Transportation Servicing

April 6, 2009

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Phase 3
Sustainable Halton Report 3.12

Halton REGION
Prepared for Halton Region

1.0 Introduction

Halton Region is developing a plan for building sustainable and healthy communities - Sustainable Halton.

Over the next 25 years, the Greater Golden Horseshoe is expected to grow significantly. By 2031, the Province of Ontario forecasts that Halton Region will have a population of approximately 780,000 people and 390,000 jobs.

The Sustainable Halton plan will help the Region meet the provincial requirements of the Greenbelt Plan and the Places to Grow Plan, and will help develop Halton's next Official Plan.

Purpose of Report

The purpose of this report is to present the strategic level assessment undertaken of the transportation infrastructure required of each of the three Concepts prepared for new urban land required for the period 2021 to 2031. The Concepts evaluated are:

- Concept 1 – "Milton Centred" – all of the new mixed-use/residential development area is located in Milton.

- Concept 2 – "Milton and Georgetown Growth to 20,000 People" – a population of approximately 20,000 people is allocated around Georgetown, with the remaining mixed-use/residential lands in Milton.

- Concept 3 – "Milton and Georgetown Growth to 40,000 People" - a population of 40,000 people is accommodated in Georgetown with the remaining mixed-use/residential land in Milton.

The same employment lands (1100 ha) were used for all three Concepts. The employment lands were focused around the Highway 401 corridor in Milton and Halton Hills, Highway 407 in Milton, around the CN Lands at Tremaine Road and north of James Snow Parkway.

2.0 Analysis Methodology

Methodology

The three Concepts were analysed using the Region's demand forecasting model as the principal tool. The population and employment estimates for each Concept were provided by the Region's Long Range Planning section at the traffic zone level. These in turn were loaded into the Region's model and the transportation impacts were evaluated for the period 2021 to 2031 using the current Regional Roads Capital Program to 2021. A copy of the Regional Road Capital Program is provided in Appendix A.

The analysis was undertaken at the "screenline" level; hence it is strategic in nature and identifies high level deficiencies. A screenline is an imaginary line defined in the network that captures a broad corridor through which traffic flows. The Regional screenlines are illustrated in Appendix B.

Screenline capacity deficiencies were triggered if the ratio of the volume of traffic travelling across the screenline is greater than 90% of the screenline's capacity.

Assumptions

As noted, the analysis was undertaken using the Region's demand forecasting model and using the current Regional Roads Capital Program (2009-2021) as the base roadway network for the analysis.

Transit Mode Split

Each scenario tested for the three Concepts was undertaken under two transit mode split assumptions.

The first was a "Trend Transit" condition where transit mode split targets reflected the current Regional trends based on the 2006 Transportation Tomorrow Survey and growth in transit use is assumed to follow population and employment growth. For this scenario, the average transit mode split for trips Region-wide is just under 2% during the PM peak hour, and about 4.4% for all trips to/from Halton Region. That is, one out of every 22 trips made to/from Halton Region would be undertaken by some type of transit service by 2021. Currently, the highest level of transit use is in the southern part of the Region (GO Lakeshore Line) which is in the range of 75%.

The second was an "Enhanced Transit" condition whereby the transit mode split targets between 2021 and 2031 were increased to an average of 20% throughout the Region; with an internal Regional transit mode split of approximately 11% and an external Regional transit mode split of approximately 41%. Within Halton Region, the highest transit use is

anticipated to be in the existing urban areas of Oakville and Burlington, averaging just over 17% of PM peak hour trips by transit by 2031. Approximately 12% transit mode split is anticipated in the central area of Milton.

Provincial Facility Improvements

The following Provincial facility improvements were assumed to be in place by 2031 and thus incorporated in the analysis:

- Widening of Highway 401 corridor from 6 to 8 lanes; west to James Snow Parkway
- Widening of Highway 403 corridor from 6 to 8 lanes; from the Freeman Interchange to Highway 6 (including new ramps to/from the east at Waterdown Road)
- Widening of the QEW to provide a new HOV lane in each direction (total of 8 lanes); from Highway 403 to Freeman Interchange
- No changes to Highway 407 corridor

Other Transportation Initiatives

There are studies underway at this time that may influence travel in Halton Region. These studies are in their preliminary stages. As such, they have only been taken into account on a contextual basis in the analysis of the three land use Concepts.

- *Halton-Peel Boundary Area Transportation Study (HPBATS)*
  The Halton-Peel Boundary Area Transportation Study is a joint study between the Region of Peel, Halton Region, City of Brampton, Town of Caledon, and the Town of Halton Hills to identify the long-term (2021 and 2031) transportation network required to support current and future municipal planning objectives by providing transportation capacity to accommodate future travel demands generated by planned growth in west Brampton and Halton Hills.

- *GTA West Corridor Environmental Assessment*
  The Ministry of Transportation - Ontario (MTO) is conducting an Environmental Assessment (EA) Study for the GTA West Corridor to examine long-term (2031) transportation needs and consider alternative solutions to provide linkages between Downtown Guelph, Downtown Milton, Brampton City Centre and Vaughan Corporate Centre as identified in the Province of Ontario Growth Plan.

- *Niagara to Greater Toronto Area Corridor (NGTA)*
  The Ministry of Transportation - Ontario (MTO) is undertaking Phase 1 of the Niagara to GTA Corridor Planning and Environmental Assessment Study. The purpose of this study is to address existing and future anticipated transportation capacity deficiencies (problems and opportunities) within the Niagara to Greater Toronto Area (GTA) corridor by providing additional capacity for a 30 year planning horizon and beyond.

3.0 Assessment of Concepts

Assessment of Concept 1

The population and employment estimates for Concept 1 revealed that there will be a need for additional Regional infrastructure in central Milton and in Halton Hills north of Highway 401. The Enhanced Transit Scenario, with its aggressive transit mode splits, could not accommodate all capacity deficiencies from the Trend scenario in Milton. This Concept would require the Enhanced Transit investment and roadway infrastructure to "top up" demand that cannot be met by the transit service alone. Hence this Concept needs more infrastructure or an even more aggressive transit mode split, which may not be practical to achieve in this time frame.

Appendix C presents the lane deficiencies for the Trend and Enhanced Transit model runs by general geographic area.

For both the Trend and Enhanced Transit Scenarios, there are deficiencies found in the central Milton area (northbound/ southbound flows along Tremaine Road, Bronte Street, Thompson Road, Ontario Street, and James Snow Parkway). The only Regional roadways in this screenline are Tremaine Road and James Snow Parkway, both of which are proposed to be widened to a six lane cross-section by 2021. Widening these roadways further to eight lanes is not considered practical, nor desirable, due to impacts on property, urban design and scale.

The lane deficiencies identified in Halton Hills north of Highway 401 are triggered by the new employment lands in this area. The demand is marginal but sufficient to exceed the critical screenline volume to capacity ratio of 0.9.

The Enhanced Transit Scenario addresses the deficiencies in the southern part of the Region with the exception of two deficiencies. In the southern part of the Region, there is an east-west deficiency associated with the performance of the QEW/Highway 403 (Provincial facilities) around Bronte Road. The Regional solution to the deficiency around Bronte Road would be the extension of Upper Middle Road across the Bronte Creek, which is not considered a practical option. There is a localized north-south deficiency

(equivalent of one lane of capacity) just north of the QEW/Highway 403 generally between Brant Street and Appleby Line.

Assessment of Concept 2

The population and employment estimates for Concept 2 revealed that there will be a need for additional infrastructure in central Milton and north of Highway 401 in Halton Hills, similar to Concept 1. The Enhanced Transit Scenario does address some of the deficiencies in central Milton as there is a relocation of 20,000 people out of this area to Georgetown.

Appendix D presents the lane deficiencies for the Trend and Enhanced Transit model runs by the general geographic area. In comparison to Concept 1, this Concept needs the same infrastructure but in this Concept, the roadway network in the Milton area is not "as full".

There are deficiencies found in the central Milton area (northbound/ southbound flows along Tremaine Road, Bronte Street, Thompson Road, Ontario Street, and James Snow Parkway). The only Regional roadways in this screenline are Tremaine Road and James Snow Parkway, both of which are proposed to be widened to a six lane cross-section by 2021. Widening these roadways further to eight lanes is not considered practical, nor desirable, due to impacts on property, urban design and scale.

The lane deficiencies identified in Halton Hills north of Highway 401 are triggered by the new employment lands in this area and the growth in population in Georgetown.

The Enhanced Transit Scenario addresses the deficiencies in the southern part of the Region with the exception of two deficiencies. In the southern part of the Region, there is an east-west deficiency associated with the performance of the QEW/Highway 403 (Provincial facilities) around Bronte Road. The Regional solution to the deficiency around Bronte Road would be the extension of Upper Middle Road across the Bronte Creek, which is not considered a practical option. There is a localized north-south deficiency (equivalent of one lane of capacity) just north of the QEW/Highway 403 generally between Brant Street and Appleby Line.

Assessment of Concept 3

The population and employment estimates for Concept 3 revealed there will be a need for additional infrastructure in central Milton and north of Highway 401 in Halton Hills, similar to Concept 2. The difference with this Concept relative to Concept 2 is that one additional lane is required in the north/south direction between Highway 401 and Georgetown.

Appendix E presents the lane deficiencies for the Trend and Enhanced Transit model runs by the general geographic area.

The Enhanced Transit Scenario addresses the deficiencies in the southern part of the Region with the exception of two deficiencies. In the southern part of the Region, there is an east-west deficiency associated with the performance of the QEW/Highway 403 (Provincial facilities) around Bronte Road. The Regional solution to the deficiency around Bronte Road would be the extension of Upper Middle Road across the Bronte Creek, which is not considered a practical option. There is a localized north-south deficiency (equivalent of one lane of capacity) just north of the QEW/Highway 403 generally between Brant Street and Appleby Line.

Summary of Technical Analysis

The following conclusions can be made from the technical analysis:

- The analysis of the travel demand from Concept 1 revealed a total of 13 and 11 additional lanes of road capacity are required for the Trend and Enhanced scenarios, respectively.
- The analysis of the travel demand from Concept 2 revealed a total of 13 and 10 additional lanes of road capacity are required for the Trend and Enhanced scenarios, respectively.
- The analysis of the travel demand from Concept 3 revealed a total of 14 and 11 additional lanes of road capacity are required for the Trend and Enhanced scenarios, respectively.
- The magnitude of growth in Concept 1 is too great for the transit system model used in the assessment, which is representative of what can reasonably be assumed for this time frame.
- Concept 2 will have more "traditional" travel characteristics from Georgetown as the amount of growth would not be supportive of higher order transit due to its anticipated urban form and location from existing and planned GO facilities. From a transportation perspective, the "gap" between the urban area limit in Georgetown and Highway 401 is not ideal as it creates "dead" service areas for both roadway and transit services.
- Concept 3 will also have more "traditional" travel characteristics from Georgetown. The configuration/location of the growth is not supportive of higher order transit due to its anticipated urban form and location from existing and planned GO facilities. From a transportation perspective, the "gap" between the urban area limit in Georgetown and Highway 401 is not ideal as it creates "dead" service areas for both roadway and transit services.
- The Georgetown land use components of Concepts 2 and 3 could be conducive to peak period shuttle transit service to the major transit terminals.

4.0 Costing

An order of magnitude cost estimate of the Region's Capital Roads Projects program for each Concept was developed for the period 2021 to 2031. These costs are presented for comparison purposes among each Concept and should not be taken as "absolutes". It is important to note these costs are based on road improvements/ solutions that were not assessed under the Class Environmental Assessment process. As such, upon the undertaking of the Transportation Master Plan for the preferred option, some of these improvements may change.

Costing was derived for both the "Trend" and "Enhanced" Transit scenarios for each Concept. The same "Enhanced Transit service" was assumed to be in place for all three Concepts. The costs of transportation infrastructure required to support each of the Concepts analysed is summarized in the following table. Total program costs are in Millions of dollars. Also presented in the table is the range of the cost per population and employment increase. This is the range (rounded to the nearest hundred) of the Total cost divided by 188,336; which is the total increase in population (135,407) and employment (52,929) between 2021 and 2031.

Table 1 – Concept Costs

	Trend			Enhanced		
	Roads	Transit	Total	Roads	Transit	Total
Concept 1						
Total ($Million)	$725	$62	$787	$652	$243	$895
Per Pop-Empl.	$3,700 - $3,900	$320 - $340	$4,100 - $4,300	$3,400 - $3,600	$1,200 - $1,400	$4,700 - $4,900
Concept 2						
Total ($Million)	$725	$62	$787	$569	$243	$812
Per Pop-Empl.	$3,700 - $3,900	$320 - $340	$4,100 - $4,300	$2,900 - $3,100	$1,200 - $1,400	$4,200 - $4,400
Concept 3						
Total ($Million)	$745	$62	$807	$598	$243	$841
Per Pop-Empl.	$3,900 - $4,100	$320 - $340	$4,200 - $4,400	$3,100 - $3,300	$1,200 - $1,400	$4,400 - $4,600

Given the level of detail of the costing analysis the following can be concluded about the Concepts:

- The Trend Transit Scenario costing (total) is within approximately $20 Million for all three Concepts.
- For Concepts 2 and 3, the Trend and Enhanced Scenario costs (total) for each Concept are within a negligible variance.
- The Enhanced Transit Scenario costing (total) is within approximately $83 Million (approximately 10%) for all three Concepts.

5.0 Other Considerations

There are a number of other factors which are not yet defined that may impact the analysis undertaken. Specifically, these factors are the proposed Education Village in west Milton and increased goods movement activity resulting from employment in the CN lands.

Both of these are likely to require additional access from the site via Highway 407, potentially triggering the need to implement a new interchange at Highway 407 and Tremaine Road. Given the complexities in this area, the costs to build an interchange at this location would be in the range of $50 to $100 Million.

This would define Tremaine Road as a major goods movement and people carrying corridor as it would connect Highway 401 and Highway 407 at the western section of the Region's urban area.

These issues will be analysed and defined in more detail during the development of the Transportation Master Plan for the Preferred Growth Option as this information becomes available from others.

6.0 Summary of Results

Overall, from a transportation perspective, there is no clear winner among the three Concepts as a result of the travel demand analysis and costing exercise.

Trend Transit Scenario:

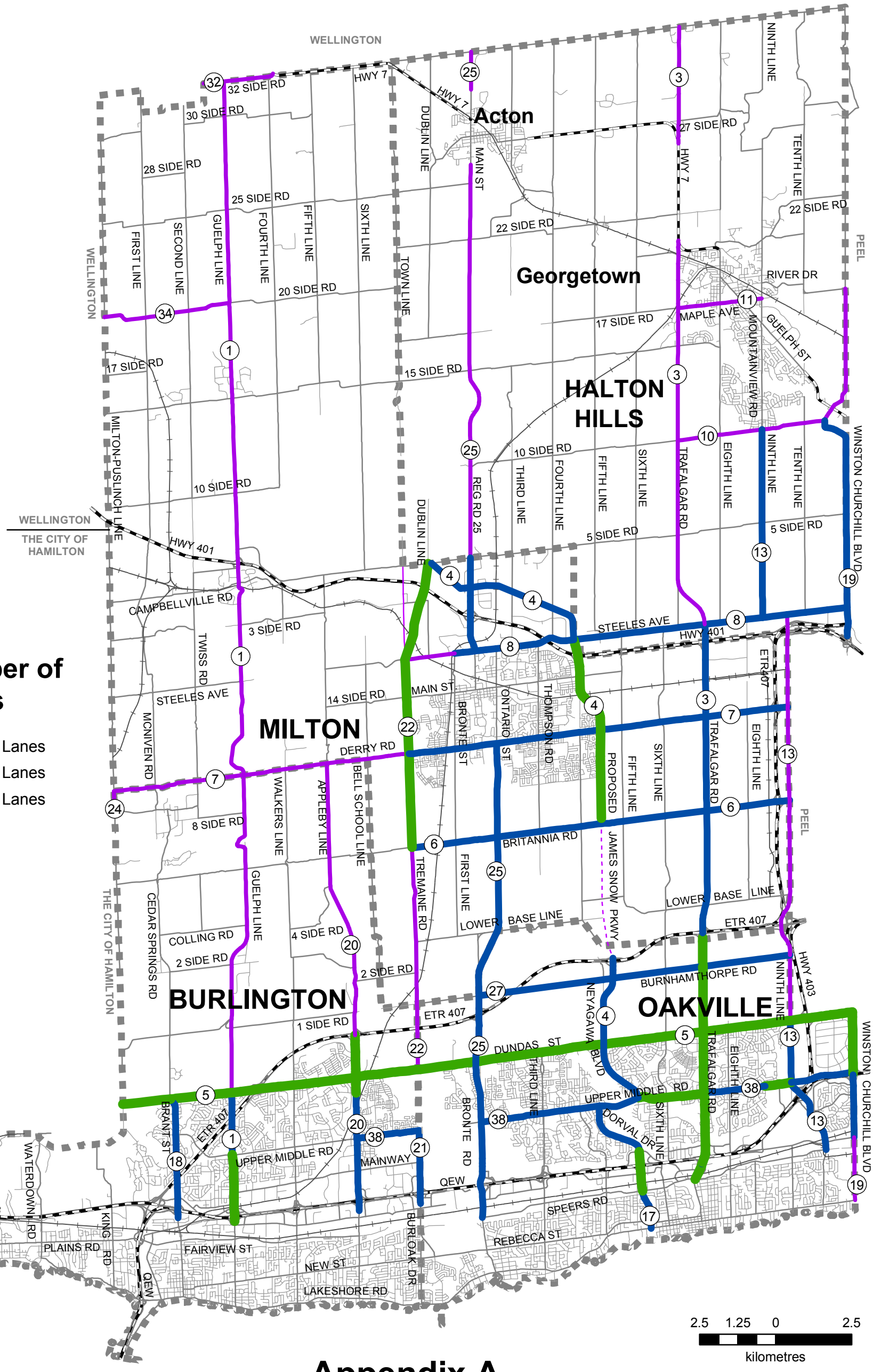
- The costs associated with the servicing of Concept 1 and 2 are similar.
- There is a minor difference in the costs to service Concept 3 which reflects an additional lane of capacity north of Highway 401 in Halton Hills.

Enhanced Transit Scenario

- Concept 1 will require more infrastructure as discussed above, hence its costs related to Roads under the Enhanced Transit Scenario is much higher than the other two Concepts.

From the quantitative analysis undertaken as described in this report, the conclusion is not ascertained easily. All three Concepts can be made to work from a transportation perspective; that is, a transportation solution can be developed.

Halton REGION



Number of Lanes

- 2 Lanes
- 4 Lanes
- 6 Lanes

Appendix A
Halton Region
Number of Lanes to 2021

March 2009
Public Works & Engineering
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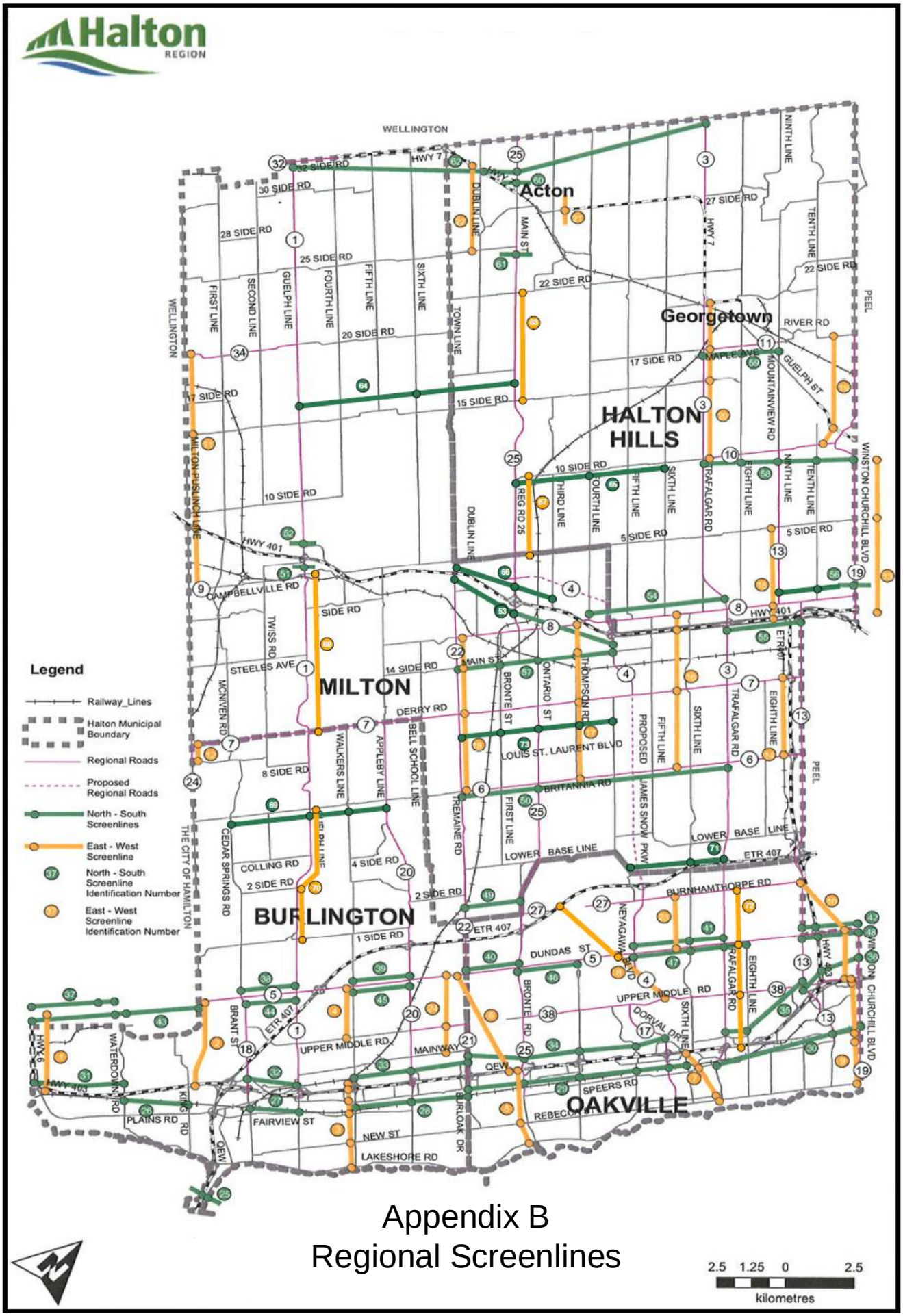
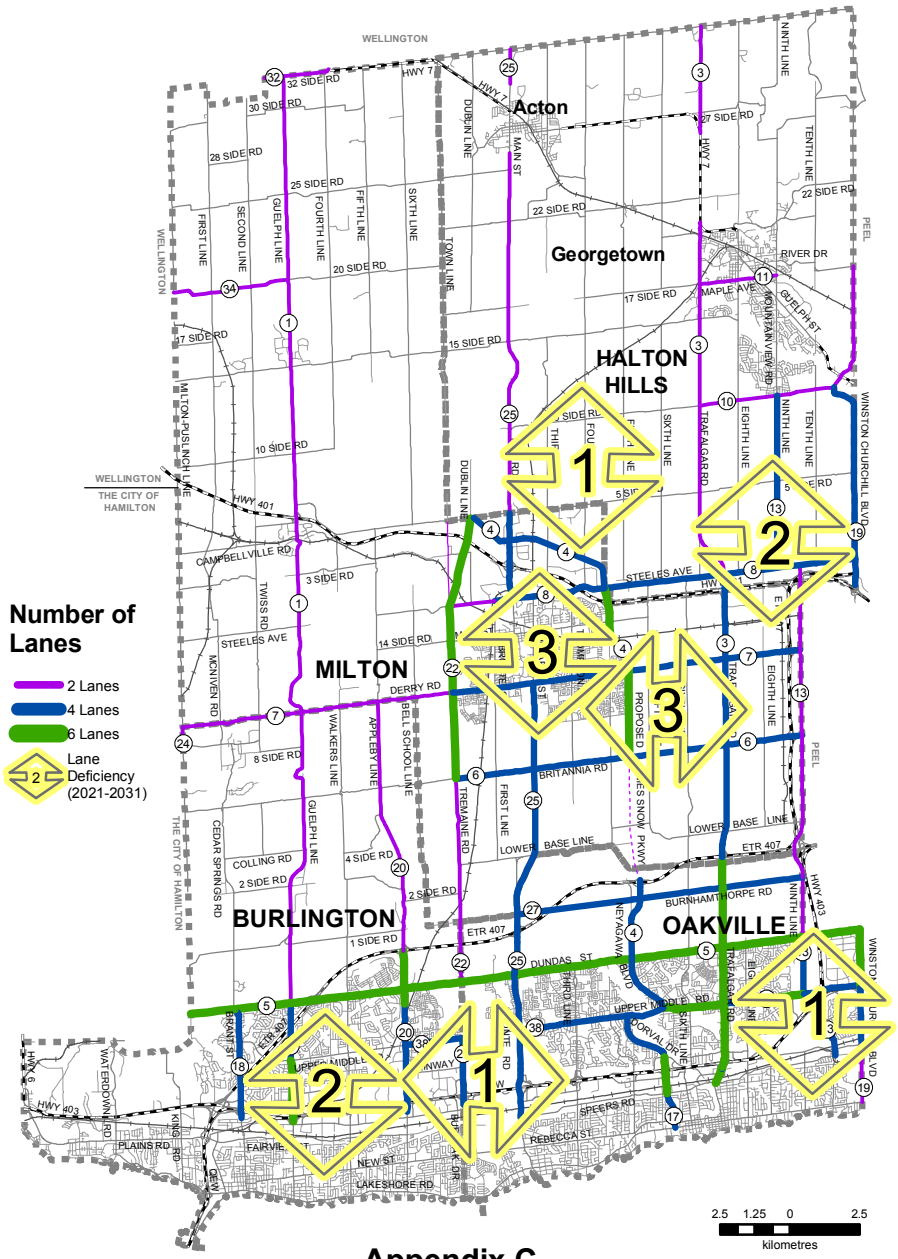


Appendix B
Regional Screenlines



Appendix C
Transportation Evaluation of Concepts
Trend Transit - Concept 1

March 2009
Public Works & Engineering
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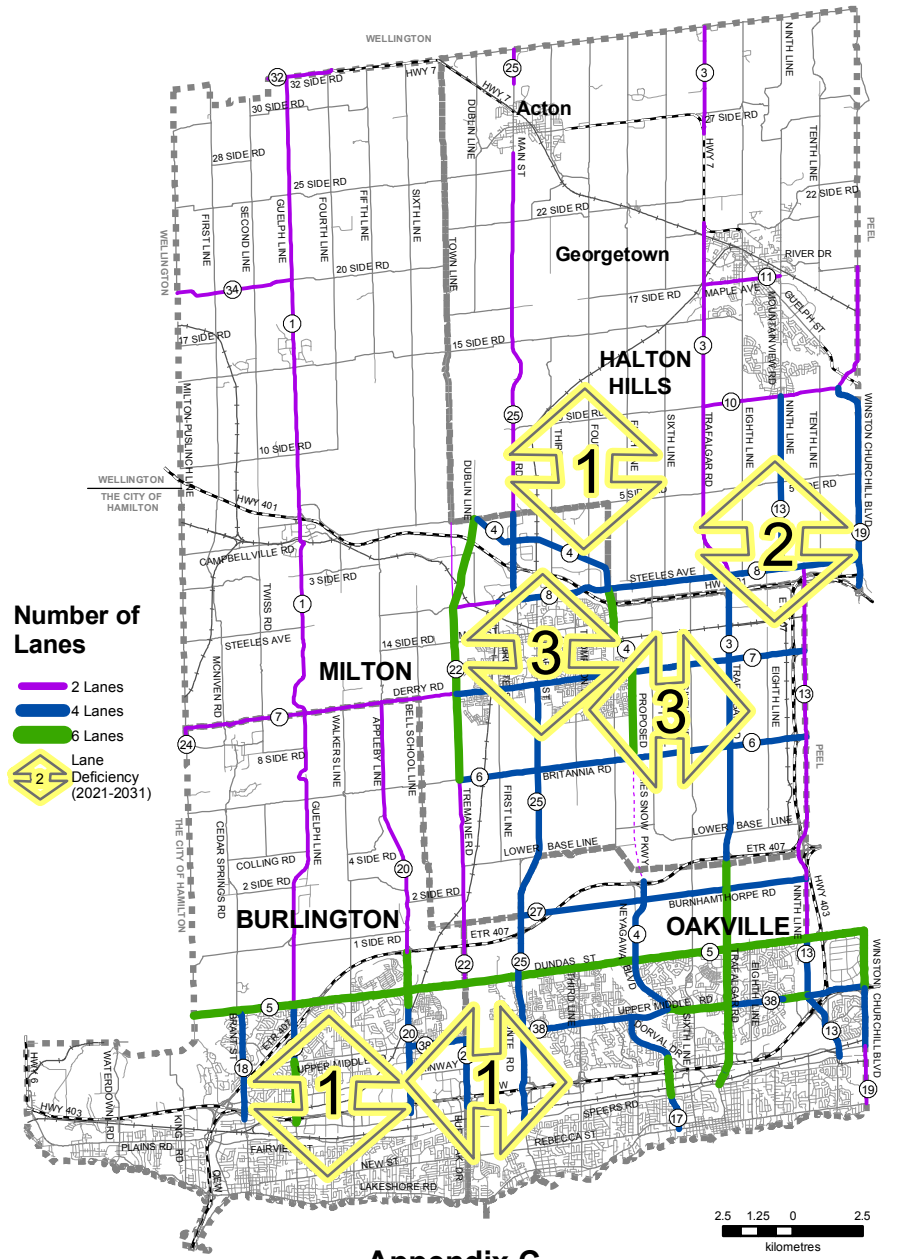

Appendix C
Transportation Evaluation of Concepts
Enhanced Transit - Concept 1

March 2009
Public Works & Engineering
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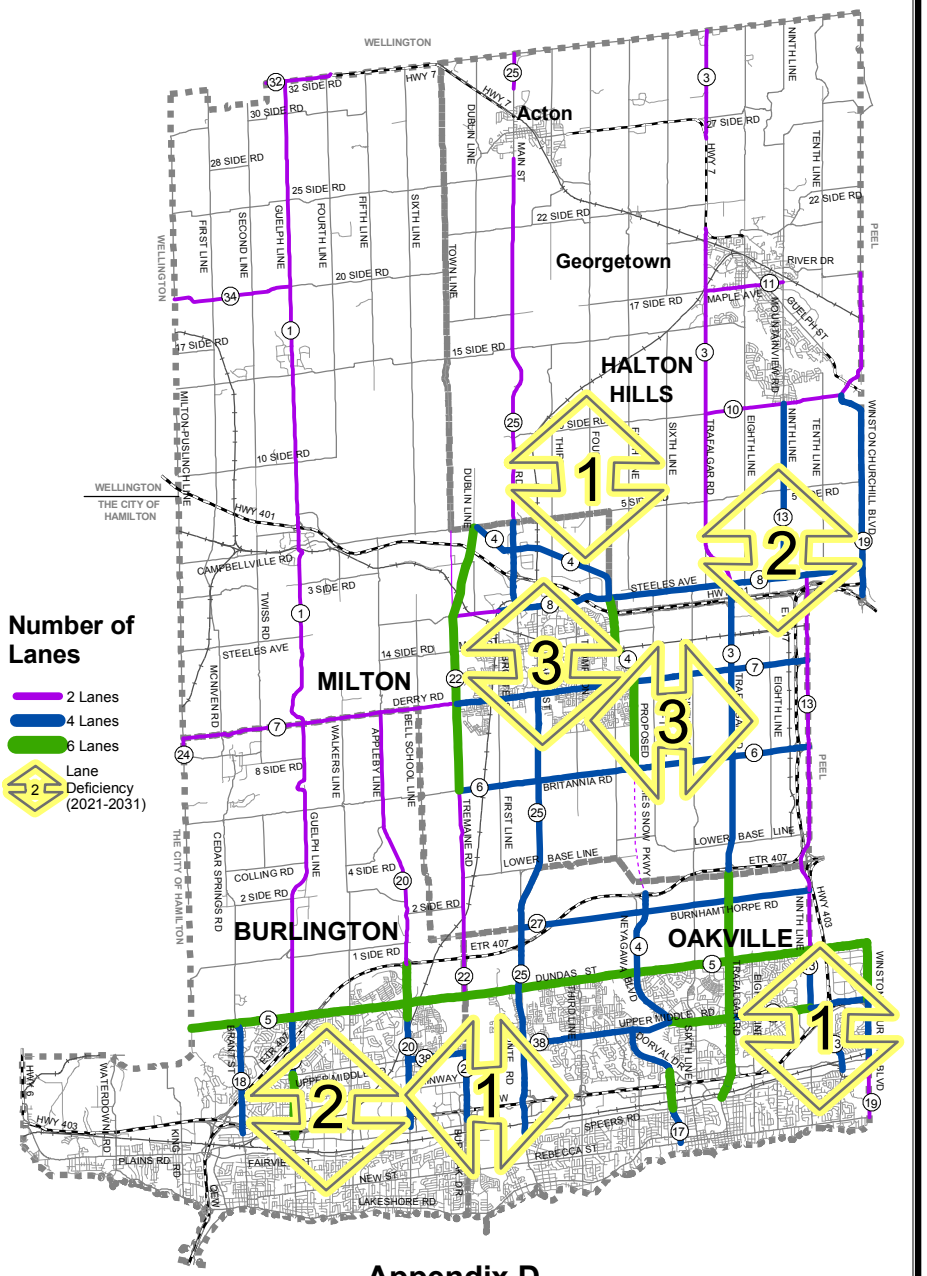

Appendix D
Transportation Evaluation of Concepts
Trend Transit - Concept 2

March 2009
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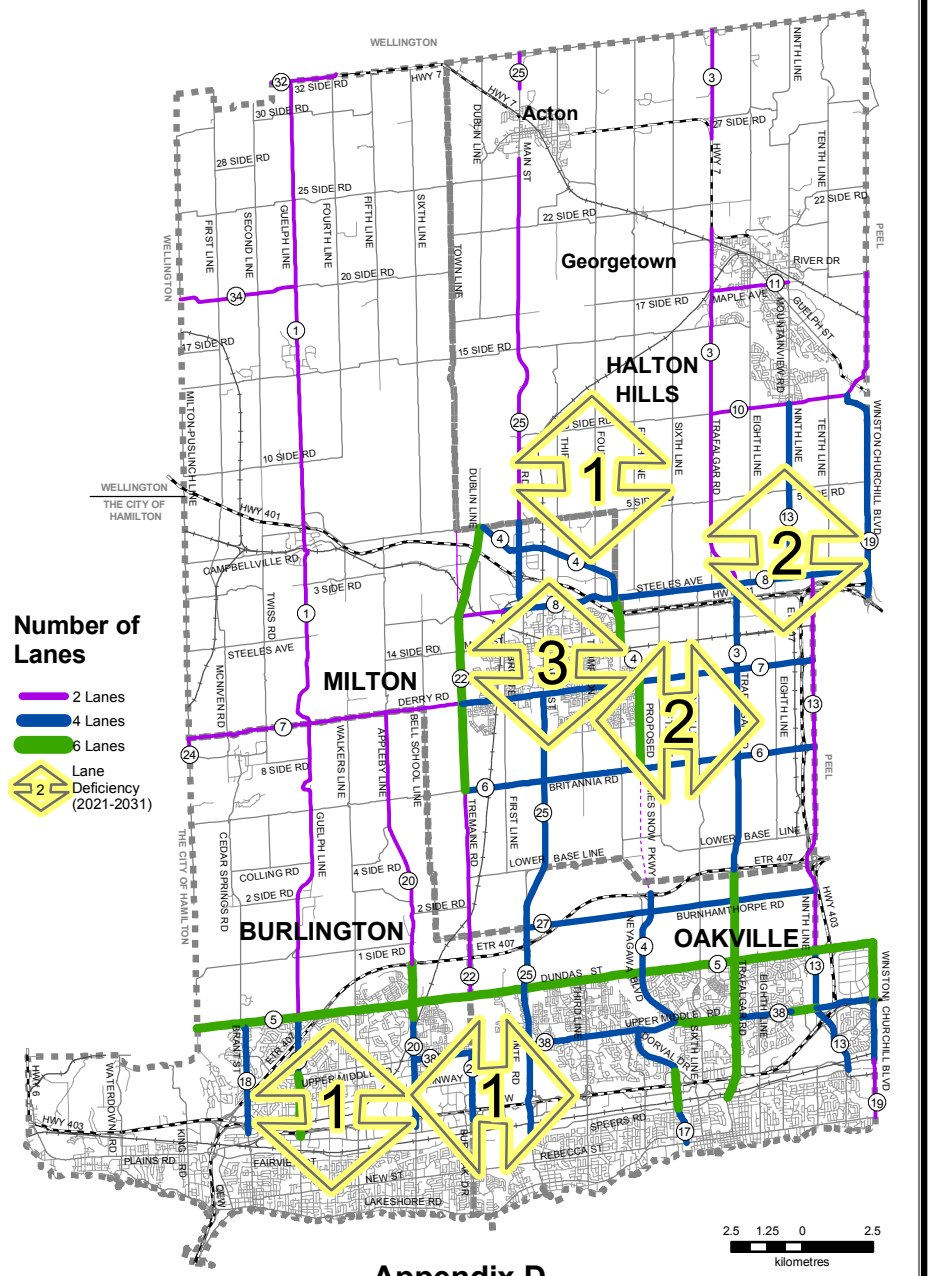

Appendix D
Transportation Evaluation of Concepts
Enhanced Transit - Concept 2

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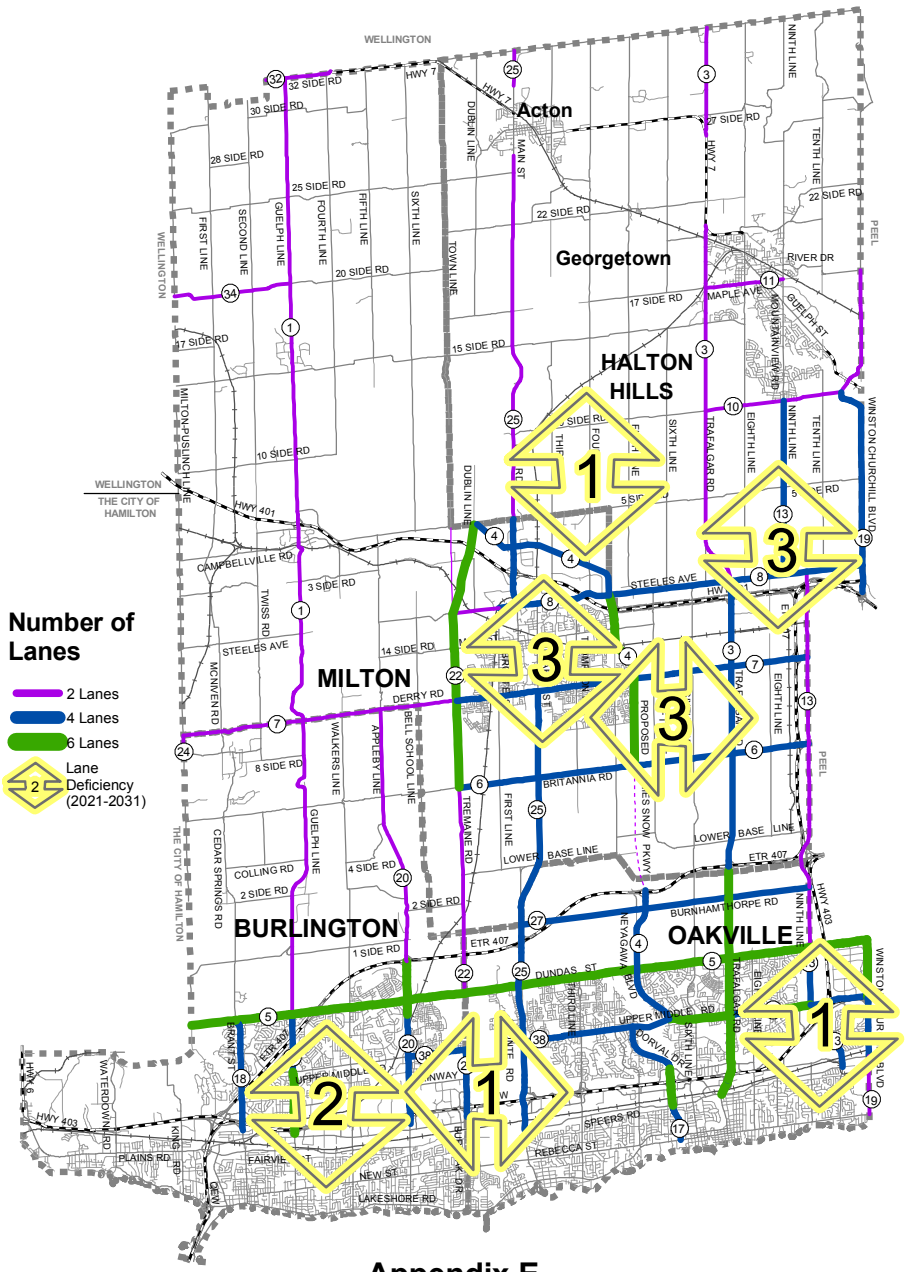
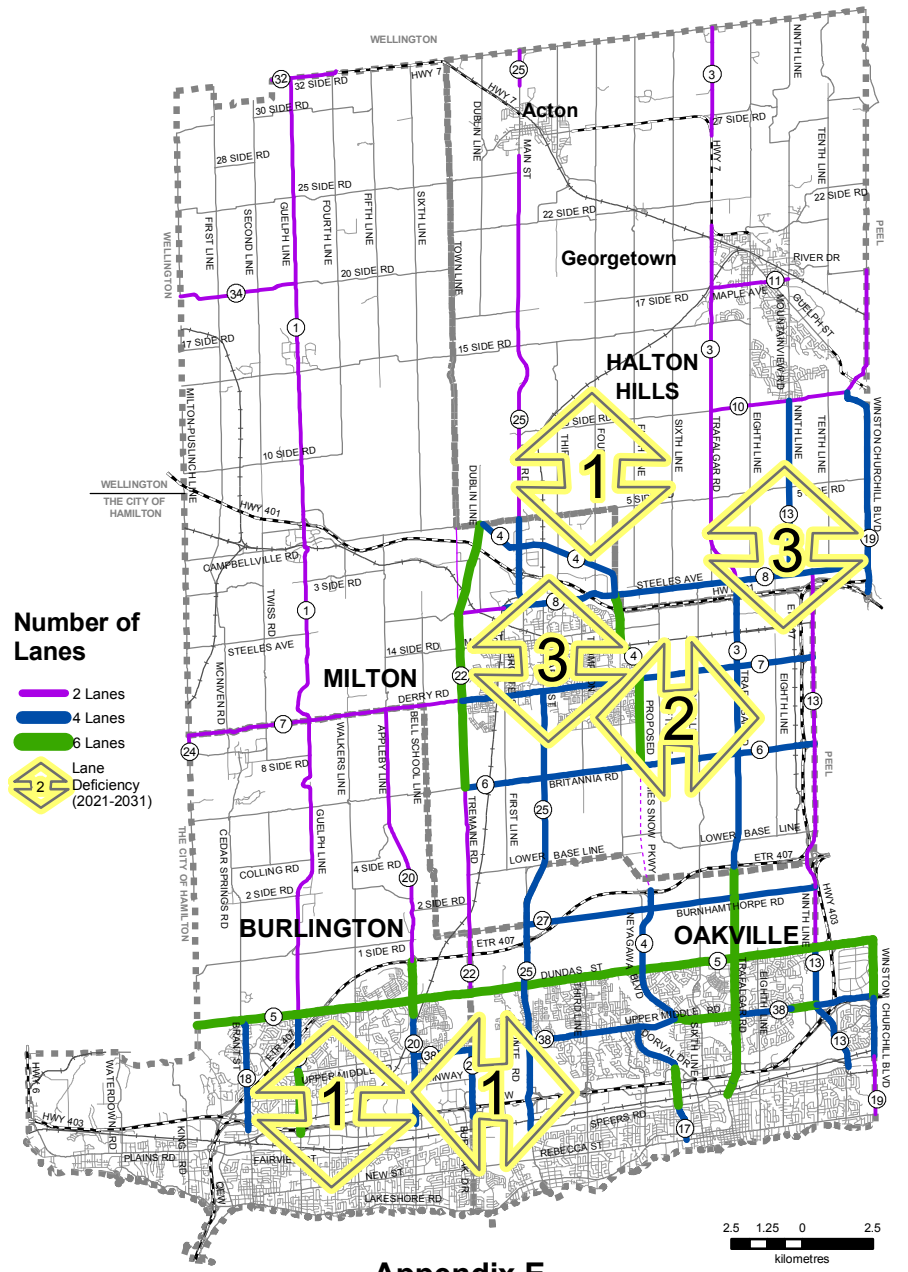


Appendix E
Transportation Evaluation of Concepts
Trend Transit - Concept 3



Appendix E
Transportation Evaluation of Concepts
Enhanced Transit - Concept 3