



**Region of Peel**

**Settlement Area Boundary  
Expansion (SABE)**

**Transportation Technical Study –  
Phase 2 Detailed Assessment**

Paradigm Transportation Solutions Limited

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## **Region of Peel Settlement Area Boundary Expansion (SABE) Transportation Technical Study – Phase 2 Detailed Assessment**



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# 1 Introduction

## 1.1 Overview

The Region of Peel is undertaking a municipal comprehensive review of the Regional Official Plan (ROP) with the objective of updating policies and mapping that guide growth in Peel to the year 2051. Through the results of the Peel 2051 study, the updated ROP will make provisions for approximately 2.3 million residents and 1.1 million jobs in Peel Region to the year 2051 consistent with projections contained in *A Place to Grow*, the Provincial Growth Plan for the Greater Golden Horseshoe (the Growth Plan).

The land needs assessment (LNA) for Peel 2051 has identified the need for an additional 3,000 hectares to support Community Areas and 1,400 hectares to support Employment Areas outside the existing settlement area boundary in the Town of Caledon. The Region has retained Hemson Consulting to undertake the **Settlement Area Boundary Expansion (SABE) Study** to determine the appropriate location(s) for the additional lands needed to serve this growth. The recommended SABE will be defined, in part, based on the results of a series of technical studies, including the **Transportation Technical Study** being completed by Paradigm Transportation Solutions Limited as part of the Hemson team.

This report presents the findings of the Phase 2 detailed assessment of the Transportation Technical Study. The intent of these analyses is to determine roadway infrastructure requirements and cost impacts to serve new projected residential and employment growth between the years 2041 and 2051 in the conceptual SABE area and assess the financial implications of different growth scenarios.

The analyses presented in this report follow-on from the initial transportation assessment (Phase 1) completed in November 2020<sup>1</sup>. The Phase 1 study involved a preliminary examination of the most suitable location for settlement expansion based on the results of existing conditions in the broader Focus Study Area (FSA), available servicing capacity, planned major road expansion, knowledge of high-level infrastructure cost impacts, and the Provincial policy context. The detailed transportation assessment (Phase 2) summarized in this report identifies more precise infrastructure needs and associated costs of the conceptual SABE area(s) derived through Phase 1 based

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<sup>1</sup> See Paradigm Transportation Solutions Limited, *Region of Peel Settlement Boundary Area Expansion Study, Transportation Technical Study, Technical Memorandum A – Assessment and Evaluation Process and Initial Assessment*, November 6, 2020



on small-scale forecasts of population and employment growth and travel demand modelling.

## 1.2 Study Area

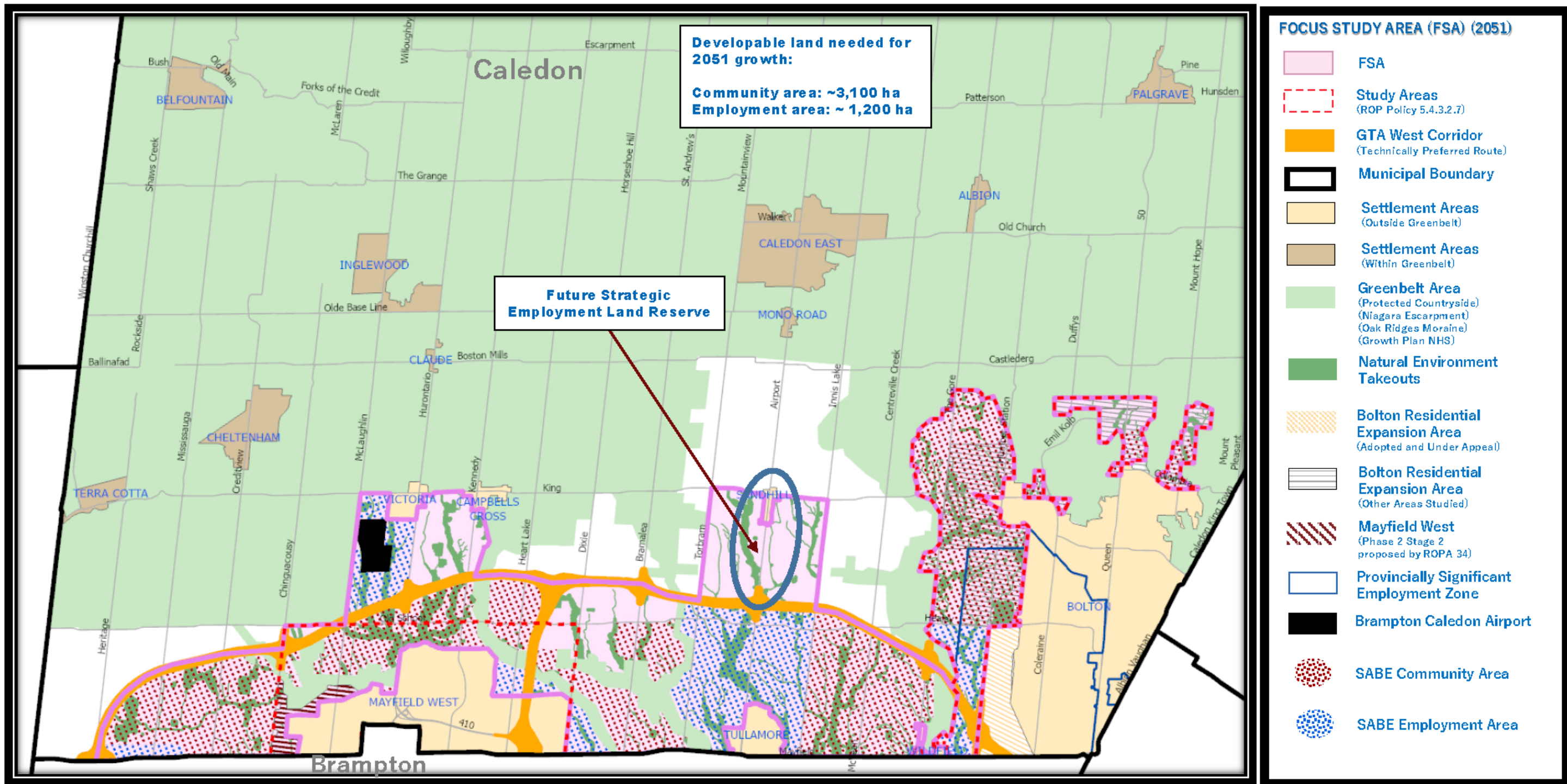
**Map 1** illustrates the first draft of the SABE concept map released on December 10, 2020<sup>2</sup> (and since updated with ROPA 30 LPAT settlement and approved ROPA 34), which served as the starting point for the analyses. The SABE lands generally lie between Mayfield Road and the GTA West Transportation Corridor, along with expansion areas in west Bolton (west of Coleraine Drive), northwest Bolton (north of King Street), and north Bolton (north of Columbia Way).

The detailed transportation assessment focuses on the road network requirements in Peel Region north of Countryside Drive/Wanless Drive.

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<sup>2</sup> See Hemson Consulting, *Planning Justification Report, Settlement Area Boundary Expansion Study: Concept Map and Technical Study Findings*, December 10, 2020





**FOCUS STUDY AREA (FSA) (2051)**

- FSA
- Study Areas (ROP Policy 5.4.3.2.7)
- GTA West Corridor (Technically Preferred Route)
- Municipal Boundary
- Settlement Areas (Outside Greenbelt)
- Settlement Areas (Within Greenbelt)
- Greenbelt Area (Protected Countryside) (Niagara Escarpment) (Oak Ridges Moraine) (Growth Plan NHS)
- Natural Environment Takeouts
- Bolton Residential Expansion Area (Adopted and Under Appeal)
- Bolton Residential Expansion Area (Other Areas Studied)
- Mayfield West (Phase 2 Stage 2 proposed by ROPA 34)
- Provincially Significant Employment Zone
- Brampton Caledon Airport
- SABE Community Area
- SABE Employment Area

**Disclaimer:** This map has been developed for the Settlement Area Boundary Expansion (SABE) Study and represents a conceptual area for the SABE based on technical studies. For additional information, please refer to the technical studies at <http://www.peelregion.ca/officialplan/review/focus-areas/settlement-area-boundary.asp>

**Notes:**

- 1) Other natural environmental constraints not identified on this map, including potential restoration lands, will be identified through further analysis and may further limit development.
- 2) ROP Policy 5.4.3.2.7 as it relates to the area surrounding Bolton is under appeal.
- 3) The ~4,300 ha SABE is based on a draft land needs assessment which is under review.



1 cm = 1 km



**Draft SABE Concept – December 10, 2020**

## 2. Analysis Process

### 2.1 Overview

The analysis process for the detailed transportation assessment involved the following steps:

1. Assign 2051 population and employment growth forecasts to traffic zones (TZ).<sup>3</sup>
2. Forecast future 2051 vehicle traffic volumes using the Peel Travel Demand Forecasting Model (the Model) assuming:
  - Future 2041 road network recommended in the 2019 *Long Range Transportation Plan*<sup>4</sup> (LRTP);
  - 2018 *Sustainable Transportation Strategy*<sup>5</sup> (STS) mode splits; and
  - Factored 2041 population and employment forecasts and 2041 road networks for other Greater Toronto and Hamilton Area (GTHA) Regions.
3. Identify and assess screenline<sup>6</sup> and link capacity deficiencies on the road network based on forecast volume to capacity (v/c) ratios. A v/c ratio of 0.9 or higher was considered the threshold for congestion and practical capacity for the purpose of identifying deficiencies.
4. Determine and cost potential road widening projects needed to address forecast capacity deficiencies.

The following sections provide further detail on the individual steps in the process.

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<sup>3</sup> Traffic Zones are the basic unit of travel forecasting model geography, dividing a planning region into relatively similar areas of land use activity. Zones contain socioeconomic data used in models, represent the origins and destinations of travel activity within the planning region, and serve as the primary unit of analysis in the model.

<sup>4</sup> Peel Region, *Let's Move Peel – Long Range Transportation Plan 2019*, 2019

<sup>5</sup> Peel Region, *Sustainable Transportation Strategy*, February 2018

<sup>6</sup> A screenline is a pre-determined imaginary line spanning a major road, municipal boundary, a man-made boundary (such a railway), or a natural boundary (such as a river). Screenlines are used to summarize traffic conditions at important locations.



## 2.2 Growth Forecasts

### 2.2.1 Scenarios

**Table 1** lists the six 2051 growth scenarios tested for the detailed transportation assessment. The table summarizes, by scenario (where available), the:

- ▶ Assumed housing intensification rates for the proposed Community Area lands;
- ▶ Assumed density of housing in the designated greenfield area (DGA) of the Community Area lands;
- ▶ Community Area and Employment Area land needs; and
- ▶ Resulting population and employment forecasts by municipality and for Peel Region in total.

The first five scenarios can be described as follows:

- ▶ **Scenario 0 – Land Needs Assessment Base** reflects the distribution of Community Area and Employment Area set out in the first draft of the SABE concept map released on December 10, 2020 (**Map 1**). This initial concept map was further refined through Scenario 1 below and ultimately did not serve as the basis for comparison as explained in Subsection 3.3.1.
- ▶ **Scenario 1 – Updated Land Needs Assessment Base** updates the amount and configuration of SABE lands in Scenario 0 based on the final LNA. An additional ~200 hectares of Employment Area have been added to the SABE area, mostly north of the GTA West Transportation Corridor just south of the hamlet of Sandhill. Moreover, Community Area north-east of Mayfield West has been reconfigured in part to accommodate this additional Employment Area and recognize the approvals of ROPA 30 and ROPA 34 settlement areas. Subsection 3.3.1 explains the consequences of these variations between Scenarios 0 and 1 from the land use and transportation perspectives.
- ▶ **Scenario 2 – Higher Designated Greenfield Area Density** carries the same assumptions as Scenario 1 except for an increase in housing density in the DGA. This reduces the overall Community Area land need to 2051, with lands removed from the SABE area south of the GTA West Transportation Corridor and north-east of Mayfield West.





**TABLE 1: SUMMARY OF GROWTH SCENARIO ASSUMPTIONS**

Scenario	Intensification Rate	Designated Greenfield Area Density (persons and jobs per ha)	Land Needs (ha)		Municipality	2051 Population	2051 Employment
			Community Area	Employment Area			
0 – Land Needs Assessment Base	55%	65	3,100	1,200	Caledon	300,000	125,000
					Brampton	984,000	353,000
					Mississauga	995,000	590,000
					<b>TOTAL</b>	<b>2,279,000</b>	<b>1,069,000</b>
1 – Updated Land Needs Assessment Base	55%	65	3,000	1,400	Caledon	300,000	126,000
					Brampton	985,000	356,000
					Mississauga	995,000	590,000
					<b>TOTAL</b>	<b>2,280,000</b>	<b>1,071,000</b>
2 – Higher Designated Greenfield Area Density	55%	75	2,500	1,400	Caledon	300,000	125,000
					Brampton	985,000	356,000
					Mississauga	995,000	590,000
					<b>TOTAL</b>	<b>2,280,000</b>	<b>1,071,000</b>
3 – Lower Designated Greenfield Area Density	55%	55	3,200	1,400	Caledon	300,000	126,000
					Brampton	985,000	356,000
					Mississauga	995,000	590,000
					<b>TOTAL</b>	<b>2,280,000</b>	<b>1,072,000</b>
4 – Minimum Intensification	50%	65	4,200	1,600	Caledon	360,000	131,000
					Brampton	960,000	355,000
					Mississauga	960,000	586,000
					<b>TOTAL</b>	<b>2,280,000</b>	<b>1,073,000</b>
5 – No GTA West	55%	65	3,000	1,400	Caledon	300,000	126,000
					Brampton	985,000	356,000
					Mississauga	995,000	590,000
					<b>TOTAL</b>	<b>2,280,000</b>	<b>1,071,000</b>



- ▶ **Scenario 3 – Lower Designated Greenfield Area Density** carries the same assumptions as Scenario 1 except for a reduction in housing density in the DGA. This increases the overall Community Area land need to 2051, with lands added to the SABE area north of the GTA West Transportation Corridor between Highway 10 and Airport Road and in the Bolton “fingers”.
- ▶ **Scenario 4 – Minimum Intensification** modifies the assumptions of Scenario 1 in two ways:
  - A reduction in the intensification rate, which shifts population and population-related employment growth to Caledon from other parts of Peel. This increases the overall Community Area land need to 2051, with lands added to the SABE area north of the GTA West Transportation Corridor between Highway 10 and Airport Road as well as north and west of the GTA West Highway Corridor west of Chinguacousy Road.
  - An addition of 200 hectares of employment land to the SABE area to test the impact of a more extensive employment land base. This reduces the density of jobs on employment land. Employment Area has been added north of the GTA West Transportation Corridor around Sandhill and around the intersection of the highway corridor with the extension of Highway 410.

As noted in the table, the lower intensification rate shifts population growth from Mississauga (35,000 people) and Brampton (25,000 people) to Caledon. Less intensification also results in slightly more population-related employment in Caledon, which contributes only to an increase in need for Community Area.

A sixth growth scenario (Scenario 5) reflects a future development pattern for the SABE area without the proposed GTA West Highway 413 and northerly extension of Highway 410. This scenario was developed in response to a series of resolutions passed by Regional Council on March 11, 2021 expressing “strong opposition in principle to construction of any transportation corridor traversing the Region of Peel, but specifically the currently proposed GTA West 413 highway and Transmission corridor...”. As noted in **Table 1**, Scenario 5 is based on the same intensification, density, and overall population and employment assumptions as Scenario 1. However, the population and employment growth has been redistributed to different TZs to reflect the land use effects of this scenario. It also assumes the GTA West Transportation Corridor remains a feature to be planned for and



protected (pursuant to Provincial policy) but is not used for a highway or transmission purposes.

### 2.1.2 Distribution to Traffic Zones

Hemson and Peel Region staff prepared 2051 population and employment forecasts for each growth scenario by TZ for use in the Model. The forecasts were generated by aggregating/redistributing data provided at the small geographic unit (SGU)<sup>7</sup> level to a modified TZ system. Several larger traffic zones in the southern portion of Caledon, not previously forecast to accommodate much future growth, were split to achieve a more appropriate loading of trips onto the road network by the Model.

**Appendix A** contains a series of choropleth (“heat”) maps displaying the geographical allocation of the population and employment growth by TZ from 2041 to 2051 for each scenario.

### 2.1.3 Forecasts for Traffic Zones Outside Peel Region

To accurately reflect travel patterns for a vast conurbation like the Toronto area, the Model cover lands outside Peel Region. Inside the GTHA, the TZ system for the Model is identical to the 2006 GTA system developed by the University of Toronto’s Data Management Group (DMG) for the Transportation Tomorrow Survey (TTS). It consists of 2,272 zones, 405 of which are in Peel Region. Outside the GTHA, the 2006 GTA zones are aggregated to 31 external zones covering the remainder of the Greater Golden Horseshoe (GGH) to capture external trips<sup>8</sup>. **Map 2** illustrates the Model coverage.

The Model requires population and employment data for all TZs, including those outside Peel Region, to forecast future travel demands. At the time of completing the SABE Study, the other GTHA regions and cities were in the process of developing 2051 demographic forecasts at a zonal level for their municipalities but had not released the data.

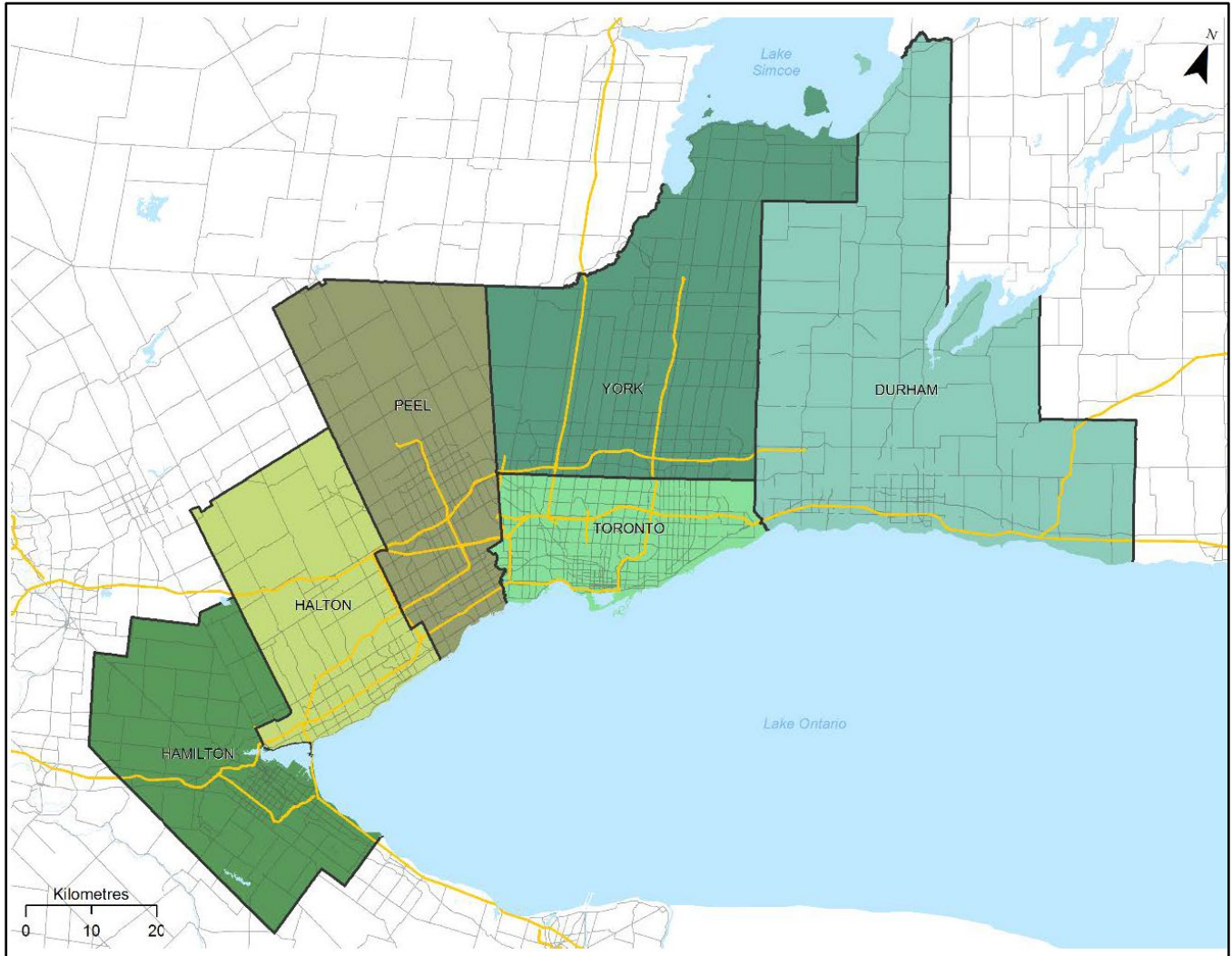
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<sup>7</sup> Small Geographic Units are used for mid-scale census data dissemination and analysis and are created to correspond with planning policies and the unique geographical features found in the Region of Peel.

<sup>8</sup> IBI Group, *Peel Region Travel Demand Forecasting Model Update: 2011 AM and PM Peak Period Model*, March 2016







(Source: *Peel Region Travel Demand Forecasting Model Update: 2011 AM and PM Peak Period Model*, March 2016)

In the absence of this information, 2051 population and employment figures for zones outside Peel Region were estimated by applying a proportional growth factor to the 2041 values available within the Model. A growth rate was calculated for each GTHA region and city from the demographic forecasts provided in the Growth Plan and applied uniformly to the population and employment data for all zones within that municipality. **Table 2** summarizes the growth factors for the GTHA regions and cities applied in the analysis.

**TABLE 2: CALCULATION OF GROWTH FACTORS**

Region/ City	Population			Employment		
	2041 <sup>1</sup>	2051 <sup>2</sup>	Growth Factor	2041 <sup>1</sup>	2051 <sup>2</sup>	Growth Factor
Toronto	3,182,984	3,650,000	1.15	2,026,181	1,980,000	0.98
Durham	1,051,689	1,300,000	1.24	374,859	460,000	1.23
York	1,656,974	2,020,000	1.22	861,604	990,000	1.15
Halton	840,730	1,100,000	1.31	431,413	500,000	1.16
Hamilton	613,822	820,000	1.34	277,269	360,000	1.30

Source:

1. Data from Peel Travel Demand Forecasting Model
2. Data from Schedule 3 of the Growth Plan

It is acknowledged this approach could produce imprecise results given growth is unlikely to occur uniformly across the other GTHA regions and cities. The comparative nature of the assessment process for the Transportation Technical Study helps to negate/mitigate the potential implications, as the travel demand forecasting for all six land use scenarios relies on the same assumptions.

## 2.2 Traffic Forecasting

### 2.2.1 Peel Travel Demand Forecasting Model

The Model is a tool used to predict and analyze travel behaviour in Peel Region and in the wider GTHA. Implemented in INRO's EMME software platform, the Region uses the Model to provide traffic and transit forecasts for new transportation initiatives, analyze the impact of new policies, and provide quantitative backing for strategic and operational studies (e.g., traffic impact assessments, environmental assessments).

The 2041 AM peak period (6:30 to 9:30) version of the Model applied in the 2019 LRTP was used for the Transportation Technical Analysis.



This version is based on the Region’s 2011 modelling system, which was last re-estimated and calibrated in 2016 to reflect updated travel behaviour information made available through release of the 2011 TTS data and to incorporate other procedural and structural changes.

**Figure 1** provides a schematic overview of the 2011 system.

### 2.2.2 Mode Split Assumptions

The travel demand forecasting completed for the SABE study assumed the same mode split targets as the 2019 LRTP to ensure consistency in approach and findings. The LRTP builds on the directions presented in the 2018 STS, which set an overall target of 50% of morning peak period person-trips using sustainable transportation modes and the remaining 50% made by driving. Sustainable transportation modes include walking, cycling, transit, carpools, school buses, taxis, and new mobility options like ridesharing and ride-hailing. Telework will also contribute by eliminating 1.5% of morning peak period trips.<sup>9</sup>

### 2.2.3 Application for the SABE Study

Peel Region staff completed Model runs for the six scenarios and provided the output to Paradigm for the detailed analysis. The travel demand forecasting followed the process shown in **Figure 2**. The 2041 AM peak period version of the Model was used without modification to the calibration or operational structure, other than the TZ system changes noted in Subsection 2.1.2 above. A rerun of the Model with the approved 2041 land use scenario from the 2019 LRTP, but allocated to the refined system, confirmed the zone changes did not alter the travel demand forecasting results at a screenline level.

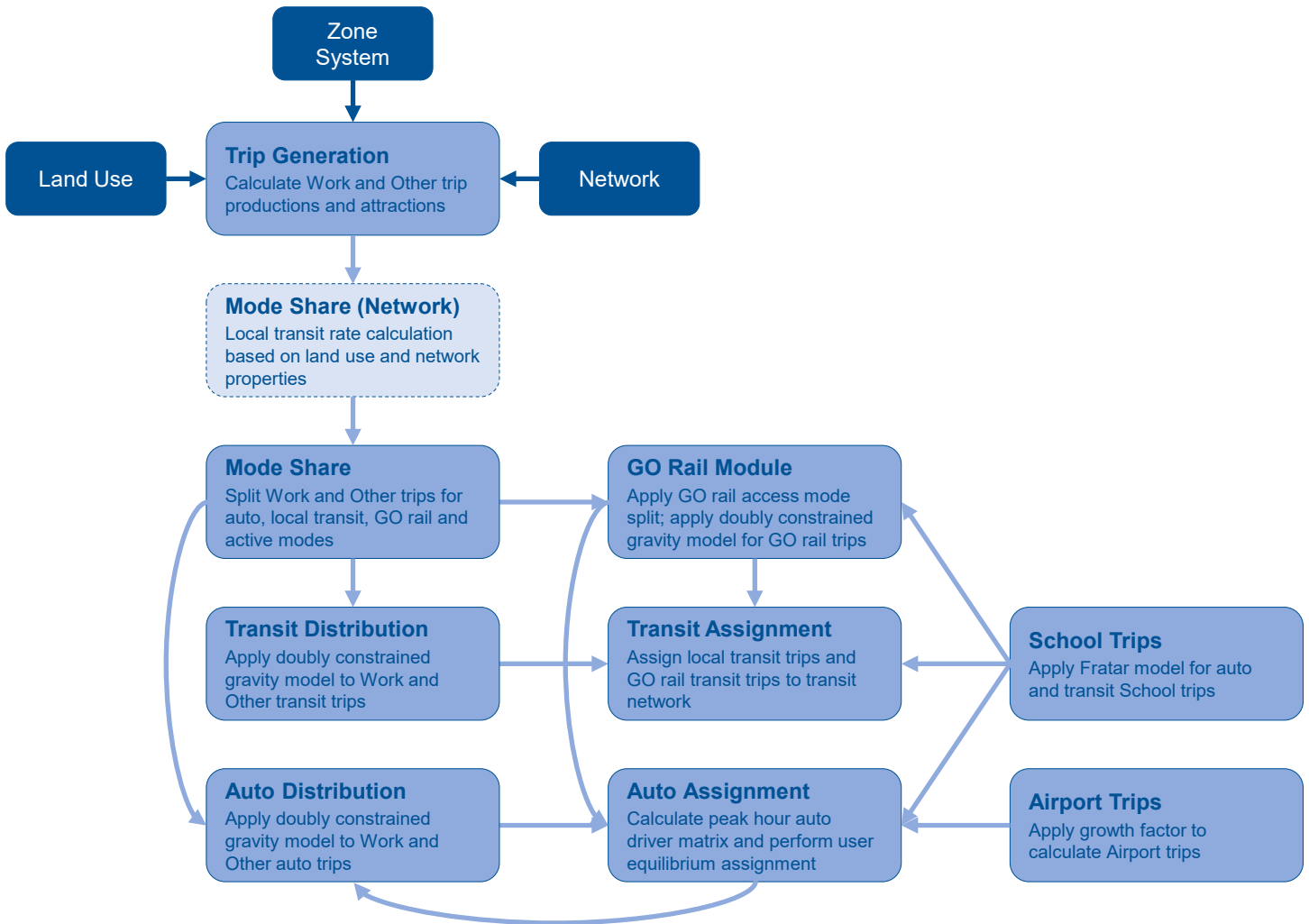
The Model requires information about the road network to generate traffic forecasts. The future 2041 road network used in the 2019 LRTP was assumed as the base condition within Peel Region for assessing network capacity deficiencies between 2041 and 2051 resulting from SABE area growth, except for Scenario 5 as discussed below. These planned road expansion projects are already reflected in the 2041 version of the Model.

For Scenario 5, the proposed GTA West Highway 413, including the northerly extension of Highway 410, was removed from the Model road network. All other planned Regional and Provincial road projects remained.

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<sup>9</sup> Peel Region, *Sustainable Transportation Strategy*, February 2018





**FIGURE 1: 2011 AM PEAK PERIOD MODEL SYSTEM OVERVIEW**

(Source: *Peel Region Travel Demand Forecasting Model Update: 2011 AM and PM Peak Period Model*, March 2016)



Typically, the Model would include planned road networks for municipalities outside Peel Region for the select horizon year (in this case 2051) as the base condition. But like the population and employment forecasts, information on future road expansion projects to 2051 for other GTHA regions and cities was not available at the time of completing the SABE Study. This necessitated use of the 2041 road networks contained in the 2041 Model for these areas. While this simplifying assumption could produce imprecise results, the comparative nature of the assessment process for the Transportation Technical Study helps to negate/mitigate the potential implications.

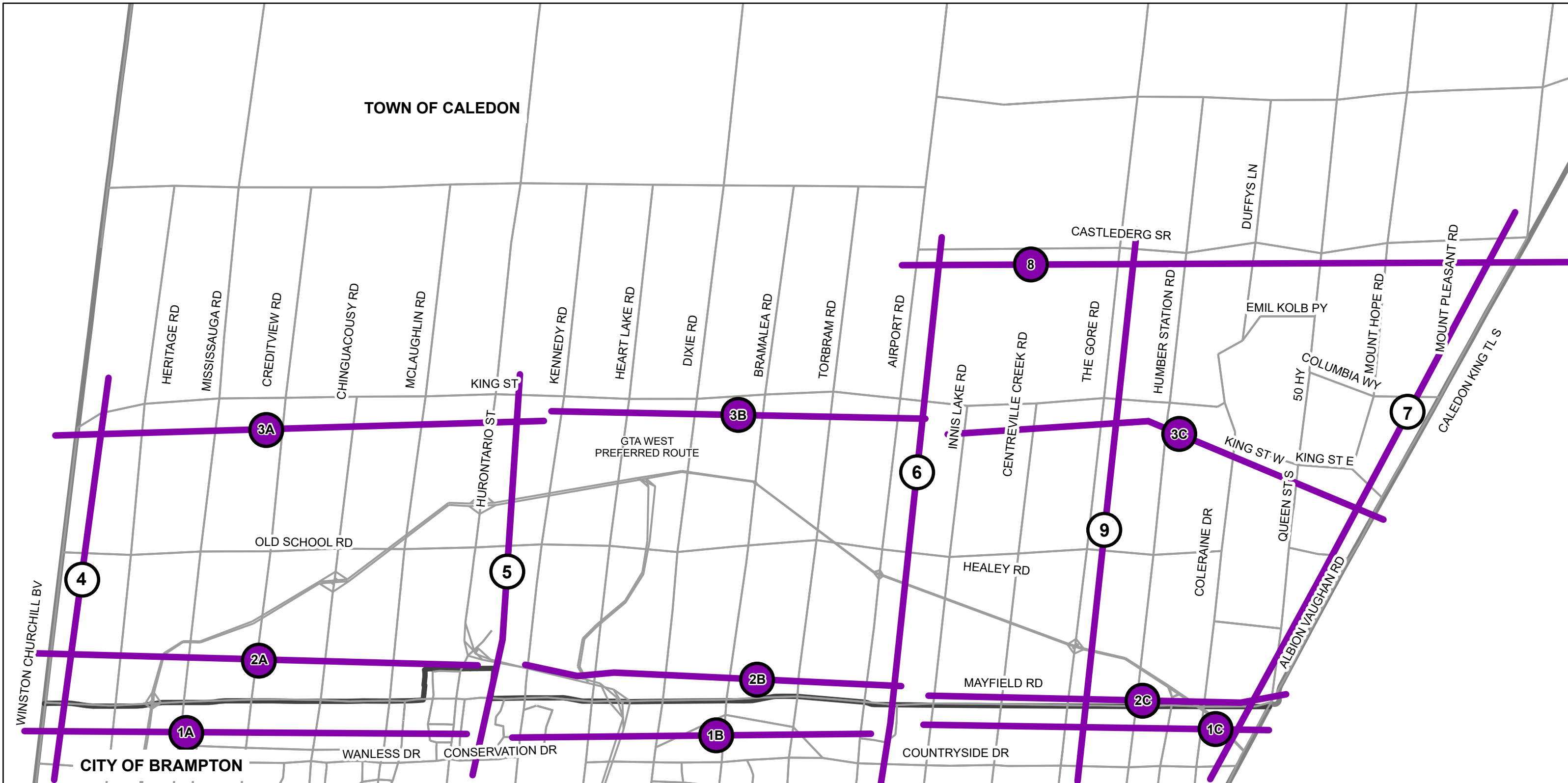
## 2.3 Identification of Deficiencies

Potential future road needs resulting from growth within the SABE area were determined for each scenario by comparing forecasts of future 2051 traffic volumes on the road network simulated by the Model to assumed vehicle capacities on a screenline and link basis. Locations exhibiting volume to capacity (v/c) ratios of 0.9 or higher in the morning peak hour, the level considered by Peel Region as the threshold for congestion, were considered deficient and candidates for road widening. This approach is consistent with the methodology used in the 2019 LRTP.





**Map 3** depicts the four east-west (#1, 2, 3, and 8) and five north-south (#4, 5, 6, 7, and 9) screenlines set for the SABE area transportation analysis. These screenlines capture north/south and east/west traffic movements on all roads crossing these imaginary east-west and north-south lines, respectively. Screenlines #1, 2, and 3 were further segmented into three parts each (A, B, and C) due to their length.

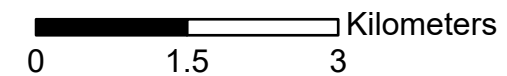
The nine screenline locations established for the detailed transportation assessment (plus sub-screenlines) allowed for more finite analyses of potential road capacity deficiencies within the SABE area than the Region's broader system, which uses municipal boundaries and major features (i.e., freeways and watercourses) for screenlines, permits. This approach is suitable for a sub-area study of this nature.





**Legend**

-  Roads
-  East-West Screenlines
-  North-South Screenlines
-  Municipal Boundary



**Map 3**

SABE Area Screenlines



## 2.4 Potential Road Widening Projects

A series of potential road widening projects were identified for each scenario to address forecast 2051 capacity deficiencies. The analysis involved flagging corridors for possible widening based primarily on their v/c ratios and network connectivity (to adjacent sections). The list of projects was further refined through the consideration of lane continuity and efforts to consolidate expansion works to a minimum number of facilities.

Roads under the jurisdiction of Peel Region were considered first for potential widening in the assessment. Town of Caledon roads were then considered if:

- ▶ The road connected to a proposed GTA West Highway 413 interchange;
- ▶ The capacity deficiency could not be addressed by a Regional road widening (e.g., would require widening the Regional Road beyond six lanes, no Regional Road in proximity); and/or
- ▶ The growth scenario contemplates development on lands directly abutting the Town road (i.e., intuitively the road will likely need to be “improved” to support development).

Projected deficiencies on Provincial highways were not addressed.

The potential widening programs focused on road needs within and immediately adjacent (north of Countryside Drive/Wanless Road) to the SABE area. The travel demand forecasting did identify some modest capacity deficiencies between 2041 and 2051 on roads to the south of the SABE area in most scenarios. However, the analysis did not consider these road needs to maintain consistency across scenarios for comparison purposes. The assessment is also not intended to consider broader, Region-wide impacts, which will be addressed through a follow-on update/amendment to the LRTP.

Costs for the potential road widening projects were estimated based on the methodology and benchmark costs set out in the 2020 *Development Charges Background Study*<sup>10</sup>, with unit prices increased slightly to reflect inflation (assumed 2.6% per annum). Fundamental assumptions made in the DC study pertaining to design standards, service levels, and cost adjustments were maintained.

<sup>10</sup> Watson & Associates Economists Ltd., *Development Charges Background Study – Consolidation Report, The Regional Municipality of Peel*, December 16, 2020



The estimated project costs include amounts for:

- ▶ Construction between the curb lines (i.e., road platform, intersection tie-ins, auxiliary turn lanes) assuming:
  - Rural cross-sections for widenings to four lanes and urban cross-sections for widenings to six lanes;
  - No centre two-way left-turn lanes or medians; and
  - No new turn lanes or channelization at intersections. Only existing left and right turn lanes were included, with 50 m storage lanes assumed;
- ▶ Construction beyond the curb lines (i.e., sidewalks, illumination, landscaping, permanent and temporary traffic control signals);
- ▶ Minor utility relocation;
- ▶ Structures (bridges and culverts larger than 3 m in diameter). Existing condition data, where available, was used to assess the extent of rehabilitation required;
- ▶ Municipal Class Environmental Assessment studies, design, and construction administration (assumed 18% of construction and utility relocation); and
- ▶ Sundry (i.e., small items that vary from project to project and cannot be addressed individually) and contingency (i.e., unforeseen costs for additional works) items (assumed 25% of construction and utility relocation).

Costs for property acquisition, transit (e.g., bus bays, bus lanes), noise attenuation, and/or other special considerations (e.g., bike lanes, multi-use paths, retaining walls, bioswales, enhanced streetscaping) are not included.

Peel Region provided data pertaining to its bridge and culvert inventory (i.e., location, dimensions, condition) to aid with costing the structure works. Information for structures on lower-tier roads was interpolated from Google Earth and Streetview images.

It is noted the project identification and costing completed for the Transportation Technical Study was carried out at a high-level based on assumptions stated above. The analysis did not include assessments of project feasibility, constructability, and/or environmental impact, making the simplifying assumption the potential road widenings could be implemented with typical considerations. Further detailed study, including a Municipal Class Environmental Assessment, is required prior to considering implementation.





## 3. Detailed Assessment Findings

### 3.1 Deficiency Analysis

**Table 3** summarizes the forecast 2051 v/c ratios at the screenline locations shown in **Map 3** for each growth scenario. The screenline and sub-screenline numbers referenced in the table correspond to the identifiers noted on the map. Screenline v/c ratios are not projected to exceed 0.9 for any of the scenarios.

Location-specific needs were assessed based on a link-level analysis of the forecast 2051 v/c ratios. **Map 4** to **Map 9** show the links with estimated v/c ratios of 0.9 or higher by direction. **Table 4** summarizes the number of links exceeding this threshold by scenario.

General observations from the deficiency analysis include the following:

- ▶ The absence of screenline deficiencies suggests the 2041 road network set out in the 2019 LRTP may be able to serve projected 2051 travel demands on a broader basis, but localized capacity deficiencies may still exist.
- ▶ Scenario 1 has the least links with forecast 2051 v/c ratios of 0.9 or higher at 36.
- ▶ By contrast, Scenario 5 has the most links with forecast 2051 v/c ratios of 0.9 or higher at 112.
- ▶ The number of links with 2051 v/c ratios of 0.9 or higher do not differ considerably between Scenarios 2, 3, and 4 (54, 60, and 64, respectively).
- ▶ The travel demand forecasting showed some modest capacity deficiencies on roads south of the SABE area in most scenarios. The number of links with 2051 v/c ratios of 0.9 or higher varied between scenarios, with the most observed for Scenario 5. This finding is not unexpected given the elimination of the proposed GTA West Highway 413 from the future road network. Scenario 1 had the fewest deficient links.



**TABLE 3: FORECAST 2051 V/C RATIOS AT SCREENLINE LOCATIONS**

Screenline and Limits (Sub-Screenline)	Direction	Capacity (vph)		v/c Ratio for Scenario					
		w/ GTA West Hwy 413	w/o GTA West Hwy 413	0	1	2	3	4	5
<b>East-West Screenlines (South to North)</b>									
<b>Screenline 1 – South of Mayfield Road</b>									
Winston Churchill Boulevard to Hurontario Street (Screenline 1A)	Northbound	20,800	15,400	0.28	0.33	0.28	0.28	0.28	0.27
	Southbound	20,700	15,300	0.54	0.40	0.54	0.53	0.63	0.55
Heart Lake Road to Kennedy Road (Screenline 1B)	Northbound	14,900	14,900	0.36	0.46	0.36	0.36	0.34	0.36
	Southbound	14,900	14,900	0.69	0.65	0.67	0.69	0.75	0.67
Goreway Drive to Highway 50 (Screenline 1C)	Northbound	20,800	15,400	0.35	0.36	0.35	0.35	0.34	0.25
	Southbound	21,100	15,700	0.63	0.54	0.64	0.62	0.67	0.68
<b>Screenline 2 – North of Mayfield Road</b>									
Winston Churchill Boulevard to Hurontario Street (Screenline 2A)	Northbound	13,400	8,000	0.43	0.48	0.44	0.42	0.50	0.44
	Southbound	13,300	7,900	0.50	0.45	0.49	0.51	0.68	0.49
Heart Lake Road to Kennedy Road (Screenline 2B)	Northbound	13,200	7,800	0.35	0.37	0.33	0.36	0.34	0.64
	Southbound	13,200	7,800	0.49	0.57	0.46	0.51	0.55	0.79
Goreway Drive to Albion Vaughan Road (Screenline 2C)	Northbound	18,000	10,800	0.58	0.56	0.59	0.57	0.57	0.51
	Southbound	18,200	11,000	0.76	0.75	0.75	0.75	0.78	0.82
<b>Screenline 3 – South of King Street</b>									
Winston Churchill Boulevard to Hurontario Street (Screenline 3A)	Northbound	8,200	8,200	0.15	0.33	0.14	0.16	0.18	0.19
	Southbound	8,100	8,100	0.36	0.38	0.36	0.45	0.47	0.30
Kennedy Road to Airport Road (Screenline 3B)	Northbound	7,000	7,000	0.17	0.32	0.16	0.23	0.23	0.08
	Southbound	7,000	7,000	0.42	0.46	0.47	0.58	0.66	0.43
Goreway Drive to Albion Vaughan Road (Screenline 3C)	Northbound	9,200	9,200	0.18	0.41	0.19	0.18	0.19	0.23
	Southbound	9,400	9,400	0.72	0.40	0.72	0.75	0.77	0.82
<b>Screenline 8 – South of Castlederg Side Road</b>									
Airport to 12th Concession	Northbound	6,700	6,700	0.21	0.32	0.24	0.21	0.25	0.28
	Southbound	6,800	6,800	0.61	0.61	0.61	0.62	0.62	0.67



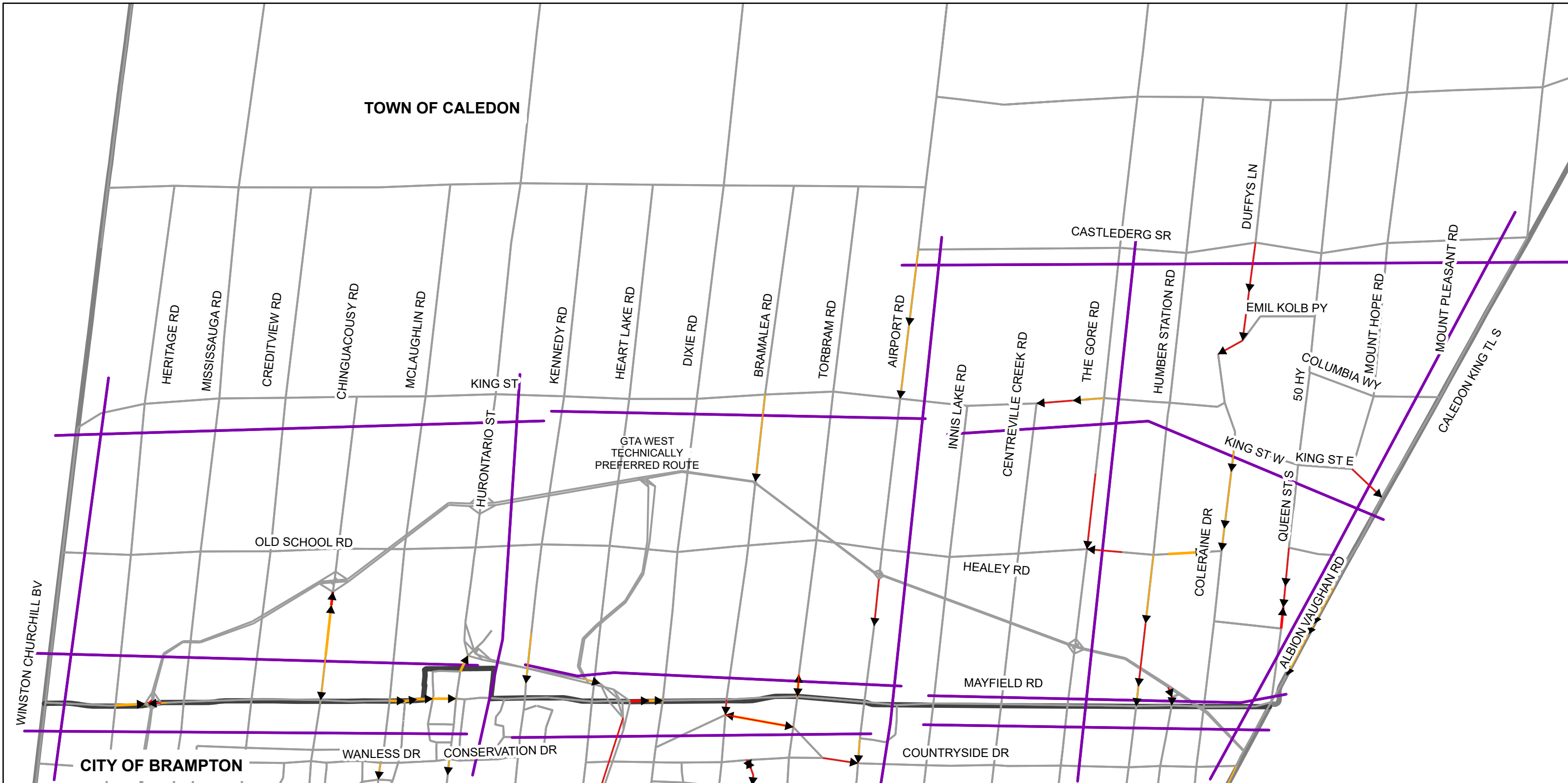
**TABLE 3: FORECAST 2051 V/C RATIOS AT SCREENLINE LOCATIONS**

Screenline and Limits (Sub-Screenline)	Direction	Capacity (vph)		v/c Ratio for Scenario					
		w/ GTA West Hwy 413	w/o GTA West Hwy 413	0	1	2	3	4	5
<b>North-South Screenlines (West to East)</b>									
<b>Screenline 4 – East of Winston Churchill Boulevard</b>									
Wanless Drive to King Street	Eastbound	6,000	6,000	0.49	0.52	0.50	0.49	0.46	0.45
	Westbound	6,000	6,000	0.28	0.21	0.28	0.28	0.28	0.34
<b>Screenline 5 – East of Hurontario Street</b>									
Conservation Drive to King Street	Eastbound	14,500	9,100	0.71	0.60	0.73	0.71	0.74	0.83
	Westbound	14,500	9,100	0.41	0.53	0.39	0.41	0.42	0.39
<b>Screenline 6 – East of Airport Road</b>									
Countryside Drive to Castleberg Side Road	Eastbound	12,400	7,000	0.64	0.56	0.59	0.63	0.65	0.62
	Westbound	12,400	7,000	0.58	0.69	0.63	0.58	0.61	0.69
<b>Screenline 9 – East of The Gore Road</b>									
Countryside Drive to Castleberg Side Road	Eastbound	13,400	8,000	0.63	0.49	0.61	0.61	0.64	0.63
	Westbound	13,400	8,000	0.52	0.60	0.55	0.54	0.54	0.54
<b>Screenline 7 – West of Albion Vaughan Road</b>									
Countryside Drive to Castleberg Side Road	Eastbound	8,000	8,000	0.46	0.25	0.46	0.46	0.49	0.50
	Westbound	8,000	8,000	0.28	0.34	0.28	0.28	0.27	0.33

**TABLE 4: LINKS WITH FORECAST 2051 V/C RATIO OF 0.9 OR HIGHER**

v/c Ratio	Number of Links for Scenario					
	0	1	2	3	4	5
Between 0.9 and 1.0	32	21	31	32	30	59
Over 1.0	22	15	23	28	34	53
<b>TOTAL 0.9 or higher</b>	<b>54</b>	<b>36</b>	<b>54</b>	<b>60</b>	<b>64</b>	<b>112</b>



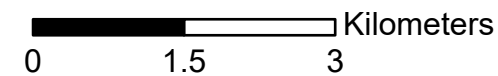


**Legend**

**Link Volume/Capacity Ratios**

- ▶  $0.9 < v/c < 1.0$
- ▶  $v/c > 1.0$

- Roads
- Screenlines
- Municipal Boundary

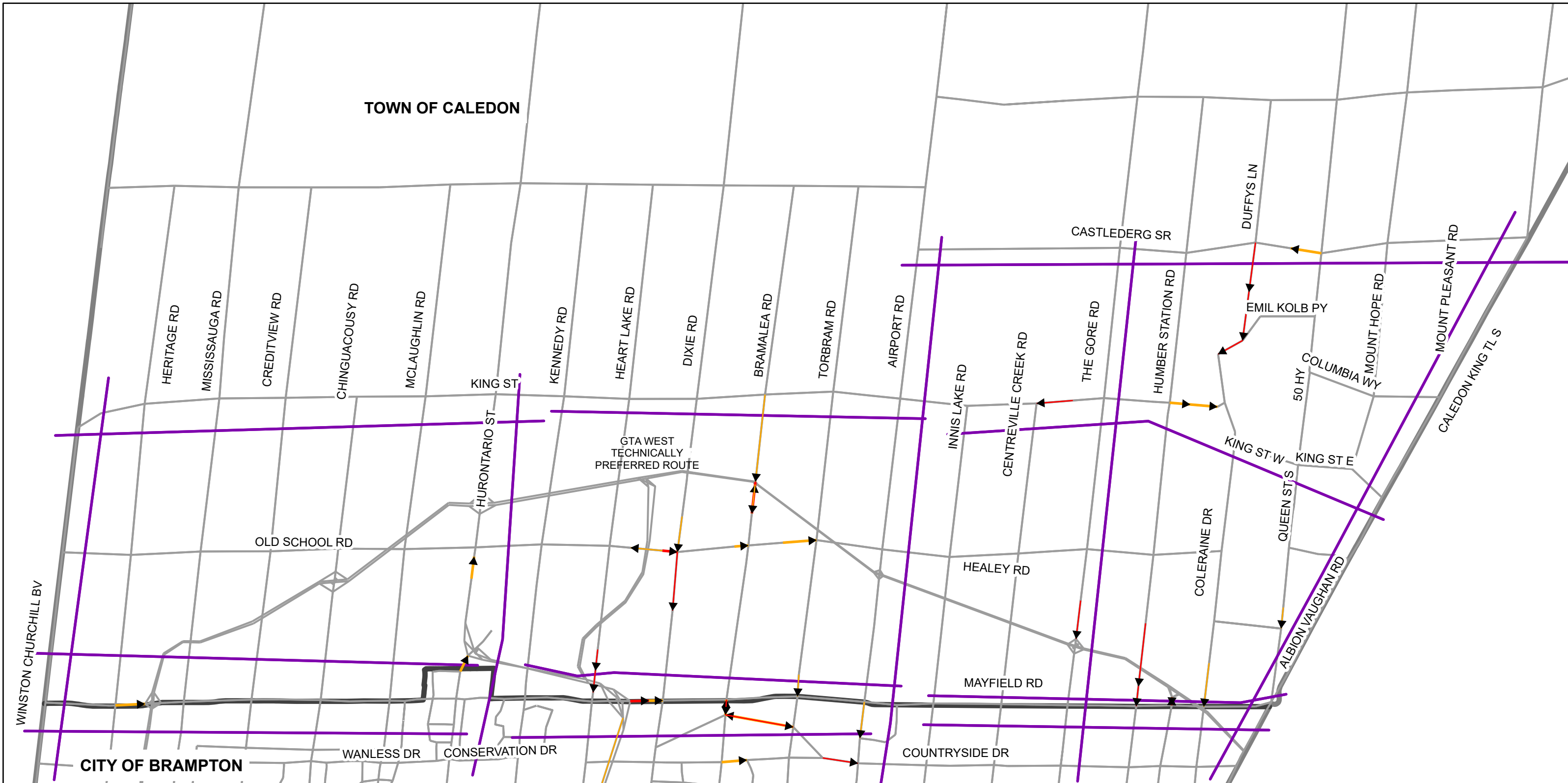


**Map 4**

Link Capacity Deficiencies

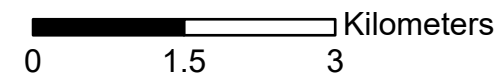
Scenario 0 - Land Needs  
Assessment Base





**Legend**

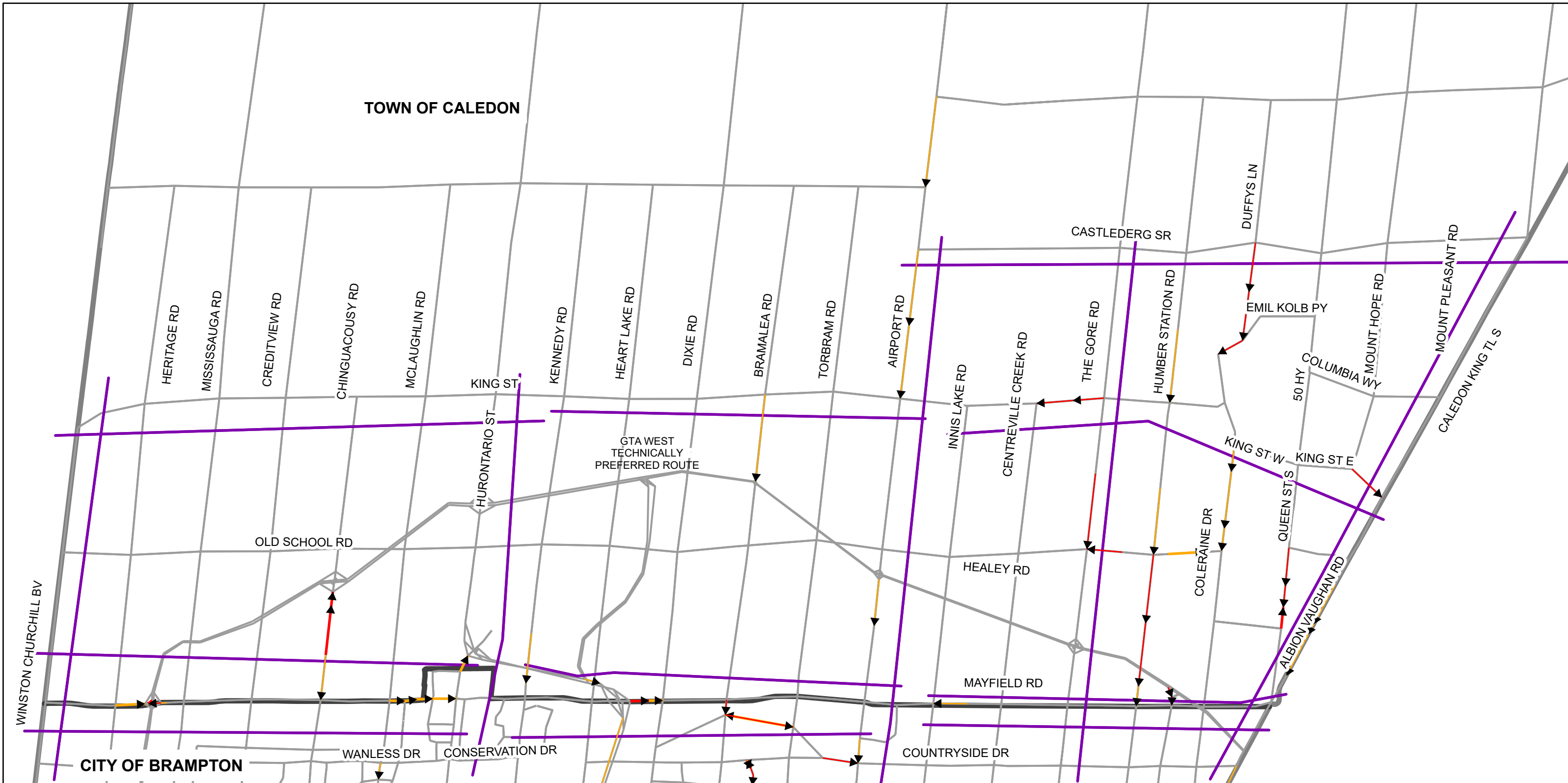
- |                                    |                      |
|------------------------------------|----------------------|
| <b>Link Volume/Capacity Ratios</b> | — Roads              |
| 0.9 < v/c < 1.0                    | — Screenlines        |
| v/c > 1.0                          | ▭ Municipal Boundary |



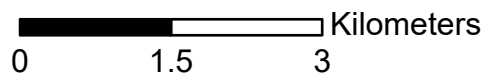
**Map 5**

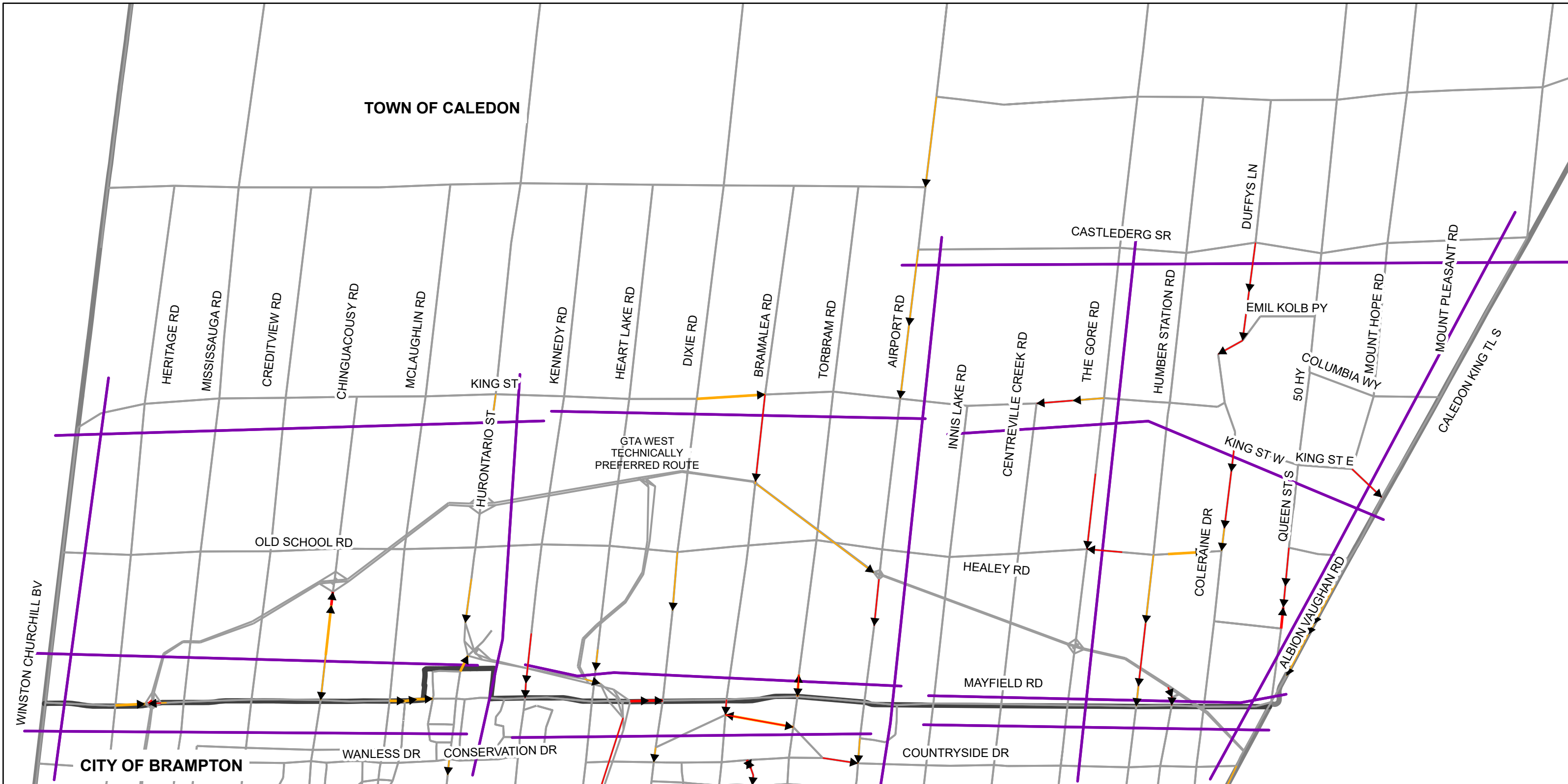
Link Capacity Deficiencies  
Scenario 1 - Updated Land  
Needs Assessment Base





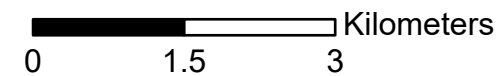
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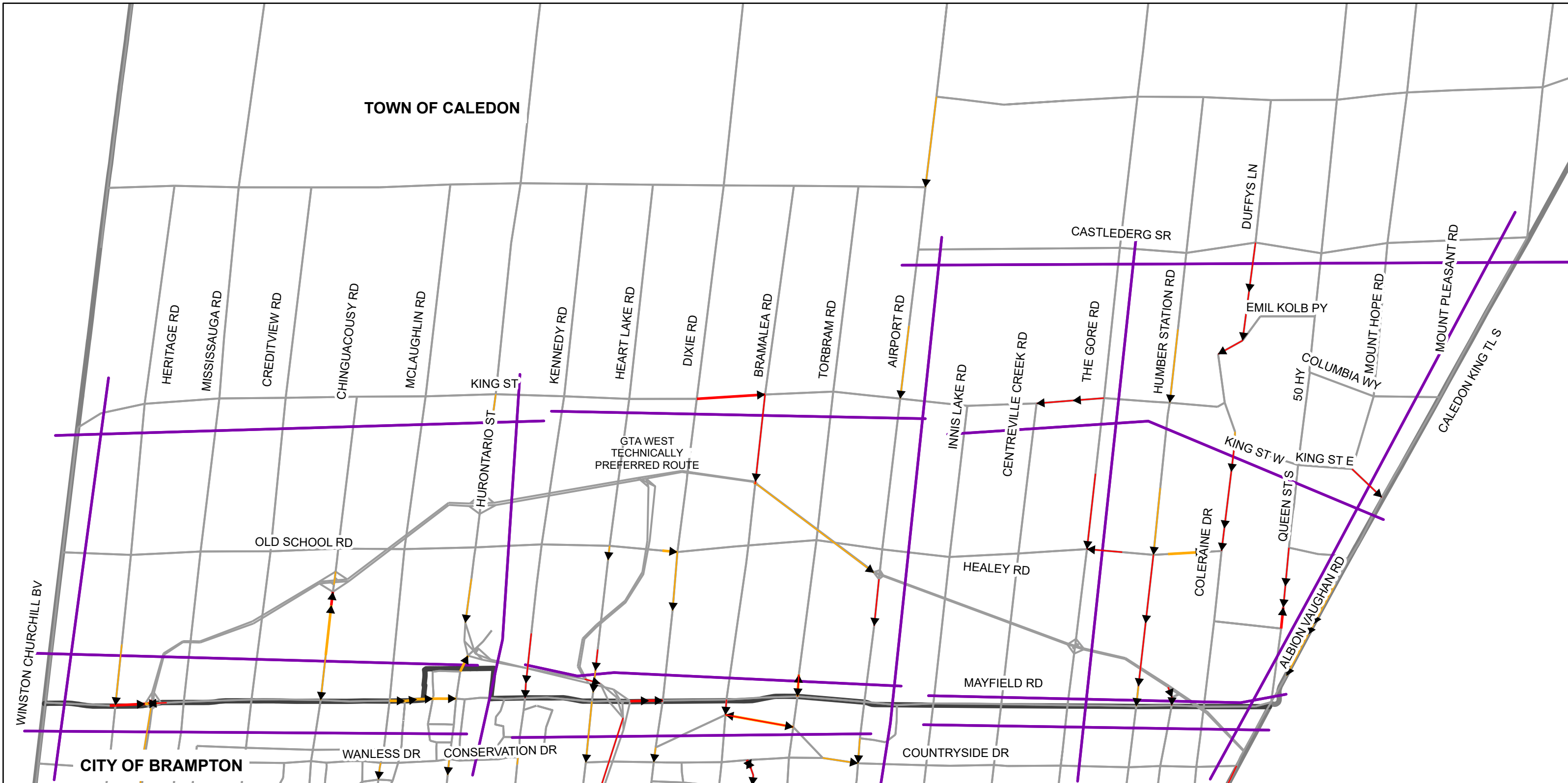
**Legend**

- |                                    |                      |
|------------------------------------|----------------------|
| <b>Link Volume/Capacity Ratios</b> | — Roads              |
| 0.9 < v/c < 1.0                    | — Screenlines        |
| v/c > 1.0                          | ▭ Municipal Boundary |

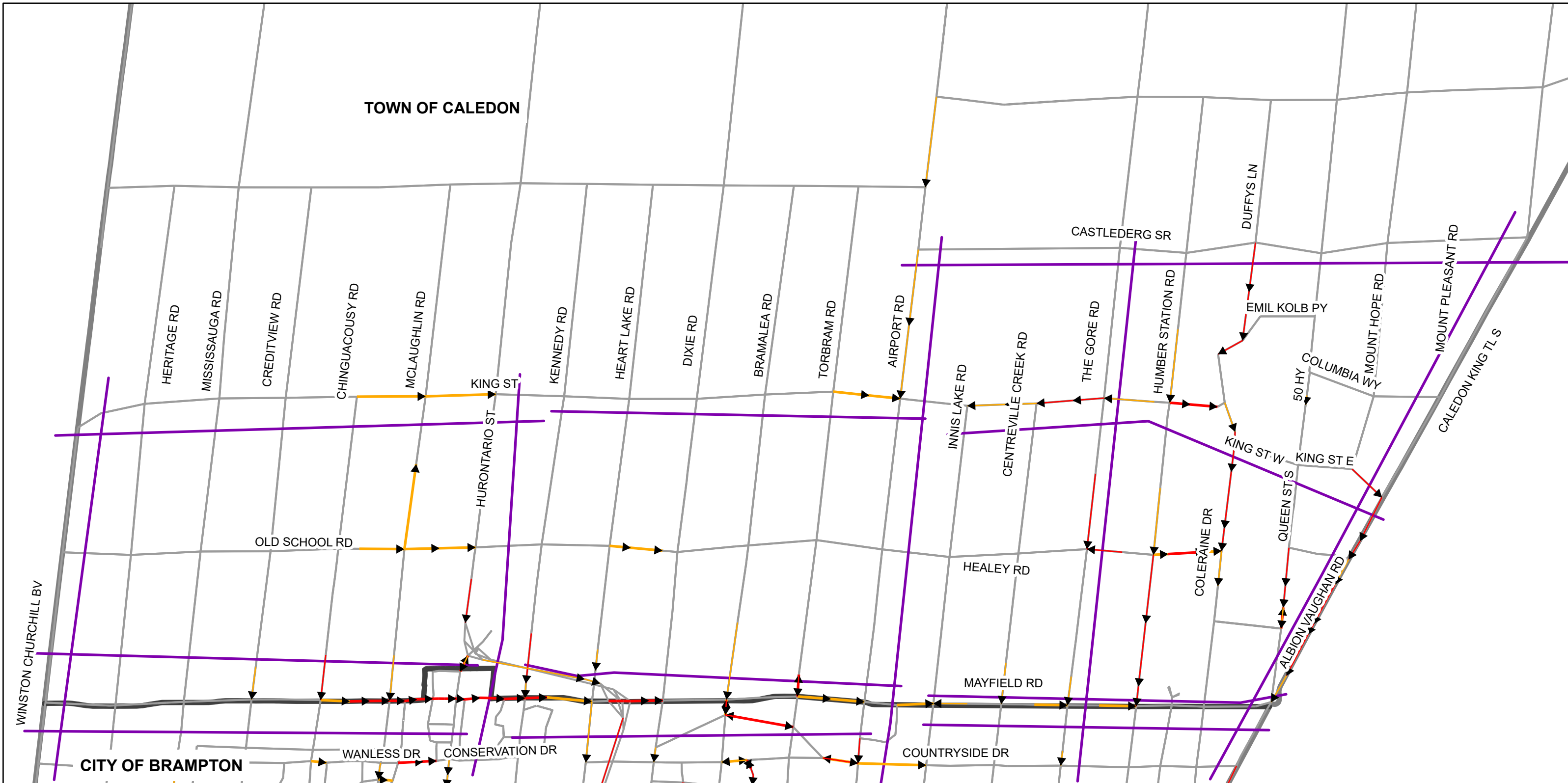


**Map 7**

Link Capacity Deficiencies  
Scenario 3 - Lower Designated  
Greenfield Area





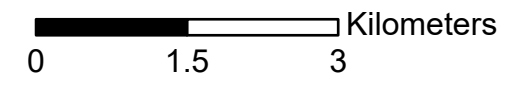


TOWN OF CALEDON

CITY OF BRAMPTON

**Legend**

- Link Volume/Capacity Ratios**
- 0.9 < v/c < 1.0
- v/c > 1.0
- Roads
- Screenlines
- Municipal Boundary



**Map 9**

Link Capacity Deficiencies  
Scenario 5 - No GTA West



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## 3.2 Potential Road Widening Programs

**Map 10 to Map 15** show the potential road widening programs proposed to address the forecast capacity deficiencies attributed to growth between 2041 and 2051 within the SABE area. The list of projects was developed to address the projected deficiencies shown in **Map 4 to Map 9**.

**Table 5** summarizes the estimated costs for the road infrastructure needed to serve growth in the SABE area from 2041 to 2051 for the different scenarios. These are additional costs over and above the proposed 2041 road capital program outlined in the 2019 LRTP.

**Appendix B** details the cost estimates prepared for the study.

General observations from developing the potential road widening programs include the following:

- ▶ Road infrastructure costs to serve the SABE area vary by scenario, in the same relative proportions as the link deficiency analysis showed.
- ▶ Scenario 1 has the lowest potential road widening program cost at approximately \$270.6 M.
- ▶ By contrast, Scenario 5 has the highest potential road widening program cost at approximately \$597.6 M, more than twice Scenario 1.
- ▶ The potential road widening program costs for Scenarios 2, 3, and 4 do not differ considerably (\$403.3 M, \$436.3 M, and \$458.9 M).
- ▶ The least expensive option, Scenario 1, would also pose the lowest cost for road widening to the Town of Caledon at about \$22.4 M. Regional road widening costs account for the remainder at \$166.5 M. Town costs for other scenarios would be (much) higher, especially for Scenario 5 (No GTA West).
- ▶ Several road widening projects are common to all scenarios, specifically Project #2 (Dixie Road), #3 (Airport Road), #4 (Airport Road), #7 (Humber Station Road), #8 (Coleraine Drive), #10 (Emil Kolb Parkway), #11 (Highway 50), and #15 (King Street). These roads are mostly in the Bolton area or immediately to the west, consistent with the allocation of new growth. Where the programs differ relate, in part, to the different allocations of new growth to the SABE area.



**TABLE 5: COST ESTIMATES FOR POTENTIAL ROAD WIDENING PROGRAMS, 2041-2051**

Project No.	Road	Limits	Description	Cost (Rounded)	Project Included in Potential Road Widening Program for Scenario					
					0	1	2	3	4	5
<b>North-South Roads</b>										
1*	Chinguacousy Road	Mayfield Road to Old School Road	Widen 2 to 4 lanes	\$25,738,100	●		●	●	●	●
2	Dixie Road	2 km north of Mayfield Road to King Street	Widen 2 to 4 lanes	\$31,582,400	●	●	●	●	●	●
3	Airport Road	Countryside Drive to Mayfield Road	Widen 4 to 6 lanes	\$14,752,900	●	●	●	●	●	●
4	Airport Road	Mayfield Road to Highway 413	Widen 2/4 to 6 lanes	\$35,346,400	●	●	●	●	●	●
5	Airport Road	King Street to Castlederg Side Road	Widen 2 to 4 lanes	\$49,532,200	●		●	●	●	●
6	The Gore Road	Healey Road to King Street	Widen 2 to 4 lanes	\$22,638,100	●		●	●	●	●
7*	Humber Station Road	Mayfield Road to Healey Road	Widen 2 to 4 lanes	\$22,412,200	●	●	●	●	●	●
8	Coleraine Drive	Mayfield Road to Healey Road	Widen 4 to 6 lanes	\$29,615,300	●	●	●	●	●	●
9	Coleraine Drive	Healey Road to King Street	Widen 4 to 6 lanes	\$22,363,400	●		●	●	●	●
10	Emil Kolb Parkway	King Street to Highway 50	Widen 2 to 4 lanes	\$28,798,400	●	●	●	●	●	●
11	Highway 50	Emil Kolb Parkway to Castlederg Side Road	Widen 2 to 4 lanes	\$ 9,869,800	●	●	●	●	●	●
16	The Gore Road	King Street to Castlederg Side Road	Widen 2 to 4 lanes	\$22,537,100			●		●	●
17*	Chinguacousy Road	Old School Road to King Street	Widen 2 to 4 lanes	\$20,709,000				●	●	●
20	Emil Kolb Parkway	King Street/Harvest Moon Drive to King Street	Widen 4 to 6 lanes	\$ 9,965,400						●
<b>East-West Roads</b>										
12	Mayfield Road	Heritage Road to west of Mississauga Road	Widen 4 to 6 lanes	\$10,848,800	●	●	●	●	●	
13*	Old School Road	Chinguacousy Road to Hurontario Road	Widen 2 to 4 lanes	\$23,357,200	●		●	●	●	●
14*	Healey Road	The Gore Road to Coleraine Drive	Widen 2 to 4 lanes	\$20,725,400	●		●	●	●	●
15	King Street	Airport Road to The Gore Road	Widen 2 to 4 lanes	\$33,210,300	●	●	●	●	●	●
18	King Street	Dixie Road to Airport Road	Widen 2 to 4 lanes	\$34,844,100		●		●	●	●
19	King Street	The Gore Road to Coleraine Drive	Widen 2 to 4 lanes	\$19,307,600		●				●
21*	Old School Road	Hurontario Street to Dixie Road	Widen 2 to 4 lanes	\$32,697,800						●
22*	Old School Road	Dixie Road to Airport Road	Widen 2 to 4 lanes	\$31,650,200						●
23*	Healey Road	Airport Road to The Gore Road	Widen 2 to 4 lanes	\$31,433,000						●
24*	King Street	Chinguacousy Road to Hurontario Road	Widen 2 to 4 lanes	\$24,477,000						●
<b>TOTAL</b>					<b>\$380,790,900</b>	<b>\$270,588,200</b>	<b>\$403,328,000</b>	<b>\$436,344,000</b>	<b>\$458,881,100</b>	<b>\$597,563,300</b>
<b>Regional Roads</b>					<b>\$157,344,100</b>	<b>\$166,494,300</b>	<b>\$179,881,200</b>	<b>\$192,188,200</b>	<b>\$214,725,300</b>	<b>\$257,626,500</b>
<b>Town of Caledon Roads (projects denoted with an *)</b>					<b>\$ 66,494,800</b>	<b>\$ 22,412,200</b>	<b>\$ 66,494,800</b>	<b>\$ 87,203,800</b>	<b>\$ 87,203,800</b>	<b>\$182,984,800</b>
<b>Number of Projects in Potential Road Widening Program</b>					<b>15</b>	<b>11</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>23</b>





**Potential Road Widening Projects**

- █ Scenario 0 Town Road Projects
- █ Scenario 0 Regional Road Projects

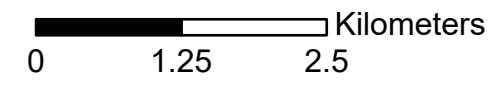
**Legend**

**Road Jurisdiction**

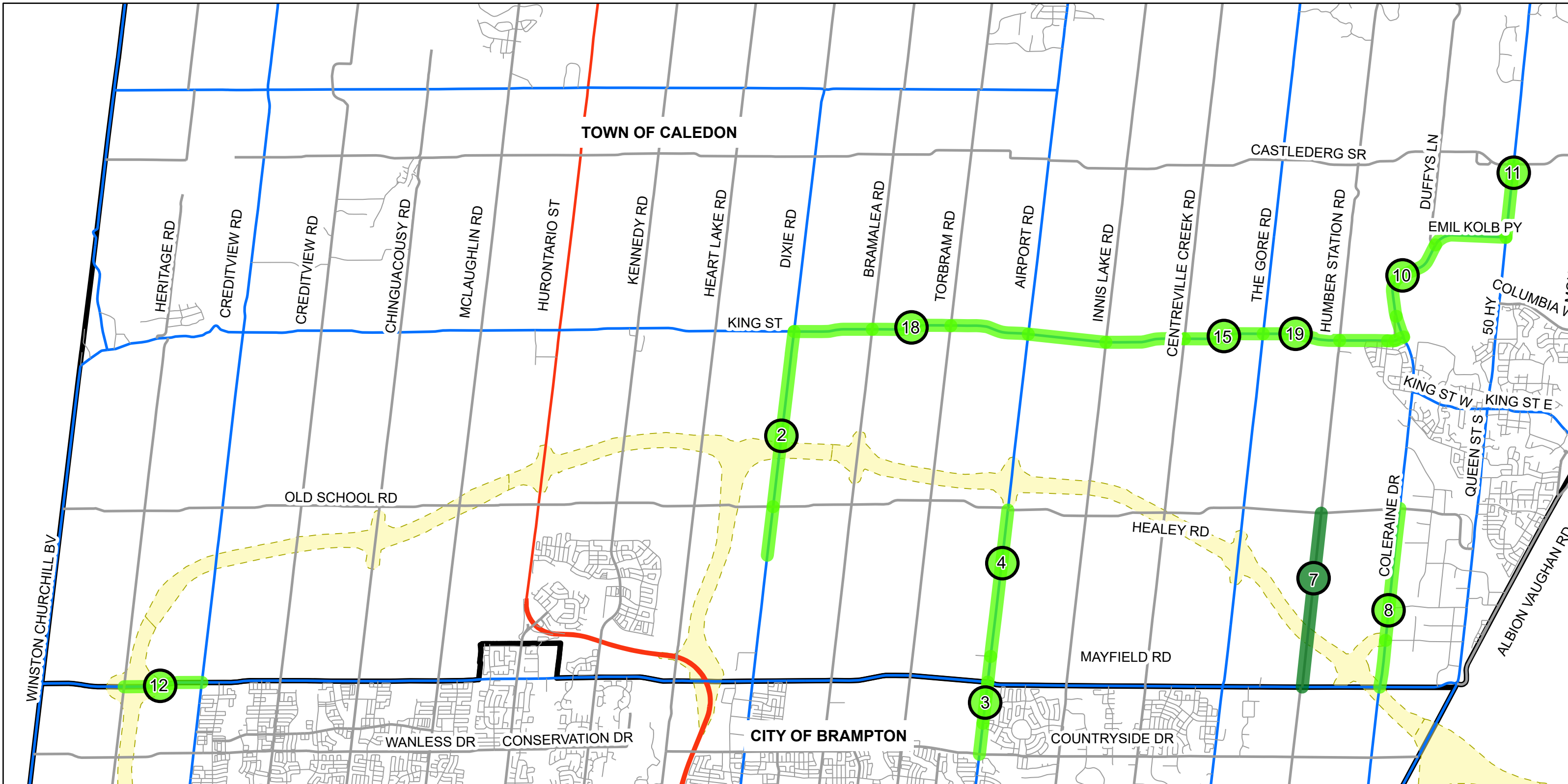
- █ Provincial Freeway
- █ Provincial Highway
- █ Regional Road
- █ Lower Tier Road - Major
- █ Lower Tier Road - Minor

GTA West Corridor (Preferred Route)

Municipal Boundaries







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**Potential Road Widening Projects**

- Scenario 1 Town Road Projects
- Scenario 1 Regional Road Projects

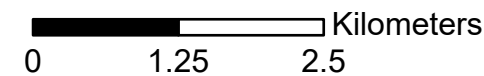
**Legend**

**Road Jurisdiction**

- Provincial Freeway
- Provincial Highway
- Regional Road
- Lower Tier Road - Major
- Lower Tier Road - Minor

GTA West Corridor (Preferred Route)

Municipal Boundaries



**Map 11**

Potential Road Widening Program  
2041 - 2051

Scenario 1 - Updated Land  
Needs Assessment Base



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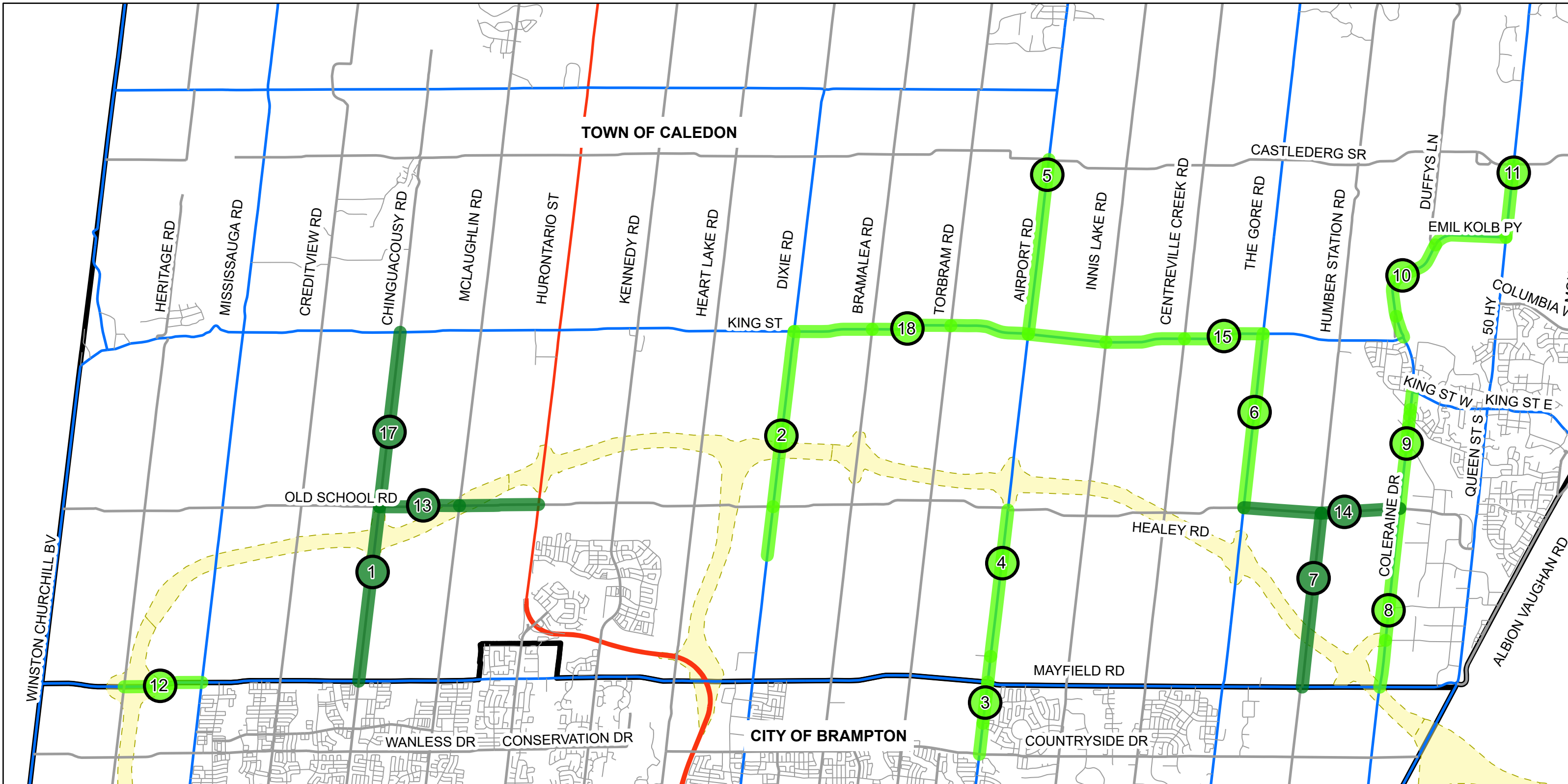


**Legend**

<p><b>Potential Road Widening Projects</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #008000; margin-right: 5px;"></span> Scenario 2 Town Road Projects</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #00FF00; margin-right: 5px;"></span> Scenario 2 Regional Road Projects</li> </ul>	<p><b>Road Jurisdiction</b></p> <ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; border-bottom: 2px solid red; margin-right: 5px;"></span> Provincial Freeway</li> <li><span style="display: inline-block; width: 15px; border-bottom: 2px solid orange; margin-right: 5px;"></span> Provincial Highway</li> <li><span style="display: inline-block; width: 15px; border-bottom: 2px solid blue; margin-right: 5px;"></span> Regional Road</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid grey; margin-right: 5px;"></span> Lower Tier Road - Major</li> <li><span style="display: inline-block; width: 15px; border-bottom: 1px solid lightgrey; margin-right: 5px;"></span> Lower Tier Road - Minor</li> </ul>	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 20px; border-bottom: 1px dashed yellow; margin-right: 5px;"></span> GTA West Corridor (Preferred Route)</li> <li><span style="display: inline-block; width: 15px; border: 1px solid black; margin-right: 5px;"></span> Municipal Boundaries</li> </ul>
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Kilometers

0      1.25      2.5



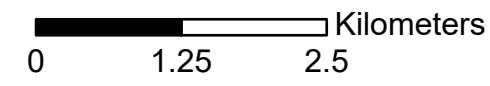
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**Legend**

- Potential Road Widening Projects**
- █ Scenario 3 Town Road Projects
  - █ Scenario 3 Regional Road Projects

- Road Jurisdiction**
- █ Provincial Freeway
  - █ Provincial Highway
  - █ Regional Road
  - █ Lower Tier Road - Major
  - █ Lower Tier Road - Minor

- GTA West Corridor (Preferred Route)
- Municipal Boundaries



**Map 13**

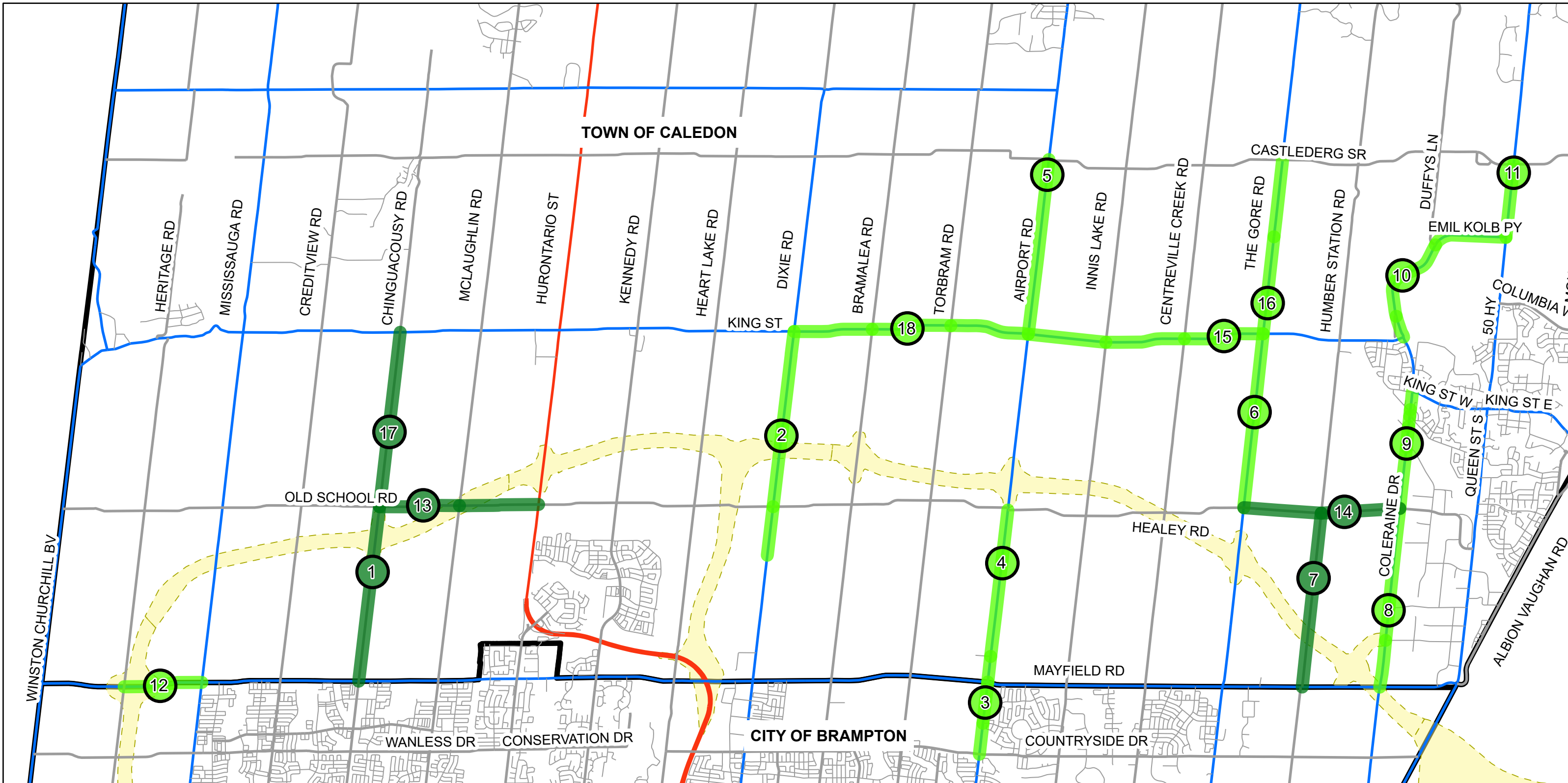
Potential Road Widening Program  
2041 - 2051

Scenario 3 - Lower Designated  
Greenfield Area



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Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Legend**

<b>Potential Road Widening Projects</b>	<b>Road Jurisdiction</b>	GTA West Corridor (Preferred Route)
Scenario 4 Town Road Projects	Provincial Freeway	Municipal Boundaries
Scenario 4 Regional Road Projects	Provincial Highway	
	Regional Road	
	Lower Tier Road - Major	
	Lower Tier Road - Minor	

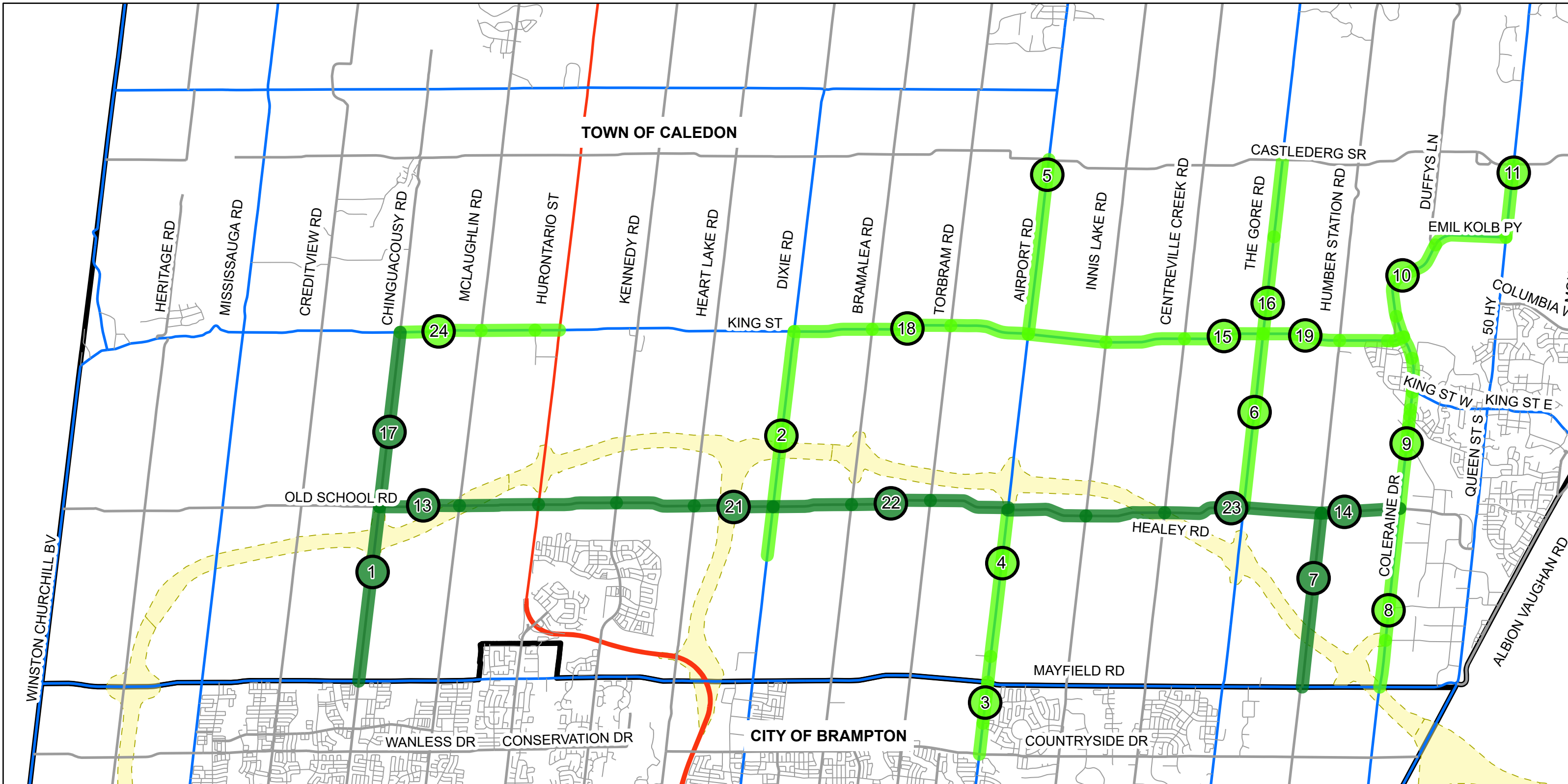
Kilometers  
 0    1.25    2.5

**Map 14**  
Potential Road Widening Program  
2041 - 2051

Scenario 4 - Minimum  
Intensification

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**Legend**

<b>Potential Road Widening Projects</b>	<b>Road Jurisdiction</b>	GTA West Corridor (Preferred Route)
Scenario 5 Town Road Projects	Provincial Freeway	Municipal Boundaries
Scenario 5 Regional Road Projects	Provincial Highway	
	Regional Road	
	Lower Tier Road - Major	
	Lower Tier Road - Minor	

Kilometers  
 0 1.25 2.5

### 3.3 Sensitivity Analysis

#### 3.3.1 Rationale for Comparison to Scenario 1

Scenario 0 represents the distribution of population and employment in the SABE area assuming a Region-wide intensification rate of 55% and a density of 65 persons and jobs per hectare in Community Areas within the SABE. It is based on preliminary land needs assessment as at December 10, 2020.

Further refinements to the land needs assessment in the spring of 2021 led to a reconfiguration of the Community Area SABE lands between Dixie Road and Torbram Road south of the GTA West Transportation Corridor, in part to accommodate the addition of approximately 200 hectares of Employment Area that were determined to be required for the SABE. No changes to the Region-wide intensification rate of 55% and density of 65 persons and jobs per hectare in Community Areas were made between Scenarios 0 and 1. As such, Scenario 1 represents a revised version of the preferred SABE area based on the final land needs assessment and served as the reference scenario for comparison purposes.

Reconfiguring the Community Area lands and adding the Employment Area lands did alter the traffic forecasting results from Scenario 0 to Scenario 1, though. The SABE area changes led to fewer roadway capacity deficiencies between 2041 and 2051 for Scenario 1, particularly in the Mayfield West and west Bolton areas. By contrast, greater deficiencies were noted in the area between Dixie Road and Torbram Road, which was expected given the reconfiguration of the Community Area SABE lands. Overall, the detailed assessment showed Scenario 0 would require more road widening projects to address forecast deficiencies, with the potential program costing significantly more than Scenario 1.

#### 3.3.2 Observations and Conclusions

**Table 6** summarizes the key differences between Scenario 1 and Scenarios 2 to 5. **Map 10** to **Map 15** further illustrate the differences between potential road widening programs graphically albeit without the variations explicitly identified.



**TABLE 6: COMPARISON TO SCENARIO 1**

<b>Difference from Scenario 1 in:</b>	<b>Scenario 2 Higher Designated Greenbelt Area</b>	<b>Scenario 3 Lower Designated Greenbelt Area</b>	<b>Scenario 4 Minimum Intensification</b>	<b>Scenario 5 No GTA West</b>
Total Program Costs	+ \$132,739,800	+ \$165,755,800	+\$188,292,900	+ \$326,975,100
Peel Region Costs	+ \$13,386,900	+ \$25,693,900	+ \$48,231,000	+ \$91,132,200
Town of Caledon Costs	+ \$44,082,600	+ \$64,791,600	+ \$64,791,600	+ \$160,572,600
Intensification Rate	0%	0%	- 5%	0%
Designated Growth Area Density	+ 10 ppj/ha	-10 ppj/ha	0 ppj/ha	0 ppj/ha
Land Need – Community Area	- 500 ha	+ 200 ha	+ 1,200 ha	0 ha
Land Need – Employment Area	0 ha	0 ha	+200 ha	0 ha
Potential Road Widening Projects	9 different projects. Added 7 and removed 2.	8 different projects. Added 7 and removed 1.	9 different projects. Added 8 and removed 1.	14 different projects. Added 13 and removed 1.



### A few observations and conclusions:

- ▶ The analysis shows somewhat of a correlation between the amount of SABE land and road costs, at least for Scenarios 2, 3, and 4, which tested different levels of intensification and density. Scenario 2, which is denser and thus needs less land than Scenarios 3 (less dense) and 4 (less intense), had lower road costs. Costs also increased incrementally between these scenarios as land needs grew.
- ▶ The correlation between land need and roads costs did not hold for Scenarios 0 and 1, which are less dense than Scenario 2, but had lower potential road widening costs. For Scenario 1, which had the lowest costs (by far), and to a lesser extent Scenario 0, two factors seem to affect road needs:
  - Proximity to GTA West Highway 413, particularly the interchanges, seems to have a bearing on road needs. With proximity and ease of access, the proposed freeway becomes an attractive route for trips made to and from the SABE area (despite likely toll charges). This helps to lessen demand and minimize capacity deficiencies on the adjacent Regional and lower-tier road networks.
  - Distributing new growth throughout the SABE area, instead of concentrating development primarily south of the GTA West Transportation Corridor, appears to cause fewer capacity deficiencies. The roads north of the corridor tend to carry less traffic today given their somewhat rural nature, meaning more capacity exists to accommodate new travel demand.
- ▶ The Scenario 5 (No GTA West) had the greatest road needs and the highest costs despite having similar new growth assumptions as Scenario 1. This observation can be attributed to the elimination of the proposed GTA West Highway 413 from the future road network. Not proceeding with the implementation of this freeway facility will have considerable impact on available transportation capacity and cause additional deficiencies, particularly in areas of Brampton south of the SABE area.
- ▶ Although this study has only examined initial capital costs for road widening to serve the SABE area, there is a correlation between these costs and future operating and state of good repair expenses, which increase as paved surface area expands. The natural, social, and cultural environments are also impacted to a greater extent with more roads.



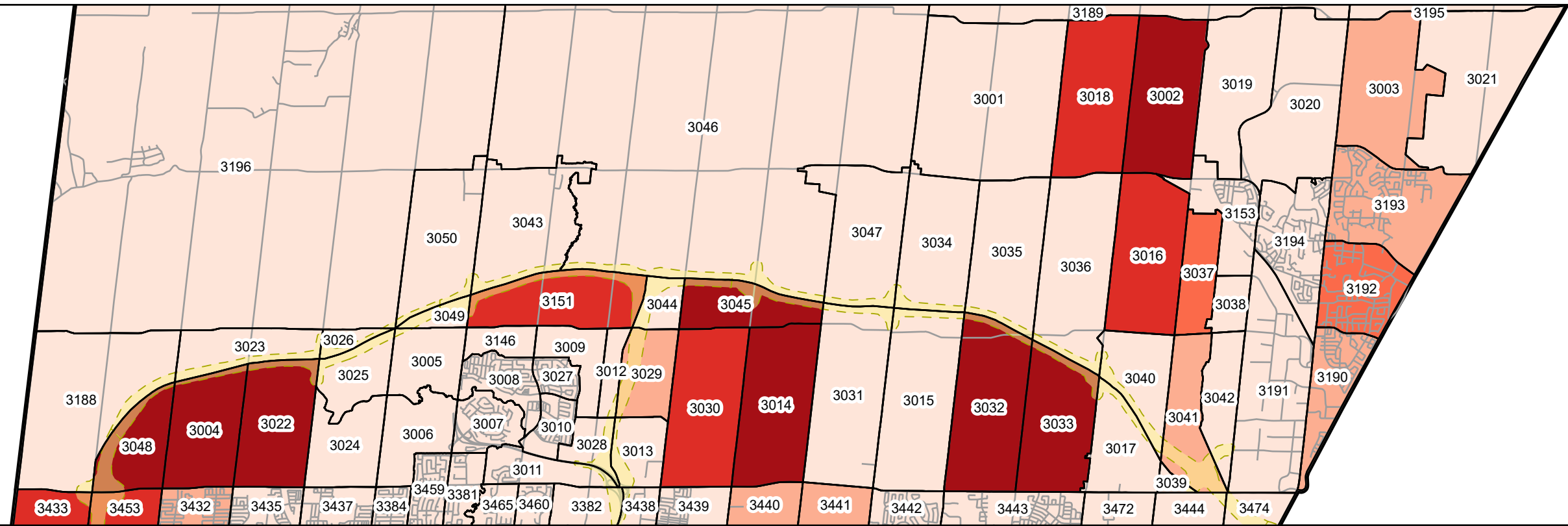
# Appendix A

## Choropleth (“Heat”) Maps of Population and Employment Growth Between 2041 and 2051 by Traffic Zone

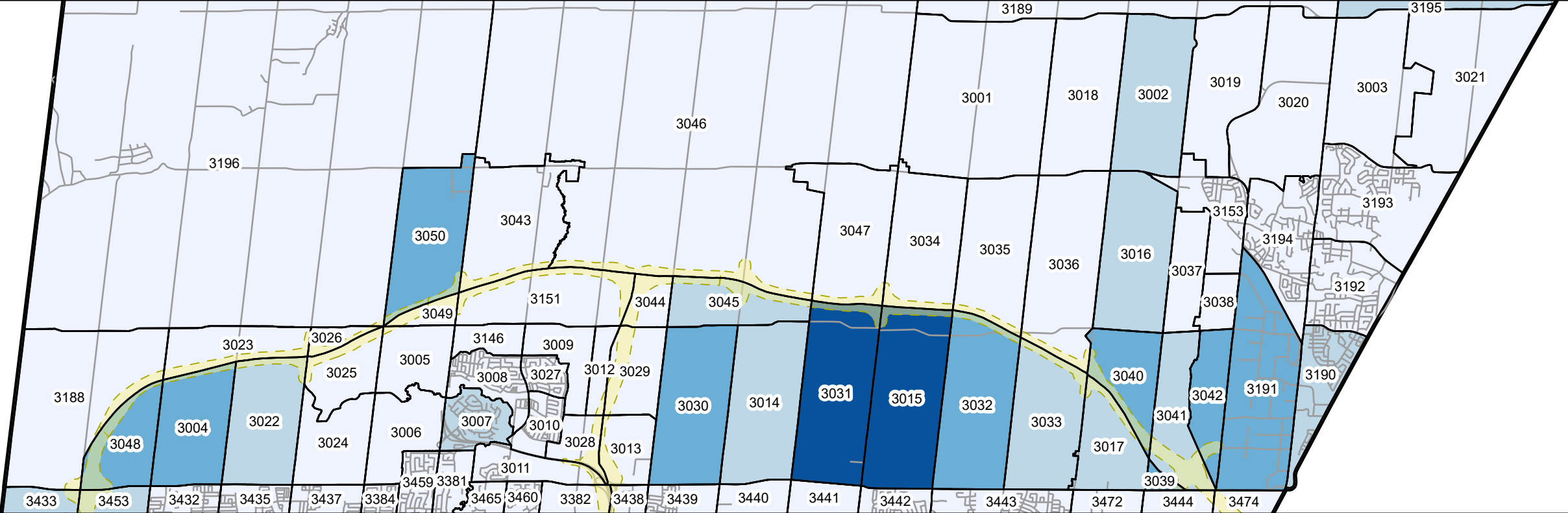




# Population



# Employment



Transportation Technical Study -  
Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Population Growth 2041 to 2051**

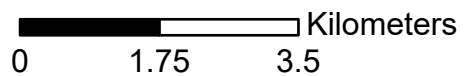
Light Orange	<= 500
Orange	500 - 1000
Dark Orange	1000 - 2500
Red	2500 - 5000
Dark Red	>= 5000

**Employment Growth 2041 to 2051**

Light Blue	<= 500
Blue	500 - 1000
Dark Blue	1000 - 2500
Very Dark Blue	2500 - 5000
Black	>= 5000

### Legend

- Roads
- xxxx Traffic Zones
- GTA West Corridor (Preferred Route)
- ▭ Municipal Boundaries



### Map A-1

Population and Employment Growth  
2041 - 2051

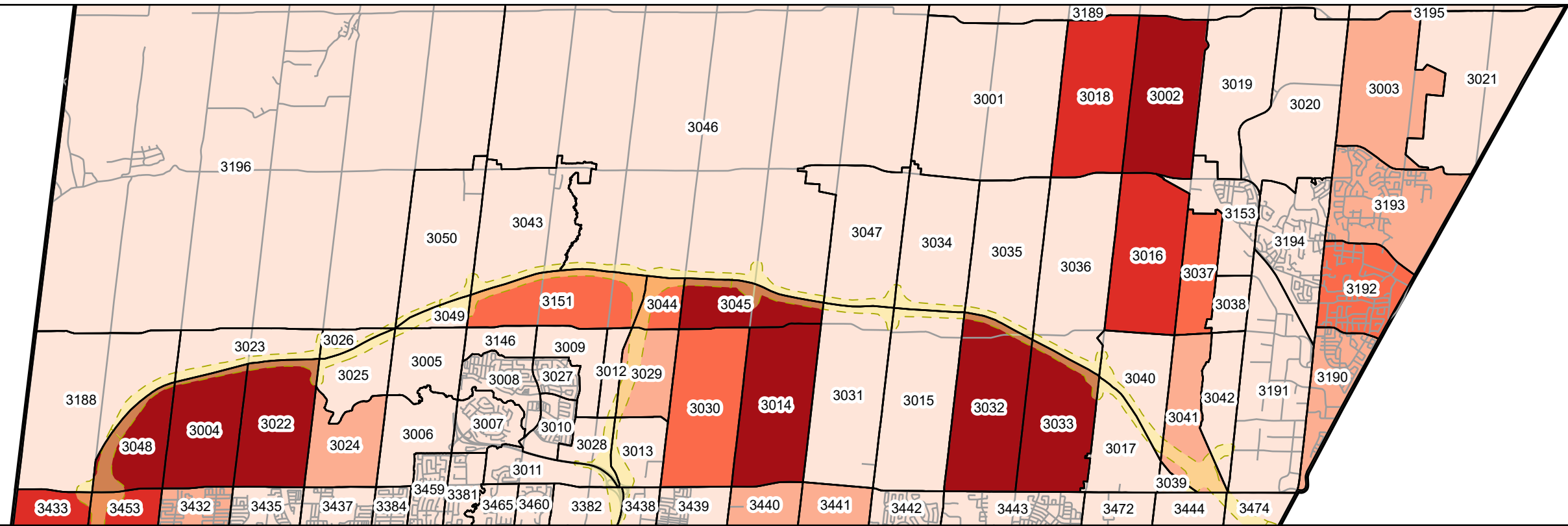
Scenario 0 - Land Needs  
Assessment Base



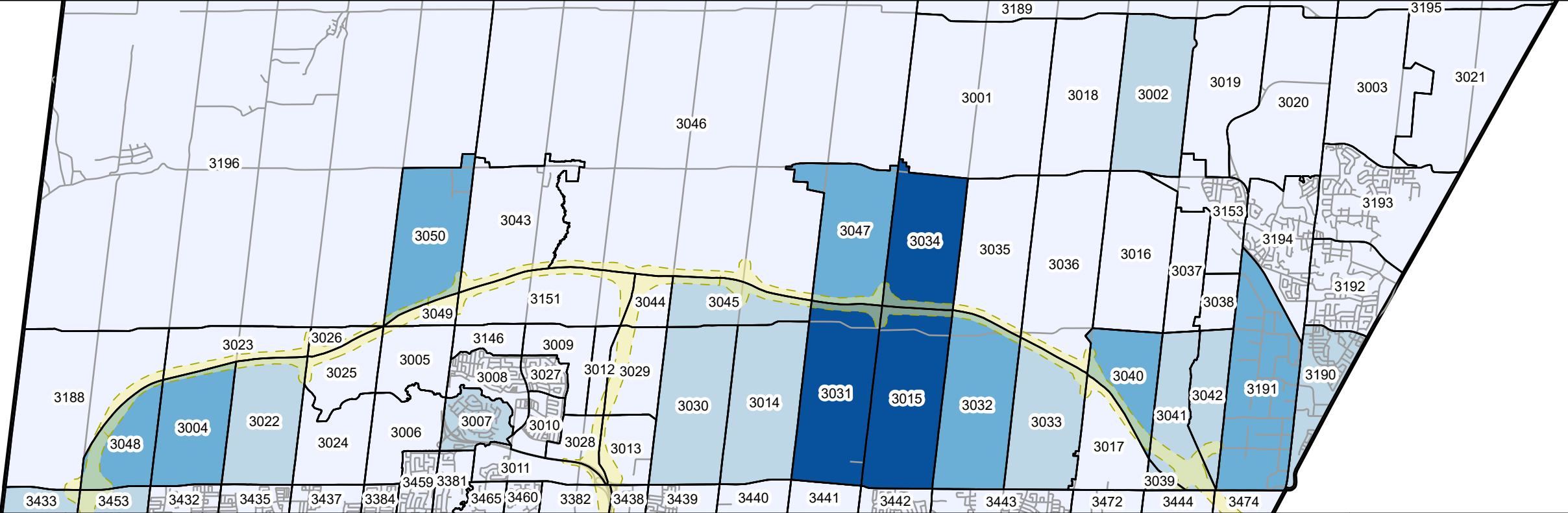
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# Population



# Employment



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Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Population Growth 2041 to 2051**

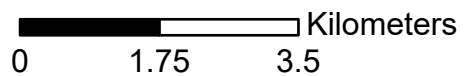
Light Orange	<= 500
Orange	500 - 1000
Red-Orange	1000 - 2500
Red	2500 - 5000
Dark Red	>= 5000

**Employment Growth 2041 to 2051**

Light Blue	<= 500
Medium Blue	500 - 1000
Dark Blue	1000 - 2500
Very Dark Blue	2500 - 5000
Black	>= 5000

### Legend

- Roads
- Traffic Zones
- GTA West Corridor (Preferred Route)
- Municipal Boundaries



### Map A-2

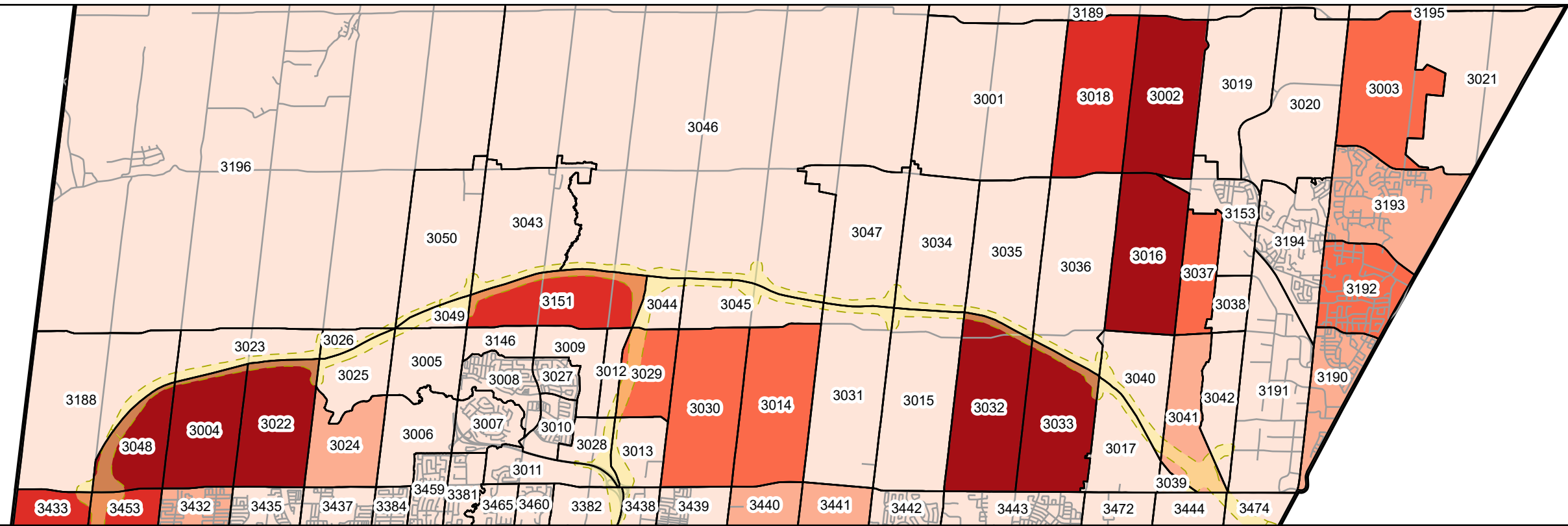
Population and Employment Growth  
2041 - 2051

Scenario 1 - Updated Land  
Needs Assessment Base

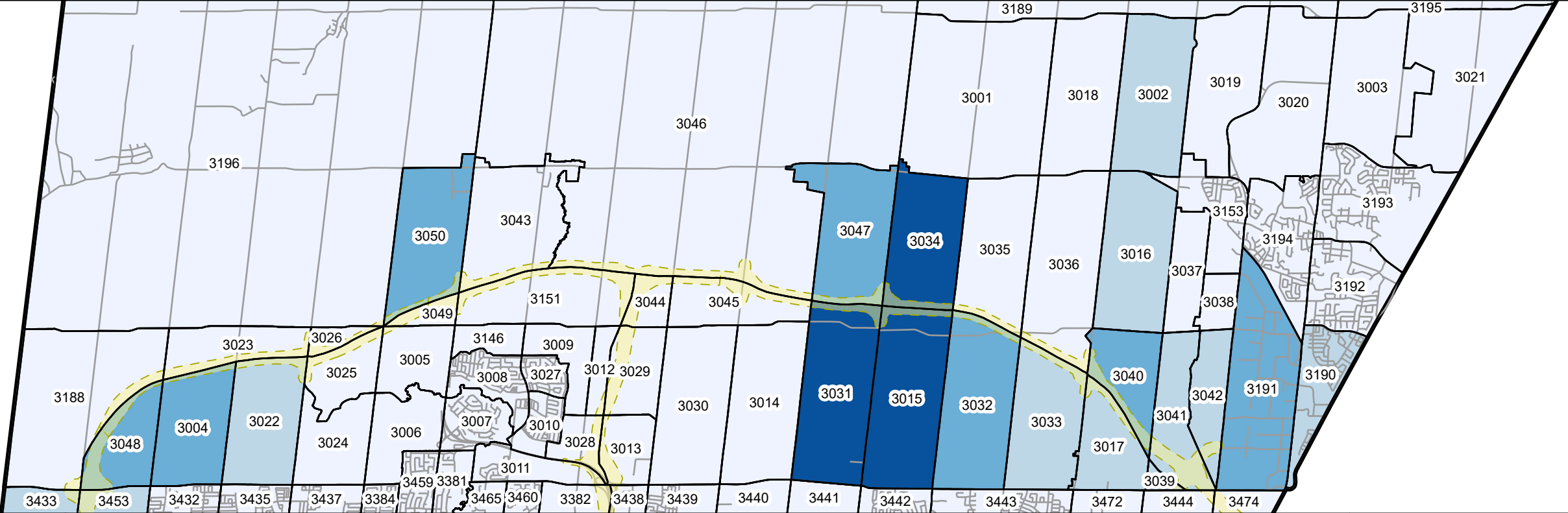


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# Population



# Employment



Transportation Technical Study -  
Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Population Growth 2041 to 2051**

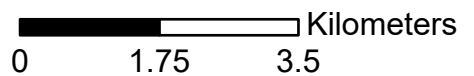
Lightest Orange	<= 500
Light Orange	500 - 1000
Orange	1000 - 2500
Dark Orange	2500 - 5000
Red	>= 5000

**Employment Growth 2041 to 2051**

Lightest Blue	<= 500
Light Blue	500 - 1000
Blue	1000 - 2500
Dark Blue	2500 - 5000
Very Dark Blue	>= 5000

### Legend

- Roads
- Traffic Zones
- GTA West Corridor (Preferred Route)
- Municipal Boundaries



### Map A-3

Population and Employment Growth  
2041 - 2051

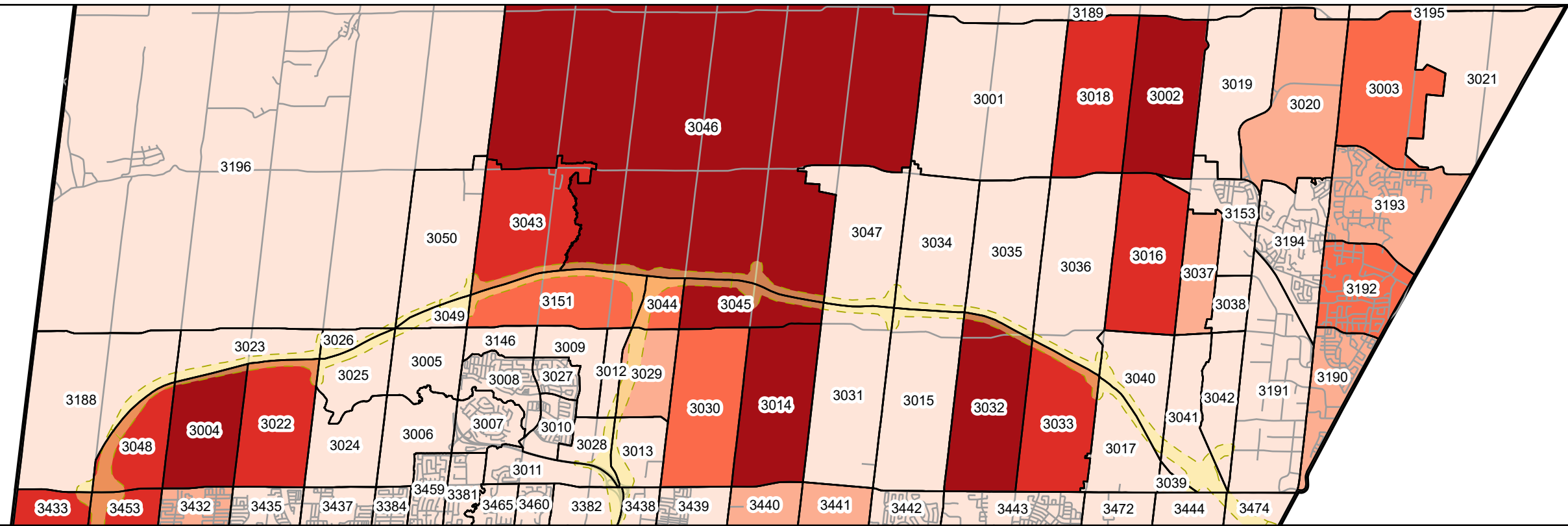
Scenario 2 - Higher Designated  
Greenfield Area



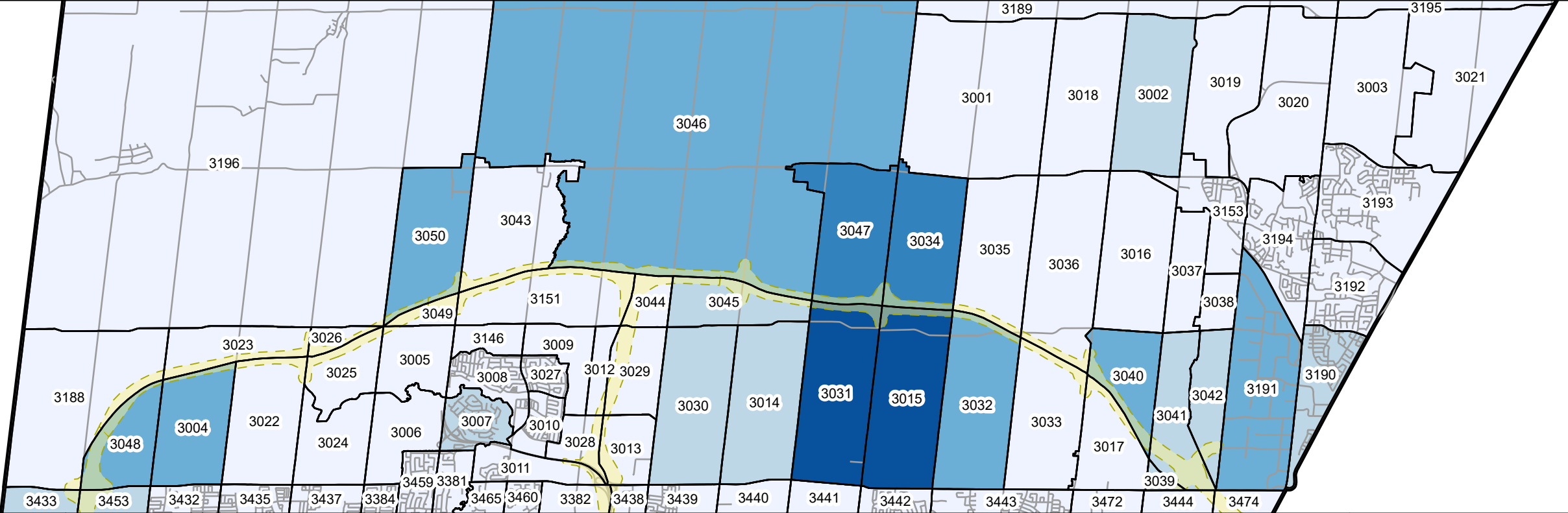
August 2021  
Version 1  
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# Population



# Employment



Transportation Technical Study -  
Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Population Growth 2041 to 2051**

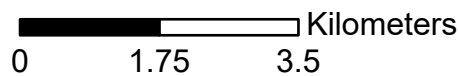
Light Orange	<= 500
Orange	500 - 1000
Dark Orange	1000 - 2500
Red	2500 - 5000
Dark Red	>= 5000

**Employment Growth 2041 to 2051**

Light Blue	<= 500
Blue	500 - 1000
Dark Blue	1000 - 2500
Very Dark Blue	2500 - 5000
Black	>= 5000

### Legend

- Roads
- xxxx Traffic Zones
- GTA West Corridor (Preferred Route)
- ▭ Municipal Boundaries



### Map A-4

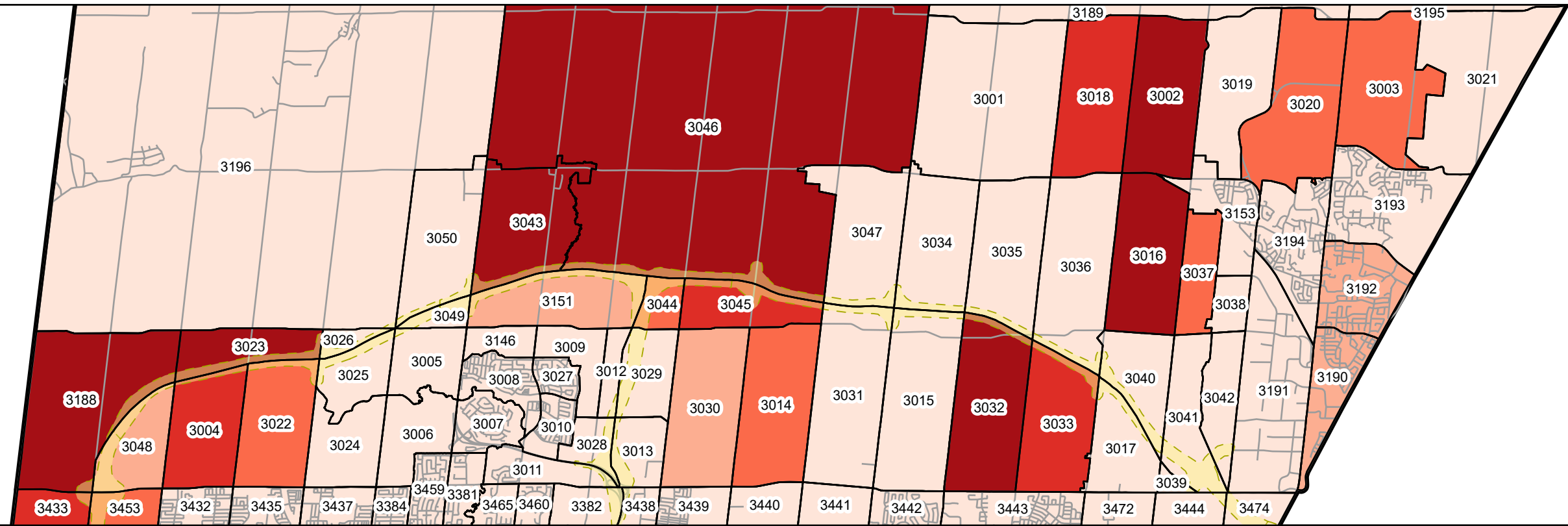
Population and Employment Growth  
2041 - 2051

Scenario 3 - Lower Designated  
Greenfield Area

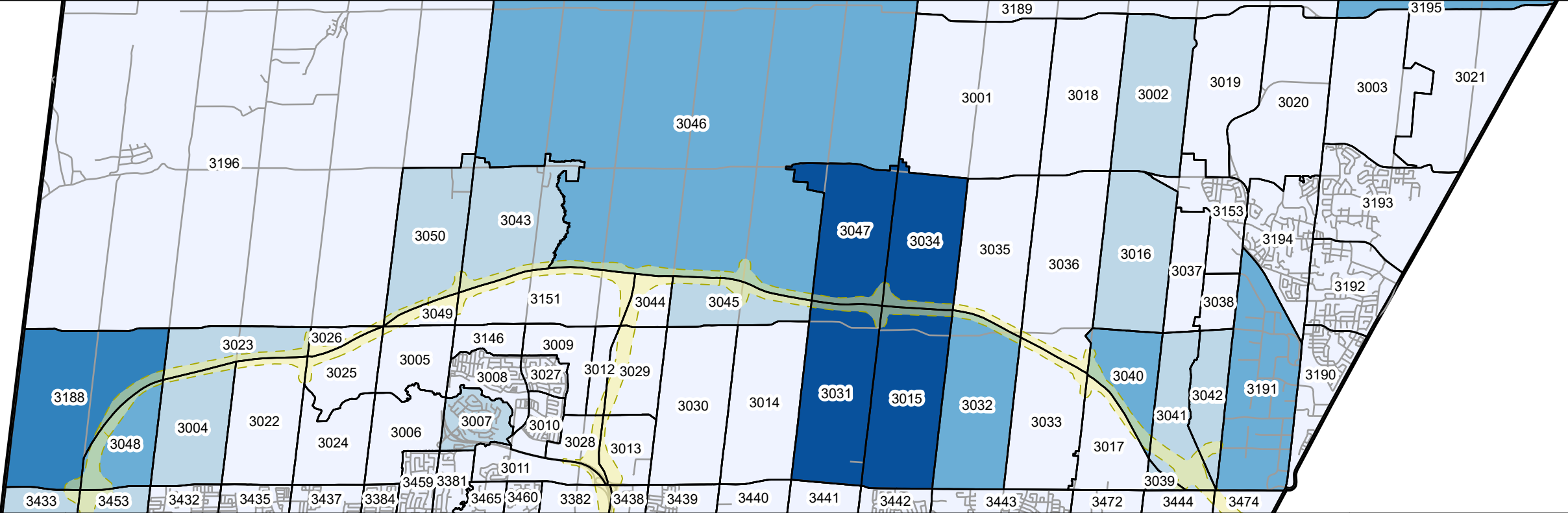


August 2021  
Version 1  
Drawn by: AMO

# Population



# Employment



Transportation Technical Study -  
Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Population Growth 2041 to 2051**

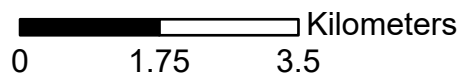
Light Orange	<= 500
Orange	500 - 1000
Dark Orange	1000 - 2500
Red	2500 - 5000
Dark Red	>= 5000

**Employment Growth 2041 to 2051**

Light Blue	<= 500
Blue	500 - 1000
Dark Blue	1000 - 2500
Very Dark Blue	2500 - 5000
Black	>= 5000

### Legend

- Roads
- xxxx Traffic Zones
- GTA West Corridor (Preferred Route)
- ▭ Municipal Boundaries



### Map A-5

Population and Employment Growth  
2041 - 2051

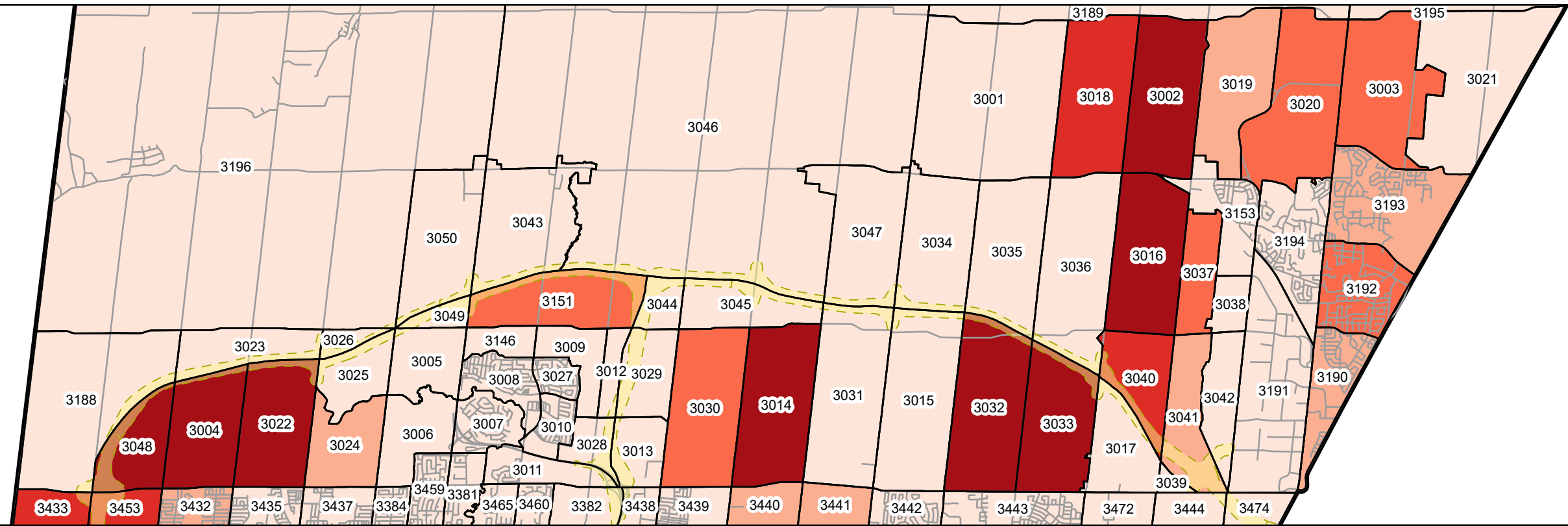
Scenario 4 - Minimum  
Intensification



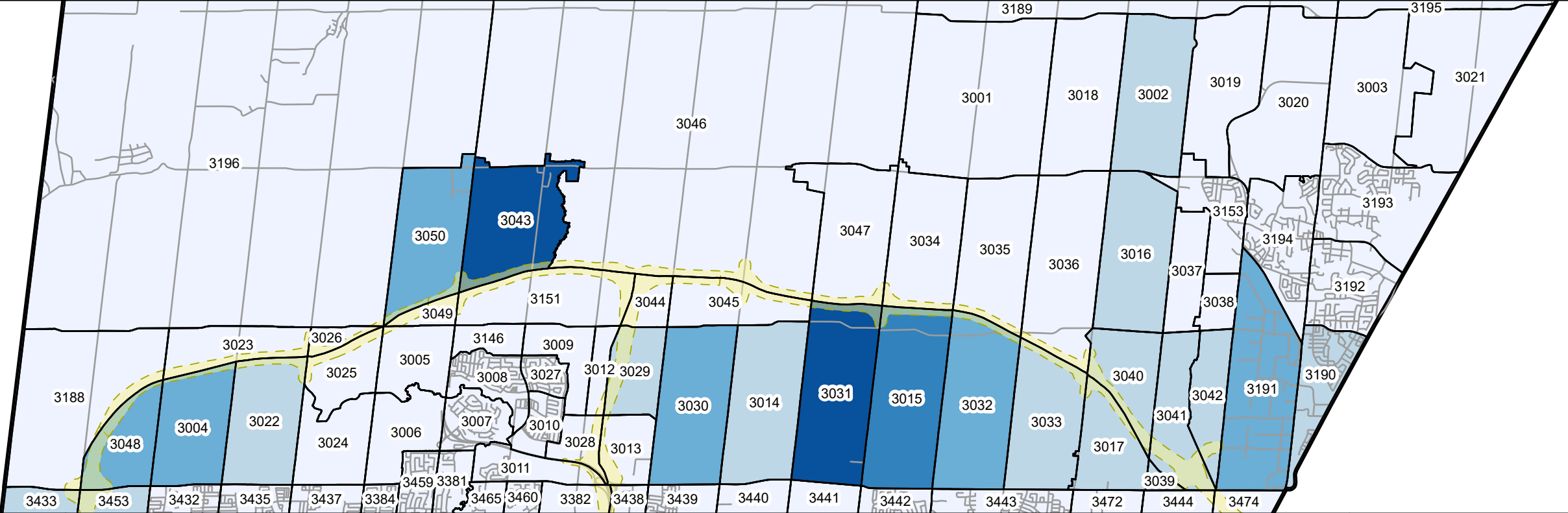
August 2021  
Version 1  
Drawn by: AMO



# Population



# Employment



Transportation Technical Study -  
Phase 2 Detailed Assessment for Settlement  
Boundary Area Expansion (SABE) Study

**Population Growth 2041 to 2051**

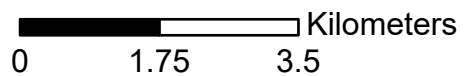
Light Orange	<= 500
Orange	500 - 1000
Dark Orange	1000 - 2500
Red-Orange	2500 - 5000
Dark Red	>= 5000

**Employment Growth 2041 to 2051**

Light Blue	<= 500
Blue	500 - 1000
Dark Blue	1000 - 2500
Very Dark Blue	2500 - 5000
Black	>= 5000

### Legend

- Roads
- Traffic Zones
- GTA West Corridor (Preferred Route)
- Municipal Boundaries



### Map A-6

Population and Employment Growth  
2041 - 2051

Scenario 5 - No GTA West



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# Appendix B

## Project Costing Details





## Project Costing Details

**Appendix B** summarizes the cost estimates prepared for the potential road widening projects listed in **Table 5** of the report. The information is presented in the following three tables:

- ▶ **Table B-1** provides a brief description of each potential road widening project including section length and number of intersections, bridges, and culverts along the segment;
- ▶ **Table B-2** details the construction costs for the individual components (e.g., roadwork, bridges, culverts, intersections, sidewalks, landscaping, street lighting, and utility relocation) based on the benchmark unit costs; and
- ▶ **Table B-3** lists the total estimated cost for each project, which comprises the sum of the individual component costs from **Table B-2** plus allowances for the Municipal Class Environmental Assessment study, detailed design/engineering, and contingency.



## APPENDIX B - PROJECT COSTING DETAILS

### Peel Region Settlement Area Boundary Expansion Study Transportation Technical Analysis - Phase 2 Detailed Assessment

Table B-1 - Project Descriptions

Project #	Road Name	Limits	Description	Length (km)	Number of:		
					Intersections	Bridges	Culverts
1	Chinguacousy Road	Mayfield Road to Old School Road	Widen from 2 rural to 4 rural lanes	3.07	4	0	3
2	Dixie Road	2 km north of Mayfield Road to King Street	Widen from 2 rural to 4 rural lanes	4.16	2	0	1
3	Airport Road	Countryside Drive to Mayfield Road	Widen from 4 urban to 6 urban lanes	1.27	2	1	0
4	Airport Road	Mayfield Road to Highway 413	Widen from 2/4 rural to 6 urban lanes	3.27	5	1	0
5	Airport Road	King Street to Castlederg Side Road	Widen from 2 rural to 4 rural lanes	7.20	2	0	0
6	The Gore Road	Healey Road to King Street	Widen from 2 rural to 4 rural lanes	3.07	2	0	0
7	Humber Station Road	Mayfield Road to Healey Road	Widen from 2 rural to 4 rural lanes	3.07	2	0	0
8	Coleraine Drive	Mayfield Road to Healey Road	Widen from 4 rural to 6 urban lanes	3.15	4	0	1
9	Coleraine Drive	Healey Road to King Street	Widen from 4 urban/rural to 6 urban lanes	2.05	5	0	0
10	Emil Kolb Parkway	King Street to Highway 50	Widen from 2 rural to 4 rural lanes	3.28	3	2	1
11	Highway 50	Emil Kolb Parkway to Castlederg Side Road	Widen from 2 rural to 4 rural lanes	1.10	2	0	0
12	Mayfield Road	Heritage Road to west of Mississauga Road	Widen from 4 rural to 6 rural lanes	1.10	1	0	0
13	Old School Road	Chinguacousy Road to Hurontario Street	Widen from 2 rural to 4 rural lanes	2.79	3	0	4
14	Healey Road	The Gore Road to Coleraine Drive	Widen from 2 rural to 4 rural lanes	2.75	3	0	1
15	King Street	Airport Road to The Gore Road	Widen from 2 rural to 4 rural lanes	4.14	4	0	3
16	The Gore Road	King Street to Castlederg Side Road	Widen from 2 rural to 4 rural lanes	3.06	2	0	1
17	Chinguacousy Road	Old School Road to King Street	Widen from 2 rural to 4 rural lanes	3.07	0	0	0
18	King Street	Dixie Road to Airport Road	Widen from 2 rural to 4 rural lanes	4.13	4	0	3
19	King Street	The Gore Road to Coleraine Drive	Widen from 2 rural to 4 rural lanes	2.46	4	0	1
20	Emil Kolb Parkway	King Street/Harvest Moon Drive to King Street	Widen from 4 urban to 6 urban lanes	0.99	2	0	0
21	Old School Road	Hurontario Street to Dixie Road	Widen from 2 rural to 4 rural lanes	4.12	4	0	3
22	Old School Road	Dixie Road to Airport Road	Widen from 2 rural to 4 rural lanes	4.16	4	0	2
23	Healey Road	Airport Road to The Gore Road	Widen from 2 rural to 4 rural lanes	4.18	4	0	1
24	King Street	Chinguacousy Road to Hurontario Street	Widen from 2 rural to 4 rural lanes	2.80	4	0	0

## APPENDIX B - PROJECT COSTING DETAILS

### Peel Region Settlement Area Boundary Expansion Study Transportation Technical Analysis - Phase 2 Detailed Assessment

Table B-2 - Component Construction Costs

Project #	Road Name	Limits	Component Construction Costs (Based on Benchmark Unit Costs)							
			Roadwork	Bridges	Culverts	Intersections	Sidewalks	Landscaping	Streetlighting	Utility Relocation
1	Chinguacousy Road	Mayfield Road to Old School Road	\$ 8,401,209	\$ -	\$ 1,539,000	\$ 1,977,870	\$ 1,117,541	\$ 299,878	\$ 2,538,767	\$ 2,124,440
2	Dixie Road	2 km north of Mayfield Road to King Street	\$ 11,384,048	\$ -	\$ 122,000	\$ 2,340,030	\$ 1,514,323	\$ 406,349	\$ 3,440,154	\$ 2,878,720
3	Airport Road	Countryside Drive to Mayfield Road	\$ 4,140,606	\$ 870,000	\$ -	\$ 2,356,260	\$ 462,305	\$ 124,054	\$ 1,050,239	\$ 878,840
4	Airport Road	Mayfield Road to Highway 413	\$ 12,063,138	\$ 1,651,561	\$ -	\$ 4,526,320	\$ 1,190,345	\$ 319,414	\$ 2,704,159	\$ 2,262,840
5	Airport Road	King Street to Castlederg Side Road	\$ 19,703,160	\$ -	\$ -	\$ 674,010	\$ 2,620,944	\$ 703,296	\$ 5,954,112	\$ 4,982,400
6	The Gore Road	Healey Road to King Street	\$ 8,401,209	\$ -	\$ -	\$ 1,349,010	\$ 1,117,541	\$ 299,878	\$ 2,538,767	\$ 2,124,440
7	Humber Station Road	Mayfield Road to Healey Road	\$ 8,401,209	\$ -	\$ -	\$ 1,191,000	\$ 1,117,541	\$ 299,878	\$ 2,538,767	\$ 2,124,440
8	Coleraine Drive	Mayfield Road to Healey Road	\$ 10,270,008	\$ -	\$ 85,200	\$ 4,115,740	\$ 1,146,663	\$ 307,692	\$ 2,604,924	\$ 2,179,800
9	Coleraine Drive	Healey Road to King Street	\$ 6,683,656	\$ -	\$ -	\$ 4,894,700	\$ 746,241	\$ 200,244	\$ 1,695,268	\$ 1,418,600
10	Emil Kolb Parkway	King Street to Highway 50	\$ 8,975,884	\$ 3,344,000	\$ 300,000	\$ 1,022,290	\$ 1,193,986	\$ 320,390	\$ 2,712,429	\$ 2,269,760
11	Highway 50	Emil Kolb Parkway to Castlederg Side Road	\$ 3,010,205	\$ -	\$ -	\$ 786,870	\$ 400,422	\$ 107,448	\$ 909,656	\$ 761,200
12	Mayfield Road	Heritage Road to west of Mississauga Road	\$ 3,586,352	\$ -	\$ -	\$ 994,000	\$ 400,422	\$ 107,448	\$ 909,656	\$ 761,200
13	Old School Road	Chinguacousy Road to Hurontario Street	\$ 7,634,975	\$ -	\$ 1,436,400	\$ 1,736,280	\$ 1,015,616	\$ 272,527	\$ 2,307,218	\$ 1,930,680
14	Healey Road	The Gore Road to Coleraine Drive	\$ 7,525,513	\$ -	\$ 615,600	\$ 905,330	\$ 1,001,055	\$ 268,620	\$ 2,274,140	\$ 1,903,000
15	King Street	Airport Road to The Gore Road	\$ 11,329,317	\$ -	\$ 336,054	\$ 3,358,650	\$ 1,507,043	\$ 404,395	\$ 3,423,614	\$ 2,864,880
16	The Gore Road	King Street to Castlederg Side Road	\$ 8,373,843	\$ -	\$ 364,230	\$ 961,290	\$ 1,113,901	\$ 298,901	\$ 2,530,498	\$ 2,117,520
17	Chinguacousy Road	Old School Road to King Street	\$ 8,401,209	\$ -	\$ -	\$ -	\$ 1,117,541	\$ 299,878	\$ 2,538,767	\$ 2,124,440
18	King Street	Dixie Road to Airport Road	\$ 11,301,952	\$ -	\$ 721,376	\$ 4,163,070	\$ 1,503,403	\$ 403,418	\$ 3,415,345	\$ 2,857,960
19	King Street	The Gore Road to Coleraine Drive	\$ 6,731,913	\$ -	\$ 46,817	\$ 1,850,640	\$ 895,489	\$ 240,293	\$ 2,034,322	\$ 1,702,320
20	Emil Kolb Parkway	King Street/Harvest Moon Drive to King Street	\$ 3,227,717	\$ -	\$ -	\$ 863,720	\$ 360,380	\$ 96,703	\$ 818,690	\$ 685,080
21	Old School Road	Hurontario Street to Dixie Road	\$ 11,274,586	\$ -	\$ 1,436,400	\$ 1,994,280	\$ 1,499,762	\$ 402,442	\$ 3,407,075	\$ 2,851,040
22	Old School Road	Dixie Road to Airport Road	\$ 11,384,048	\$ -	\$ 1,333,800	\$ 1,175,640	\$ 1,514,323	\$ 406,349	\$ 3,440,154	\$ 2,878,720
23	Healey Road	Airport Road to The Gore Road	\$ 11,438,779	\$ -	\$ 1,231,200	\$ 1,032,000	\$ 1,521,604	\$ 408,302	\$ 3,456,693	\$ 2,892,560
24	King Street	Chinguacousy Road to Hurontario Street	\$ 7,662,340	\$ -	\$ -	\$ 3,908,590	\$ 1,019,256	\$ 273,504	\$ 2,315,488	\$ 1,937,600
		<b>TOTAL</b>	<b>\$ 211,306,873</b>	<b>\$ 5,865,561</b>	<b>\$ 9,568,077</b>	<b>\$ 48,177,590</b>	<b>\$ 27,097,649</b>	<b>\$ 7,271,299</b>	<b>\$ 61,558,902</b>	<b>\$ 51,512,480</b>

## APPENDIX B - PROJECT COSTING DETAILS

### Peel Region Settlement Area Boundary Expansion Study Transportation Technical Analysis - Phase 2 Detailed Assessment

Table B-3 - Total Project Costs

Project #	Road Name	Limits	TOTAL Construction Components	Municipal Class EA Study	Detailed Design	Contingency	TOTAL PROJECT
1	Chinguacousy Road	Mayfield Road to Old School Road	\$ 17,998,705	\$ 539,961	\$ 2,699,806	\$ 4,499,676	\$ 25,738,148
2	Dixie Road	2 km north of Mayfield Road to King Street	\$ 22,085,624	\$ 662,569	\$ 3,312,844	\$ 5,521,406	\$ 31,582,442
3	Airport Road	Countryside Drive to Mayfield Road	\$ 9,882,305	\$ 400,000	\$ 2,000,000	\$ 2,470,576	\$ 14,752,881
4	Airport Road	Mayfield Road to Highway 413	\$ 24,717,777	\$ 741,533	\$ 3,707,667	\$ 6,179,444	\$ 35,346,421
5	Airport Road	King Street to Castlederg Side Road	\$ 34,637,922	\$ 1,039,138	\$ 5,195,688	\$ 8,659,481	\$ 49,532,228
6	The Gore Road	Healey Road to King Street	\$ 15,830,845	\$ 474,925	\$ 2,374,627	\$ 3,957,711	\$ 22,638,108
7	Humber Station Road	Mayfield Road to Healey Road	\$ 15,672,835	\$ 470,185	\$ 2,350,925	\$ 3,918,209	\$ 22,412,154
8	Coleraine Drive	Mayfield Road to Healey Road	\$ 20,710,027	\$ 621,301	\$ 3,106,504	\$ 5,177,507	\$ 29,615,339
9	Coleraine Drive	Healey Road to King Street	\$ 15,638,709	\$ 469,161	\$ 2,345,806	\$ 3,909,677	\$ 22,363,354
10	Emil Kolb Parkway	King Street to Highway 50	\$ 20,138,739	\$ 604,162	\$ 3,020,811	\$ 5,034,685	\$ 28,798,396
11	Highway 50	Emil Kolb Parkway to Castlederg Side Road	\$ 5,975,801	\$ 400,000	\$ 2,000,000	\$ 1,493,950	\$ 9,869,751
12	Mayfield Road	Heritage Road to west of Mississauga Road	\$ 6,759,078	\$ 400,000	\$ 2,000,000	\$ 1,689,770	\$ 10,848,848
13	Old School Road	Chinguacousy Road to Hurontario Street	\$ 16,333,696	\$ 490,011	\$ 2,450,054	\$ 4,083,424	\$ 23,357,185
14	Healey Road	The Gore Road to Coleraine Drive	\$ 14,493,258	\$ 434,798	\$ 2,173,989	\$ 3,623,314	\$ 20,725,358
15	King Street	Airport Road to The Gore Road	\$ 23,223,953	\$ 696,719	\$ 3,483,593	\$ 5,805,988	\$ 33,210,253
16	The Gore Road	King Street to Castlederg Side Road	\$ 15,760,183	\$ 472,805	\$ 2,364,027	\$ 3,940,046	\$ 22,537,061
17	Chinguacousy Road	Old School Road to King Street	\$ 14,481,835	\$ 434,455	\$ 2,172,275	\$ 3,620,459	\$ 20,709,024
18	King Street	Dixie Road to Airport Road	\$ 24,366,524	\$ 730,996	\$ 3,654,979	\$ 6,091,631	\$ 34,844,129
19	King Street	The Gore Road to Coleraine Drive	\$ 13,501,794	\$ 405,054	\$ 2,025,269	\$ 3,375,448	\$ 19,307,565
20	Emil Kolb Parkway	King Street/Harvest Moon Drive to King Street	\$ 6,052,290	\$ 400,000	\$ 2,000,000	\$ 1,513,073	\$ 9,965,363
21	Old School Road	Hurontario Street to Dixie Road	\$ 22,865,585	\$ 685,968	\$ 3,429,838	\$ 5,716,396	\$ 32,697,787
22	Old School Road	Dixie Road to Airport Road	\$ 22,133,034	\$ 663,991	\$ 3,319,955	\$ 5,533,258	\$ 31,650,238
23	Healey Road	Airport Road to The Gore Road	\$ 21,981,138	\$ 659,434	\$ 3,297,171	\$ 5,495,284	\$ 31,433,027
24	King Street	Chinguacousy Road to Hurontario Street	\$ 17,116,778	\$ 513,503	\$ 2,567,517	\$ 4,279,195	\$ 24,476,993
<b>TOTAL</b>			<b>\$ 422,358,432</b>	<b>\$ 13,410,669</b>	<b>\$ 67,053,344</b>	<b>\$ 105,589,608</b>	<b>\$ 608,412,052</b>