the approximate two-way total of 90 veh/h to 510 veh/h discussed above, would not require alternative routes, in turn reducing overall vehicle kilometres travelled and GHG emissions, and the study area network would operate within the theoretical link capacities. Reopening Safari Road would also provide a more direct east-west truck route that would reduce travel times and in turn, alleviate Brock Road, Regional Road 97 and Kirkwall Road from truck traffic. The parallel routes, 8th Concession and Concession 6 W, would also experience less traffic with Safari Road reopened, as it is a more direct route between Highway 6 and Kirkwall Road.

8.0 IMPROVEMENT ALTERNATIVES TO MITIGATE IMPACTS

If Safari Road is permanently closed, and its projected volumes are distributed to parallel routes, the area network is projected to have sufficient capacity. However, with additional traffic volumes on rural collector roadways, such as 8th Concession and Concession 6 W, consideration should be given to implementing additional road safety features, such as wider travel lanes (e.g., 3.25 - 3.5 m) and paved shoulders (e.g., 1.5 – 2.0 m). The need for area intersection improvements should also be monitored, as additional traffic volumes may warrant the need for additional intersection control (e.g., All-Way Stop control, traffic signal control, roundabouts, etc.).

With Safari Road having been closed for almost five years, and based on our understanding that there have been no traffic-related issues to-date, with the current detour in-place, the implementation of additional road safety features (described above) can be incorporated into 5 to 10 year capital improvement plans, or road resurfacing programs.

If Safari Road was reopened, the recommended network improvements described above would be less critical; however, from a road safety and active transportation perspective, providing paved shoulders along rural collector roadways should still be given consideration, as there are very limited east-west pedestrian / cycling routes available within, and around the study area.

9.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

RVA has completed a review of a potential permanent closure of Safari Road, between Kirkwall Road and Valens Road. The projected impacts from a transportation perspective have been summarized above, and the following findings, conclusions and recommendations are offered:

- › Safari Road is an east-west rural arterial roadway and is a full-time truck route.
- › Safari Road is currently closed between Kirkwall Road and Valens Road, and a detour is in place, utilizing Brock Road, Regional Road 97 and Kirkwall Road. However, this is mainly for truck traffic, as alternative parallel routes can be used by auto traffic.
- › Safari Road is an identified cycling route, planned to have paved shoulders (currently, paved shoulders are not provided).
- › There is currently no transit, sidewalks or dedicated cycling facilities within the study area, and there are no foreseeable plans to provide transit within the vicinity of Safari Road.
- › Field investigations conducted during peak commuter hours revealed that based on observations, traffic volumes at study area intersections are nominal and there are no prevailing operational concerns.

- › Given relevant traffic count data is not available, the Hamilton EMME model was used for analysis purposes, which revealed the subject section of Safari Road is projected to carry two-way volumes of approximately 100 veh/h to 500 veh/h between the 2031 and 2051 planning horizon years.
- › If Safari Road were to be permanently closed:
 - The overall area road network is projected to have sufficient capacity. However, consideration should be given to implementing additional road safety features, such as wider travel lanes and paved shoulders for parallel routes (e.g., 8th Concession and Concession 6 W are currently narrow with limited shoulders).
 - The need for area intersection improvements should be monitored, as additional traffic volumes may warrant the need for additional intersection control.
 - Consideration should be given to planning an alternative cycling route (e.g., Safari Road is the only east-west cycling route within the study area, planned to have paved shoulders).
 - The existing detour will remain in place, adding approximately 8.5 kilometres of distance travelled and 5 minutes of travel time per trip.
- › If Safari Road were reopened:
 - The overall area road network is projected to have sufficient capacity, with parallel routes projected to carry less traffic than if Safari Road was to remain closed. This includes less truck traffic along the current signed detour route that is Brock Road, Regional Road 97 and Kirkwall Road.
 - From a road safety perspective and given there are limited east-west pedestrian / cycling routes available within, and around the study area, consideration should still be given to providing paved shoulders along rural collector roadways.

Based on the foregoing, the permanent closure of Safari Road between Kirkwall Road and Valens Road is considered feasible. However, it is recommended that additional road safety features be incorporated into 5 to 10 year capital improvement plans or road resurfacing programs along parallel collector roadways.