EVERGREEN COMMUNITY
PROPOSED MIXED USE DEVELOPMENT

TRANSPORTATION CONSIDERATIONS

Prepared For: Evergreen Community (Burlington) Ltd.

July 10, 2015



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1.0 INTRODUCTION

BA Group has been retained by Evergreen Community (Burlington) Ltd. ("Evergreen") to undertake a transportation impact study regarding Evergreen's proposed mixed use development at the northwest quadrant of Tremaine Road and Dundas Street, in the City of Burlington. The study has been undertaken in pursuant to ROP policy 173(22) and OP policy 3.2.2. d) regarding transportation impact assessments.

This report provides a detailed assessment of the proposed site access plan and identifies the relative impact of the development on Tremaine Road and Dundas Street intersections. The study scope includes a review of the transportation site context, existing and future traffic activity levels, and the corresponding traffic analysis for the following study area intersections:

Signalized

- Dundas Street West / Tremaine Road
- Dundas Street West / Street "A"
- Tremaine Road / Street 'H'
- Tremaine Road / Street 'L'

Unsignalized

- Tremaine Road / Street 'C'
- Tremaine Road / Street 'K'

The following horizon timeframes were analyzed in this study, consistent with those utilized in the Halton Transportation Master Plan:

- Existing traffic conditions
- 2021 future traffic conditions with and without the proposed development
- 2031 future traffic conditions with and without the proposed development
- Weekday morning and afternoon peak hours

1.1 SITE DESCRIPTION

The Evergreen site is located in northeast Burlington in the northwest quadrant of Tremaine Road and Dundas Street, consisting of approximately 67 hectares. The site is represented by four properties: 5421 and 5463 Dundas Street (Norton/Stevenson Lands) and 5453 Dundas Street and 3232 Tremaine Road. Together, these form the Evergreen Community.

Currently, the site is undeveloped green field land bounded by the Bronte Creek flood plains to the west, Tremaine Road to the east, Highway 407 to the north, and Dundas Street to the south. The site location is illustrated in Figure 1.

Directly across Dundas Street from the site is a pathway for maintenance vehicles leading to the Bronte Provincial Park. The other side of Tremaine Road is undeveloped green field land that will be developed for industrial-commercial uses as part of the North Oakville West Master Plan. Tremaine Road forms the boundary between the City of Burlington and the Town of Oakville.

Due to its unique geography, the site is physically separated from the rest of the City of Burlington by Bronte Creek to the west and Bronte Provincial Park to the south. The hydro corridor and Highway 407 also form a barrier to the north.

1.2 PROPOSED DEVELOPMENT

The "Evergreen Community" is proposed to consist of approximately 907 residential dwelling units in addition to approximately 33,633 square metres of business office GFA and 16,577 square metres of ground level retail GFA. The residential component is proposed to include 360 apartment dwelling units, 173 townhomes, and the remaining 374 units as single detached homes. The office component will be located around the outer perimeter of the site in 5 mid-rise buildings and the retail-commercial service component will be widely dispersed and provided at grade in 13 mixed use buildings.

The Evergreen proposal includes an internal grid oriented network of streets connecting to the existing major arterial roads of Tremaine and Dundas in order to facilitate the movement of people within the site and provide connectivity for various travel modes, including the regional higher order transit planned for Dundas Street. Access to the site will be provided via five public streets, four connecting to Tremaine Road and one connecting to Dundas Street. The site layout and proposed access arrangements are illustrated in the reduced scale site plan in Figure 2.

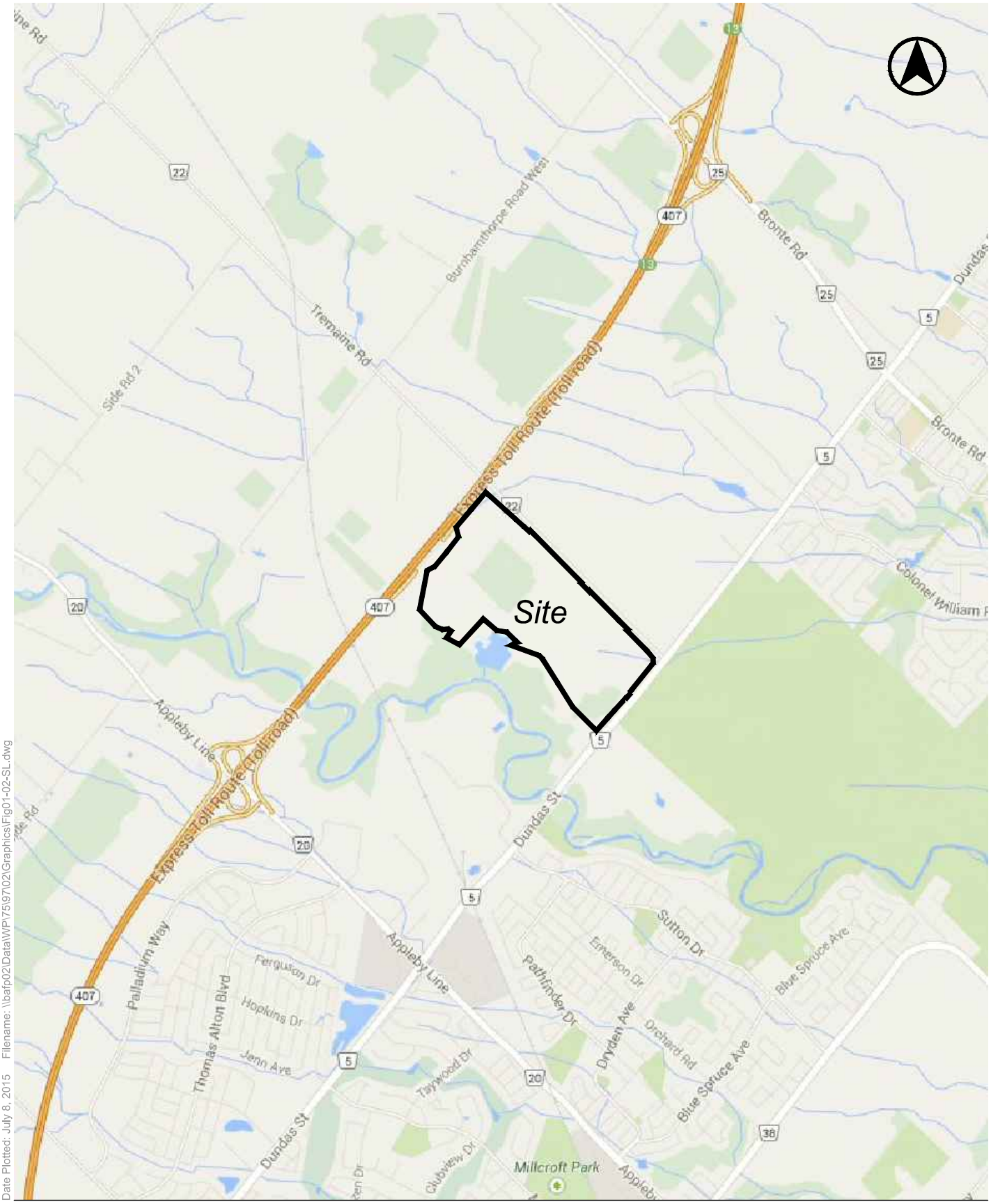
It is proposed that the public street access on Dundas Street (Street A) and two of the four access streets (Streets L and H) on Tremaine Road that will connect with two future roads in the North Oakville West Master Plan, be signalized. All other site access street intersections will be unsignalized and the southernmost site access intersection along Tremaine Road will operate as right-in, right-out only. The proposed traffic control and intersection spacing is provided in Table 1:

TABLE 1 PROPOSED TRAFFIC CONTROL AND INTERSECTION SPACING SUMMARY

Intersection	Centerline to Centerline Spacing	Traffic Control	Traffic Movements
Street A & Dundas Street	270 metres west of Tremaine Road	Signal Control	All moves
Street C & Tremaine Road	220 metres north of Dundas Street	Stop Control	Right in / Right out
Street H & Tremaine Road	485 metres north of Dundas Street	Signal Control	All moves
Street K & Tremaine Road	720 metres north of Dundas Street	Stop Control	All moves
Street L & Tremaine Road	905 metres north of Dundas Street	Signal Control	All moves

Notes:
1. Based on site plans dated Tuesday, December 23, 2014.

The proposed Street A & Dundas Street signalized intersection is less than the 400 metre spacing preferred by the Region along Dundas Street, however it is the farthest west it can go in order to preserve the existing woodlot immediately west. The provision of a signal in this location will allow people travelling into the community from the west to access the site and reduce eastbound left turn traffic volumes at the Dundas/Tremaine intersection, thereby mitigating some of the long term capacity and queuing issues at that location described later in this report. It will also provide convenient access for the Evergreen Community and provide a pedestrian crossing opportunity on Dundas Street, west of Tremaine Road.



SITE LOCATION

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Figure 1



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SITE PLAN

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Figure 2

2.0 PLANNING CONTEXT

2.1 HALTON REGION TRANSPORTATION MASTER PLAN

An updated Halton Region Transportation Master Plan (2031) was adopted by Halton Region in October 2011 defining the Region's framework for growth from 2021 to 2031. The new Master Plan supports the policies and objectives arising out of Regional Official Plan Amendment No. 38 (ROPA 38) which incorporate the results from the Sustainable Halton Official Plan Review process. The Halton Region Transportation Master Plan (2031) is focused on a sustainable approach that balances 'greenfield' development with intensification.

The Master Plan has identified a number of initiatives to accommodate future growth in the region including, but not limited to: an expanded road network, transportation demand management, active transportation, and expanded transit options. Figure 3 illustrates the planned capital works projects to start construction by 2021.

Although a Highway 407 interchange at Tremaine Road was under discussion prior to 2011, the Master Plan ultimately did not plan for an exit at Tremaine Road by 2031.

2.2 TREMAINE / DUNDAS SECONDARY PLAN

In 2009, the Region of Halton, in collaboration with the City of Burlington, undertook several studies for the Tremaine / Dundas Secondary Plan Area, illustrated in Figure 4, that largely consists of the Evergreen Community described in this report. The studies evaluated three land use concepts for the area: all residential, all employment, and mixed use. The Region of Halton retained Dillon Consulting Limited to conduct the transportation study for the Tremaine and Dundas Secondary Plan Study Area to evaluate each of these land use concepts, resulting in the *Inter-Municipal Secondary Planning Exercise for Tremaine Road Area Transportation Study, September 2009.*

Overall, the study concluded that all three of the development concepts studied would generate a similar number of trips. However, given the difference in directional split between the alternatives, the residential option might have a lower impact at the major intersections along Dundas Street. The study also concluded that new site generated traffic could be generally accommodated by Tremaine Road / Dundas Street and all site access intersections. However, it was expected that other intersections along Dundas Street at Appleby Line and Bronte Road would operate at or over capacity due to heavy projected east-west traffic volumes, primarily associated with background traffic growth.

Following a review of the *Tremaine and Dundas Secondary Plan Background and Options Report, September 2009* prepared by Macaulay Shiomi Howson, Burlington Council supported a mixed use option for the Evergreen site. The draft secondary plan has been the subject of discussions between Evergreen and City Burlington, Region of Halton, and Town of Oakville. A form of the draft secondary plan is being submitted by Evergreen to the City of Burlington, for the City's consideration together with the Region and the Town.

2.3 DUNDAS BRT EA STUDY

Halton Region has initiated a Class Environmental Assessment to consider a number of improvements for Dundas Street between Brant Street and Proudfoot Trail to accommodate anticipated future demand along the Dundas Street corridor. One of the options considered is the widening of Dundas Street from four to six lanes in order to ultimately accommodate a Bus Rapid Transit (BRT) lane in each direction. Initially, after the widening, the curb lanes will be designated as HOV lanes. As transit utilization increases, these HOV lanes will be converted to dedicated BRT lanes, likely by 2031. The environmental assessment compares the traffic and design impact between a centre lane versus curb side HOV/BRT lane designation.

Based on the preliminary street level plans along Dundas Street in the study area, the curb side option for the HOV/BRT lanes was adopted as the preferred solution. These lane configurations have been assumed to be in place for this study.

2.4 NORTH OAKVILLE SECONDARY PLAN

The North Oakville Secondary Plan consists of residential, employment and mixed use development in the area between Highway 407 to the north and Dundas Street to the south within the Town of Oakville. This area includes approximately 3,100 hectares of land to be developed based on the New Urbanist model in order to promote efficient land use through a mix of uses and densities while maintaining a distinction between each of the 14 neighbourhoods. Overall, the plan will accommodate approximately 50,000 new residents and 35,000 new jobs. The North Oakville West Secondary Plan refers to the lands west of Sixteen Mills Creek to Tremaine Road which are planned to be mostly employment land with some mixed use near Dundas and Bronte. The North Oakville East Secondary Plan refers to the lands east of Sixteen Mills Creek to Ninth Line north of Dundas Street. These areas are illustrated in Figure 5.

A traffic study has been conducted for the North Oakville West Secondary Plan area immediately east of the site in August 2013 by MMM entitled *Lazy Pat Farm Property Transportation Impact Study 2nd Submission Report*. The MMM study assumes the Lazy Pat Farm subdivision will be developed in three phases, with Phases 1 and 2 in place by 2021 and Phase 3 developed by 2031. The phasing boundaries are illustrated in Figure 6. Two new east-west collector roads – Avenue One and Burnhamthorpe Road are proposed to run through the North Oakville West area and connect with Tremaine as indicated in the North Oakville West Secondary Plan. It is intended that these streets would align with Streets H and L in the Evergreen Community when they intersect Tremaine Road. However, the westerly extension of Avenue One is planned for Phase 3 and so the northern direct connection between the subject site and North Oakville West lands would likely wait until 2031.

We have not been able to locate a recent traffic study conducted for the North Oakville East Secondary Plan. Therefore, population and employment projections for the area were utilized to develop traffic estimates for North Oakville East based on land use designations in the Secondary Plan and trip rates suggested in the ITE Trip Generation Manual 9th Edition.

2.5 ALTON SECONDARY PLAN

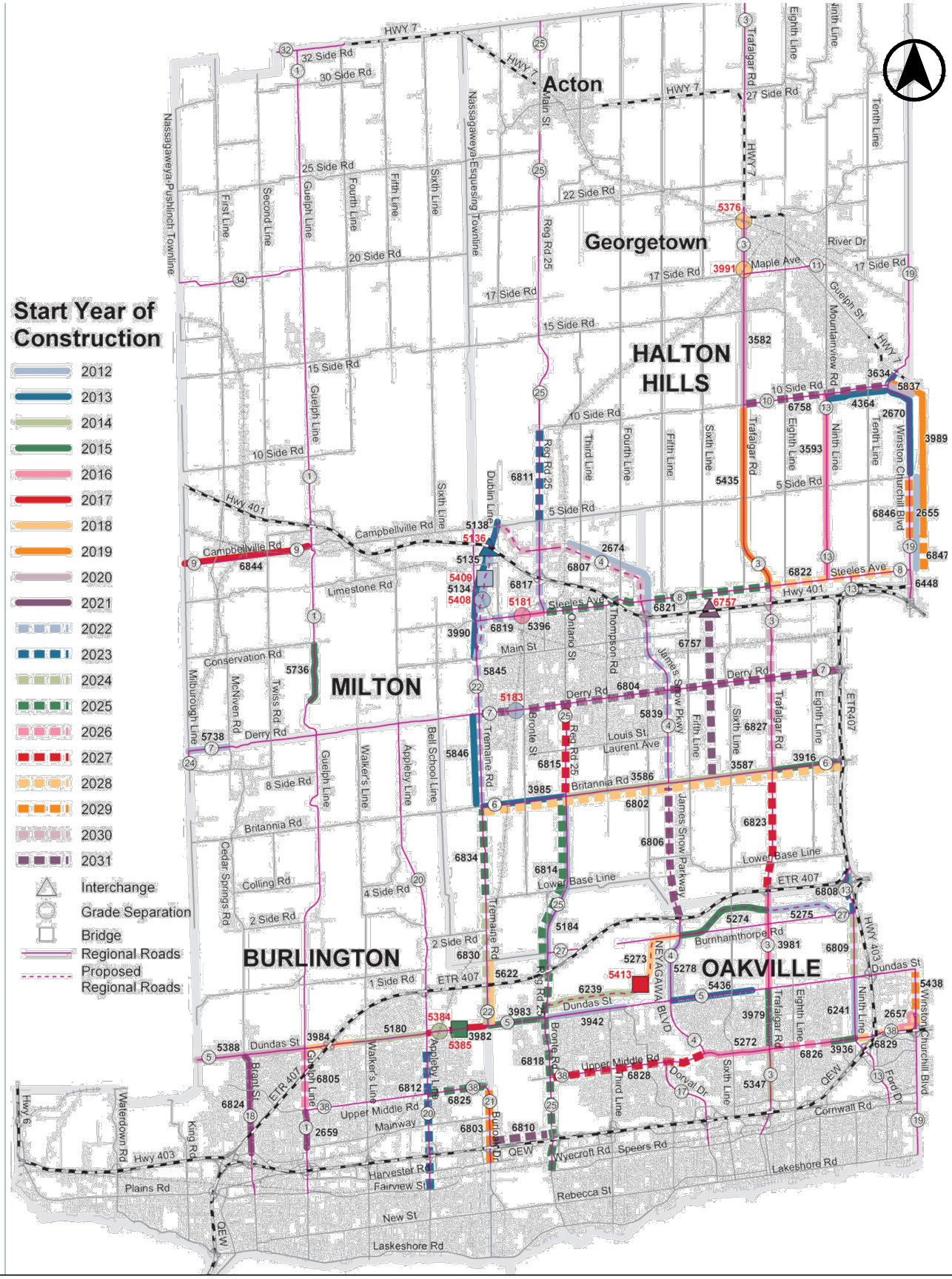
The 2002 Alton Secondary Plan area in Burlington is planned to accommodate approximately 10,300 residents and 7,300 employees. The residential component to the Alton Secondary Plan, currently referred to as Alton Village, is almost fully built out and fully occupied. The employment component between Palladium Way and Highway 407 on either side of Appleby Line remains to be built out.

2.6 MILTON SHERWOOD & BOYNE SURVEY

The Town of Milton will expand its urban core in three phases, as illustrated in Figure 7.

The Sherwood Survey and Boyne Survey areas are the westerly and southerly expansions, forming phase 2 and 3 of the expansion respectively. The Sherwood Survey consists of the area within Regional Road 25 in the east, Tremaine Road in the west, Louis St Laurent Avenue in the south and No 14 Side Road in the north. The Sherwood Survey also includes the Milton Heights community further north. Altogether, the Sherwood Survey is 913 hectares of primarily residential development.

The Boyne Survey is a rectangular block of land south of Milton's urban core in the area bounded by Louis St Laurent Avenue in the north, James Snow Parkway in the east, Tremaine Road in the west, and Britannia Road in the south. Approximately 930 hectares in size, the Boyne Survey will include residential development with some mixed-use areas to accommodate an additional 50,000 residents when fully developed.



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HALTON REGION
ROADS CAPITAL PROJECTS (2012-2031)

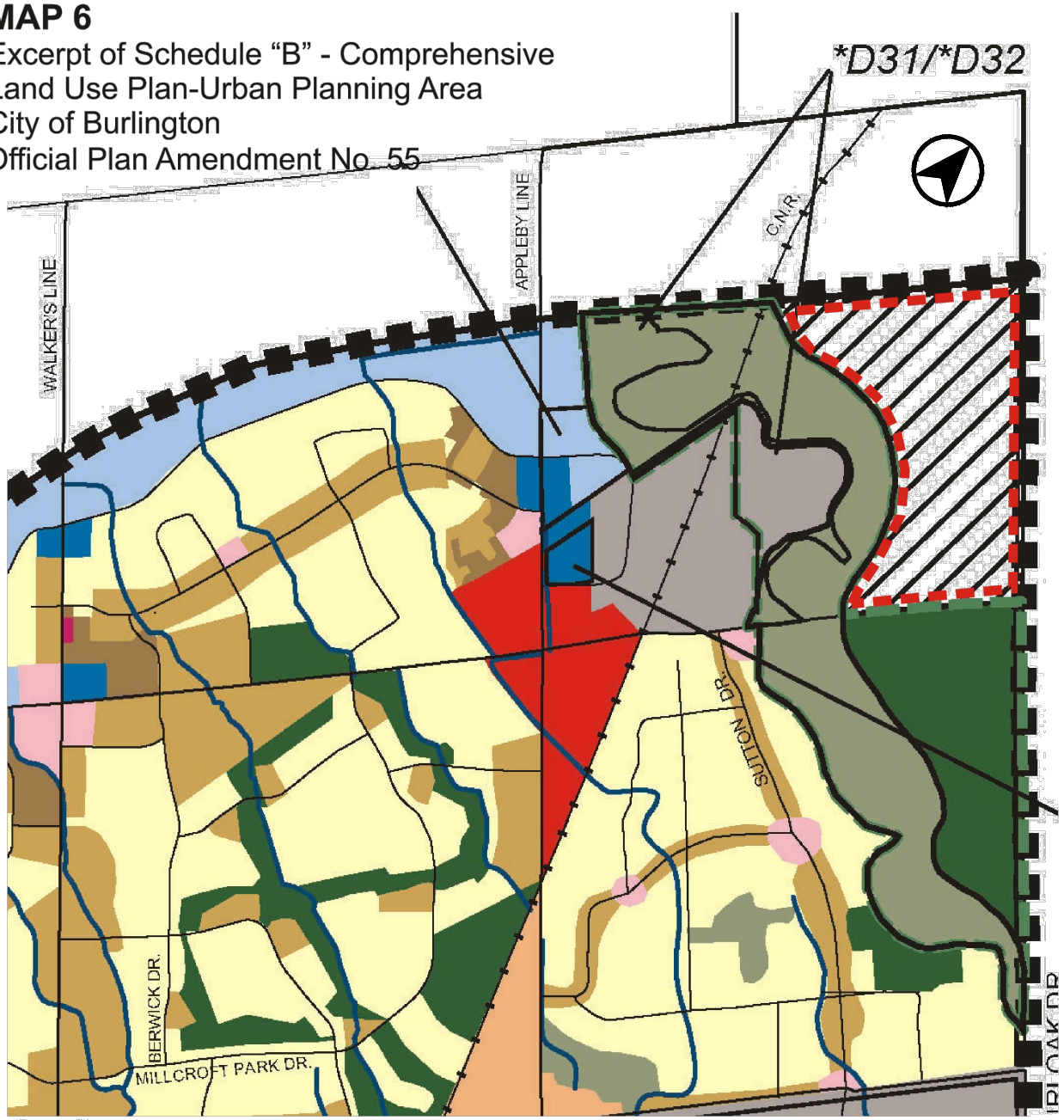
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Figure 3

MAP 6

Excerpt of Schedule "B" - Comprehensive Land Use Plan-Urban Planning Area
City of Burlington
Official Plan Amendment No. 55



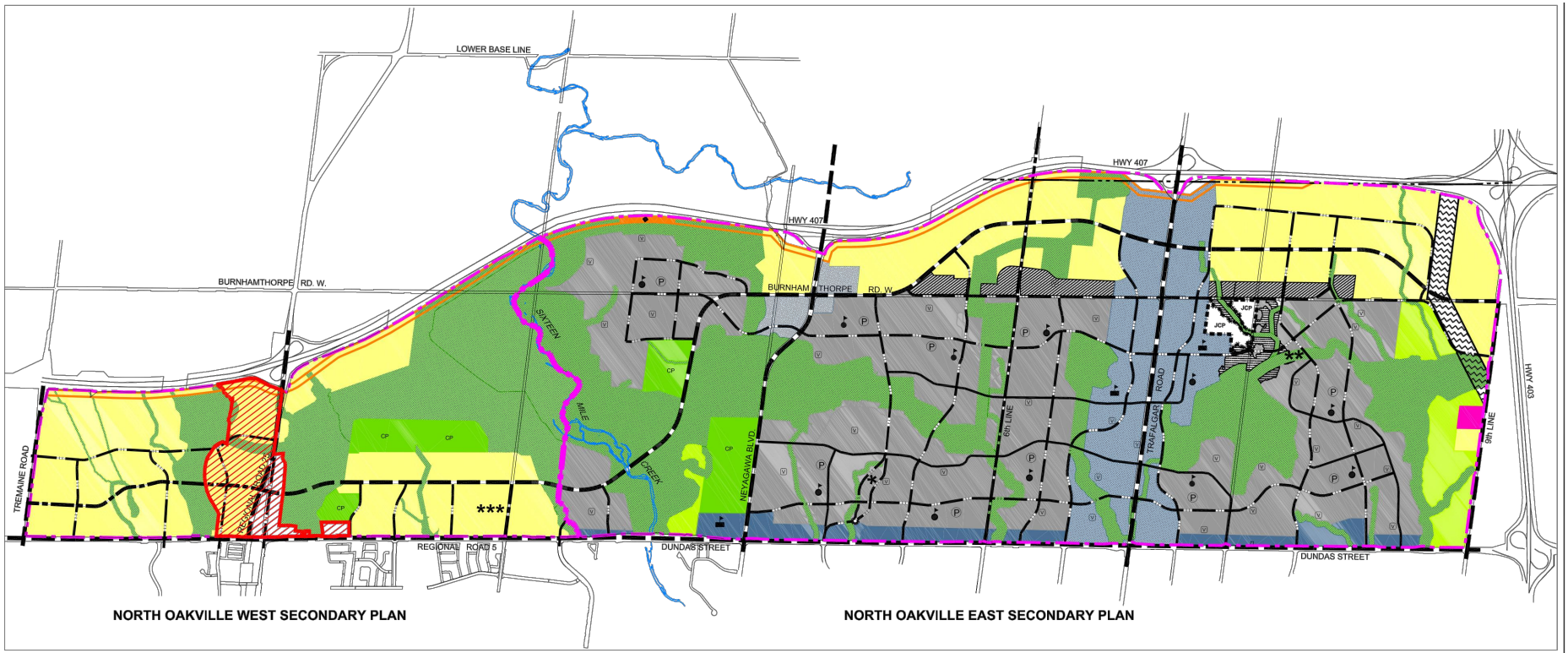
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DUNDAS / TREMAINE SECONDARY PLAN AREA

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Figure 4



LEGEND

- SECONDARY PLAN AREA BOUNDARY
- MILTON/OAKVILLE MUNICIPAL BOUNDARY
- PROVINCIAL FREEWAY
- MAJOR ARTERIAL/TRANSIT CORRIDOR
- MINOR ARTERIAL/TRANSIT CORRIDOR
- AVENUE/TRANSIT CORRIDOR
- CONNECTOR/TRANSIT CORRIDOR
- TRANSITWAY
- UNDERLYING LAND USE NOT DETERMINED subject to Section 7.4.7.1(b)(i)
- VILLAGE SQUARE
- UTILITY CORRIDOR
- DUNDAS URBAN CORE AREA
- NEYAGAWA URBAN CORE AREA
- SPECIAL STUDY AREA
- TRAFALGAR URBAN CORE AREA
- TRANSITIONAL AREA
- EMPLOYMENT DISTRICT
- NATURAL HERITAGE SYSTEM AREA
- *** HEALTH ORIENTED MIXED USE NODE
- ** SUBJECT TO SECTIONS 7.4.7.3c viii & 7.4.14.3 d)
- * POLICY REFERENCE SEE POLICY SECTION 7.4.7.2
- COMMUNITY PARK AREA
- CEMETERY AREA
- INSTITUTIONAL AREA
- ELEMENTARY SCHOOL SITE
- SECONDARY SCHOOL SITE
- NEIGHBOURHOOD PARK AREA
- NEIGHBOURHOOD AREA
- AREA STILL UNDER APPEAL
- JCP JOSHUA CREEK COMMUNITY PARK AREA
- JOSHUA CREEK FLOODPLAIN AREA subject to Sections 7.4.13.1 & 7.6.17

Town of Oakville

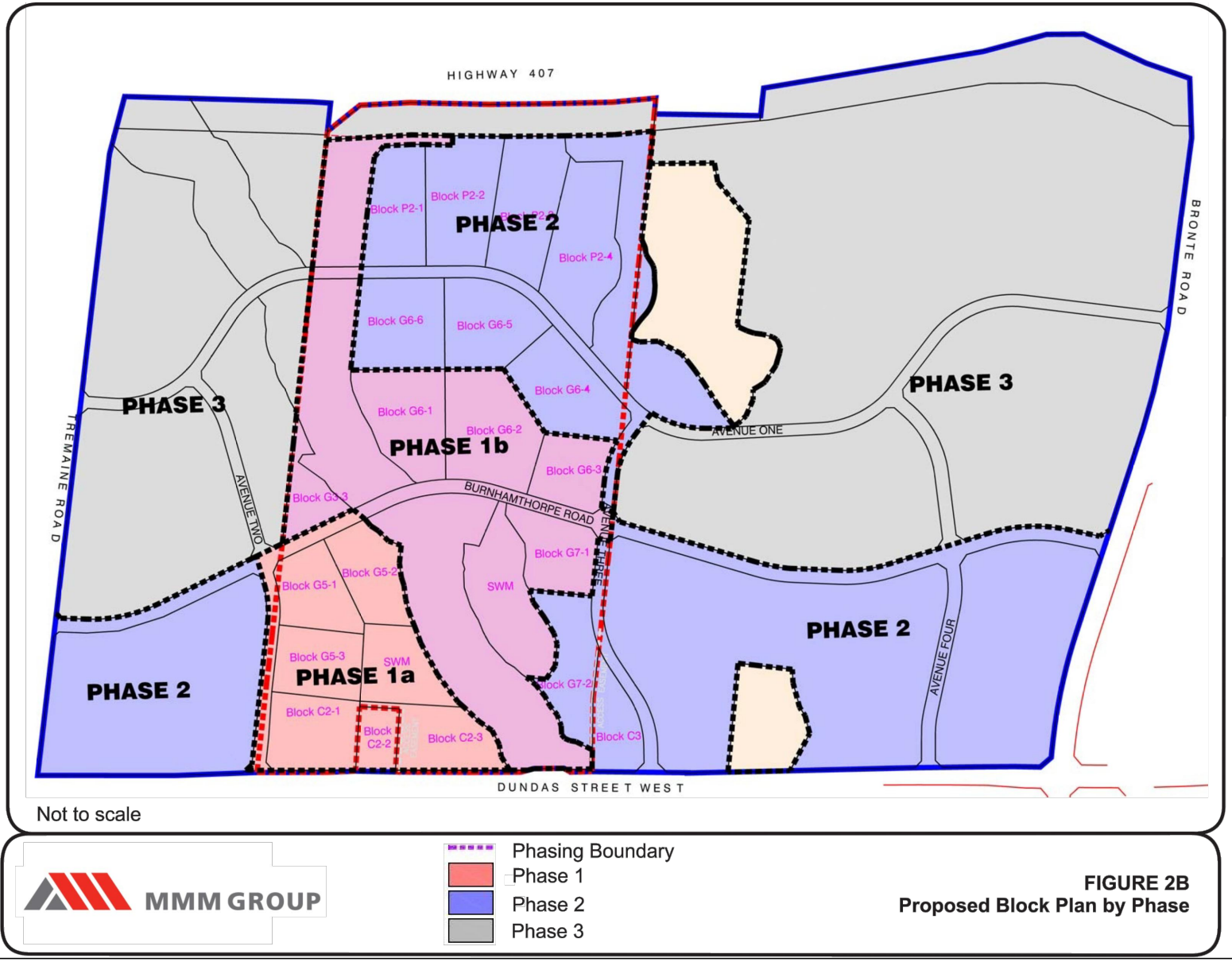
North Oakville
Secondary Plan

FIGURE NOW 2 & NOE 2
Land Use Plan

500 300 100 0 750 metres
400 200

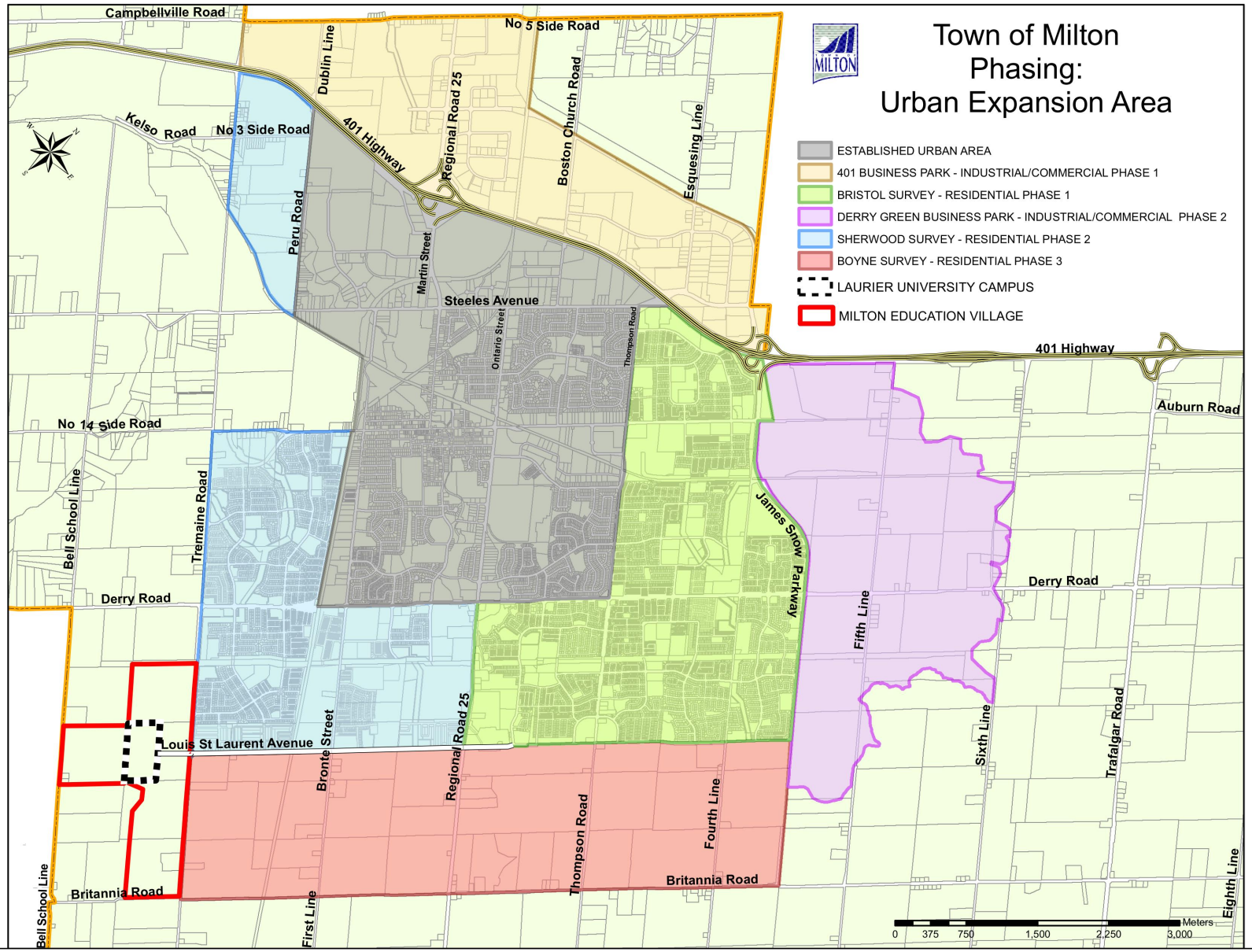
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NORTH OAKVILLE SECONDARY PLAN



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PROPOSED BLOCK PLAN BY PHASING



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URBAN EXPANSION AREA

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Figure 7

3.0 TRANSPORTATION CONTEXT

3.1 AREA ROAD NETWORK

The existing road network, lane configurations, signal controls and intersection turn restrictions are shown in Figure 8. The future lane configurations and street network assumed for the 2021 and 2031 time horizons are illustrated in Figure 9 and Figure 10 respectively and described in the following sections.

Dundas Street is a major east-west arterial roadway under the jurisdiction of the Region of Halton (Regional Road 5). It currently has a 4-lane cross section in the site vicinity and the street extends across Halton Region, connecting Hamilton from the west through Burlington and Oakville to Mississauga to the east. In the vicinity of the site, it has a speed limit of 80 km/h.

Within the site vicinity, Dundas Street intersects with Appleby Line, Tremaine Street, and Bronte Road all under signal control. Dundas Street will be widened to a 6-lane cross section with curb side HOV/BRT lanes in the future between Brant Street to Oak Park Boulevard. A preliminary cross-sectional design is available for the Dundas Street corridor as part of the Dundas Corridor EA Study conducted by Halton Region. Widening of Dundas Street east of Tremaine Road is scheduled to begin in 2015 and west of Tremaine Road in 2017.

A review of the preliminary plan indicates that dual eastbound left turns are incorporated at the Dundas / Tremaine intersection.

Highway 407 is a 6-lane toll freeway that runs east-west across Halton Region between the Queen Elizabeth Way / Highway 403 interchange in Burlington and Highway 403 in Mississauga before extending further east across Toronto. Full interchanges are located in the site vicinity at Appleby Line and at Bronte Road immediately north of Dundas Street.

The freeway is grade separated from Tremaine Road without any interchange. Truck inspection stations are located in the northeast and southwest quadrants of the grade separation at the Tremaine Road overpass.

Tremaine Road is a 2-lane arterial roadway under the jurisdiction of the Region of Halton (Regional Road 22). It extends between Dundas Street to the south and Highway 401 to the north, forming the boundary between the City of Burlington and the Town of Oakville. A class environmental assessment has been recently completed by the Region for Tremaine Road between Derry Road to Britannia Road north of the study area.

The Region of Halton plans to widen Tremaine Road to a four lane road from Dundas Street to Derry Road as a regional roadway improvement sometime between 2021 and 2031 as part of the Halton Transportation Master Plan. At its intersection with Dundas Street, a recent study for the employment area along the east side of Tremaine Road in North Oakville West indicated the need for a southbound to westbound free flow right turn (channelized right turn) to accommodate future traffic volumes.

Appleby Line is a major arterial roadway under the jurisdiction of the Region of Halton (Regional Road 20) extending from Lakeshore Road in the south to the northerly rural areas of Burlington. Appleby Line provides access to Highway 407 and would accommodate trips to/from the west on Highway 407 associated with the Evergreen Community. It intersects Dundas Street under signal control. North of Dundas Street, it has a posted speed limit of 70 km/h and 60 km/h south of Dundas Street. The street currently has a 4-lane cross section with auxiliary turning lanes at major intersections and bike lanes on either side.

Halton Region has completed an environmental assessment for Appleby Line in March 2006 supporting the widening of Appleby Line to a 6-lane cross section with additional turning lanes and dual left turn lanes for all movements at its intersection with Dundas Street. A number of developments are planned along the Appleby Corridor as part of the Alton Community. Following the EA study, Dillon Consulting completed the *Appleby Line Corridor Developments* traffic study to assess the cumulative impact from the number of developments for the Appleby Line Corridor.

Bronte Road is a major arterial roadway under the jurisdiction of the Region of Halton (Regional Road 25) extending from Lakeshore Road in the south to Milton and Halton Hills in the north. Bronte Road provides access to Highway 407 and would accommodate trips to/from the east on Highway 407 associated with the Evergreen Community. Within the study area, it has been widened to a 4-lane cross section and the east-west approaches at the Dundas Street intersection have been widened to its ultimate 6-lane cross section.

3.2 AREA TRANSIT NETWORK

Transit service currently is not available for the Tremaine-Dundas Secondary Plan Area as there is currently no passenger demand or land uses for transit to serve. Burlington Transit provides service west of the site and Oakville Transit provides service east of the site. The nearest Burlington route extends as far east as Sutton Drive. The nearest Oakville route extends as far west as Colonel William Parkway. These are over a kilometre away from the site along Dundas Street.

GO Transit provides a GO Bus service along Highway 407 with stops at the Dundas Street, Appleby Line, and Bronte Road interchanges. These stations also provide carpool and park-and-ride facilities. GO Transit also provides north-south service along Bronte Road between Milton and Oakville.

As mentioned earlier, Halton Region, together with the City of Burlington and the Town of Oakville, is undertaking an environmental assessment study to consider Bus Rapid Transit along Dundas Street in Burlington and Oakville between Brant Street to Oak Park Boulevard. This corridor was identified as part of the 2011 Halton Transportation Master Plan as appropriate for a higher-order multi-regional transit corridor through Halton Region. The class environmental assessment currently underway for the corridor considers road improvement options to support the future BRT.

In the longer term, the province is considering a Bus Rapid Transit corridor along the south-side of Highway 407, likely with a station in the southeast quadrant of Highway 407/ Tremaine Road.

Municipal transit service may also be provided on some of the local and collector streets within the community in order to provide mobility options for residents/employees and facilitate the achievement of municipal transit utilization targets.



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EXISTING LANE CONFIGURATIONS

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Figure 8



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2021 FUTURE LANE CONFIGURATIONS



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2031 FUTURE LANE CONFIGURATIONS

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Figure 10

4.0 TRAFFIC VOLUMES

4.1 EXISTING TRAFFIC

Existing traffic volumes at the study area intersections are based on traffic counts collected by the Region of Halton as summarized in Table 2. Existing traffic volumes during the morning and afternoon peak hours on the area street network are illustrated in Figure 11.

TABLE 2 INTERSECTION TRAFFIC COUNT SOURCE SUMMARY

Intersection	Source	Date
Dundas St / Tremaine St	Region of Halton	Wednesday, May 29, 2013

4.2 BACKGROUND TRAFFIC

4.2.1 General Corridor Growth

The transportation study conducted in 2009 by Dillon for the Region of Halton and City of Burlington regarding Dillon's review of the Dundas / Tremaine Secondary Plan area, accounted for future background (i.e. non-site related) traffic growth by explicitly considering known development proposals in the area and not including a generalized annual growth rate.

Similarly, our current study explicitly accounts for all background development proposals (individual sites and subdivisions) in the site vicinity as identified in the following section. As such, potential growth on the area network has been captured and explicitly considered within this study and an annual growth rate has not been applied to the analysis.

4.2.2 Specific Area Developments

An allowance has been made to account for new traffic generated by other development proposals in the area that are either approved, but not yet built, or are actively being reviewed by the City. A total of 14 development proposals were considered based upon a review of the City of Burlington's development application database and other traffic studies for development proposals in the vicinity of the site. A list of background developments considered and the source of related traffic volumes incorporated in this study is shown in Table 3. The location of these future developments is illustrated in Figure 12. The estimated peak hour traffic volumes for the noted background developments are illustrated on Figure 13 and Figure 14 for the 2021 and 2031 time horizon respectively.

Developments 1 to 5 are relatively small individual developments and are not discussed in greater detail beyond the summary provided in the table. Background developments 6 to 14 are larger developments that are described in further detail in the following sections.

TABLE 3 BACKGROUND DEVELOPMENTS – SITE SPECIFIC TRAFFIC ALLOWANCE

#	Development Address	Scope	Study	Status
1	5210,5218,5216 Dundas Street	311 units 1,234 sq.m Commercial	Paradigm, February 2013	Under Review
2	3136 Dundas Street West	116 units	Lazy Pat Farm TIS	Under Review
3	2525 Old Bronte Road	7,081 sq.m. Medical	BA Group, January 2011	Under Review
4	2390 Khalsa Gate	152 units 280 sq.m. Commercial	Cole, February 2010	Under Review
5	2385 & 2389 Khalsa Gate	147 units	Genivar, November 2010	Under Review
6	Bronte Creek Community	545 units	Lazy Pat Farm TIS	Under Review
7	Pineberry Estates	104 units	Lazy Pat Farm TIS	Under Review
8	New Oakville Hospital[1]	2021: 1,573,000 sq.ft. 2031: 1,733,000 sq.ft.	IBI, June 2010	Approved
9	ORC Lands[1,2]	80.9 ha (land area)	IBI, June 2010	Site Plan Application
10	Alton Commercial/Industrial Lands	51,019 sq.m. Alton Commercial Site Palladium Way Corridor	Paradigm, August 2013	Under Review
11	Milton Sherwood/Boyne Subdivisions	-	Entra, December 2010	Site Plan Application
12	407 West Employment Area	2021: 1,195,289 sq.ft. 2031: 3,528,991 sq.ft.	MMM, August 2013	Under Review
13	Lazy Pat Farm Subdivision	1,795,291 sq.ft.	MMM, August 2013	Under Review
14	North Oakville East Secondary Plan	50,000 units 25,000 non-residential	BA Group Estimate	No Site Plan

Notes:
1. Reflects redistributed traffic given the Burnhamthorpe Road extension
2. Based on background traffic for the New Oakville Hospital from the June 2010 IBI report

4.2.2.1 Bronte Creek Community and Pineberry Estates

The Bronte Creek Community is a phased residential subdivision development located south of Dundas Street West and is served by Colonel William Parkway. The majority of the development had been constructed at the time when the traffic counts used in this study were undertaken. An additional 545 dwelling units is expected by 2016 based on the Revised Phasing Plan of Proposed Subdivision related to the Bronte Creek Community dated December 2009. The Pineberry Estates is located adjacent to the Bronte Creek Community on the east side of Colonel William Parkway.

Trip generation and assignment have been undertaken for these developments in the *Transportation Impact Study, Lazy Pat Farm Property* report by MMM dated August 2013 based on the ITE Trip Generation Manual 8th Edition and 2006 TTS data. BA Group has adopted the same assignment and extended the volumes to the remainder of the study area.

4.2.2.2 New Oakville Hospital and ORC Lands

The New Oakville Hospital is currently under construction on greenfield lands in the North Oakville West Secondary Plan at the northwest corner of Dundas Street West and Third Line. The hospital is projected to open in 2015 with future expansions in 2020 and 2023 resulting in an ultimate floor area of 1,733,000 square feet GFA with some mixed use development on the west side of the property. As part of this development, Burnhamthorpe Road will be extended west from its current terminus at Neyagawa Boulevard through these lands passing the northern perimeter of the New Oakville Hospital site.

Halton Healthcare Service retained IBI Group to conduct a transportation impact study for the proposed New Oakville Hospital resulting in the *Halton Healthcare Services, New Oakville Hospital Transportation Impact Study*, June 2010. The study also accounted for the greenfield Ontario Realty Corporation (ORC) lands surrounding the hospital generally between Postmaster Drive and Proudfoot Trail south of the Burnhamthorpe Road extension and north of Dundas Street. Currently, no development applications are in place for the ORC lands. With respect to the North Oakville West Secondary Plan, these lands are envisioned to be employment lands and are expected to begin development once the hospital is operational. The IBI study has generated and assigned trips from the ORC lands based on phased development with respect to the hospital expansion timeline.

Traffic related to the New Oakville Hospital and ORC lands for the 2021 and 2031 horizons are based on the assignment of this background traffic onto the study area intersections as described in the *Transportation Impact Study, Lazy Pat Farm Property* report by MMM dated August 2013. The MMM report adjusted the site traffic in the IBI report recognizing that the Burnhamthorpe Road extension would be in place by 2021.

4.2.2.3 Alton Commercial/Industrial Lands

The Alton East and West Community are located in Burlington along the Highway 407 corridor north of Dundas Street and west of Bronte Creek immediately west of the subject site. The City of Burlington had completed an Urban Design Study and Guidelines for the area in 2003, resulting in a land use and transportation network plan. The Alton community supports a mixed use strategy with significant Business Corridor, Mixed-Use Corridor, and low to medium density residential land uses.

Currently, the majority of the residential land uses in the Alton East Community have been built out and occupied. Remaining development of the community involves the business corridor along the south side of Highway 407 and mixed use / general employment lands along Appleby Line and Walker's Line.

Traffic increases related to the development of these employment lands were based on the *Appleby Line Office Development, Transportation Impact Study* by Paradigm Transportation Solutions Limited dated August 2013. The Paradigm study included background traffic volumes for the above developments in the Alton East community. BA Group has adopted the background and site traffic volumes from the Paradigm study and projected them through the study area network based on existing turning movement information.

4.2.2.4 Milton Sherwood and Boyne Subdivisions

The Town of Milton will expand its urban core in three phases. The Sherwood Survey and Boyne Survey areas are the westerly and southerly expansions, forming phase 2 and 3 of the expansion respectively. The Sherwood Survey consists of the area within Regional Road 25 in the east, Tremaine Road in the west, Louis St Laurent Avenue in the south and No 14 Side Road in the north. The Sherwood Survey also includes the Milton Heights community further north. Altogether, the Sherwood Survey is 913 hectares of primarily residential development.

The Boyne Survey is a rectangular block of land south of Milton's urban core in the area bounded by Louis St Laurent Avenue in the north, James Snow Parkway in the east, Tremaine Road in the west, and Britannia Road in the south. Approximately 930 hectares in size, the Boyne Survey will include residential development with some mixed-use areas to accommodate an additional 50,000 residents when fully developed.

Traffic volumes associated with both subdivisions and other Milton developments were based on the *Boyne Survey Secondary Plan and Milton Education Village Transportation Option Assessment Final Draft* by Entra Consultants dated December 2010. The Entra report estimated future background volume growth based on the Town's EMME/2 model which accounted for the Sherwood expansion and other Milton developments. Additional background growth, calculated as the difference between future background and existing traffic, was adopted from the Entra report to represent traffic generated from the Sherwood Survey and site traffic for the Boyne Survey was taken directly from the report.

Based on a review of trip interaction between Milton to and from Burlington and Oakville for residential and employment trips, a percentage of the above background growth and Boyne site traffic was allocated onto Appleby Line, Tremaine Road, and Bronte Road in the study area. Detailed analysis is attached in Appendix B.

4.2.2.5 Lazy Pat Farm and 407 West Employment Area

The 407 West Employment Area consists of lands inside the North Oakville West Secondary Plan generally bounded by Highway 407 in the north, Tremaine Road in the west, Bronte Road in the east, and Dundas Street in the south. The Lazy Pat Farm property is a subsection of the secondary plan area, making up the first and partially the second phases of the entire 407 West Employment Area development. The remaining second phase area and final third phase lands will be the remainder of the 407 West Employment Area.

Phases 1, 2, and 3 are envisioned to be in place by 2016, 2021, and 2031 respectively. As per the North Oakville West Secondary Plan, these lands are envisioned to be mainly employment use with some service, retail and office uses. Combined, the Lazy Pat Farm and 407 West Employment Area will consist of the following GFA of employment development during each phase:

- Phase 1 - 809,209 square feet GFA
- Phase 2 - 2,181,371 square feet GFA
- Phase 3 – 2,333,702 square feet GFA

Altogether, the 407 West Employment Area will include approximately 5.32 million square feet GFA of employment development. Two new east-west links, Avenue One and the extension of Burnhamthorpe Road, will serve the area. The study assumed that the Burnhamthorpe Road extension will be in place by 2021 and the full extent of Avenue One will be in place by 2031. Both roads will ultimately connect to the Evergreen Community via the two signalized intersections on Tremaine Road at Streets H and L, as illustrated on the attached concept plans.

Traffic increases related to the Lazy Pat Farm and 407 West Employment Area for the 2021 and 2031 horizons were based on the *Transportation Impact Study, Lazy Pat Farm Property* report by MMM dated August 2013.

4.2.2.6 North Oakville East Secondary Plan

The North Oakville East Secondary Plan consists of lands generally bounded by Highway 407 in the north, Neyagawa Boulevard in the west, Ninth Line in the east, and Dundas Street in the south. These lands are envisioned for a balanced mix of both residential and employment lands. Given the lack of current development proposals and the distant horizon for development of these lands, no traffic reports are available for built out of the North Oakville East Secondary Plan.

BA Group has estimated the number of trips generated by residential and employment components of the North Oakville East Secondary Plan based on trip rates from the ITE Trip Generation Manual 9th Edition. Trip rates from the manual for the two uses are based on the number of proposed units and number of jobs respectively. The general population and employment targets found in Official Plan Amendment Number 272 dated February 2008 were converted into number of dwelling units and number of jobs, categorized by the projected housing and employment mix. A person per unit conversion rate, weighted by dwelling age and type, was used to convert population to dwelling units. This rate was adopted from the *Town of Oakville Development Charge Background Study* dated February 15, 2013 by Watson & Associates Economists Limited. The proposed employment mix is also based on the Watson report.

Generated residential and employment trips were assigned onto the area street network based on a review of Transportation Tomorrow Survey data of work-to-home and home-to-work trip interactions between Burlington and East Oakville. The percentage of work trips between the two municipalities was further divided according to whether the trip end is in north or south Burlington. North Burlington trip ends would travel via Dundas Street or Highway 407 within the study area and South Burlington trip ends would likely travel along Highway 403 outside the study area. Detailed trip generation and assignment is attached in Appendix A.

4.2.3 Future Background Traffic Volumes

Future background traffic as the sum of existing and site specific background traffic allowance is illustrated in Figure 15 and Figure 16 for the 2021 and 2031 horizon years respectively.

Existing through traffic volumes along Dundas Street have been reduced by 10 and 20 percent at the 2021 and 2031 horizon years respectively to reflect increased transit utilization associated with the future provision of HOV and ultimately BRT lanes on Dundas as described earlier.

4.3 EVERGREEN COMMUNITY SITE TRAFFIC

4.3.1 Trip Generation

Vehicular trip generation during the morning and afternoon peak hours has been estimated for the proposed Evergreen mixed use development based on the ITE Trip Generation Manual Edition 9. Trip rates for the proposed business corridor are based on the general office land use (ITE710) category. Mixed use retail trip rates are based on the specialty retail land use. Residential trip rates were based on the corresponding single, townhome, apartment unit type in reference to the ITE land use codes.

Since only nominal non-auto mode shares are included in the ITE trip rates, they were adjusted to reflect increased transit mode share given the completion of the Dundas BRT and other transit initiatives in the site vicinity. Like the August 2013 *Transportation Impact Study, Lazy Pat Farm Property* report by MMM Group, BA Group has adopted a 10 percent and 20 percent reduction to vehicular trips under the 2021 and 2031 horizon years respectively to account for the other travel modes. The retail pass-by percentage during the afternoon peak hour was developed based on the best fit equation for shopping centre uses found in Volume 1 of the ITE Trip Generation Manual 9th Edition.

Table 4 provides a summary of the site total trip generation rates, before transit and pass-by reductions, derived from ITE during the morning and afternoon peak hours.

TABLE 4 PROPOSED DEVELOPMENT TRIP GENERATION RATE SUMMARY

Land Use	ITE Code	Morning Peak Hour			Afternoon Peak Hour		
Residential							
Single	ITE 210	0.18	0.54	0.73	0.58	0.34	0.92
Townhome	ITE 230	0.08	0.38	0.46	0.36	0.18	0.54
Apartment	ITE 232	0.10	0.40	0.50	0.39	0.21	0.60
General Office	ITE 710	1.49	0.20	1.69	0.26	1.29	1.55
Specialty Retail	ITE 826	0.32	0.34	0.66	1.12	1.42	2.54

Vehicular trips before and after transit and pass-by reductions based on the above trip generation rates are summarized in Table 5.

TABLE 5 PROPOSED DEVELOPMENT SITE TRIP GENERATION SUMMARY

Land Use	Stats	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	2-way	In	Out	2-way
RESIDENTIAL							
Single	374 units	65	205	270	215	130	345
Townhome	173 units	15	65	80	65	30	95
Apartment	360 units	25	105	135	85	50	135
Transit Reduction (2021)	10%	-10	-40	-50	-35	-25	-60
Transit Reduction (2031)	20%	-20	-75	-95	-75	-40	-115
Residential 2021		95	340	435	330	185	515
Residential 2031		85	305	390	290	170	460
OFFICE	362,022 sq.ft.	535	80	615	100	460	560
Transit Reduction (2021)	10%	-55	-10	-65	-10	-45	-55
Transit Reduction (2031)	20%	-105	-15	-120	-20	-95	-115
Office 2021		480	70	550	90	415	505
Office 2031		430	65	495	80	365	445
RETAIL	178,433 sq.ft.	55	60	115	200	250	450
Passby	10% AM 30% PM	-5	-5	-10	-70	-70	-140
Transit Reduction (2021)	10%	-5	-5	-10	-20	-25	-45
Transit Reduction (2031)	20%	-10	-10	-20	-40	-50	-90
Retail 2021		45	50	95	110	155	265
Retail 2031		40	45	85	90	130	220
Total 2021[2]		625	465	1090	600	825	1425
Total 2031[2]		560	420	980	530	735	1265

Notes:
1. Vehicle trips are rounded to the nearest 5 vehicles.
2. Includes retail pass-by trips

4.3.2 Trip Distribution

New site traffic has been assigned to the area road network based upon a review of travel distribution patterns provided by the Transportation Tomorrow Survey (TTS) for the site area and the different land uses. Given the greenfield nature of the site, adjacent and nearby traffic zones were used to query travel distribution information from the TTS.

The existing site vicinity from east of Appleby Line to west of Bronte Road between Dundas Street and Upper Middle Road, 2006 GTA Zones 4045 and 4079, are zoned for residential uses. These zones were used to query for residential travel distribution inbound and outbound from the zones. Similarly for the employment distribution, the employment district around Highway 403 and Burloak Drive directly south of the site (2006 GTA Zones 4078, 4077, and 4002) was used in the query. The employment distribution was used for office trips. Retail trips are anticipated to be local in nature given the scope of the retail development. The retail distribution is based on a truncated employment distribution consisting mainly of zones within Burlington and Oakville.

Tables summarizing inbound and outbound trips to / from the zones and corresponding major travel routes and distributions to / from the development site for residential and employment land uses are provided in Appendix C. Table 6 summarizes the resultant directional distribution to / from the site.

TABLE 6 PROPOSED SITE DEVELOPMENT ARRIVAL / DEPARTURE PATTERNS

Routes	Direction (to / from)	Residential		Employment		Retail	
		Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
Dundas	West	50%	49%	71%	72%	70%	68%
Dundas	East	14%	18%	6%	11%	22%	27%
Burnhamthorpe East / Avenue One	East	36%	5%	22%	3%	3%	0%
Tremaine	North	0%	28%	1%	14%	5%	5%

4.3.3 Trip Assignment

New site traffic volumes and pass-by traffic were distributed on the adjacent road system based upon the arrival / departure patterns in Table 6. Given the development timing of the east-west roadway links within the 407 West Employment Lands and the Lazy Pat Farm property, separate trip assignments were adopted for the 2021 and 2031 horizon years reflecting the availability of Avenue One which will connect to the site directly from the east in 2031. New site traffic volumes in 2021 and 2031 are illustrated in Figure 17 and Figure 18.

4.4 FUTURE TOTAL TRAFFIC

Future 2021 and 2031 total traffic volumes that include future background traffic (Figure 15 and Figure 16 respectively) and new site traffic (Figure 17 and Figure 18 respectively) are illustrated for the morning and afternoon peak hours periods in Figure 19 and Figure 20.



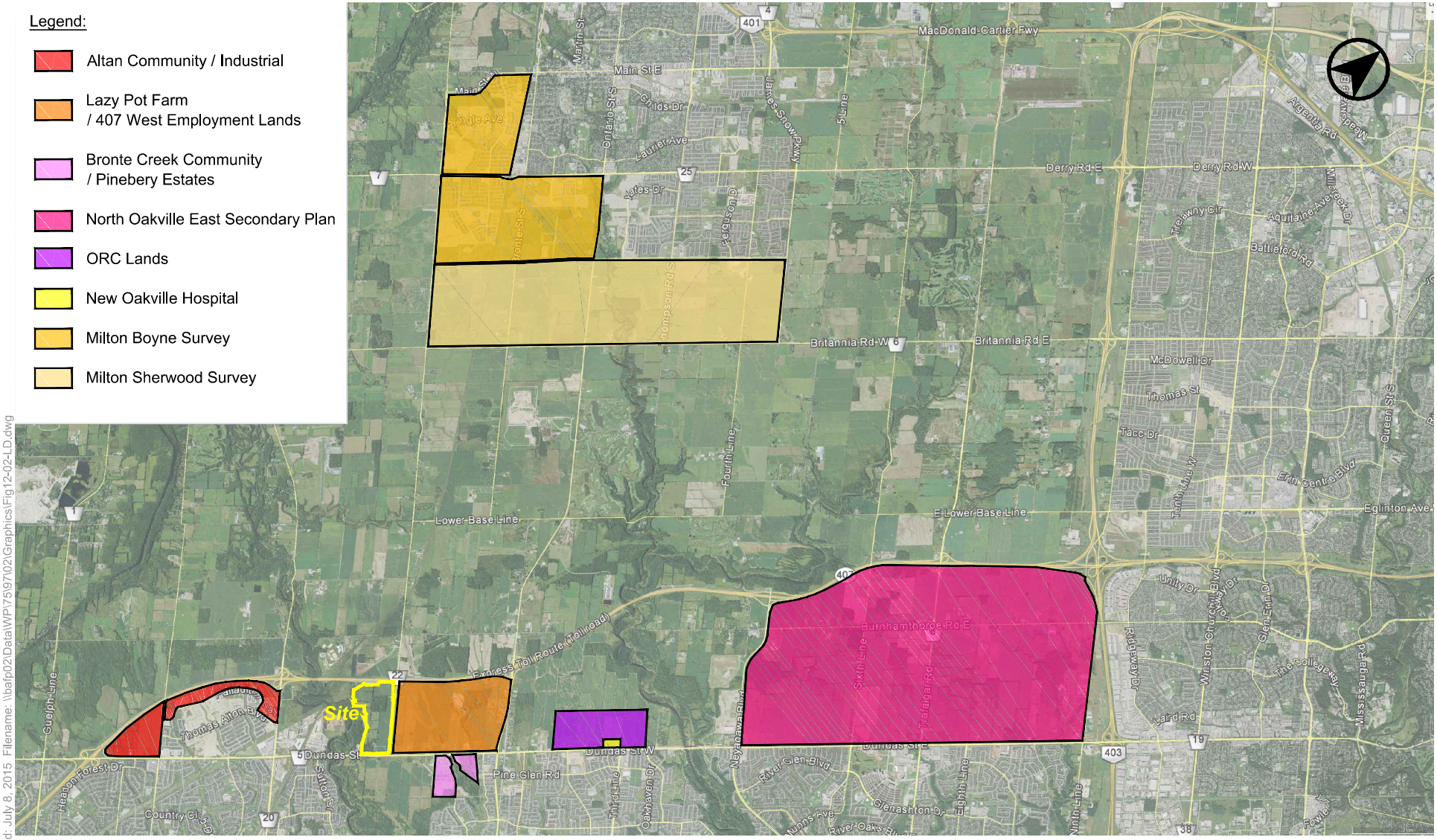
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EXISTING TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 11



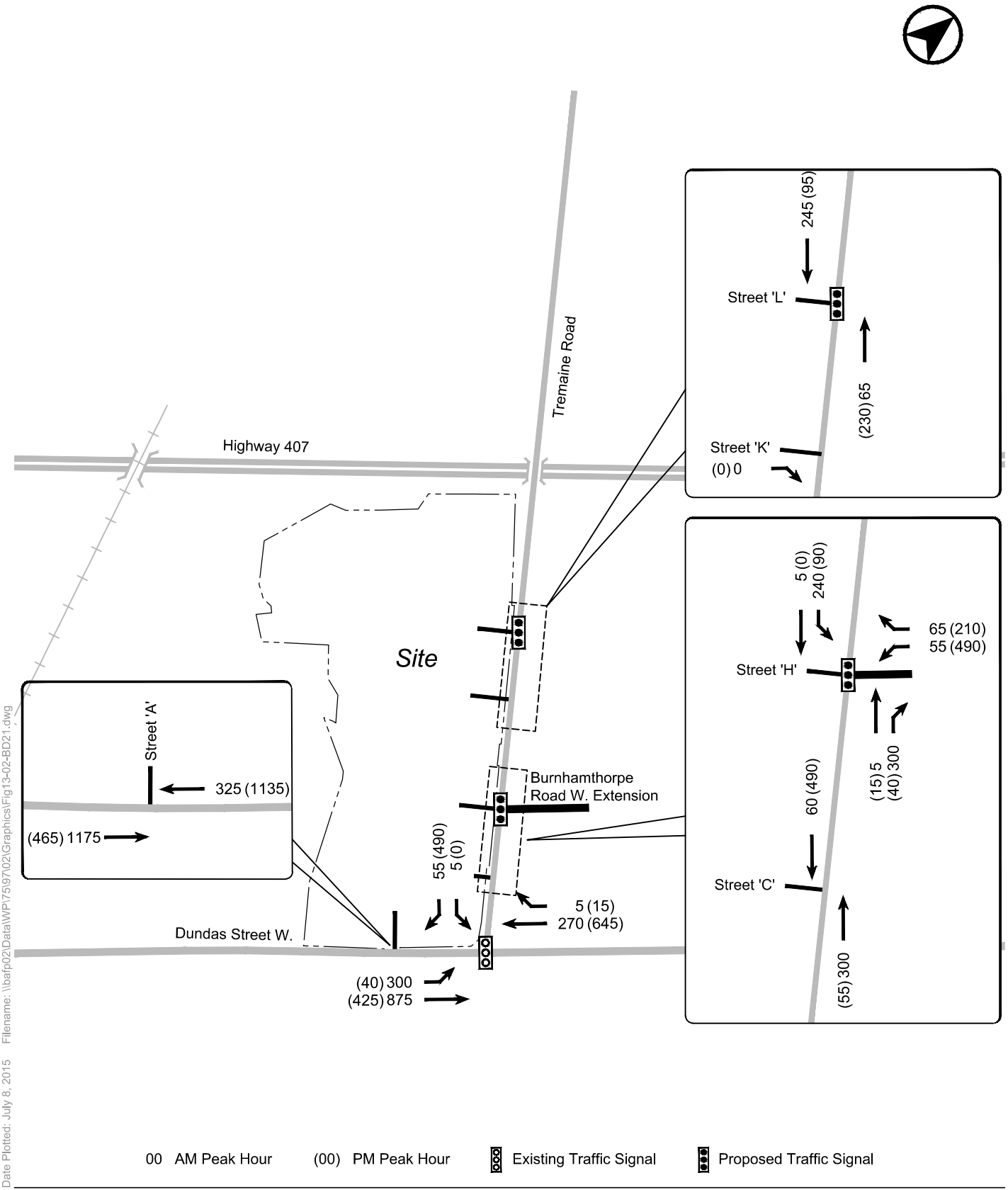
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FUTURE DEVELOPMENT LOCATIONS

BA Group

Evergreen Community
7597-02 July 2015

Figure 12



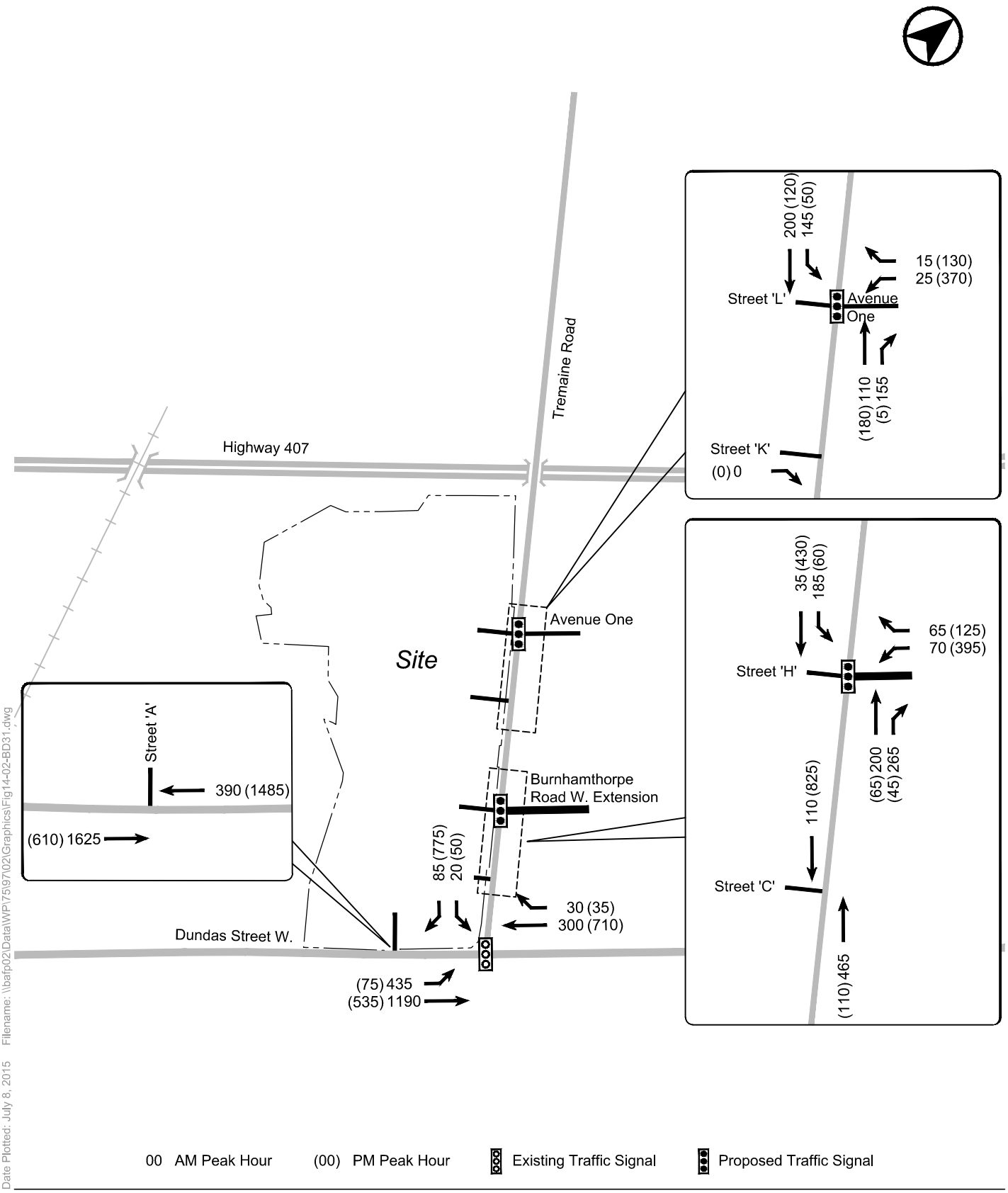
Date Plotted: July 8, 2015 Filename: \\bafp02\Data\WP\7597\02\Graphics\Fig13-02-BD21.dwg

2021 BACKGROUND DEVELOPMENT TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 13



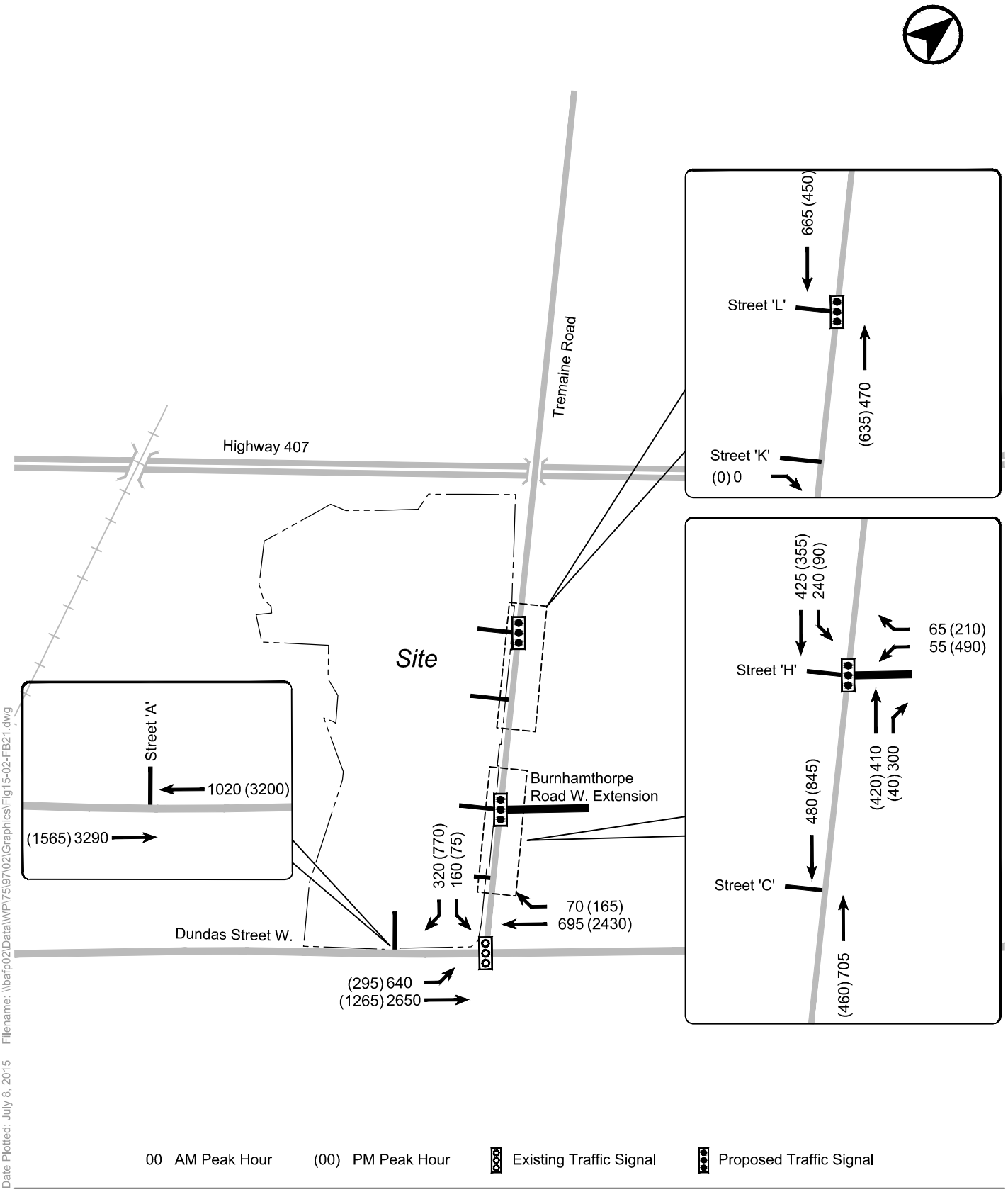
Date Plotted: July 8, 2015 Filename: \\bafp02\Data\WP\75\97102\Graphics\Fig14-02-BD31.dwg

2031 BACKGROUND DEVELOPMENT TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 14



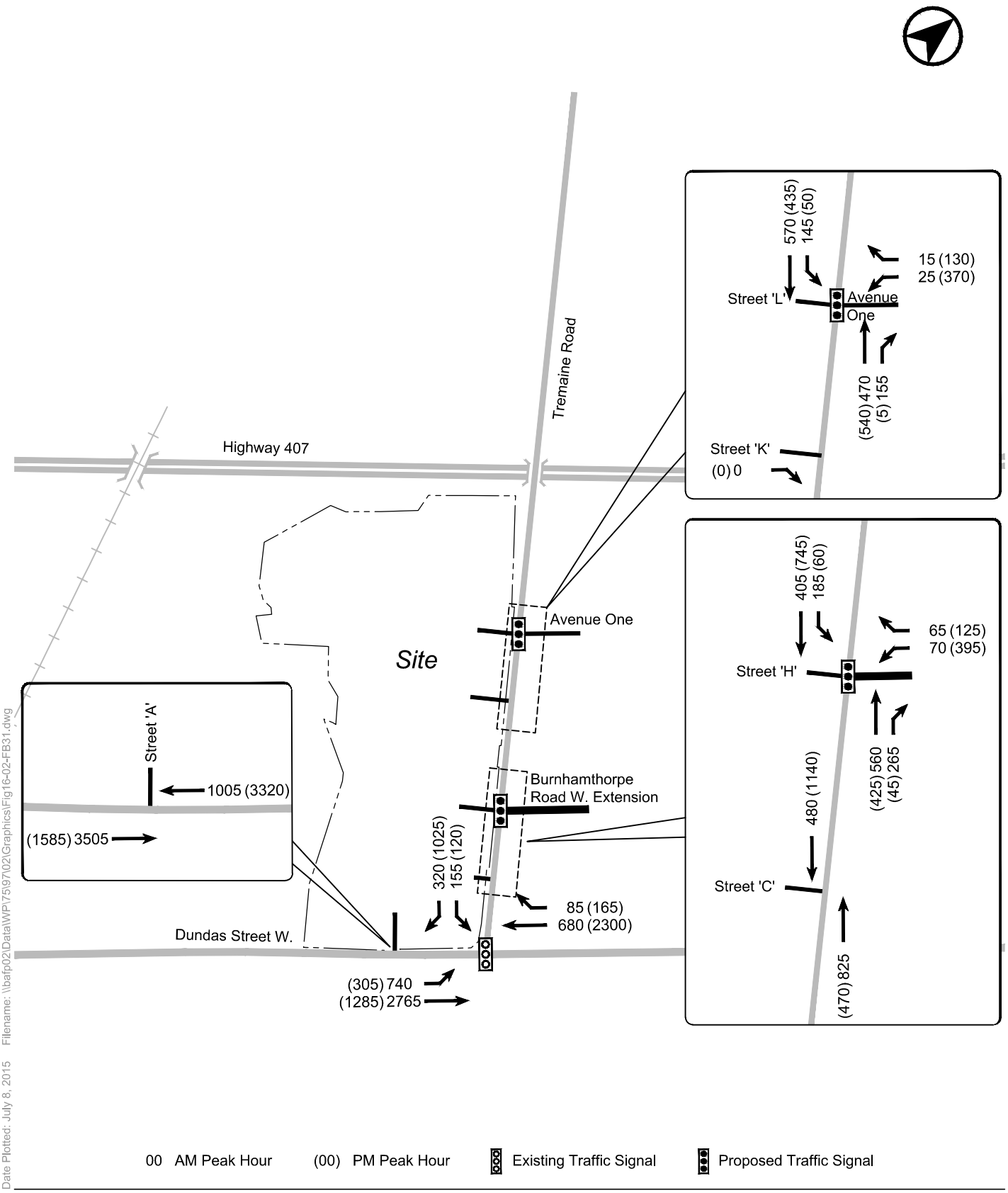
Date Plotted: July 8, 2015 Filename: \\bafp02\Data\WP\75\97102\Graphics\Fig15-02-FB21.dwg

2021 FUTURE BACKGROUND TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 15



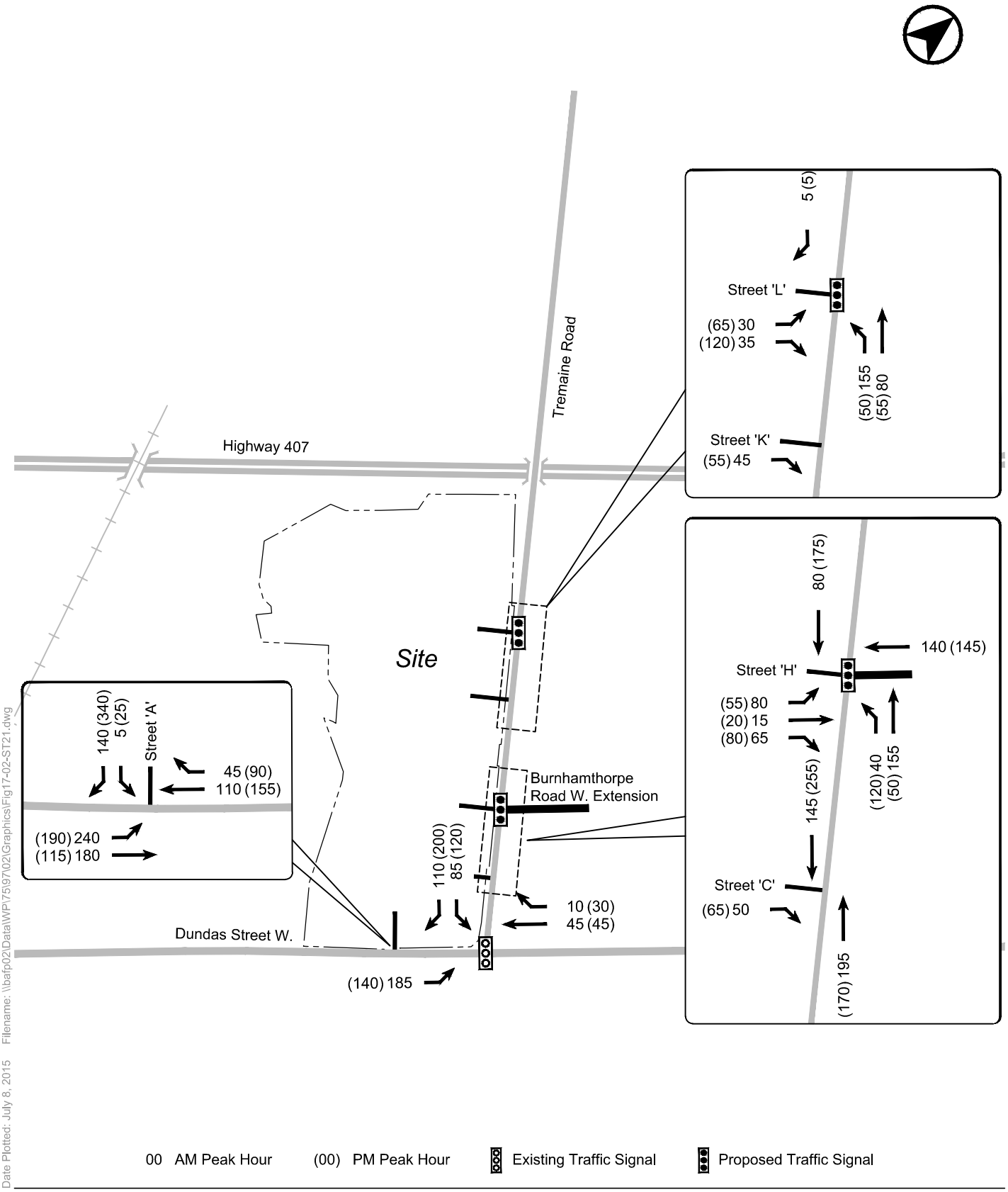
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2031 FUTURE BACKGROUND TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 16



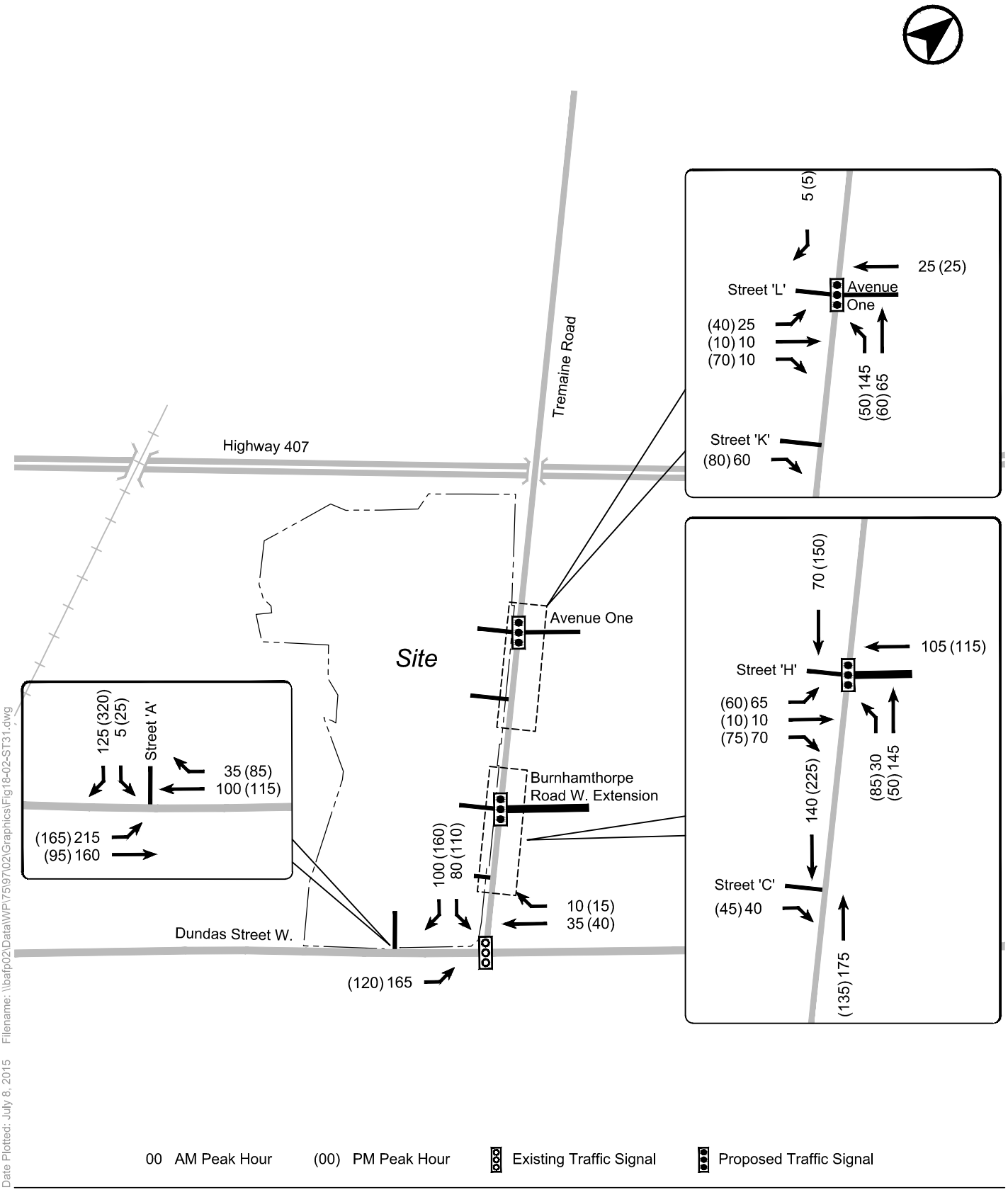
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2021 EVERGREEN TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 17



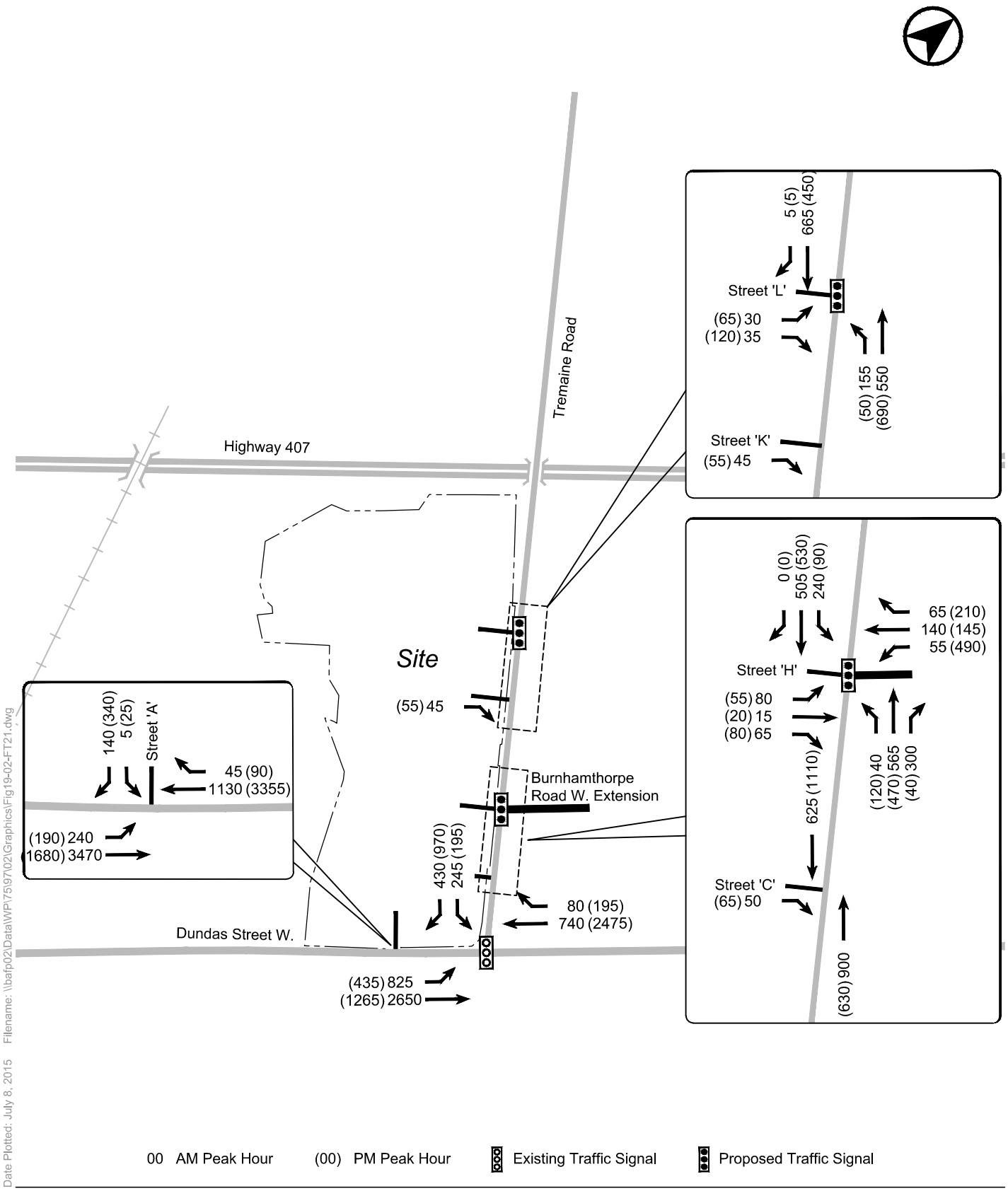
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2031 EVERGREEN TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 18



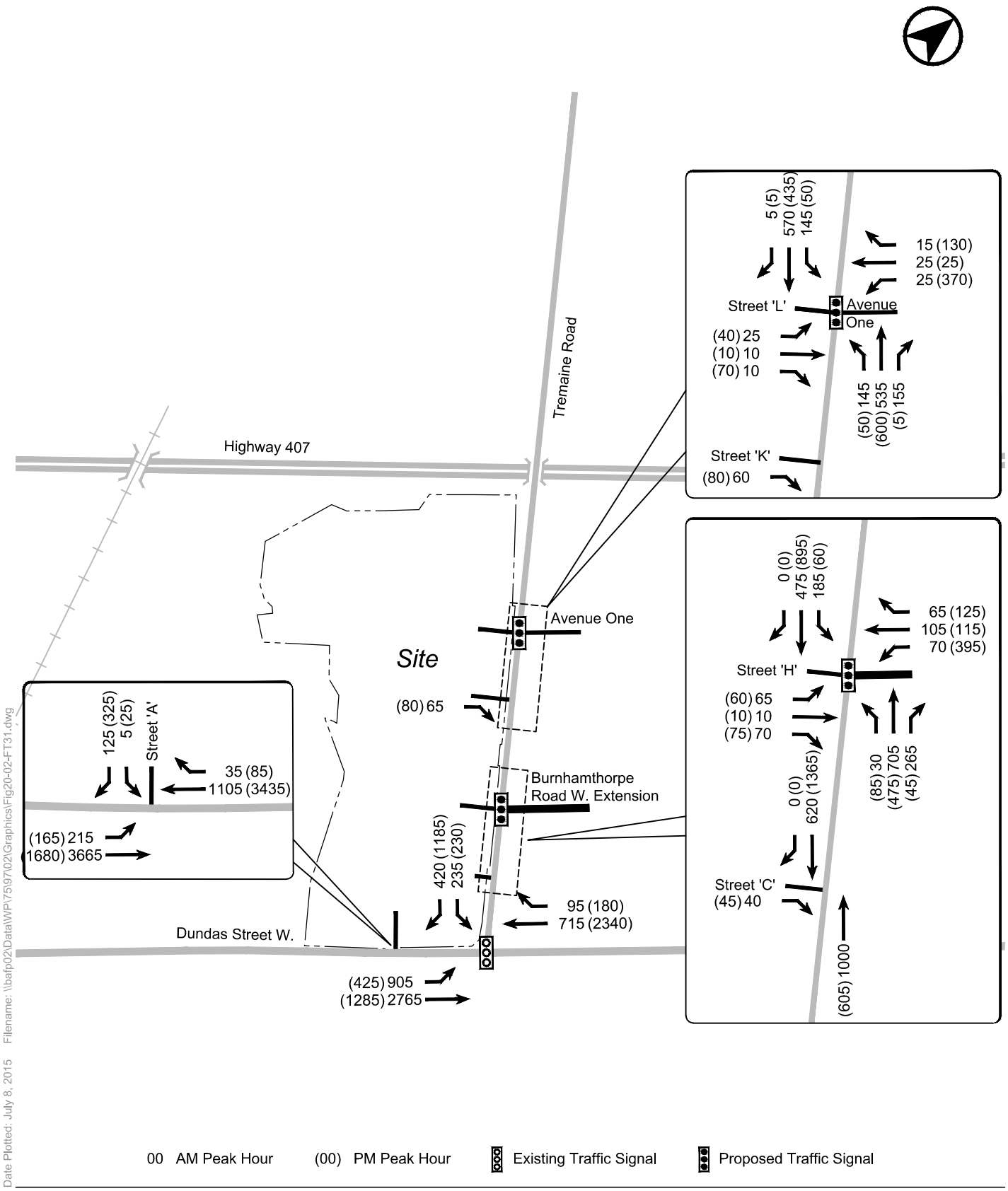
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2021 FUTURE TOTAL TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 19



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2031 FUTURE TOTAL TRAFFIC VOLUMES

BA Group

Evergreen Community
7597-02 July 2015

Figure 20

5.0 SIGNAL WARRANT

Streets L and H in the Evergreen Community that will align with Avenue One and Burnhamthorpe Road on the opposite side of Tremaine Road are proposed to be signalized. The Street A/Dundas intersection is also proposed to be signalized. Based on the methodologies outlined in Book 12 of the Ontario Traffic Manual (OTM), an average hour signal warrant was conducted for the proposed new site access driveway intersections with Dundas Street and with Tremaine Road / Avenue One / Burnhamthorpe Road based on Justification 7 – Projected Volumes. Given the future BRT operation along Dundas Street and its 6-lane cross section, the site access driveway intersection with Dundas Street will need to operate as right-in right-out only if it is unsignalized.

The warrant considers the delay in all directions at the intersections, given the average hourly volumes of an average day, to determine if a traffic signal is necessary. The application of Justification 7 is appropriate as the subject intersections do not exist currently and due to the long range horizon year and the numerous long range background developments associated with this study.

5.1 AVERAGE HOURLY VOLUMES

The average hourly volumes at the subject intersections are calculated for each movement as the sum of the morning and afternoon peak hour volume divided by 4, based on the methodology provided in OTM Section 4.10. The resultant baseline vehicular volumes for the two subject intersections are summarized in Table 7.

TABLE 7 PROJECTED AVERAGE HOURLY VOLUMES

Approach	Dundas St / Street 'A'		Tremaine Rd / Street 'L'		Tremaine Rd / Street 'H'	
	2021	2031	2021	2031	2021	2031
All Approaches	2675	2715	705	865	1080	1095
Minor Street (vehicular)	125	120	65	190	355	290
Major Street	2550	2595	645	675	725	805
Minor Street (pedestrian)	125	120	65	190	355	290

5.2 WARRANT

The traffic warrant is based on free flow conditions for all intersections, given their 80 km/h speed limits. Simplified traffic signal warrant analysis forms for Justifications 1 and 2 are attached in Appendix D. A signal control is warranted at the Dundas Street intersection (Street 'A') and the southern Tremaine Road intersection (Street 'H') under both horizon years. At the northern Tremaine Road intersection (Street 'L'), a signal control is warranted under the 2031 horizon year after Avenue One has been fully built out and connected with the site driveway intersection as the east leg. However, as signalization of the Avenue One / Tremaine Road / Street 'L' intersection will be eventually warranted, the intersection has been analyzed as a signalized intersection in all scenarios.

6.0 CAPACITY ANALYSIS

6.1 METHODOLOGY

Traffic operations analyses within the study area are based upon the methodologies outlined in the Highway Capacity Manual (HCM) methodology and the Synchro 7.0 software package. The key performance indicator utilized for the signalized analysis is the volume to capacity (v/c) ratio where a v/c ratio of 1.0 reflects 'at capacity' conditions. The key performance indicator utilized for the unsignalized analysis is a level of service (LOS) measure ranging from LOS A to LOS F that is based upon average delays. LOS A represents minimal delay while LOS F represents extended delay.

Existing signal timings were obtained from the Region of Halton and utilized as the basis for the signalized analysis. Signal timings have been adjusted, where appropriate, in existing, future background and future total conditions to optimize intersection operation. Under future conditions, an overlapping protected SBR and EBL turn phase was incorporated into the analysis to optimize operations at Tremaine Road / Dundas Street.

Inputs into the Synchro software have been calibrated to reflect existing conditions observed during the counts undertaken by adjusting the lane utilization factors, protected left turn factors, lost time adjustments, and saturation flows during the morning and afternoon to achieve a maximum v/c ratio of 1.0 for all movements at all intersections under existing traffic conditions. These adjustments reflect the fact that the observed traffic volumes passed through the intersection during the respective peak hours and the adjustments have been carried forward to future scenario analysis. The Synchro software is not accurately reflecting existing conditions without these adjustments.

In addition, the lane utilization factor for the eastbound and westbound through movements along Dundas Street has been adjusted to reflect the operation of the Dundas HOV and BRT lanes during the 2021 and 2031 horizon respectively. At the 2021 horizon, the lane utilization factor has been set to 0.75 along Dundas Street to reflect the uneven use of the lanes along the Dundas corridor given the HOV lane, assuming the HOV lane will carry 15% of traffic. This 15% value is based on empirical research and field surveys. Detailed calculation of the factor is shown in Appendix E. At the 2031 horizon, the lane utilization factor has been set to 1.0 along Dundas Street and only two lanes of through traffic have been modeled to simulate the loss of one lane to the BRT. This analysis methodology for the Dundas HOV and BRT is similar to that in the MMM report for the neighbouring Lazy Pat Farm property.

Intersections operations were analyzed under existing, future background, and future total conditions for both the morning and afternoon peak hours at the 2021 and 2031 horizon years. Detailed capacity analysis calculation worksheets are attached in Appendix F.

6.2 SIGNALIZED INTERSECTIONS

Overall capacity analysis results for the signalized intersections under existing baseline and future conditions are summarized in Table 8 and Table 9. Detailed capacity analysis results summarizing V/C ratios for each individual movement are available in Appendix F.

6.2.1 Existing Conditions

TABLE 8 SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Tremaine Rd / Dundas Street	Existing
Overall	0.83 (0.97)
EBL	0.76 (0.99)
EBT	0.97 (0.40)
WBT	0.34 (1.00)
WBR	0.05 (0.14)
SBL	0.39 (0.36)
SBR	0.21 (0.81)

Notes:
1. xx (xx) – AM (PM)

Under existing baseline conditions, the Tremaine Road / Dundas Street intersection will operate under busy conditions in the afternoon peak hour with an overall V/C ratio of 0.97, primarily due to high traffic volumes east-west along the Dundas corridor. The unique geography of the area – with Bronte Creek to the west, the Bronte Provincial Park to the south, and Highway entrance/exits only at adjacent major intersections – causes both local and commuter traffic to and from northern Burlington and Oakville to funnel through Dundas Street.

6.2.2 Future Traffic Conditions

The 2021 and 2031 time horizons were reviewed after projected area traffic has been reduced by 10% and 20%, respectively, to account for increased transit utilization given the future implementation of higher order transit infrastructure along Dundas Street (HOV and BRT lanes). Table 9 summarizes the analysis results. Detailed analysis worksheets are provided in Appendix F.

TREMAINE ROAD / DUNDAS STREET

Under future background conditions in 2021, the Tremaine Road / Dundas Street intersection will operate below capacity and with acceptable levels of service for urban conditions, with overall V/C ratios of 0.82 and 0.92 during the morning and afternoon peak hour respectively, resulting in a slight improvement over the existing operation due to additional capacity afforded by the HOV lanes. Under future total conditions, with the addition of site traffic, the Tremaine Road / Dundas Street intersection will operate below capacity and with acceptable levels of service for urban conditions during the morning peak hour and at capacity during the afternoon peak hour with overall V/C ratios of 0.88 and 1.01 respectively.

Under future background conditions in 2031, the Tremaine / Dundas Street intersection will operate below capacity and with an acceptable level of service with a V/C ratio of 0.94 during the morning peak hour. During the afternoon peak hour the intersection will operate over capacity and at poor levels of service with an overall V/C ratio of 1.06, primarily related to the westbound through movement (1.00) and southbound right turn movement (1.18). This assumes that southbound dual right turn lanes are provided. The EBL operation will improve compared to 2021 future background conditions due to reduced opposing volumes given a diversion of trips from auto to transit modes. Under future total conditions, with the addition of site traffic, Tremaine Road / Dundas Street will operate with overall V/C ratios between 1.00 and 1.13 for the morning and afternoon peak hours respectively. The poor level of service in the afternoon peak hour is primarily related to the westbound through movement (1.06) and the southbound right turn movement (1.25).

It is possible that the future traffic conditions described above will be mitigated through increased transit utilization and peak hour traffic spreading. Physical improvements to provide additional road capacity along Dundas might also be considered by adding one additional through lane per direction in the long term.

STREET 'A' / DUNDAS STREET

Under future 2021 conditions, the intersection of Dundas Street / Street 'A' will operate below capacity and with acceptable levels of service with a V/C ratio of 0.95 during the morning peak hour. During the afternoon peak hour the intersection will operate with a V/C ratio of 1.11. The overcapacity condition is, in part, due to the heavy east-west traffic volumes on the segment of Dundas Street between the two Highway 407 access points at Appleby Line and Bronte Road. Specifically, the heavy westbound through traffic results in overcapacity at the intersection during the afternoon peak hour.

Under 2031 future conditions, the Street 'A' / Dundas Street intersection will operate over capacity and with poor levels of service with overall V/C ratios between 1.12 and 1.22 during the morning and afternoon peak hours, respectively, due to heavy eastbound and westbound through traffic. It is possible that future conditions will be mitigated somewhat by increased transit use and some peak hour spreading. Alternatively, one additional through lane in each direction could be provided along Dundas Street in the long term.

SITE ACCESS STREETS / TREMAINE ROAD

The proposed signalized intersections along Tremaine Road will operate well under future conditions with overall V/C ratios of 0.46 and 0.64 or better during the morning and afternoon peak hours, respectively. Site traffic impact is a moderate increase of 0% to 13% in overall V/C ratios for all peak periods and horizon years.

TABLE 9 SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection/Movement	2021 FB	2021 FT	2031 FB	2031 FT
Tremaine Rd / Dundas Street				
Overall	0.82 (0.92)	0.88 (1.01)	0.94 (1.06)	1.00 (1.13)
EBL	0.84 (0.77)	0.77 (0.91)	0.85 (0.66)	0.86 (0.76)
EBT	0.83 (0.41)	0.89 (0.41)	0.97 (0.46)	0.97 (0.46)
WBT	0.33 (0.91)	0.48 (0.96)	0.38 (1.00)	0.46 (1.06)
WBR	0.04 (0.13)	0.05 (0.16)	0.05 (0.13)	0.06 (0.15)
SBL	0.60 (0.29)	0.69 (0.76)	0.58 (0.47)	0.89 (0.90)
SBR	0.14 (0.96)	0.24 (1.11)	0.15 (1.18)	0.26 (1.25)
Street 'A' / Dundas Street				
Overall		0.95 (1.11)		1.12 (1.22)
EBL		0.53 (0.90)		0.47 (0.89)
EBT		0.96 (0.53)		1.14 (0.60)
WBT		0.39 (1.18)		0.39 (1.33)
WBR		0.03 (0.08)		0.02 (0.07)
SBL		0.05 (0.09)		0.05 (0.09)
SBR		0.09 (0.93)		0.08 (0.92)
Street 'L' / Tremaine Rd				
Overall		0.26 (0.27)	0.20 (0.50)	0.23 (0.52)
EBL		0.32 (0.38)		0.37 (0.09)
EBR		0.02 (0.08)		0.11 (0.06)
WBL			0.28 (0.80)	0.30 (0.80)
WBTR				0.26 (0.12)
NBL		0.26 (0.07)		0.22 (0.11)
NBT		0.19 (0.25)	0.16 (0.29)	0.19 (0.33)
NBR			0.10 (0.00)	0.10 (0.00)
SBL			0.20 (0.12)	0.21 (0.13)
SBT		0.23 (0.17)	0.20 (0.24)	0.20 (0.24)
SBR		0.00 (0.00)		0.00 (0.00)

Intersection/Movement	2021 FB	2021 FT	2031 FB	2031 FT
Street 'H' / Tremaine Rd				
Overall	0.33 (0.59)	0.46 (0.58)	0.32 (0.58)	0.39 (0.64)
EBL		0.57 (0.53)		0.47 (0.16)
EBTR		0.10 (0.17)		0.09 (0.07)
WBL	0.37 (0.83)	0.26 (0.97)	0.46 (0.81)	0.39 (0.85)
WBTR		0.64 (0.46)		0.58 (0.31)
NBL		0.07 (0.28)		0.05 (0.36)
NBT	0.15 (0.28)	0.23 (0.26)	0.21 (0.24)	0.27 (0.26)
NBR	0.19 (0.03)	0.19 (0.03)	0.17 (0.03)	0.17 (0.03)
SBL	0.33 (0.23)	0.42 (0.20)	0.30 (0.13)	0.36 (0.13)
SBT	0.16 (0.23)	0.20 (0.29)	0.15 (0.42)	0.18 (0.50)
SBR		0.00 (0.00)		0.00 (0.00)

Notes:
1. xx (xx) – AM (PM)
2. FB (Future Background Conditions), FT (Future Total Conditions)

6.3 UNSIGNALIZED INTERSECTIONS

Analysis results for unsignalized intersections in the site vicinity are summarized in Table 10.

TABLE 10 UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY

Intersection / Movement	Existing		2021 FB		2021 FT		2031 FB		2031 FT	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Site Access C / Tremaine Rd										
EBR					11 (12)	B (B)			11 (11)	B (B)
Site Access K / Tremaine Rd										
EBR					11 (11)	B (B)			11 (11)	B (B)

Notes:
1. xx (xx) – AM (PM)

The proposed unsignalized intersections on Tremaine Road will operate acceptably with level of service LOS B and can adequately accommodate the projected future traffic.

7.0 SUMMARY & CONCLUSIONS

PROPOSED DEVELOPMENT SITE STATISTICS AND SITE PLAN

1. Evergreen's proposed development will consist of approximately 907 residential dwelling units in addition to 33,633 square metres of business office GFA and 16,577 square metres of ground level retail GFA. The residential component will include 360 apartment dwelling units, 173 townhomes, and the remaining 374 units as single detached homes. The office component will be located around the outer perimeter of the site in 5 mid-rise buildings and the retail-commercial service component will be widely dispersed provided at grade in 13 mixed use buildings.

   Access to the site is proposed via five streets, four connecting to Tremaine Road and one connecting to Dundas Street. The northern-most (Street 'L') and third access from the north (Street 'H') are planned to be signalized and are assumed to connect with the two future roads, Avenue One and Burnhamthorpe Road extension, planned in the North Oakville West development east of the site. The site access onto Dundas Street (Street 'A') is also planned to be signalized.

   The proposed development will generate 1090 and 1425 two-way vehicular trips during the morning and afternoon peak hour respectively under 2021 conditions. Under 2031 conditions, due to increased transit use given the BRT lanes, the proposed development will generate 980 and 1265 two-way vehicular trips during the morning and afternoon peak hour respectively.

DUNDAS BRT

2. Dundas Street currently has a 4-lane cross section with auxiliary turning lanes. As part of the Region's Transportation Master Plan, Dundas Street is planned to be expanded to a 6-lane cross section with 1 lane in each direction dedicated to BRT. In the interim, 1 lane in each direction will be designated as an HOV lane.

3. Given the future high order transit service proposed for the Dundas Street corridor, it has been assumed that future developments along Dundas Street will achieve a peak hour transit mode share of 10% and 20% for the 2021 and 2031 horizon years respectively. It has also been assumed that existing through traffic volumes along Dundas Street will be reduced by 10% and 20% respectively as existing drivers convert to use transit instead.

BACKGROUND DEVELOPMENT

4. An allowance for an extensive number of background developments has been considered, including 7 small residential developments totalling 1375 residential dwelling units and 7,000 square metres of medical office, the New Oakville Hospital, the ORC lands, the Alton commercial/industrial lands, the Milton Sherwood/Boyne Subdivisions, and the North Oakville East and West Secondary Plans.

   Altogether, background development traffic contribute an additional 2015 and 2095 two-way vehicular trips along Dundas Street, and 575 and 935 two-way vehicular trips along Tremaine Road for the 2031 time horizon.

SIGNALIZED INTERSECTION CAPACITY ANAYLSIS

5. Under existing traffic conditions, all signalized intersections along Dundas Street are at or are approaching capacity in the afternoon peak hour.

6. With the introduction of dual southbound right turn lanes and overlapping southbound right turns and eastbound left turns at Tremaine Road / Dundas Street, the intersection will operate below capacity with overall V/C ratios of 0.82 and 0.92 during the morning and afternoon peak hour, respectively, under future background conditions in 2021. Under future background conditions in 2031, the Tremaine Road / Dundas Street intersection will operate below capacity during the morning peak (0.94) and over capacity during the afternoon peak (1.06).

7. Under future total conditions, with the addition of proposed site traffic, the Tremaine Road / Dundas Street intersection will be at capacity in the 2021 time horizon and over capacity in the 2031 time horizon. The Dundas Street / Street ‘A’ intersection will be over capacity under both future 2021 and 2031 conditions due to heavy westbound and eastbound through traffic.

8. Other signalized site access intersections along Tremaine Road will operate well under future conditions with overall V/C ratios of 0.46 and 0.64 or better during the morning and afternoon peak hour, respectively.

9. Future conditions at the Dundas/Tremaine and Dundas/Street ‘A’ intersections might be mitigated somewhat through increased transit use and peak hour traffic spreading. Alternatively, one through lane per direction on Dundas Street might be added in the long term to provide additional road capacity.

UNSIGNALIZED INTERSECTION TRAFFIC IMPACT

10. All unsignalized site driveways will operate well with level of service of LOS B or better under all scenarios and horizon years.

SIGNAL WARRANT

11. Based on a 4-hour signal warrant at the proposed signalized intersections (Street ‘A’ / Dundas Street, Street ‘L’ / Tremaine Road, and Street ‘H’ / Tremaine Road), the Street ‘A’ and Street ‘L’ intersections are warranted at both horizon years. The Street ‘H’ intersection is warranted under the 2031 horizon year after Avenue One has been fully built out and connected with the proposed site access. However, because the intersection will be signalized in the future, given the development of North Oakville West, it is proposed to also signalize it at the 2021 horizon year.

OVERALL CONCLUSIONS

12. Projected traffic generated by the Evergreen Community can be accommodated by the proposed site access streets.

13. In the 2021 and 2031 time horizon, through traffic flow along Dundas Street at Tremaine and Street A will exceed available road capacity without and with the Evergreen Community development, largely due to the very high demand for travel along Dundas Street given the discontinued street network in the area and the need to access Highway 407 via Appleby Line or Bronte Road.

14. It is possible that future conditions will be mitigated through increased transit use and peak hour spreading. Alternatively, if congestion along the length of Dundas Street becomes unacceptable on a regional basis, the Region would have to consider the long range implementation of additional through lanes along Dundas Street.

APPENDIX A:
North Oakville East Trip Generation and Assignment

North Oakville East Trip Generation

Project #: 7597-02
Project: Evergreen Connect
Date: Oct/10/2014

EMPLOYMENT

SCOPE ESTIMATION

Uses	2031 Employment Ratio to Population	Percentile	Jobs
Industrial	0.155	33%	8298
Commercial	0.198	42%	10600
Institutional	0.069	15%	3694
No Fixed	0.045	10%	2409
Total	0.467	100%	25000

Based on North Oakville East Secondary Plan Section 7.3.7 (Febuary 2008)
Based on Town of Oakville Development Charge Background Study Appendix A Schedule 9B (Febuary 2013)

TRIP GENERATION

			Morning Peak Hour			Afternoon Peak Hour		
Uses	Source	Jobs	In	Out	2-way	In	Out	2-way
Rates								
Industrial	ITE 130	8298	0.29	0.05	0.33	0.06	0.24	0.30
Commercial	ITE 770	10600	0.29	0.05	0.34	0.06	0.22	0.28
Institutional		3694						
No Fixed	Average	2409	0.29	0.05	0.34	0.06	0.23	0.29
Trips								
Industrial			2367	385	2752	503	2011	2514
Commercial			4170	736	4905	876	3107	3983
Institutional								
No Fixed			695	118	813	147	554	700
Total			**7231**	**1239**	**8471**	**1526**	**5671**	**7197**

DISTRIBUTION TO/FROM EAST OAKVILLE

Employment Distribution

From Home in Burlington	14%
To Home in Burlington	12%

Ratio of home in North to South Burlington

33%

ASSIGNMENT TO/FROM OAKVILLE

Route Selection

Highway 407	84%
Dundas St	16%

TRIP DISTRIBUTION/ASSIGNMENT

	AM	PM
Dundas St EB	55	10
Dundas St WB	10	35

APPENDIX B:
Sherwood/Boyne Survey Trip Distribution and Assignment

TTS Trip Distribution - AM in

USER : Justin Kwok - BA Group
DATE : Sep 25 2014 (10:08:31)
DATA : 2006 TTS V1.0 Trips
FILTER 1 : start_time => 600-859
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : pd_orig => Burlington
ROW : gta06_orig
COLUMN : pd_dest
Group 1 : Milton

Burlington			Other	Tremaine N	Bronte N	Appleby N	Other	Tremaine N	Bronte N	Appleby N
4050	31	3%	100%				3%	0%	0%	0%
4051	15	1%	100%				1%	0%	0%	0%
4052	15	1%	100%				1%	0%	0%	0%
4054	19	2%	100%				2%	0%	0%	0%
4057	34	3%	100%				3%	0%	0%	0%
4058	17	2%	100%				2%	0%	0%	0%
4060	18	2%	100%				2%	0%	0%	0%
4061	27	2%	100%				2%	0%	0%	0%
4062	18	2%	100%				2%	0%	0%	0%
4064	18	2%	100%				2%	0%	0%	0%
4065	16	1%	100%				1%	0%	0%	0%
4066	16	1%	100%				1%	0%	0%	0%
4070	15	1%				100%	0%	0%	0%	1%
4071	33	3%				100%	0%	0%	0%	3%
4073	30	3%				100%	0%	0%	0%	3%
4074	54	5%				100%	0%	0%	0%	5%
4076	78	7%				100%	0%	0%	0%	7%
4078	35	3%				100%	0%	0%	0%	3%
4,079	123	11%				100%	0%	0%	0%	11%
4080	35	3%				100%	0%	0%	0%	3%
4081	17	2%				100%	0%	0%	0%	2%
4083	68	6%	100%				6%	0%	0%	0%
4084	85	8%	100%				8%	0%	0%	0%
4085	16	1%	100%				1%	0%	0%	0%
4087	17	2%	100%				2%	0%	0%	0%
4088	17	2%	100%				2%	0%	0%	0%
4,089	111	10%	100%				10%	0%	0%	0%
4090	17	2%	100%				2%	0%	0%	0%
4091	15	1%	100%				1%	0%	0%	0%
4093	53	5%	100%				5%	0%	0%	0%
4189	29	3%	100%				3%	0%	0%	0%
4190	35	3%	100%				3%	0%	0%	0%
	1127						**63%**	**0%**	**0%**	**37%**
Oakville										
4002	18	2%			100%		0%	0%	2%	0%
4004	19	2%			100%		0%	0%	2%	0%
4005	16	2%			100%		0%	0%	2%	0%
4011	17	2%	50%		50%		1%	0%	1%	0%
4013	21	2%	100%				2%	0%	0%	0%
4014	18	2%	100%				2%	0%	0%	0%
4015	31	4%	100%				4%	0%	0%	0%
4016	18	2%	100%				2%	0%	0%	0%
4017	16	2%	100%				2%	0%	0%	0%
4018	46	5%	100%				5%	0%	0%	0%
4020	31	4%	100%				4%	0%	0%	0%
4022	18	2%	100%				2%	0%	0%	0%
4023	16	2%	100%				2%	0%	0%	0%
4024	37	4%	100%				4%	0%	0%	0%
4026	16	2%	100%				2%	0%	0%	0%
4027	33	4%	100%				4%	0%	0%	0%
4029	18	2%	100%				2%	0%	0%	0%
4030	17	2%	100%				2%	0%	0%	0%
4031	33	4%	100%				4%	0%	0%	0%
4032	33	4%	100%				4%	0%	0%	0%
4037	33	4%	100%				4%	0%	0%	0%
4039	94	11%	50%		50%		5%	0%	5%	0%
4040	70	8%	50%		50%		4%	0%	4%	0%
4041	72	8%	50%		50%		4%	0%	4%	0%
4042	58	7%			100%		0%	0%	7%	0%
4046	19	2%	100%				2%	0%	0%	0%
4182	24	3%	100%				3%	0%	0%	0%
4183	18	2%	100%				2%	0%	0%	0%
4186	19	2%			100%		0%	0%	2%	0%
	879						**71%**	**0%**	**29%**	**0%**

TTS Distribution - AM out

USER : Justin Kwok - BA Group
DATE : Sep 25 2014 (10:08:31)
DATA : 2006 TTS V1.0 Trips
FILTER 1 : start_time => 600-859
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : pd_dest => Burlington
ROW : gta06_dest
COLUMN : pd_orig
Group 1 : Milton

Burlington			Other	Tremaine N	Bronte N	Appleby N	Other	Tremaine N	Bronte N	Appleby N
4055	19	3%	100%				3%	0%	0%	0%
4056	16	2%	100%				2%	0%	0%	0%
4059	34	5%	100%				5%	0%	0%	0%
4061	16	2%	100%				2%	0%	0%	0%
4062	35	5%	100%				5%	0%	0%	0%
4068	69	11%	40%			60%	4%	0%	0%	6%
4069	69	11%				100%	0%	0%	0%	11%
4073	16	2%				100%	0%	0%	0%	2%
4074	16	2%				100%	0%	0%	0%	2%
4075	17	3%				100%	0%	0%	0%	3%
4076	17	3%				100%	0%	0%	0%	3%
4077	18	3%				100%	0%	0%	0%	3%
4078	49	8%				100%	0%	0%	0%	8%
4080	18	3%				100%	0%	0%	0%	3%
4081	68	11%				100%	0%	0%	0%	11%
4082	68	11%	100%				11%	0%	0%	0%
4085	15	2%	100%				2%	0%	0%	0%
4089	16	2%	100%				2%	0%	0%	0%
4091	16	2%	100%				2%	0%	0%	0%
4190	17	3%	100%				3%	0%	0%	0%
4191	36	6%	100%				6%	0%	0%	0%
	645						**49%**	**0%**	**0%**	**51%**
Oakville			Other	Tremaine N	Bronte N	Appleby N	Other	Tremaine N	Bronte N	Appleby N
4001	54	3%			100%		0%	0%	3%	0%
4,003	141	8%			100%		0%	0%	8%	0%
4005	33	2%			100%		0%	0%	2%	0%
4006	18	1%			100%		0%	0%	1%	0%
4007	30	2%			100%		0%	0%	2%	0%
4008	34	2%			100%		0%	0%	2%	0%
4009	90	5%	50%		50%		3%	0%	3%	0%
4011	16	1%	50%		50%		0%	0%	0%	0%
4012	48	3%	50%		50%		1%	0%	1%	0%
4014	15	1%	100%				1%	0%	0%	0%
4015	97	6%	100%				6%	0%	0%	0%
4016	36	2%	100%				2%	0%	0%	0%
4,021	103	6%	100%				6%	0%	0%	0%
4,022	123	7%	100%				7%	0%	0%	0%
4023	54	3%	100%				3%	0%	0%	0%
4,024	133	8%	100%				8%	0%	0%	0%
4,027	199	11%	100%				11%	0%	0%	0%
4,029	100	6%	100%				6%	0%	0%	0%
4030	18	1%	100%				1%	0%	0%	0%
4032	36	2%	100%				2%	0%	0%	0%
4034	18	1%	100%				1%	0%	0%	0%
4035	50	3%	100%				3%	0%	0%	0%
4037	18	1%	100%				1%	0%	0%	0%
4038	18	1%	100%				1%	0%	0%	0%
4039	18	1%	50%		50%		1%	0%	1%	0%
4040	18	1%	50%		50%		1%	0%	1%	0%
4041	16	1%	50%		50%		0%	0%	0%	0%
4042	73	4%			100%		0%	0%	4%	0%
4180	18	1%	100%				1%	0%	0%	0%
4183	91	5%	100%				5%	0%	0%	0%
4187	15	1%			100%		0%	0%	1%	0%
	1731						**71%**	**0%**	**29%**	**0%**

TTS Trip Distribution - PM in

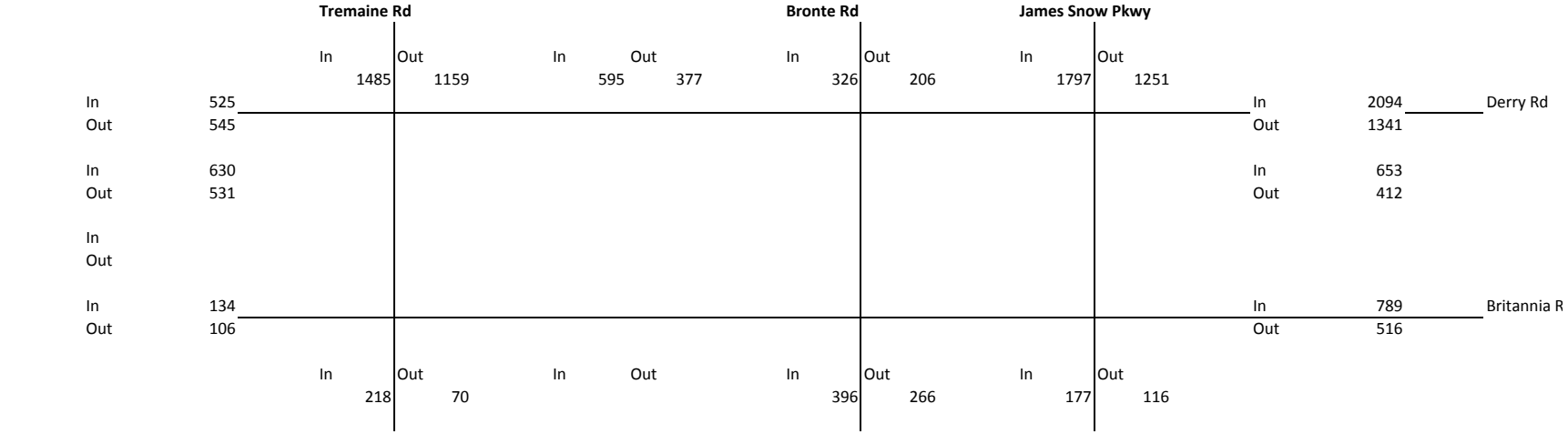
USER : Justin Kwok - BA Group
DATE : Sep 25 2014 (10:08:31)
DATA : 2006 TTS V1.0 Trips
FILTER 1 : start_time => 1500-1759
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : pd_orig => Burlington
ROW : gta06_orig
COLUMN : pd_dest
Group 1 : Milton

Burlington			Other	Tremaine N	Bronte N	Appleby N	Other	Tremaine N	Bronte N	Appleby N
4051	17	2%	100%				2%	0%	0%	0%
4052	17	2%	100%				2%	0%	0%	0%
4055	19	2%	100%				2%	0%	0%	0%
4056	16	2%	100%				2%	0%	0%	0%
4059	34	4%	100%				4%	0%	0%	0%
4062	66	9%	100%				9%	0%	0%	0%
4063	16	2%	100%				2%	0%	0%	0%
4068	67	9%	40%			60%	3%	0%	0%	5%
4069	18	2%				100%	0%	0%	0%	2%
4072	33	4%				100%	0%	0%	0%	4%
4073	36	5%				100%	0%	0%	0%	5%
4076	17	2%				100%	0%	0%	0%	2%
4077	44	6%				100%	0%	0%	0%	6%
4078	50	6%				100%	0%	0%	0%	6%
4079	18	2%				100%	0%	0%	0%	2%
4080	18	2%				100%	0%	0%	0%	2%
4081	51	7%				100%	0%	0%	0%	7%
4082	18	2%	100%				2%	0%	0%	0%
4088	17	2%	100%				2%	0%	0%	0%
4089	16	2%	100%				2%	0%	0%	0%
4090	60	8%	100%				8%	0%	0%	0%
4098	17	2%	100%				2%	0%	0%	0%
4099	33	4%	100%				4%	0%	0%	0%
4190	18	2%	100%				2%	0%	0%	0%
4191	56	7%	100%				7%	0%	0%	0%
	772						**58%**	**0%**	**0%**	**42%**
Oakville										
4001	35	2%			100%		0%	0%	2%	0%
4,003	112	7%			100%		0%	0%	7%	0%
4005	35	2%			100%		0%	0%	2%	0%
4006	18	1%			100%		0%	0%	1%	0%
4007	16	1%			100%		0%	0%	1%	0%
4008	51	3%			100%		0%	0%	3%	0%
4009	55	3%	50%		50%		2%	0%	2%	0%
4010	69	4%	50%		50%		2%	0%	2%	0%
4012	17	1%	50%		50%		1%	0%	1%	0%
4014	15	1%	100%				1%	0%	0%	0%
4015	33	2%	100%				2%	0%	0%	0%
4016	49	3%	100%				3%	0%	0%	0%
4017	16	1%	100%				1%	0%	0%	0%
4020	17	1%	100%				1%	0%	0%	0%
4021	87	5%	100%				5%	0%	0%	0%
4,022	106	6%	100%				6%	0%	0%	0%
4023	54	3%	100%				3%	0%	0%	0%
4,024	135	8%	100%				8%	0%	0%	0%
4025	18	1%	100%				1%	0%	0%	0%
4,027	115	7%	100%				7%	0%	0%	0%
4029	50	3%	100%				3%	0%	0%	0%
4030	35	2%	100%				2%	0%	0%	0%
4032	35	2%	100%				2%	0%	0%	0%
4034	33	2%	100%				2%	0%	0%	0%
4035	72	4%	100%				4%	0%	0%	0%
4036	15	1%	100%				1%	0%	0%	0%
4037	18	1%	100%				1%	0%	0%	0%
4038	18	1%	100%				1%	0%	0%	0%
4039	37	2%	50%		50%		1%	0%	1%	0%
4040	53	3%	50%		50%		2%	0%	2%	0%
4041	35	2%	50%		50%		1%	0%	1%	0%
4042	35	2%			100%		0%	0%	2%	0%
4180	18	1%	100%				1%	0%	0%	0%
4183	91	6%	100%				6%	0%	0%	0%
4186	18	1%			100%		0%	0%	1%	0%
4187	15	1%			100%		0%	0%	1%	0%
	1631						**71%**	**0%**	**29%**	**0%**

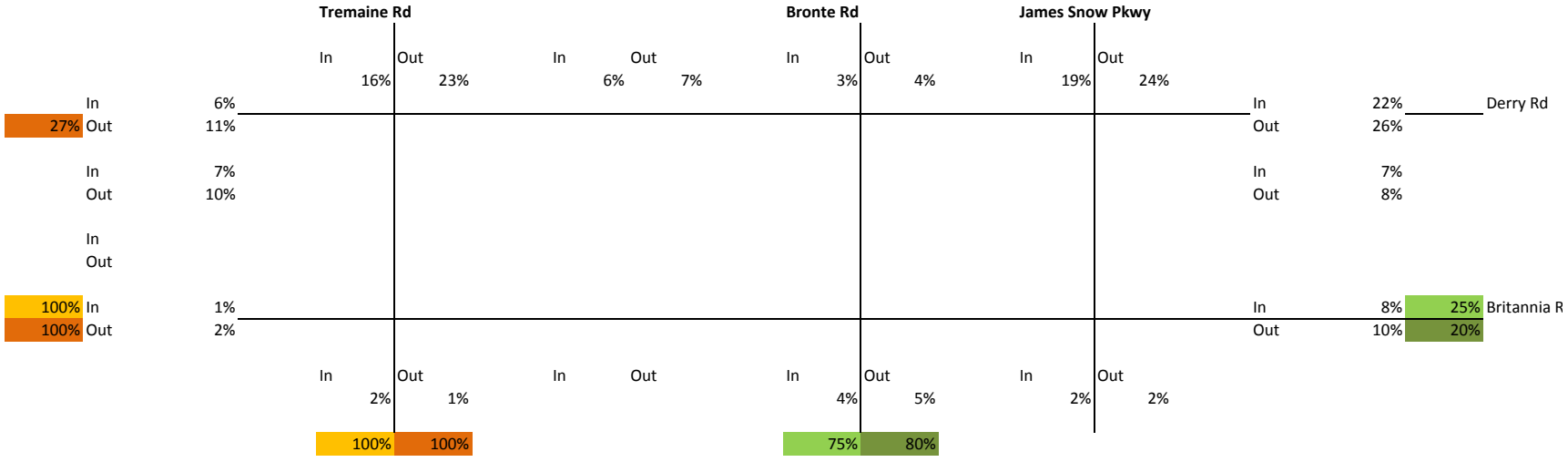
TTS Trip Distribution - PM out

USER : Justin Kwok - BA Group
DATE : Sep 25 2014 (10:08:31)
DATA : 2006 TTS V1.0 Trips
FILTER 1 : start_time => 1500-1759
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : pd_dest => Burlington
ROW : gta06_dest
COLUMN : pd_orig
Group 1 : Milton

Burlington			Other	Tremaine N	Bronte N	Appleby N	Other	Tremaine N	Bronte N	Appleby N
4050	15	1%	100%				1%	0%	0%	0%
4052	15	1%	100%				1%	0%	0%	0%
4057	34	3%	100%				3%	0%	0%	0%
4058	36	3%	100%				3%	0%	0%	0%
4060	71	6%	100%				6%	0%	0%	0%
4061	11	1%	100%				1%	0%	0%	0%
4062	18	2%	100%				2%	0%	0%	0%
4063	18	2%	100%				2%	0%	0%	0%
4066	16	1%	100%				1%	0%	0%	0%
4068	18	2%	40%			60%	1%	0%	0%	1%
4069	18	2%				100%	0%	0%	0%	2%
4071	66	6%				100%	0%	0%	0%	6%
4072	15	1%				100%	0%	0%	0%	1%
4073	30	3%				100%	0%	0%	0%	3%
4074	18	2%				100%	0%	0%	0%	2%
4076	80	7%				100%	0%	0%	0%	7%
4077	34	3%				100%	0%	0%	0%	3%
4078	18	2%				100%	0%	0%	0%	2%
4,079	158	13%				100%	0%	0%	0%	13%
4080	17	1%				100%	0%	0%	0%	1%
4081	36	3%				100%	0%	0%	0%	3%
4082	36	3%	100%				3%	0%	0%	0%
4083	51	4%	100%				4%	0%	0%	0%
4084	68	6%	100%				6%	0%	0%	0%
4085	16	1%	100%				1%	0%	0%	0%
4087	17	1%	100%				1%	0%	0%	0%
4088	17	1%	100%				1%	0%	0%	0%
4089	78	7%	100%				7%	0%	0%	0%
4090	34	3%	100%				3%	0%	0%	0%
4093	53	5%	100%				5%	0%	0%	0%
4094	27	2%	100%				2%	0%	0%	0%
4099	36	3%	100%				3%	0%	0%	0%
	1175						**57%**	**0%**	**0%**	**43%**
Oakville										
4003	15	1%			100%		0%	0%	1%	0%
4005	16	1%			100%		0%	0%	1%	0%
4007	15	1%			100%		0%	0%	1%	0%
4009	69	6%	50%		50%		3%	0%	3%	0%
4010	17	1%	50%		50%		1%	0%	1%	0%
4012	21	2%	50%		50%		1%	0%	1%	0%
4013	21	2%	100%				2%	0%	0%	0%
4015	34	3%	100%				3%	0%	0%	0%
4016	85	7%	100%				7%	0%	0%	0%
4018	31	3%	100%				3%	0%	0%	0%
4020	15	1%	100%				1%	0%	0%	0%
4023	16	1%	100%				1%	0%	0%	0%
4024	37	3%	100%				3%	0%	0%	0%
4028	18	2%	100%				2%	0%	0%	0%
4030	17	1%	100%				1%	0%	0%	0%
4031	50	4%	100%				4%	0%	0%	0%
4032	64	6%	100%				6%	0%	0%	0%
4035	56	5%	100%				5%	0%	0%	0%
4036	17	1%	100%				1%	0%	0%	0%
4037	32	3%	100%				3%	0%	0%	0%
4038	33	3%	100%				3%	0%	0%	0%
4039	94	8%	50%		50%		4%	0%	4%	0%
4040	51	4%	50%		50%		2%	0%	2%	0%
4041	36	3%	50%		50%		2%	0%	2%	0%
4042	77	7%			100%		0%	0%	7%	0%
4046	19	2%	100%				2%	0%	0%	0%
4047	72	6%	100%				6%	0%	0%	0%
4048	37	3%	100%				3%	0%	0%	0%
4182	16	1%	100%				1%	0%	0%	0%
4183	18	2%	100%				2%	0%	0%	0%
4186	37	3%			100%		0%	0%	3%	0%
	1136						**73%**	**0%**	**27%**	**0%**



Total			Burlington	Oakville
In	9493	In	0.03	0.06
Out	5108	Out	0.06	0.06



	0.29	0.27
Oakville	39%	34%
Burlington	25%	20%

APPENDIX C:
TTS Site Trip Distribution

TTS Trip Distribution - Residential AM out

Project: Evergreen Community
Project No: 7597-02
Date: 29-Oct-14

: Justin Kwok - BA Group
DATE : Sep 15 2014 (15:04:42)
DATA : 2011 TTS V1.0 Trips (Records)
FILTER 1 : start_time => 600-859
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : purp_orig => Home
ROW : pd_dest
COLUMN : ggh_orig
Group 1 : 4079, 4045

			Route Selection									Trip Distribution								
	Trips	%	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S
PD 1 of Toro	219	3%		100%								0%	3%	0%	0%	0%	0%	0%	0%	0%
PD 3 of Toro	26	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 5 of Toro	61	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 6 of Toro	37	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 8 of Toro	74	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 9 of Toro	85	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Markham	51	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Vaughan	63	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Brampton	114	2%		100%								0%	2%	0%	0%	0%	0%	0%	0%	0%
Mississauga	1333	20%		80%				10%			10%	0%	16%	0%	0%	0%	2%	0%	0%	2%
Halton Hills	26	0%								100%		0%	0%	0%	0%	0%	0%	0%	0%	0%
Milton	175	3%					30%		20%	50%		0%	0%	0%	0%	1%	0%	1%	1%	0%
Oakville		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4002	48	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4,003	122	2%									100%	0%	0%	0%	0%	0%	0%	0%	0%	2%
4004	25	0%									100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4008	39	1%				50%					50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4009	79	1%						50%			50%	0%	0%	0%	0%	0%	1%	0%	0%	1%
4011	91	1%						50%			50%	0%	0%	0%	0%	0%	1%	0%	0%	1%
4015	96	1%						50%			50%	0%	0%	0%	0%	0%	1%	0%	0%	1%
4019	50	1%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4022	45	1%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4,024	228	3%		100%								0%	3%	0%	0%	0%	0%	0%	0%	0%
4026	63	1%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4027	48	1%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4029	26	0%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4030	74	1%						30%			70%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4037	16	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4038	25	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4039	24	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4,041	129	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4042	48	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4,045	203	3%				100%						0%	0%	0%	3%	0%	0%	0%	0%	0%
4182	34	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4186	62	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4187	77	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
Burlington		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4052	26	0%	50%					50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4056	51	1%	50%					50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4058	26	0%	50%					50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4060	16	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
4062	26	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4065	26	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4068	34	1%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4069	22	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4071	72	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,076	195	3%						100%				0%	0%	0%	0%	0%	3%	0%	0%	0%
4077	51	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,078	476	7%						100%				0%	0%	0%	0%	0%	7%	0%	0%	0%
4,079	504	8%			50%			50%				0%	0%	4%	0%	0%	4%	0%	0%	0%
4,080	107	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4,081	107	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4085	70	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4087	48	1%	50%					50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4088	51	1%	50%					50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4090	48	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4094	19	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4188	69	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4189	26	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4190	22	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
Flamboroug	51	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Ancaster	26	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Stoney Cree	37	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Hamilton	453	7%	100%									7%	0%	0%	0%	0%	0%	0%	0%	0%
St Catharine	34	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Cambridge	34	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Guelph	56	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
	6699											**12%**	**31%**	**10%**	**9%**	**1%**	**26%**	**1%**	**2%**	**9%**

TTS Trip Distribution - Residential PM in

Project: Evergreen Community
Project No: 7597-02
Date: 29-Oct-14

USER : Justin Kwok - BA Group
DATE : Sep 15 2014 (15:04:42)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : start_time => 1500-1759
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : purp_dest => Home
ROW : pd_orig
COLUMN : gta06_dest
Group 1 : 4079, 4045

			Route Selection									Trip Distribution								
	Trips	%	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S
PD 1 of Toro	77	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 3 of Toro	26	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 5 of Toro	71	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 6 of Toro	37	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 7 of Toro	37	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 8 of Toro	74	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 9 of Toro	51	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Markham	51	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Vaughan	26	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Brampton	114	2%		100%								0%	2%	0%	0%	0%	0%	0%	0%	0%
Mississauga	860	14%		80%				10%			10%	0%	12%	0%	0%	0%	1%	0%	0%	1%
Halton Hills	26	0%								100%		0%	0%	0%	0%	0%	0%	0%	0%	0%
Milton	107	2%					30%		20%	50%		0%	0%	0%	0%	1%	0%	0%	1%	0%
Oakville		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4001	32	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4,002	123	2%									100%	0%	0%	0%	0%	0%	0%	0%	0%	2%
4003	68	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4004	25	0%									100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4008	26	0%				50%					50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4009	79	1%						50%			50%	0%	0%	0%	0%	0%	1%	0%	0%	1%
4011	94	2%						50%			50%	0%	0%	0%	0%	0%	1%	0%	0%	1%
4012	51	1%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4014	36	1%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4,015	125	2%						50%			50%	0%	0%	0%	0%	0%	1%	0%	0%	1%
4019	25	0%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4021	26	0%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4022	25	0%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4024	67	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
4026	37	1%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4027	22	0%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4029	99	2%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4030	89	1%						30%			70%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4034	20	0%				50%		15%			35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4035	46	1%				50%		15%			35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4037	16	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4038	25	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4039	60	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4040	20	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4,041	123	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4,042	107	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4,045	193	3%				100%						0%	0%	0%	3%	0%	0%	0%	0%	0%
4182	34	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4,186	125	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4187	88	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
Burlington		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4056	48	1%	70%					30%				1%	0%	0%	0%	0%	0%	0%	0%	0%
4057	51	1%	70%					30%				1%	0%	0%	0%	0%	0%	0%	0%	0%
4059	26	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4060	16	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4062	74	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,063	102	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4065	26	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4068	26	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4074	56	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4075	16	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4076	50	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4077	51	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,078	195	3%						100%				0%	0%	0%	0%	0%	3%	0%	0%	0%
4,079	442	7%			50%			50%				0%	0%	4%	0%	0%	4%	0%	0%	0%
4,080	179	3%			100%							0%	0%	3%	0%	0%	0%	0%	0%	0%
4,081	107	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4082	67	1%			50%			50%				0%	0%	1%	0%	0%	1%	0%	0%	0%
4083	34	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4084	64	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4085	70	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4087	32	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4088	41	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4089	26	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4,189	164	3%			100%							0%	0%	3%	0%	0%	0%	0%	0%	0%
4190	22	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
Flamboroug	58	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Ancaster	26	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Stoney Cree	37	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Hamilton	298	5%	100%									5%	0%	0%	0%	0%	0%	0%	0%	0%
Guelph	56	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Brantford	22	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
	5945											**11%**	**23%**	**14%**	**14%**	**1%**	**24%**	**0%**	**1%**	**12%**

TTS Trip Distribution - Employment AM in

Project: Evergreen Community
Project No 7597-02
Date: 29-Oct-14

USER : Justin Kwok - BA Group
DATE : Sep 15 2014 (17:29:18)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : start_time => 600-859
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : purp_dest => Work
ROW : pd_orig
COLUMN : gta06_dest
Group 1 : 4078, 4077, 4002

			Route Selection									Trip Distribution								
	Trips	%	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S
PD 1 of To	22	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 2 of To	37	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 3 of To	31	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 4 of To	27	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 5 of To	18	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 7 of To	23	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 8 of To	101	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 9 of To	45	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 16 of T	30	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Newmarke	17	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Richmond	78	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Markham	39	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
King	22	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Vaughan	59	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Brampton	158	2%		100%								0%	2%	0%	0%	0%	0%	0%	0%	0%
Mississaug	731	8%		80%				10%			10%	0%	6%	0%	0%	0%	1%	0%	0%	1%
Halton Hill	67	1%								100%		0%	0%	0%	0%	0%	0%	0%	1%	0%
Milton	428	5%					30%		20%	50%		0%	0%	0%	0%	1%	0%	1%	2%	0%
Oakville		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4001	39	0%									100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4004	22	0%									100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4006	54	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4007	71	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4011	25	0%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4013	32	0%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4017	51	1%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4024	26	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
4025	47	1%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4026	23	0%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4029	40	0%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4031	18	0%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4032	33	0%				50%		15%			35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4033	41	0%				50%		15%			35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4036	23	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4037	79	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4038	18	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4,039	122	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4041	51	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4042	20	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4045	80	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4186	76	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
Burlington		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4050	18	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4051	28	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4052	21	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4053	28	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4055	77	1%	70%					30%				1%	0%	0%	0%	0%	0%	0%	0%	0%
4057	60	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4058	38	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4059	57	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4060	57	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4062	30	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4064	20	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4065	43	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4067	43	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4068	30	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4069	59	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4070	34	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4071	48	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4072	51	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4073	75	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4074	26	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4075	75	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,076	166	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4077	45	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4,078	108	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,079	265	3%			50%			50%				0%	0%	1%	0%	0%	1%	0%	0%	0%
4,080	257	3%			100%							0%	0%	3%	0%	0%	0%	0%	0%	0%
4082	26	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4083	76	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4084	99	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4085	48	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4088	59	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4,089	214	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4090	33	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4093	16	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4189	86	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4190	47	1%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
Flamboro	499	5%	100%									5%	0%	0%	0%	0%	0%	0%	0%	0%
Dundas	185	2%	100%									2%	0%	0%	0%	0%	0%	0%	0%	0%
Ancaster	229	2%	100%									2%	0%	0%	0%	0%	0%	0%	0%	0%
Glanbrook	116	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Stoney Cr	348	4%	100%									4%	0%	0%	0%	0%	0%	0%	0%	0%
Hamilton	1437	16%	100%									16%	0%	0%	0%	0%	0%	0%	0%	0%
Grimsby	210	2%	100%									2%	0%	0%	0%	0%	0%	0%	0%	0%
Lincoln	49	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Pelham	38	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
St Catharir	65	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Thorold	25	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Niagara Fa	44	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Welland	72	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
West Linc	107	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Kitchener	53	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Cambridge	58	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Guelph	118	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Eramosa/C	32	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Erin	13	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Brant	48	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Brantford	116	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
	9249											**45%**	**15%**	**11%**	**6%**	**1%**	**14%**	**1%**	**3%**	**4%**

TTS Trip Distribution - Employment PM out

Project: Evergreen Community
Project No 7597-02
Date: 29-Oct-14

USER : Justin Kwok - BA Group
DATE : Sep 15 2014 (17:29:18)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : start_time => 1500-1759
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : purp_orig => Work
ROW : pd_dest
COLUMN : gta06_orig
Group 1 : 4078, 4077, 4002

			Route Selection									Trip Distribution							
	Trips	%	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S
PD 1 of To	15	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 2 of To	37	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 4 of To	27	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 5 of To	18	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 7 of To	23	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 8 of To	57	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
PD 10 of T	31	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 13 of T	24	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
PD 16 of T	30	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Pickering	55	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Richmond	31	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Markham	44	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
King	22	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Vaughan	39	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
Brampton	133	1%		100%								0%	1%	0%	0%	0%	0%	0%	0%	0%
Mississau	729	8%		80%				10%			10%	0%	6%	0%	0%	0%	1%	0%	0%	1%
Halton Hill	67	1%								100%		0%	0%	0%	0%	0%	0%	0%	1%	0%
Milton	418	4%					30%		20%	50%		0%	0%	0%	0%	1%	0%	1%	2%	0%
Oakville		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4001	66	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4002	47	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4004	22	0%									100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4006	54	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4007	71	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4009	13	0%									100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4011	91	1%						50%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4024	26	0%		100%								0%	0%	0%	0%	0%	0%	0%	0%	0%
4025	25	0%		50%				25%			25%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4029	32	0%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4030	48	1%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4031	36	0%				30%		20%			50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4032	53	1%				50%		15%			35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4033	41	0%				50%		15%			35%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4036	23	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4037	56	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4038	18	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4039	65	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4040	33	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4041	78	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4042	20	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4045	62	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4186	76	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4187	26	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
Burlington		0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4052	32	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4053	84	1%	70%					30%				1%	0%	0%	0%	0%	0%	0%	0%	0%
4,055	113	1%	70%					30%				1%	0%	0%	0%	0%	0%	0%	0%	0%
4057	66	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4058	15	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4059	76	1%	70%					30%				1%	0%	0%	0%	0%	0%	0%	0%	0%
4060	64	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4061	58	1%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4062	30	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4063	75	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4064	74	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4065	43	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4066	20	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4067	54	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4068	22	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4,069	100	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4070	34	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4071	22	0%						100%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4072	51	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4073	75	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4075	75	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,076	138	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4077	54	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4078	82	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,079	157	2%			50%			50%				0%	0%	1%	0%	0%	1%	0%	0%	0%
4,080	226	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4083	68	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4,084	171	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4085	62	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4086	25	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4087	22	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4088	44	0%	70%					30%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4,089	160	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4090	33	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4093	32	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4188	17	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4,189	139	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4190	46	0%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
Flamboro	469	5%	100%									5%	0%	0%	0%	0%	0%	0%	0%	0%
Dundas	142	2%	100%									2%	0%	0%	0%	0%	0%	0%	0%	0%
Ancaster	124	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Glanbrook	39	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Stoney Cr	398	4%	100%									4%	0%	0%	0%	0%	0%	0%	0%	0%
Hamilton	1598	17%	100%									17%	0%	0%	0%	0%	0%	0%	0%	0%
Grimsby	202	2%	100%									2%	0%	0%	0%	0%	0%	0%	0%	0%
Lincoln	49	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Pelham	38	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
St Catharı	114	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Thorold	25	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Niagara Fa	24	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Welland	72	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
West Linc	122	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Kitchener	53	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Cambridge	58	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Guelph	90	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
Eramosa/	32	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Erin	22	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Brant	30	0%	100%									0%	0%	0%	0%	0%	0%	0%	0%	0%
Brantford	107	1%	100%									1%	0%	0%	0%	0%	0%	0%	0%	0%
	9349											**45%**	**13%**	**11%**	**6%**	**1%**	**15%**	**1%**	**3%**	**5%**

TTS Trip Distribution - Retail AM in

Project: Evergreen Community
Project No 7597-02
Date: 29-Oct-14

USER : Justin Kwok - BA Group
DATE : Oct 29 2014 (11:03:29)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : start_time => 600-859
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : purp_dest => Work
ROW : gta06_orig
(aggregation file : /usr/local/www/htsdocs/drs/work/aggr_file28309)
COLUMN : gta06_dest
Group 1 : 4078, 4077, 4002

			Route Selection									Trip Distribution								
	Group 1	%	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	remaine N	Bronte N	Bronte S	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	remaine N	Bronte N	Bronte S
4001	39	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4002	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4003	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4004	22	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4005	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4006	54	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4007	71	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4009	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4010	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4011	25	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4012	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4014	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4029	40	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4030	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4031	18	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4035	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4036	23	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4037	79	3%				100%						0%	0%	0%	3%	0%	0%	0%	0%	0%
4038	18	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4,039	122	4%				100%						0%	0%	0%	4%	0%	0%	0%	0%	0%
4040	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4041	51	2%				50%					50%	0%	0%	0%	1%	0%	0%	0%	0%	1%
4042	20	1%				50%					50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4043	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4045	80	3%				100%						0%	0%	0%	3%	0%	0%	0%	0%	0%
4058	38	1%	30%		20%			50%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4059	57	2%	30%		20%			50%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4060	57	2%	30%		20%			50%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4061	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4062	30	1%	30%		20%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4063	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4064	20	1%	30%		10%			60%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4065	43	1%	30%		10%			60%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4066	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4067	43	1%	10%		10%			80%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4068	30	1%	10%		10%			80%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4069	59	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4070	34	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4071	48	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4072	51	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4073	75	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4074	26	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4075	75	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4,076	166	5%						100%				0%	0%	0%	0%	0%	5%	0%	0%	0%
4077	45	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,078	108	4%						100%				0%	0%	0%	0%	0%	4%	0%	0%	0%
4,079	265	9%						100%				0%	0%	0%	0%	0%	9%	0%	0%	0%
4,080	257	8%			100%							0%	0%	8%	0%	0%	0%	0%	0%	0%
4081	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4082	26	1%			50%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4084	99	3%			100%							0%	0%	3%	0%	0%	0%	0%	0%	0%
4085	48	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4086	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4087	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4088	59	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4,089	214	7%			100%							0%	0%	7%	0%	0%	0%	0%	0%	0%
4090	33	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4093	16	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4094	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4095	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4096	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4097	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4098	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4099	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4100	29	1%							100%			0%	0%	0%	0%	0%	0%	1%	0%	0%
4103	27	1%							100%			0%	0%	0%	0%	0%	0%	1%	0%	0%
4,105	106	3%							100%			0%	0%	0%	0%	0%	0%	3%	0%	0%
4106	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4109	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4113	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4182	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4183	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4186	76	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4188	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4189	86	3%			100%							0%	0%	3%	0%	0%	0%	0%	0%	0%
4190	47	2%			50%			50%				0%	0%	1%	0%	0%	1%	0%	0%	0%
	3055											**3%**	**0%**	**29%**	**21%**	**0%**	**38%**	**5%**	**0%**	**3%**

TTS Trip Distribution - Retail PM out

Project: Evergreen Community
Project No 7597-02
Date: 29-Oct-14

USER : Justin Kwok - BA Group
DATE : Oct 29 2014 (11:03:29)
DATA : 2011 TTS V1.0 Trips
FILTER 1 : start_time => 1500-1759
FILTER 2 : mode_prime => Auto driver, Motorcycle, Auto passenger, Taxi passenger, Schoolbus
FILTER 3 : purp_orig => Work
ROW : gta06_dest
(aggregation file : /usr/local/www/htsdocs/drs/work/aggr_file28330)
COLUMN : gta06_orig
Group 1 : 4078, 4077, 4002

			Route Selection									Trip Distribution								
	Trips	%	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S	Hwy407 W	Hwy407 E	Dundas W	Dundas E	Appleby N	Appleby S	Tremaine N	Bronte N	Bronte S
4001	66	2%									100%	0%	0%	0%	0%	0%	0%	0%	0%	2%
4002	47	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4003	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4004	22	1%									100%	0%	0%	0%	0%	0%	0%	0%	0%	1%
4005	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4006	54	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4007	71	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4008	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4009	13	0%				100%						0%	0%	0%	0%	0%	0%	0%	0%	0%
4010	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4011	91	3%				100%						0%	0%	0%	3%	0%	0%	0%	0%	0%
4012	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4014	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4029	32	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4030	48	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4031	36	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4035	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4036	23	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4037	56	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4038	18	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4039	65	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4040	33	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4041	78	2%				50%					50%	0%	0%	0%	1%	0%	0%	0%	0%	1%
4042	20	1%				50%					50%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4045	62	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4048	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4058	15	0%	30%		20%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4059	76	2%	30%		20%			50%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4060	64	2%	30%		20%			50%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4061	58	2%	30%		20%			50%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4062	30	1%	30%		20%			50%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4063	75	2%	30%		10%			60%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4064	74	2%	30%		10%			60%				1%	0%	0%	0%	0%	1%	0%	0%	0%
4065	43	1%	30%		10%			60%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4066	20	1%	10%		10%			80%				0%	0%	0%	0%	0%	0%	0%	0%	0%
4067	54	2%	10%		10%			80%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4068	22	1%	10%		10%			80%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4,069	100	3%						100%				0%	0%	0%	0%	0%	3%	0%	0%	0%
4070	34	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4071	22	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4072	51	1%						100%				0%	0%	0%	0%	0%	1%	0%	0%	0%
4073	75	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4074	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4075	75	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4,076	138	4%						100%				0%	0%	0%	0%	0%	4%	0%	0%	0%
4077	54	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4078	82	2%						100%				0%	0%	0%	0%	0%	2%	0%	0%	0%
4,079	157	5%						100%				0%	0%	0%	0%	0%	5%	0%	0%	0%
4,080	226	7%			100%							0%	0%	7%	0%	0%	0%	0%	0%	0%
4081	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4082	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4,084	171	5%			100%							0%	0%	5%	0%	0%	0%	0%	0%	0%
4085	62	2%			100%							0%	0%	2%	0%	0%	0%	0%	0%	0%
4086	25	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4087	22	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4088	44	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4,089	160	5%			100%							0%	0%	5%	0%	0%	0%	0%	0%	0%
4090	33	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4093	32	1%			100%							0%	0%	1%	0%	0%	0%	0%	0%	0%
4094	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4095	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4096	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4097	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4098	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4099	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4100	29	1%							100%			0%	0%	0%	0%	0%	0%	1%	0%	0%
4103	52	2%							100%			0%	0%	0%	0%	0%	0%	2%	0%	0%
4,105	106	3%							100%			0%	0%	0%	0%	0%	0%	3%	0%	0%
4106	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4109	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4113	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4182	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4183	0	0%										0%	0%	0%	0%	0%	0%	0%	0%	0%
4186	76	2%				100%						0%	0%	0%	2%	0%	0%	0%	0%	0%
4187	26	1%				100%						0%	0%	0%	1%	0%	0%	0%	0%	0%
4188	17	0%			100%							0%	0%	0%	0%	0%	0%	0%	0%	0%
4,189	139	4%			100%							0%	0%	4%	0%	0%	0%	0%	0%	0%
4190	46	1%			50%			50%				0%	0%	1%	0%	0%	1%	0%	0%	0%
	3420											**4%**	**0%**	**30%**	**22%**	**0%**	**33%**	**5%**	**0%**	**5%**

APPENDIX D:
Signal Warrants

Justification 7 - Projected Volumes

Project Evergreen Connect
Project # 7597-02
Date 05/03/2015

				2021					
				Dundas St / St 'A'		Tremaine Rd / St 'L'		Tremaine Rd / Street 'H'	
Justification	Description	Free Flow	Restr Flow	Volume	%	Volume	%	Volume	%
Mininum Vehicular Volume	All approach vehicular volume	600	900	2675	100%	705	100%	1080	100%
	Minor street vehicular volume	120	170	125	100%	65	54%	355	100%
Delay to Cross Traffic	Major street vehicular volume	600	900	2550	100%	645	100%	725	100%
	Minor street vehicular and ped vol	120	170	125	100%	65	54%	355	100%

				2031					
				Dundas St / St 'A'		Tremaine Rd / St 'L'		Tremaine Rd / Street 'H'	
Justification	Description	Free Flow	Restr Flow	Volume	%	Volume	%	Volume	%
Mininum Vehicular Volume	All approach vehicular volume	600	900	2715	100%	865	100%	1095	100%
	Minor street vehicular volume	120	170	120	100%	190	100%	290	100%
Delay to Cross Traffic	Major street vehicular volume	600	900	2595	100%	675	100%	805	100%
	Minor street vehicular and ped vol	120	170	120	100%	190	100%	290	100%

APPENDIX E:
HOV Lane Utilization Factor Calculation

Lane Utilization Factor Calculation

Project Evergreen Connect
Project # 7597-02
Date 13/01/2015

This is to scale the Synchro default utilization factor to reflect the uneven use of the HOV lanes by regular traffic, noting that in Synchro:

# Lanes	LU Factor
1	1.00
2	0.95
3	0.91

Based on historical count evidence, HOV lanes typically carry 0.15 of the through traffic for a single direction along a corridor. Assuming the 15% on the HOV lane and equal split of the remaining 85%, the LU factor can be calculated based on the following formula

$$fLU = \frac{\text{Total App. Vol.}}{\text{\# Lanes} * \text{Max Lane Vol}}$$

$$\frac{100\%}{3 * (0.85/2)}$$

0.7843

However, the default LU factor for 2 lanes is 0.95, so after scaling down to a maximum LU factor of 0.95, the LU factor for the HOV group is:

0.7843 * 0.95 = 0.75

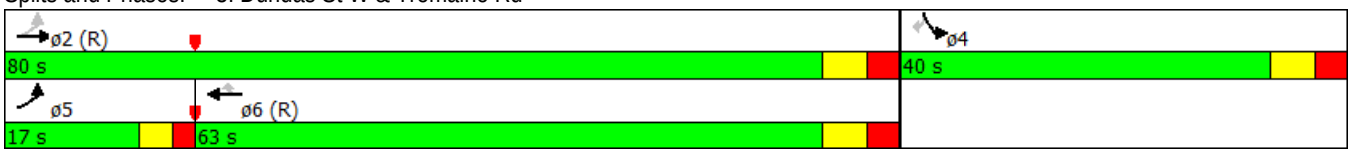
APPENDIX F:
Synchro Capacity Analysis Sheets

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	380	1970	475	70	170	295
Lane Group Flow (vph)	413	2141	516	76	185	321
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	17.0	80.0	63.0	63.0	40.0	40.0
Total Split (%)	14.2%	66.7%	52.5%	52.5%	33.3%	33.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	7.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
v/c Ratio	0.74	0.97	0.34	0.10	0.39	0.49
Control Delay	21.1	36.8	26.0	12.0	38.4	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	36.8	26.0	12.0	38.4	6.4
Queue Length 50th (m)	46.8	238.9	60.0	4.7	37.3	0.0
Queue Length 95th (m)	66.6	#309.8	73.4	16.8	59.5	22.3
Internal Link Dist (m)		2037.0	1908.9		2148.5	
Turn Bay Length (m)	120.0			75.0	135.0	
Base Capacity (vph)	559	2201	1517	765	472	659
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.97	0.34	0.10	0.39	0.49

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	380	1970	475	70	170	295
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	7.0	7.0	7.0	7.0	7.0
Lane Util. Factor	1.00	*1.00	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3619	3252	1553	1719	1553
Flt Permitted	0.39	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	727	3619	3252	1553	1719	1553
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	2141	516	76	185	321
RTOR Reduction (vph)	0	0	0	41	0	233
Lane Group Flow (vph)	413	2141	516	35	185	88
Heavy Vehicles (%)	2%	5%	11%	4%	5%	4%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	73.0	73.0	56.0	56.0	33.0	33.0
Effective Green, g (s)	73.0	73.0	56.0	56.0	33.0	33.0
Actuated g/C Ratio	0.61	0.61	0.47	0.47	0.28	0.28
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	546	2201	1517	724	472	427
v/s Ratio Prot	0.08	c0.59	0.16		c0.11	
v/s Ratio Perm	0.38			0.02		0.06
v/c Ratio	0.76	0.97	0.34	0.05	0.39	0.21
Uniform Delay, d1	14.0	22.5	20.3	17.5	35.3	33.4
Progression Factor	1.00	1.00	1.24	2.95	1.00	1.00
Incremental Delay, d2	5.9	13.8	0.6	0.1	2.4	1.1
Delay (s)	19.9	36.3	25.8	51.6	37.8	34.5
Level of Service	B	D	C	D	D	C
Approach Delay (s)		33.7	29.1		35.7	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	285	935	1985	165	85	310
Lane Group Flow (vph)	310	1016	2158	179	92	337
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	23.0	23.0	23.0	23.0	23.0
Total Split (s)	17.0	90.0	73.0	73.0	30.0	30.0
Total Split (%)	14.2%	75.0%	60.8%	60.8%	25.0%	25.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.99	0.40	1.00	0.19	0.36	0.88
Control Delay	85.8	7.1	56.7	12.4	48.1	47.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.8	7.1	56.7	12.4	48.1	47.6
Queue Length 50th (m)	~69.1	46.5	~284.8	21.0	20.4	40.8
Queue Length 95th (m)	#140.4	64.0	m#313.2	m26.9	35.7	#82.4
Internal Link Dist (m)		2037.0	1908.9		2148.5	
Turn Bay Length (m)	120.0			75.0	135.0	
Base Capacity (vph)	313	2569	2159	931	326	440
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.40	1.00	0.19	0.28	0.77

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	285	935	1985	165	85	310
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	5.0	7.0	5.0	7.0	7.0	7.0
Lane Util. Factor	1.00	0.95	*1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3505	3810	1599	1703	1568
Flt Permitted	0.06	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	105	3505	3810	1599	1703	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	310	1016	2158	179	92	337
RTOR Reduction (vph)	0	0	0	52	0	147
Lane Group Flow (vph)	310	1016	2158	127	92	190
Heavy Vehicles (%)	2%	3%	5%	1%	6%	3%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	88.0	88.0	66.0	66.0	18.0	18.0
Effective Green, g (s)	88.0	88.0	68.0	66.0	18.0	18.0
Actuated g/C Ratio	0.73	0.73	0.57	0.55	0.15	0.15
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	312	2570	2159	879	255	235
v/s Ratio Prot	c0.14	0.29	c0.57		0.05	
v/s Ratio Perm	0.59			0.08		c0.12
v/c Ratio	0.99	0.40	1.00	0.14	0.36	0.81
Uniform Delay, d1	42.9	6.0	26.0	13.2	45.8	49.3
Progression Factor	1.00	1.00	1.62	2.36	1.00	1.00
Incremental Delay, d2	49.0	0.5	15.6	0.2	0.9	18.1
Delay (s)	91.9	6.5	57.7	31.4	46.7	67.5
Level of Service	F	A	E	C	D	E
Approach Delay (s)		26.4	55.6		63.0	
Approach LOS		C	E		E	

Intersection Summary			
HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

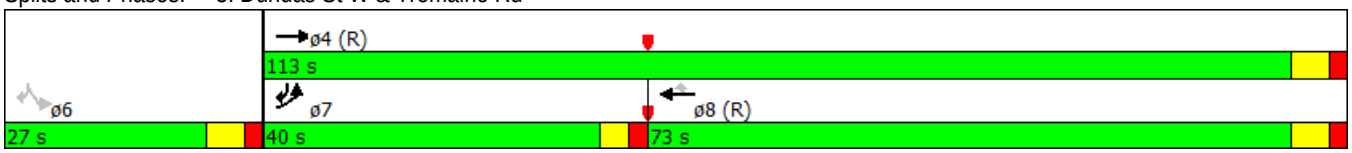
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	640	2650	695	70	160	320
Lane Group Flow (vph)	640	2650	695	70	160	320
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	90.0	27.0	27.0	27.0	9.0
Total Split (s)	40.0	113.0	73.0	73.0	27.0	40.0
Total Split (%)	28.6%	80.7%	52.1%	52.1%	19.3%	28.6%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.84	0.83	0.33	0.08	0.60	0.24
Control Delay	35.9	22.1	13.5	2.5	66.1	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.9	22.1	13.5	2.5	66.1	4.3
Queue Length 50th (m)	78.2	322.1	20.7	0.7	44.2	3.3
Queue Length 95th (m)	m52.7	m217.4	m22.0	m1.1	69.4	13.1
Internal Link Dist (m)		2037.0	1908.9		509.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	858	3203	2121	836	265	1393
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.83	0.33	0.08	0.60	0.23

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 59 (42%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





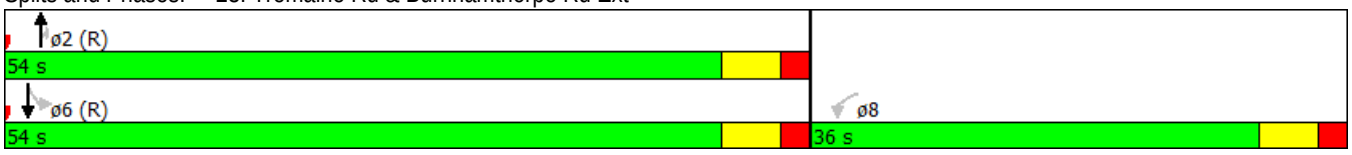
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	640	2650	695	70	160	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lane Util. Factor	0.97	*0.75	*0.75	1.00	1.00	0.88
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	4191	4191	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	4191	4191	1583	1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	640	2650	695	70	160	320
RTOR Reduction (vph)	0	0	0	35	0	179
Lane Group Flow (vph)	640	2650	695	35	160	141
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	31.1	107.0	70.9	70.9	21.0	52.1
Effective Green, g (s)	31.1	107.0	70.9	70.9	21.0	52.1
Actuated g/C Ratio	0.22	0.76	0.51	0.51	0.15	0.37
Clearance Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	762	3203	2122	801	265	1037
v/s Ratio Prot	0.19	c0.63	0.17			0.03
v/s Ratio Perm				0.02	c0.09	0.02
v/c Ratio	0.84	0.83	0.33	0.04	0.60	0.14
Uniform Delay, d1	52.1	10.6	20.4	17.4	55.6	29.1
Progression Factor	0.67	2.00	0.63	0.58	1.00	1.00
Incremental Delay, d2	0.8	0.2	0.2	0.1	9.8	0.1
Delay (s)	35.8	21.4	13.1	10.1	65.4	29.1
Level of Service	D	C	B	B	E	C
Approach Delay (s)		24.2	12.8		41.2	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations					
Volume (vph)	55	410	300	240	425
Lane Group Flow (vph)	120	410	300	240	425
Turn Type	Perm	NA	Perm	Perm	NA
Protected Phases		2			6
Permitted Phases	8		2	6	
Detector Phase	8	2	2	6	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0
Total Split (s)	36.0	54.0	54.0	54.0	54.0
Total Split (%)	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.54	0.15	0.23	0.33	0.16
Control Delay	27.9	3.1	0.9	5.1	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	3.1	0.9	5.1	3.2
Queue Length 50th (m)	9.6	7.7	0.0	10.3	8.1
Queue Length 95th (m)	25.2	15.0	6.2	25.0	15.5
Internal Link Dist (m)	345.1	509.2			1615.3
Turn Bay Length (m)			85.0	85.0	
Base Capacity (vph)	606	2720	1286	731	2720
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.20	0.15	0.23	0.33	0.16

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 23: Tremaine Rd & Burnhamthorpe Rd Ext





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	55	65	410	300	240	425
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.93		1.00	0.85	1.00	1.00
Flt Protected	0.98		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1688		3539	1583	1770	3539
Flt Permitted	0.98		1.00	1.00	0.51	1.00
Satd. Flow (perm)	1688		3539	1583	953	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	65	410	300	240	425
RTOR Reduction (vph)	59	0	0	69	0	0
Lane Group Flow (vph)	61	0	410	231	240	425
Turn Type	Perm		NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8			2	6	
Actuated Green, G (s)	8.8		69.2	69.2	69.2	69.2
Effective Green, g (s)	8.8		69.2	69.2	69.2	69.2
Actuated g/C Ratio	0.10		0.77	0.77	0.77	0.77
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	165		2721	1217	732	2721
v/s Ratio Prot			0.12			0.12
v/s Ratio Perm	c0.04			0.15	c0.25	
v/c Ratio	0.37		0.15	0.19	0.33	0.16
Uniform Delay, d1	38.0		2.7	2.8	3.2	2.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		0.1	0.3	1.2	0.1
Delay (s)	39.4		2.8	3.2	4.4	2.9
Level of Service	D		A	A	A	A
Approach Delay (s)	39.4		3.0			3.4
Approach LOS	D		A			A

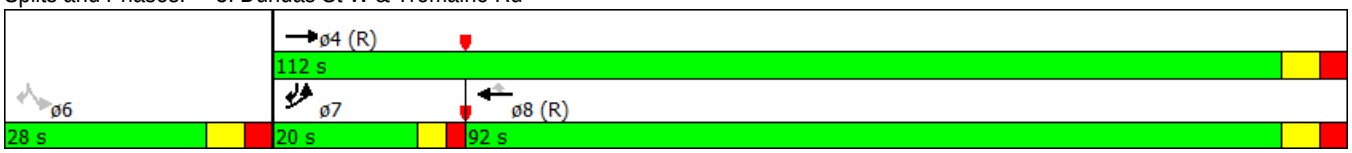
Intersection Summary			
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	295	1265	2430	165	75	770
Lane Group Flow (vph)	295	1265	2430	165	75	770
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0	9.0
Total Split (s)	20.0	112.0	92.0	92.0	28.0	20.0
Total Split (%)	14.3%	80.0%	65.7%	65.7%	20.0%	14.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.77	0.41	0.91	0.16	0.29	0.80
Control Delay	72.5	5.9	10.8	0.3	56.5	51.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	5.9	10.8	0.3	56.5	51.8
Queue Length 50th (m)	45.2	33.5	43.6	0.2	19.7	101.8
Queue Length 95th (m)	m54.9	m39.2	m47.6	m0.3	35.9	126.3
Internal Link Dist (m)		2037.0	1908.9		509.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	399	3112	2680	1017	255	970
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.41	0.91	0.16	0.29	0.79

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 55 (39%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	295	1265	2430	165	75	770
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lane Util. Factor	*1.00	*0.75	*0.75	1.00	1.00	*1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3725	4150	4286	1599	1703	3136
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3725	4150	4286	1599	1703	3136
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	295	1265	2430	165	75	770
RTOR Reduction (vph)	0	0	0	40	0	7
Lane Group Flow (vph)	295	1265	2430	125	75	763
Heavy Vehicles (%)	2%	3%	5%	1%	6%	3%
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	14.5	105.0	85.5	85.5	21.0	35.5
Effective Green, g (s)	14.5	105.0	87.5	85.5	21.0	35.5
Actuated g/C Ratio	0.10	0.75	0.62	0.61	0.15	0.25
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	385	3112	2678	976	255	795
v/s Ratio Prot	0.08	0.30	c0.57			c0.10
v/s Ratio Perm				0.08	0.04	0.14
v/c Ratio	0.77	0.41	0.91	0.13	0.29	0.96
Uniform Delay, d1	61.1	6.3	22.7	11.5	52.9	51.5
Progression Factor	1.06	0.89	0.29	0.02	1.00	1.00
Incremental Delay, d2	4.9	0.2	3.8	0.2	2.9	22.2
Delay (s)	69.6	5.8	10.4	0.4	55.8	73.7
Level of Service	E	A	B	A	E	E
Approach Delay (s)		17.9	9.8		72.1	
Approach LOS		B	A		E	

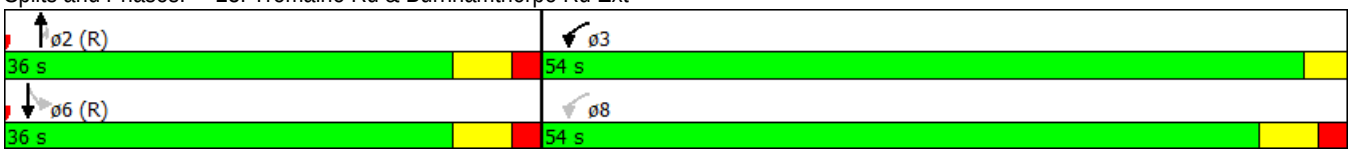
Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	NBT	NBR	SBL	SBT	ø8
Lane Configurations						
Volume (vph)	490	420	40	90	355	
Lane Group Flow (vph)	700	420	40	90	355	
Turn Type	pm+pt	NA	Perm	Perm	NA	
Protected Phases	3	2			6	8
Permitted Phases	8		2	6		
Detector Phase	3	2	2	6	6	
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	54.0	36.0	36.0	36.0	36.0	54.0
Total Split (%)	60.0%	40.0%	40.0%	40.0%	40.0%	60%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	0.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	C-Max	C-Max	C-Max	C-Max	None
v/c Ratio	0.84	0.28	0.06	0.23	0.23	
Control Delay	28.7	19.0	7.0	21.5	18.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	28.7	19.0	7.0	21.5	18.6	
Queue Length 50th (m)	98.6	26.0	0.0	10.4	21.5	
Queue Length 95th (m)	124.3	43.0	6.8	25.1	36.4	
Internal Link Dist (m)	376.2	509.2			1615.3	
Turn Bay Length (m)			85.0	85.0		
Base Capacity (vph)	995	1516	701	392	1516	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.70	0.28	0.06	0.23	0.23	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 23: Tremaine Rd & Burnhamthorpe Rd Ext





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	490	210	420	40	90	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0		6.0	6.0	6.0	6.0
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1727		3539	1583	1770	3539
Flt Permitted	0.97		1.00	1.00	0.49	1.00
Satd. Flow (perm)	1727		3539	1583	914	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	490	210	420	40	90	355
RTOR Reduction (vph)	21	0	0	23	0	0
Lane Group Flow (vph)	679	0	420	17	90	355
Turn Type	pm+pt		NA	Perm	Perm	NA
Protected Phases	3		2			6
Permitted Phases	8			2	6	
Actuated Green, G (s)	42.4		38.6	38.6	38.6	38.6
Effective Green, g (s)	42.4		38.6	38.6	38.6	38.6
Actuated g/C Ratio	0.47		0.43	0.43	0.43	0.43
Clearance Time (s)	3.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	813		1517	678	392	1517
v/s Ratio Prot	c0.39		c0.12			0.10
v/s Ratio Perm				0.01	0.10	
v/c Ratio	0.83		0.28	0.03	0.23	0.23
Uniform Delay, d1	20.8		16.7	14.8	16.3	16.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	7.4		0.5	0.1	1.4	0.4
Delay (s)	28.2		17.1	14.9	17.6	16.7
Level of Service	C		B	B	B	B
Approach Delay (s)	28.2		16.9			16.9
Approach LOS	C		B			B

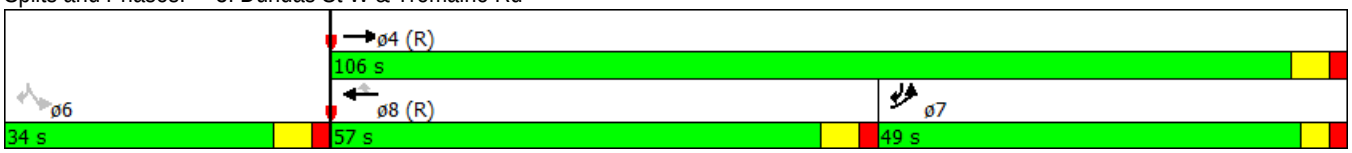
Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	825	2650	740	80	245	430
Lane Group Flow (vph)	825	2650	740	80	245	430
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	90.0	27.0	27.0	27.0	9.0
Total Split (s)	49.0	106.0	57.0	57.0	34.0	49.0
Total Split (%)	35.0%	75.7%	40.7%	40.7%	24.3%	35.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lead/Lag	Lag		Lead	Lead		Lag
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.77	0.89	0.48	0.13	0.69	0.27
Control Delay	35.8	7.4	55.6	24.2	63.4	11.4
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0
Total Delay	35.8	8.3	55.6	24.2	63.4	11.4
Queue Length 50th (m)	107.5	134.0	100.2	10.4	66.9	24.0
Queue Length 95th (m)	m113.3	m151.5	m100.4	m15.4	98.4	35.2
Internal Link Dist (m)		254.7	1908.9		217.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	1078	2993	1526	627	354	1609
Starvation Cap Reductn	0	139	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.93	0.48	0.13	0.69	0.27

Intersection Summary

Cycle Length: 140
Actual Cycle Length: 140
Offset: 7 (5%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	825	2650	740	80	245	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lane Util. Factor	0.97	*0.75	*0.75	1.00	1.00	0.88
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	4191	4191	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	4191	4191	1583	1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	825	2650	740	80	245	430
RTOR Reduction (vph)	0	0	0	51	0	62
Lane Group Flow (vph)	825	2650	740	29	245	368
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	44.0	100.0	51.0	51.0	28.0	72.0
Effective Green, g (s)	44.0	100.0	51.0	51.0	28.0	72.0
Actuated g/C Ratio	0.31	0.71	0.36	0.36	0.20	0.51
Clearance Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1078	2993	1526	576	354	1532
v/s Ratio Prot	0.24	c0.63	0.18			0.08
v/s Ratio Perm				0.02	c0.14	0.06
v/c Ratio	0.77	0.89	0.48	0.05	0.69	0.24
Uniform Delay, d1	43.3	15.5	34.4	28.8	52.0	18.8
Progression Factor	0.78	0.37	1.60	4.01	1.00	1.00
Incremental Delay, d2	1.0	1.4	0.5	0.1	10.6	0.1
Delay (s)	34.9	7.1	55.3	115.7	62.6	18.9
Level of Service	C	A	E	F	E	B
Approach Delay (s)		13.7	61.2		34.8	
Approach LOS		B	E		C	

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	240	3470	1130	45	5	140
Lane Group Flow (vph)	240	3470	1130	45	5	140
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	23.0	113.0	90.0	90.0	27.0	27.0
Total Split (%)	16.4%	80.7%	64.3%	64.3%	19.3%	19.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead	Lead		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.53	0.96	0.39	0.04	0.05	0.64
Control Delay	13.3	14.4	4.8	1.7	61.4	23.3
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0
Total Delay	13.3	15.0	4.8	1.7	61.4	23.3
Queue Length 50th (m)	12.4	209.3	30.2	0.3	1.4	0.0
Queue Length 95th (m)	m2.6	m18.3	39.3	1.7	6.0	21.2
Internal Link Dist (m)		1758.3	254.7		122.8	
Turn Bay Length (m)	105.0			65.0		
Base Capacity (vph)	457	3604	2915	1115	265	356
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	27	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.97	0.39	0.04	0.02	0.39

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 120 (86%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Dundas St W & Street A





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	240	3470	1130	45	5	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	*0.75	*0.75	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	4191	4191	1583	1770	1583
Flt Permitted	0.17	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	311	4191	4191	1583	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	3470	1130	45	5	140
RTOR Reduction (vph)	0	0	0	14	0	132
Lane Group Flow (vph)	240	3470	1130	31	5	8
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	121.4	120.4	97.4	97.4	7.6	7.6
Effective Green, g (s)	121.4	120.4	97.4	97.4	7.6	7.6
Actuated g/C Ratio	0.87	0.86	0.70	0.70	0.05	0.05
Clearance Time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	457	3604	2915	1101	96	85
v/s Ratio Prot	0.07	c0.83	0.27		0.00	
v/s Ratio Perm	0.39			0.02		c0.00
v/c Ratio	0.53	0.96	0.39	0.03	0.05	0.09
Uniform Delay, d1	9.8	8.0	8.9	6.6	62.8	62.9
Progression Factor	1.21	1.54	0.48	0.74	1.00	1.00
Incremental Delay, d2	0.1	1.1	0.4	0.0	0.2	0.5
Delay (s)	12.0	13.4	4.7	4.9	63.0	63.4
Level of Service	B	B	A	A	E	E
Approach Delay (s)		13.3	4.7		63.4	
Approach LOS		B	A		E	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	50	0	900	625	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	0	900	625	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				241	292	
pX, platoon unblocked						
vC, conflicting volume	1075	312	625			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075	312	625			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	214	683	952			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	50	450	450	417	208
Volume Left	0	0	0	0	0
Volume Right	50	0	0	0	0
cSH	683	1700	1700	1700	1700
Volume to Capacity	0.07	0.26	0.26	0.25	0.12
Queue Length 95th (m)	1.9	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.7	0.0		0.0	
Approach LOS	B				

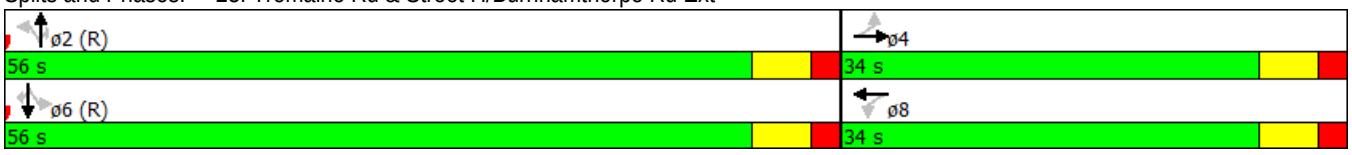
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	80	15	55	140	40	565	300	240	505
Lane Group Flow (vph)	80	80	55	205	40	565	300	240	505
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	34.0	34.0	34.0	34.0	56.0	56.0	56.0	56.0	56.0
Total Split (%)	37.8%	37.8%	37.8%	37.8%	62.2%	62.2%	62.2%	62.2%	62.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.57	0.25	0.26	0.67	0.07	0.23	0.25	0.42	0.20
Control Delay	49.6	12.8	34.3	40.7	5.5	5.4	1.3	7.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.6	12.8	34.3	40.7	5.5	5.4	1.3	7.7	4.4
Queue Length 50th (m)	13.6	2.4	8.9	30.7	1.9	16.1	0.0	10.3	11.2
Queue Length 95th (m)	26.8	13.6	18.5	49.9	6.3	28.5	8.5	39.5	16.5
Internal Link Dist (m)		179.8		345.1		268.1			227.9
Turn Bay Length (m)					65.0		85.0	85.0	
Base Capacity (vph)	271	553	408	570	612	2496	1205	578	2496
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.14	0.13	0.36	0.07	0.23	0.25	0.42	0.20

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 23: Tremaine Rd & Street H/Burnhamthorpe Rd Ext



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	15	65	55	140	65	40	565	300	240	505	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.88		1.00	0.95		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1636		1770	1774		1770	3539	1583	1770	3539	
Flt Permitted	0.47	1.00		0.70	1.00		0.47	1.00	1.00	0.44	1.00	
Satd. Flow (perm)	873	1636		1313	1774		869	3539	1583	819	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	80	15	65	55	140	65	40	565	300	240	505	0
RTOR Reduction (vph)	0	55	0	0	23	0	0	0	88	0	0	0
Lane Group Flow (vph)	80	25	0	55	182	0	40	565	212	240	505	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	14.5	14.5		14.5	14.5		63.5	63.5	63.5	63.5	63.5	
Effective Green, g (s)	14.5	14.5		14.5	14.5		63.5	63.5	63.5	63.5	63.5	
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.71	0.71	0.71	0.71	0.71	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	140	263		211	285		613	2496	1116	577	2496	
v/s Ratio Prot		0.02			c0.10			0.16			0.14	
v/s Ratio Perm	0.09			0.04			0.05		0.13	c0.29		
v/c Ratio	0.57	0.10		0.26	0.64		0.07	0.23	0.19	0.42	0.20	
Uniform Delay, d1	34.9	32.2		33.1	35.3		4.1	4.6	4.5	5.5	4.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.79	0.83	
Incremental Delay, d2	5.5	0.2		0.7	4.7		0.2	0.2	0.4	2.2	0.2	
Delay (s)	40.4	32.3		33.7	40.0		4.3	4.9	4.9	6.6	3.9	
Level of Service	D	C		C	D		A	A	A	A	A	
Approach Delay (s)		36.4			38.7			4.8			4.8	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	11.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	45	0	705	700	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	45	0	705	700	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				252	212	
pX, platoon unblocked	0.99	1.00	1.00			
vC, conflicting volume	1052	350	700			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1009	339	690			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	234	654	897			

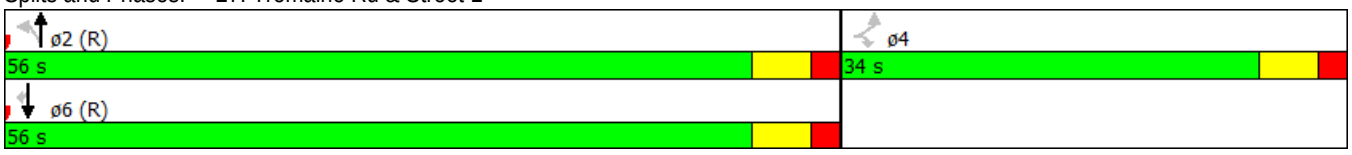
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	45	235	470	467	233
Volume Left	0	0	0	0	0
Volume Right	45	0	0	0	0
cSH	654	897	1700	1700	1700
Volume to Capacity	0.07	0.00	0.28	0.27	0.14
Queue Length 95th (m)	1.8	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.9	0.0		0.0	
Approach LOS	B				

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	29.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	35	155	550	665	5
Lane Group Flow (vph)	30	35	155	550	665	5
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	34.0	34.0	56.0	56.0	56.0	56.0
Total Split (%)	37.8%	37.8%	62.2%	62.2%	62.2%	62.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.22	0.22	0.24	0.18	0.22	0.00
Control Delay	42.0	16.9	3.6	1.6	2.1	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	16.9	3.6	1.6	2.1	1.6
Queue Length 50th (m)	5.2	0.0	4.4	7.6	12.3	0.0
Queue Length 95th (m)	13.6	9.0	13.5	12.1	19.5	0.7
Internal Link Dist (m)	193.9			188.2	1151.3	
Turn Bay Length (m)			95.0			95.0
Base Capacity (vph)	550	516	644	3068	3068	1373
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.07	0.24	0.18	0.22	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 27: Tremaine Rd & Street L



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	35	155	550	665	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.40	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	743	3539	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	35	155	550	665	5
RTOR Reduction (vph)	0	33	0	0	0	1
Lane Group Flow (vph)	30	2	155	550	665	4
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	4.8	4.8	73.2	73.2	73.2	73.2
Effective Green, g (s)	4.8	4.8	73.2	73.2	73.2	73.2
Actuated g/C Ratio	0.05	0.05	0.81	0.81	0.81	0.81
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	94	84	604	2878	2878	1287
v/s Ratio Prot				0.16	0.19	
v/s Ratio Perm	c0.02	0.00	c0.21			0.00
v/c Ratio	0.32	0.02	0.26	0.19	0.23	0.00
Uniform Delay, d1	41.0	40.4	2.0	1.9	1.9	1.6
Progression Factor	1.00	1.00	1.11	0.78	1.00	1.00
Incremental Delay, d2	2.0	0.1	1.0	0.1	0.2	0.0
Delay (s)	43.0	40.5	3.2	1.6	2.1	1.6
Level of Service	D	D	A	A	A	A
Approach Delay (s)	41.6			1.9	2.1	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	435	1265	2475	195	195	970
Lane Group Flow (vph)	435	1265	2475	195	195	970
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0	9.0
Total Split (s)	23.0	112.0	89.0	89.0	28.0	23.0
Total Split (%)	16.4%	80.0%	63.6%	63.6%	20.0%	16.4%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.91	0.41	0.96	0.20	0.76	0.94
Control Delay	78.3	3.7	15.9	0.4	77.0	61.8
Queue Delay	0.0	0.0	43.6	0.0	0.0	0.0
Total Delay	78.3	3.7	59.5	0.4	77.0	61.8
Queue Length 50th (m)	56.3	18.3	49.3	0.0	55.3	136.3
Queue Length 95th (m)	#90.9	17.9	m49.6	m0.2	#92.1	#177.8
Internal Link Dist (m)		254.7	1908.9		217.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	478	3112	2571	983	255	1035
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	656	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.41	1.29	0.20	0.76	0.94

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 56 (40%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	435	1265	2475	195	195	970
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lane Util. Factor	*1.00	*0.75	*0.75	1.00	1.00	*1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3725	4150	4286	1599	1703	3136
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3725	4150	4286	1599	1703	3136
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	435	1265	2475	195	195	970
RTOR Reduction (vph)	0	0	0	47	0	5
Lane Group Flow (vph)	435	1265	2475	148	195	965
Heavy Vehicles (%)	2%	3%	5%	1%	6%	3%
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	18.0	105.0	82.0	82.0	21.0	39.0
Effective Green, g (s)	18.0	105.0	84.0	82.0	21.0	39.0
Actuated g/C Ratio	0.13	0.75	0.60	0.59	0.15	0.28
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	478	3112	2571	936	255	873
v/s Ratio Prot	0.12	0.30	c0.58			c0.14
v/s Ratio Perm				0.09	0.11	0.17
v/c Ratio	0.91	0.41	0.96	0.16	0.76	1.11
Uniform Delay, d1	60.2	6.3	26.5	13.2	57.1	50.5
Progression Factor	0.95	0.53	0.29	0.02	1.00	1.00
Incremental Delay, d2	19.1	0.3	7.1	0.2	19.4	63.5
Delay (s)	76.0	3.7	14.9	0.5	76.5	114.0
Level of Service	E	A	B	A	E	F
Approach Delay (s)		22.2	13.9		107.8	
Approach LOS		C	B		F	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	190	1680	3355	90	25	340
Lane Group Flow (vph)	190	1680	3355	90	25	340
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4			8	6	6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0	28.0
Total Split (s)	17.0	112.0	95.0	95.0	28.0	28.0
Total Split (%)	12.1%	80.0%	67.9%	67.9%	20.0%	20.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	5.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
v/c Ratio	0.90	0.53	1.18	0.09	0.09	0.95
Control Delay	53.5	6.3	104.4	7.4	52.5	71.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	6.3	104.4	7.4	52.5	71.2
Queue Length 50th (m)	45.6	47.3	~519.6	4.7	6.4	61.3
Queue Length 95th (m)	m50.7	m50.4	#547.3	m5.4	15.6	#124.6
Internal Link Dist (m)		1758.3	254.7		122.8	
Turn Bay Length (m)	105.0			65.0		
Base Capacity (vph)	218	3143	2852	1014	265	357
Starvation Cap Reductn	0	0	25	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.53	1.19	0.09	0.09	0.95

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 35 (25%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Dundas St W & Street A





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	190	1680	3355	90	25	340
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	4.0	7.0	5.0	7.0	7.0	7.0
Lane Util. Factor	1.00	*0.75	*0.75	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	4191	4412	1583	1770	1583
Flt Permitted	0.04	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	81	4191	4412	1583	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	190	1680	3355	90	25	340
RTOR Reduction (vph)	0	0	0	14	0	120
Lane Group Flow (vph)	190	1680	3355	76	25	220
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4			8	6	6
Actuated Green, G (s)	105.0	105.0	88.5	88.5	21.0	21.0
Effective Green, g (s)	105.0	105.0	90.5	88.5	21.0	21.0
Actuated g/C Ratio	0.75	0.75	0.65	0.63	0.15	0.15
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	211	3143	2852	1000	265	237
v/s Ratio Prot	c0.08	0.40	c0.76			
v/s Ratio Perm	0.60			0.05	0.01	c0.14
v/c Ratio	0.90	0.53	1.18	0.08	0.09	0.93
Uniform Delay, d1	51.0	7.3	24.8	10.0	51.3	58.8
Progression Factor	1.28	0.84	0.90	1.20	1.00	1.00
Incremental Delay, d2	5.2	0.1	80.7	0.0	0.7	42.6
Delay (s)	70.8	6.2	102.9	12.0	52.0	101.3
Level of Service	E	A	F	B	D	F
Approach Delay (s)		12.7	100.5		98.0	
Approach LOS		B	F		F	

Intersection Summary			
HCM 2000 Control Delay	71.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	65	0	630	1100	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	65	0	630	1100	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				241	292	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	1415	550	1100			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1330	419	998			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	139	553	654			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	0	65	315	315	733	367
Volume Left	0	0	0	0	0	0
Volume Right	0	65	0	0	0	0
cSH	1700	553	1700	1700	1700	1700
Volume to Capacity	0.00	0.12	0.19	0.19	0.43	0.22
Queue Length 95th (m)	0.0	3.2	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	12.4	0.0	0.0	0.0	0.0
Lane LOS	A	B				
Approach Delay (s)	12.4		0.0		0.0	
Approach LOS	B					

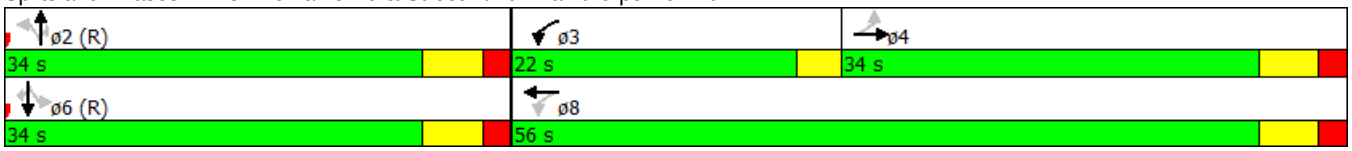
Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

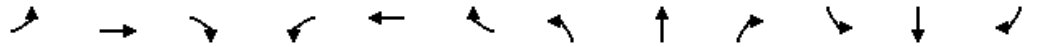
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	55	20	490	145	120	470	40	90	530
Lane Group Flow (vph)	55	100	490	355	120	470	40	90	530
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4	3	8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	3	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	8.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	34.0	34.0	22.0	56.0	34.0	34.0	34.0	34.0	34.0
Total Split (%)	37.8%	37.8%	24.4%	62.2%	37.8%	37.8%	37.8%	37.8%	37.8%
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	3.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes	Yes						
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.47	0.39	0.94	0.54	0.28	0.25	0.05	0.19	0.28
Control Delay	49.3	16.1	51.3	17.0	16.1	13.1	1.3	13.6	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.3	16.1	51.3	17.0	16.1	13.1	1.3	13.6	12.2
Queue Length 50th (m)	9.5	3.3	73.6	30.6	12.0	24.2	0.0	7.9	24.8
Queue Length 95th (m)	20.5	16.9	#111.2	51.2	27.5	38.6	2.2	17.1	36.5
Internal Link Dist (m)		179.8		376.2		268.1			227.9
Turn Bay Length (m)					65.0		85.0	85.0	
Base Capacity (vph)	318	565	524	1000	433	1887	878	469	1887
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.18	0.94	0.35	0.28	0.25	0.05	0.19	0.28

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 12 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 23: Tremaine Rd & Street H/Burnhamthorpe Rd Ext





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	20	80	490	145	210	120	470	40	90	530	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		3.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.88		1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1639		1770	1697		1770	3539	1583	1770	3539	
Flt Permitted	0.55	1.00		0.52	1.00		0.44	1.00	1.00	0.47	1.00	
Satd. Flow (perm)	1022	1639		973	1697		813	3539	1583	882	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	55	20	80	490	145	210	120	470	40	90	530	0
RTOR Reduction (vph)	0	72	0	0	85	0	0	0	19	0	0	0
Lane Group Flow (vph)	55	28	0	490	270	0	120	470	21	90	530	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	9.2	9.2		31.2	31.2		46.8	46.8	46.8	46.8	46.8	
Effective Green, g (s)	9.2	9.2		31.2	31.2		46.8	46.8	46.8	46.8	46.8	
Actuated g/C Ratio	0.10	0.10		0.35	0.35		0.52	0.52	0.52	0.52	0.52	
Clearance Time (s)	6.0	6.0		3.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	104	167		505	588		422	1840	823	458	1840	
v/s Ratio Prot		0.02		c0.20	0.16			0.13			c0.15	
v/s Ratio Perm	0.05			c0.13			0.15		0.01	0.10		
v/c Ratio	0.53	0.17		0.97	0.46		0.28	0.26	0.03	0.20	0.29	
Uniform Delay, d1	38.3	36.9		27.2	22.8		12.2	12.0	10.5	11.5	12.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.92	0.91	
Incremental Delay, d2	4.8	0.5		32.4	0.6		1.7	0.3	0.1	1.0	0.4	
Delay (s)	43.1	37.4		59.6	23.4		13.9	12.3	10.6	11.5	11.5	
Level of Service	D	D		E	C		B	B	B	B	B	
Approach Delay (s)		39.4			44.4			12.5			11.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	55	0	740	570	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	55	0	740	570	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				252	212	
pX, platoon unblocked	0.96					
vC, conflicting volume	940	285	570			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	847	285	570			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	288	712	999			

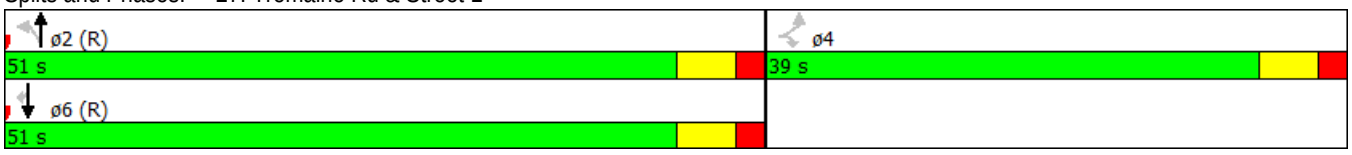
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	55	247	493	380	190
Volume Left	0	0	0	0	0
Volume Right	55	0	0	0	0
cSH	712	999	1700	1700	1700
Volume to Capacity	0.08	0.00	0.29	0.22	0.11
Queue Length 95th (m)	2.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.5	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.5	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	65	120	50	690	450	5
Lane Group Flow (vph)	65	120	50	690	450	5
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	39.0	39.0	51.0	51.0	51.0	51.0
Total Split (%)	43.3%	43.3%	56.7%	56.7%	56.7%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.38	0.46	0.07	0.25	0.17	0.00
Control Delay	43.7	13.3	2.4	2.5	3.1	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	13.3	2.4	2.5	3.1	2.0
Queue Length 50th (m)	11.3	0.0	1.3	10.4	8.8	0.0
Queue Length 95th (m)	23.2	15.5	3.5	15.8	15.3	0.8
Internal Link Dist (m)	193.9			188.2	1151.3	
Turn Bay Length (m)			95.0			95.0
Base Capacity (vph)	649	656	705	2725	2725	1220
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.07	0.25	0.17	0.00

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 27: Tremaine Rd & Street L





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	65	120	50	690	450	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.49	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	916	3539	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	120	50	690	450	5
RTOR Reduction (vph)	0	108	0	0	0	1
Lane Group Flow (vph)	65	12	50	690	450	4
Turn Type	Perm	Perm	Perm	NA	NA	Perm
Protected Phases				2	6	
Permitted Phases	4	4	2			6
Actuated Green, G (s)	8.7	8.7	69.3	69.3	69.3	69.3
Effective Green, g (s)	8.7	8.7	69.3	69.3	69.3	69.3
Actuated g/C Ratio	0.10	0.10	0.77	0.77	0.77	0.77
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	153	705	2725	2725	1218
v/s Ratio Prot				c0.19	0.13	
v/s Ratio Perm	c0.04	0.01	0.05			0.00
v/c Ratio	0.38	0.08	0.07	0.25	0.17	0.00
Uniform Delay, d1	38.1	37.0	2.5	3.0	2.7	2.4
Progression Factor	1.00	1.00	0.72	0.70	1.00	1.00
Incremental Delay, d2	1.4	0.2	0.2	0.2	0.1	0.0
Delay (s)	39.5	37.2	2.0	2.3	2.9	2.4
Level of Service	D	D	A	A	A	A
Approach Delay (s)	38.0			2.3	2.9	
Approach LOS	D			A	A	

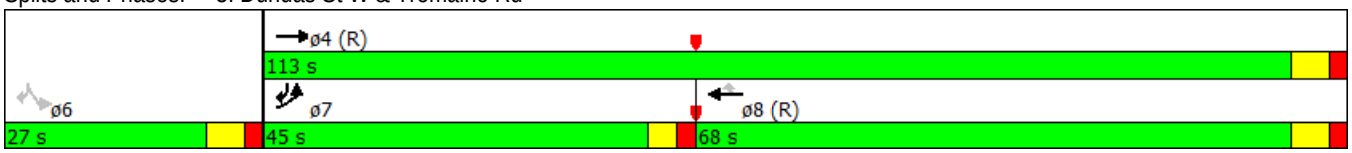
Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	740	2765	680	85	155	320
Lane Group Flow (vph)	740	2765	680	85	155	320
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	90.0	27.0	27.0	27.0	9.0
Total Split (s)	45.0	113.0	68.0	68.0	27.0	45.0
Total Split (%)	32.1%	80.7%	48.6%	48.6%	19.3%	32.1%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.85	0.97	0.38	0.11	0.58	0.23
Control Delay	56.2	13.3	30.6	13.3	65.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	13.3	30.6	13.3	65.3	5.3
Queue Length 50th (m)	94.5	395.7	58.3	6.9	42.7	6.0
Queue Length 95th (m)	m56.3	m45.5	m66.2	m9.0	67.4	15.1
Internal Link Dist (m)		2037.0	1908.9		509.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	980	2846	1770	797	265	1466
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.97	0.38	0.11	0.58	0.22

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 30 (21%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





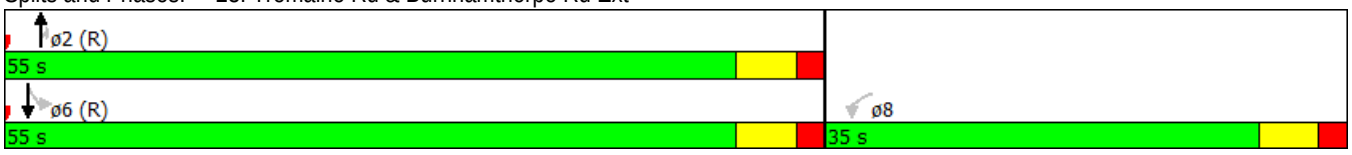
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	740	2765	680	85	155	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lane Util. Factor	0.97	*1.00	*1.00	1.00	1.00	0.88
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3725	3725	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3725	3725	1583	1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	740	2765	680	85	155	320
RTOR Reduction (vph)	0	0	0	45	0	151
Lane Group Flow (vph)	740	2765	680	40	155	169
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	35.5	107.0	66.5	66.5	21.0	56.5
Effective Green, g (s)	35.5	107.0	66.5	66.5	21.0	56.5
Actuated g/C Ratio	0.25	0.76	0.48	0.48	0.15	0.40
Clearance Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	870	2846	1769	751	265	1124
v/s Ratio Prot	0.22	c0.74	0.18			0.04
v/s Ratio Perm				0.03	c0.09	0.02
v/c Ratio	0.85	0.97	0.38	0.05	0.58	0.15
Uniform Delay, d1	49.7	15.1	23.6	19.8	55.4	26.5
Progression Factor	1.11	0.72	1.24	2.94	1.00	1.00
Incremental Delay, d2	0.8	1.7	0.2	0.1	9.1	0.1
Delay (s)	56.2	12.5	29.6	58.3	64.6	26.6
Level of Service	E	B	C	E	E	C
Approach Delay (s)		21.7	32.8		39.0	
Approach LOS		C	C		D	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations					
Volume (vph)	70	560	265	185	405
Lane Group Flow (vph)	135	560	265	185	405
Turn Type	Perm	NA	Perm	Perm	NA
Protected Phases		2			6
Permitted Phases	8		2	6	
Detector Phase	8	2	2	6	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0
Total Split (s)	35.0	55.0	55.0	55.0	55.0
Total Split (%)	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.57	0.21	0.21	0.30	0.15
Control Delay	32.0	3.7	1.0	4.2	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	32.0	3.7	1.0	4.2	2.6
Queue Length 50th (m)	13.9	12.2	0.0	5.5	5.3
Queue Length 95th (m)	30.3	22.3	6.4	9.4	9.1
Internal Link Dist (m)	371.5	509.2			440.0
Turn Bay Length (m)			85.0	85.0	
Base Capacity (vph)	584	2677	1261	622	2677
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.21	0.21	0.30	0.15

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 20 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 23: Tremaine Rd & Burnhamthorpe Rd Ext





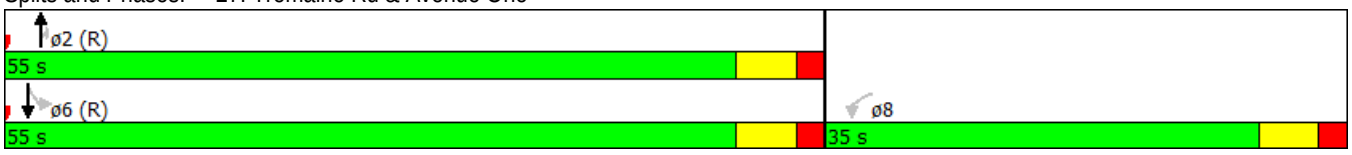
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	70	65	560	265	185	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.94		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1698		3539	1583	1770	3539
Flt Permitted	0.97		1.00	1.00	0.44	1.00
Satd. Flow (perm)	1698		3539	1583	823	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	70	65	560	265	185	405
RTOR Reduction (vph)	49	0	0	64	0	0
Lane Group Flow (vph)	86	0	560	201	185	405
Turn Type	Perm		NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8			2	6	
Actuated Green, G (s)	9.9		68.1	68.1	68.1	68.1
Effective Green, g (s)	9.9		68.1	68.1	68.1	68.1
Actuated g/C Ratio	0.11		0.76	0.76	0.76	0.76
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	186		2677	1197	622	2677
v/s Ratio Prot			0.16			0.11
v/s Ratio Perm	c0.05			0.13	c0.22	
v/c Ratio	0.46		0.21	0.17	0.30	0.15
Uniform Delay, d1	37.6		3.2	3.1	3.4	3.0
Progression Factor	1.00		1.00	1.00	0.70	0.74
Incremental Delay, d2	1.8		0.2	0.3	1.2	0.1
Delay (s)	39.4		3.3	3.4	3.6	2.3
Level of Service	D		A	A	A	A
Approach Delay (s)	39.4		3.3			2.7
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations					
Volume (vph)	25	470	155	145	570
Lane Group Flow (vph)	40	470	155	145	570
Turn Type	Perm	NA	Perm	Perm	NA
Protected Phases		2			6
Permitted Phases	8		2	6	
Detector Phase	8	2	2	6	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0
Total Split (s)	35.0	55.0	55.0	55.0	55.0
Total Split (%)	38.9%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.27	0.15	0.11	0.19	0.19
Control Delay	31.9	1.8	0.5	2.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	1.8	0.5	2.9	2.1
Queue Length 50th (m)	4.4	7.5	0.0	4.9	10.1
Queue Length 95th (m)	13.9	12.4	3.0	11.4	16.8
Internal Link Dist (m)	336.2	440.0			1151.3
Turn Bay Length (m)			85.0	85.0	
Base Capacity (vph)	562	3068	1393	780	3068
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.15	0.11	0.19	0.19

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 27: Tremaine Rd & Avenue One





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	25	15	470	155	145	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.95		1.00	0.85	1.00	1.00
Flt Protected	0.97		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1715		3539	1583	1770	3539
Flt Permitted	0.97		1.00	1.00	0.48	1.00
Satd. Flow (perm)	1715		3539	1583	899	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	15	470	155	145	570
RTOR Reduction (vph)	14	0	0	29	0	0
Lane Group Flow (vph)	26	0	470	126	145	570
Turn Type	Perm		NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8			2	6	
Actuated Green, G (s)	4.8		73.2	73.2	73.2	73.2
Effective Green, g (s)	4.8		73.2	73.2	73.2	73.2
Actuated g/C Ratio	0.05		0.81	0.81	0.81	0.81
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	91		2878	1287	731	2878
v/s Ratio Prot			0.13			0.16
v/s Ratio Perm	c0.02			0.08	c0.16	
v/c Ratio	0.28		0.16	0.10	0.20	0.20
Uniform Delay, d1	40.9		1.8	1.7	1.9	1.9
Progression Factor	1.00		0.92	0.76	1.00	1.00
Incremental Delay, d2	1.7		0.1	0.1	0.6	0.2
Delay (s)	42.7		1.8	1.4	2.5	2.0
Level of Service	D		A	A	A	A
Approach Delay (s)	42.7		1.7			2.1
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	3.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	305	1285	2300	165	120	1025
Lane Group Flow (vph)	305	1285	2300	165	120	1025
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0	9.0
Total Split (s)	22.5	112.0	89.5	89.5	28.0	22.5
Total Split (%)	16.1%	80.0%	63.9%	63.9%	20.0%	16.1%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.66	0.46	1.00	0.17	0.47	1.00
Control Delay	63.2	9.6	25.5	0.7	61.2	74.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	9.6	25.5	0.7	61.2	74.3
Queue Length 50th (m)	46.5	65.0	~63.5	0.0	32.4	148.0
Queue Length 95th (m)	m58.9	m76.2	m65.7	m0.5	53.7	#195.8
Internal Link Dist (m)		2037.0	1908.9		509.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	465	2766	2299	980	255	1026
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.46	1.00	0.17	0.47	1.00

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 51 (36%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	305	1285	2300	165	120	1025
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lane Util. Factor	*1.00	*1.00	*1.00	1.00	1.00	*1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3725	3689	3810	1599	1703	3136
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3725	3689	3810	1599	1703	3136
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	305	1285	2300	165	120	1025
RTOR Reduction (vph)	0	0	0	38	0	8
Lane Group Flow (vph)	305	1285	2300	127	120	1017
Heavy Vehicles (%)	2%	3%	5%	1%	6%	3%
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	17.5	105.0	82.5	82.5	21.0	38.5
Effective Green, g (s)	17.5	105.0	84.5	82.5	21.0	38.5
Actuated g/C Ratio	0.12	0.75	0.60	0.59	0.15	0.28
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	465	2766	2299	942	255	862
v/s Ratio Prot	0.08	0.35	c0.60			c0.15
v/s Ratio Perm				0.08	0.07	0.18
v/c Ratio	0.66	0.46	1.00	0.13	0.47	1.18
Uniform Delay, d1	58.4	6.7	27.8	12.8	54.4	50.8
Progression Factor	1.00	1.36	0.29	0.07	1.00	1.00
Incremental Delay, d2	2.0	0.3	15.8	0.2	6.1	92.9
Delay (s)	60.5	9.5	23.9	1.1	60.5	143.6
Level of Service	E	A	C	A	E	F
Approach Delay (s)		19.3	22.4		134.9	
Approach LOS		B	C		F	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	104.6%	ICU Level of Service	G
Analysis Period (min)	15		

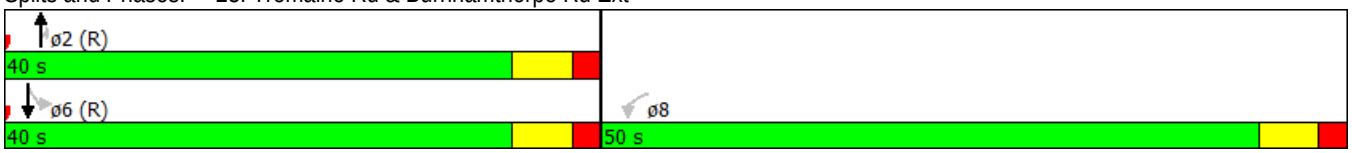
c Critical Lane Group

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations					
Volume (vph)	395	425	45	60	745
Lane Group Flow (vph)	520	425	45	60	745
Turn Type	Perm	NA	Perm	Perm	NA
Protected Phases		2			6
Permitted Phases	8		2	6	
Detector Phase	8	2	2	6	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0
Total Split (s)	50.0	40.0	40.0	40.0	40.0
Total Split (%)	55.6%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.81	0.24	0.05	0.13	0.42
Control Delay	34.4	14.4	5.2	17.2	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	14.4	5.2	17.2	17.4
Queue Length 50th (m)	80.0	21.9	0.0	5.7	41.0
Queue Length 95th (m)	100.8	38.3	6.5	m15.6	68.8
Internal Link Dist (m)	384.3	509.2			440.0
Turn Bay Length (m)			85.0	85.0	
Base Capacity (vph)	861	1790	822	472	1790
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.60	0.24	0.05	0.13	0.42

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 60 (67%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Tremaine Rd & Burnhamthorpe Rd Ext





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	395	125	425	45	60	745
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.97		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1736		3539	1583	1770	3539
Flt Permitted	0.96		1.00	1.00	0.50	1.00
Satd. Flow (perm)	1736		3539	1583	932	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	395	125	425	45	60	745
RTOR Reduction (vph)	16	0	0	22	0	0
Lane Group Flow (vph)	504	0	425	23	60	745
Turn Type	Perm		NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8			2	6	
Actuated Green, G (s)	32.5		45.5	45.5	45.5	45.5
Effective Green, g (s)	32.5		45.5	45.5	45.5	45.5
Actuated g/C Ratio	0.36		0.51	0.51	0.51	0.51
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	626		1789	800	471	1789
v/s Ratio Prot			0.12			c0.21
v/s Ratio Perm	c0.29			0.01	0.06	
v/c Ratio	0.81		0.24	0.03	0.13	0.42
Uniform Delay, d1	25.9		12.5	11.2	11.8	13.9
Progression Factor	1.00		1.00	1.00	1.10	1.08
Incremental Delay, d2	7.4		0.3	0.1	0.5	0.7
Delay (s)	33.3		12.8	11.2	13.5	15.7
Level of Service	C		B	B	B	B
Approach Delay (s)	33.3		12.7			15.5
Approach LOS	C		B			B

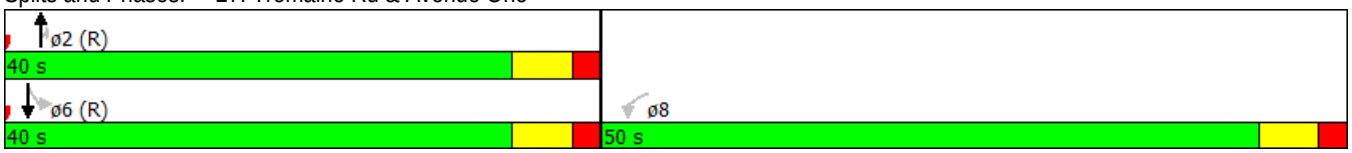
Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBL	NBT	NBR	SBL	SBT
Lane Configurations					
Volume (vph)	370	540	5	50	435
Lane Group Flow (vph)	500	540	5	50	435
Turn Type	Perm	NA	Perm	Perm	NA
Protected Phases		2			6
Permitted Phases	8		2	6	
Detector Phase	8	2	2	6	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0
Total Split (s)	50.0	40.0	40.0	40.0	40.0
Total Split (%)	55.6%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.80	0.29	0.01	0.12	0.24
Control Delay	34.7	7.2	3.0	15.1	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	7.2	3.0	15.1	13.8
Queue Length 50th (m)	76.8	14.8	0.0	4.5	21.8
Queue Length 95th (m)	97.6	19.7	m0.3	13.5	38.4
Internal Link Dist (m)	333.9	440.0			1151.3
Turn Bay Length (m)			85.0	85.0	
Base Capacity (vph)	861	1831	821	414	1831
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.58	0.29	0.01	0.12	0.24

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 88 (98%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: Tremaine Rd & Avenue One





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	370	130	540	5	50	435
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0	6.0	6.0	6.0
Lane Util. Factor	1.00		0.95	1.00	1.00	0.95
Frt	0.96		1.00	0.85	1.00	1.00
Flt Protected	0.96		1.00	1.00	0.95	1.00
Satd. Flow (prot)	1733		3539	1583	1770	3539
Flt Permitted	0.96		1.00	1.00	0.43	1.00
Satd. Flow (perm)	1733		3539	1583	801	3539
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	370	130	540	5	50	435
RTOR Reduction (vph)	18	0	0	2	0	0
Lane Group Flow (vph)	482	0	540	3	50	435
Turn Type	Perm		NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8			2	6	
Actuated Green, G (s)	31.4		46.6	46.6	46.6	46.6
Effective Green, g (s)	31.4		46.6	46.6	46.6	46.6
Actuated g/C Ratio	0.35		0.52	0.52	0.52	0.52
Clearance Time (s)	6.0		6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	604		1832	819	414	1832
v/s Ratio Prot			c0.15			0.12
v/s Ratio Perm	c0.28			0.00	0.06	
v/c Ratio	0.80		0.29	0.00	0.12	0.24
Uniform Delay, d1	26.4		12.3	10.5	11.2	11.9
Progression Factor	1.00		0.49	0.33	1.00	1.00
Incremental Delay, d2	7.3		0.4	0.0	0.6	0.3
Delay (s)	33.7		6.5	3.5	11.8	12.2
Level of Service	C		A	A	B	B
Approach Delay (s)	33.7		6.5			12.2
Approach LOS	C		A			B

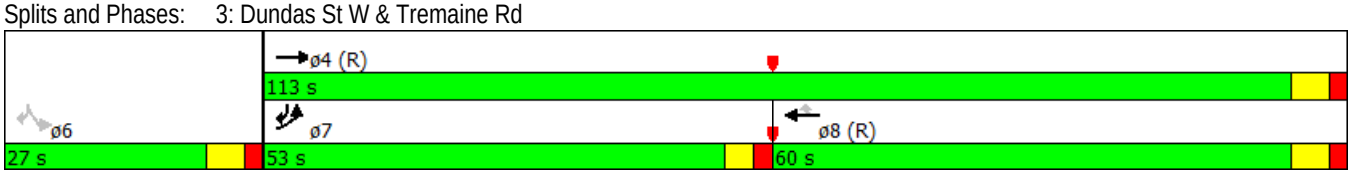
Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	905	2765	715	95	235	420
Lane Group Flow (vph)	905	2765	715	95	235	420
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	90.0	27.0	27.0	27.0	9.0
Total Split (s)	53.0	113.0	60.0	60.0	27.0	53.0
Total Split (%)	37.9%	80.7%	42.9%	42.9%	19.3%	37.9%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.86	0.97	0.46	0.13	0.89	0.28
Control Delay	46.9	8.2	35.5	13.4	90.8	11.9
Queue Delay	0.0	37.0	0.0	0.0	0.0	0.0
Total Delay	46.9	45.2	35.5	13.4	90.8	11.9
Queue Length 50th (m)	123.2	218.0	54.7	7.5	68.1	22.6
Queue Length 95th (m)	m93.8	m42.1	m54.9	m9.1	#117.5	32.3
Internal Link Dist (m)		254.7	1908.9		217.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	1177	2846	1569	721	265	1569
Starvation Cap Reductn	0	303	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	1.09	0.46	0.13	0.89	0.27

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 55 (39%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	905	2765	715	95	235	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Lane Util. Factor	0.97	*1.00	*1.00	1.00	1.00	0.88
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3433	3725	3725	1583	1770	2787
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3433	3725	3725	1583	1770	2787
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	905	2765	715	95	235	420
RTOR Reduction (vph)	0	0	0	55	0	89
Lane Group Flow (vph)	905	2765	715	40	235	331
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	43.0	107.0	59.0	59.0	21.0	64.0
Effective Green, g (s)	43.0	107.0	59.0	59.0	21.0	64.0
Actuated g/C Ratio	0.31	0.76	0.42	0.42	0.15	0.46
Clearance Time (s)	5.0	6.0	6.0	6.0	6.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1054	2846	1569	667	265	1274
v/s Ratio Prot	0.26	c0.74	0.19			0.08
v/s Ratio Perm				0.03	c0.13	0.04
v/c Ratio	0.86	0.97	0.46	0.06	0.89	0.26
Uniform Delay, d1	45.6	15.1	29.0	24.0	58.3	23.4
Progression Factor	1.01	0.36	1.18	2.61	1.00	1.00
Incremental Delay, d2	0.7	1.7	0.3	0.1	32.5	0.1
Delay (s)	46.9	7.1	34.4	62.7	90.8	23.5
Level of Service	D	A	C	E	F	C
Approach Delay (s)		16.9	37.7		47.7	
Approach LOS		B	D		D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	215	3665	1105	35	5	125
Lane Group Flow (vph)	215	3665	1105	35	5	125
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	27.0	27.0	27.0	27.0	27.0
Total Split (s)	18.0	113.0	95.0	95.0	27.0	27.0
Total Split (%)	12.9%	80.7%	67.9%	67.9%	19.3%	19.3%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	None	None
v/c Ratio	0.46	1.14	0.39	0.03	0.05	0.62
Control Delay	1.4	79.7	10.6	4.7	61.8	23.5
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	1.4	79.8	10.6	4.7	61.8	23.5
Queue Length 50th (m)	3.4	~622.7	58.4	1.0	1.4	0.0
Queue Length 95th (m)	m2.3	m22.3	108.4	5.7	6.0	20.1
Internal Link Dist (m)		1758.3	254.7		122.8	
Turn Bay Length (m)	105.0			65.0		
Base Capacity (vph)	511	3206	2856	1222	265	343
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	162	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.20	0.39	0.03	0.02	0.36

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Dundas St W & Street A





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	215	3665	1105	35	5	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	*1.00	*1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3725	3725	1583	1770	1583
Flt Permitted	0.24	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	447	3725	3725	1583	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	215	3665	1105	35	5	125
RTOR Reduction (vph)	0	0	0	8	0	118
Lane Group Flow (vph)	215	3665	1105	27	5	7
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases	4			8		6
Actuated Green, G (s)	120.5	120.5	107.3	107.3	7.5	7.5
Effective Green, g (s)	120.5	120.5	107.3	107.3	7.5	7.5
Actuated g/C Ratio	0.86	0.86	0.77	0.77	0.05	0.05
Clearance Time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	462	3206	2854	1213	94	84
v/s Ratio Prot	0.03	c0.98	0.30		0.00	
v/s Ratio Perm	0.37			0.02		c0.00
v/c Ratio	0.47	1.14	0.39	0.02	0.05	0.08
Uniform Delay, d1	2.7	9.8	5.4	3.9	62.9	63.0
Progression Factor	0.69	1.12	1.76	2.89	1.00	1.00
Incremental Delay, d2	0.1	64.8	0.4	0.0	0.2	0.4
Delay (s)	1.9	75.7	9.9	11.3	63.1	63.4
Level of Service	A	E	A	B	E	E
Approach Delay (s)		71.6	10.0		63.4	
Approach LOS		E	A		E	

Intersection Summary			
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	40	0	1000	620	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	40	0	1000	620	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				241	292	
pX, platoon unblocked						
vC, conflicting volume	1120	310	620			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1120	310	620			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	100			
cM capacity (veh/h)	200	686	956			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	0	40	500	500	413	207
Volume Left	0	0	0	0	0	0
Volume Right	0	40	0	0	0	0
cSH	1700	686	1700	1700	1700	1700
Volume to Capacity	0.00	0.06	0.29	0.29	0.24	0.12
Queue Length 95th (m)	0.0	1.5	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	10.6	0.0	0.0	0.0	0.0
Lane LOS	A	B				
Approach Delay (s)	10.6		0.0		0.0	
Approach LOS	B					

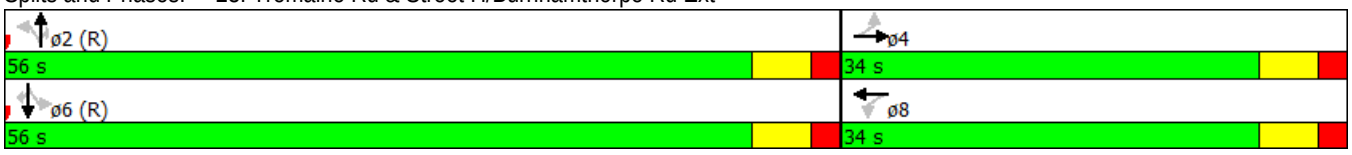
Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

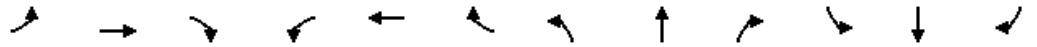
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	65	10	70	105	30	705	265	185	475
Lane Group Flow (vph)	65	80	70	170	30	705	265	185	475
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	34.0	34.0	34.0	34.0	56.0	56.0	56.0	56.0	56.0
Total Split (%)	37.8%	37.8%	37.8%	37.8%	62.2%	62.2%	62.2%	62.2%	62.2%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.47	0.28	0.39	0.62	0.05	0.27	0.22	0.36	0.18
Control Delay	45.7	12.9	40.2	38.2	4.6	4.9	1.1	6.5	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	12.9	40.2	38.2	4.6	4.9	1.1	6.5	3.8
Queue Length 50th (m)	11.1	1.6	11.8	23.1	1.3	18.8	0.0	7.1	9.4
Queue Length 95th (m)	22.7	13.4	23.2	41.1	4.5	32.8	7.3	14.8	16.1
Internal Link Dist (m)		179.8		371.5		268.1			227.9
Turn Bay Length (m)					65.0		85.0	85.0	
Base Capacity (vph)	312	551	408	571	651	2581	1226	519	2581
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.15	0.17	0.30	0.05	0.27	0.22	0.36	0.18

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 13 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 23: Tremaine Rd & Street H/Burnhamthorpe Rd Ext





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	10	70	70	105	65	30	705	265	185	475	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.87		1.00	0.94		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1618		1770	1756		1770	3539	1583	1770	3539	
Flt Permitted	0.54	1.00		0.70	1.00		0.48	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	1006	1618		1313	1756		894	3539	1583	711	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	65	10	70	70	105	65	30	705	265	185	475	0
RTOR Reduction (vph)	0	60	0	0	31	0	0	0	72	0	0	0
Lane Group Flow (vph)	65	20	0	70	139	0	30	705	193	185	475	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	12.4	12.4		12.4	12.4		65.6	65.6	65.6	65.6	65.6	
Effective Green, g (s)	12.4	12.4		12.4	12.4		65.6	65.6	65.6	65.6	65.6	
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.73	0.73	0.73	0.73	0.73	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	138	222		180	241		651	2579	1153	518	2579	
v/s Ratio Prot		0.01			c0.08			0.20			0.13	
v/s Ratio Perm	0.06			0.05			0.03		0.12	c0.26		
v/c Ratio	0.47	0.09		0.39	0.58		0.05	0.27	0.17	0.36	0.18	
Uniform Delay, d1	35.8	33.9		35.3	36.3		3.4	4.1	3.8	4.5	3.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	0.80	0.84	
Incremental Delay, d2	2.5	0.2		1.4	3.3		0.1	0.3	0.3	1.9	0.2	
Delay (s)	38.3	34.0		36.7	39.7		3.6	4.4	4.1	5.5	3.4	
Level of Service	D	C		D	D		A	A	A	A	A	
Approach Delay (s)		36.0			38.8			4.3			4.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	60	0	835	600	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	60	0	835	600	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				252	212	
pX, platoon unblocked	0.96					
vC, conflicting volume	1018	300	600			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	942	300	600			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	100			
cM capacity (veh/h)	252	696	973			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	60	278	557	400	200
Volume Left	0	0	0	0	0
Volume Right	60	0	0	0	0
cSH	696	973	1700	1700	1700
Volume to Capacity	0.09	0.00	0.33	0.24	0.12
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.7	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	25	10	25	25	145	535	155	145	570	5
Lane Group Flow (vph)	25	20	25	40	145	535	155	145	570	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	35.0	35.0	35.0	35.0	55.0	55.0	55.0	55.0	55.0	55.0
Total Split (%)	38.9%	38.9%	38.9%	38.9%	61.1%	61.1%	61.1%	61.1%	61.1%	61.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.21	0.13	0.21	0.26	0.21	0.17	0.11	0.20	0.19	0.00
Control Delay	41.9	27.9	41.9	31.1	2.7	1.8	0.4	3.1	2.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.9	27.9	41.9	31.1	2.7	1.8	0.4	3.1	2.1	0.0
Queue Length 50th (m)	4.3	1.7	4.3	4.4	4.3	8.1	0.0	5.1	10.4	0.0
Queue Length 95th (m)	11.9	8.5	11.9	13.9	9.7	13.1	2.4	11.9	17.1	0.0
Internal Link Dist (m)		193.9		336.2		188.2			1151.3	
Turn Bay Length (m)					95.0		85.0	85.0		95.0
Base Capacity (vph)	480	561	480	576	705	3059	1389	729	3059	1373
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.04	0.05	0.07	0.21	0.17	0.11	0.20	0.19	0.00

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 88 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 27: Tremaine Rd & Street L/Avenue One



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	10	10	25	25	15	145	535	155	145	570	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.93		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1723		1770	1758		1770	3539	1583	1770	3539	1583
Flt Permitted	0.80	1.00		0.80	1.00		0.44	1.00	1.00	0.45	1.00	1.00
Satd. Flow (perm)	1490	1723		1490	1758		815	3539	1583	844	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	10	10	25	25	15	145	535	155	145	570	5
RTOR Reduction (vph)	0	9	0	0	14	0	0	0	29	0	0	1
Lane Group Flow (vph)	25	11	0	25	26	0	145	535	126	145	570	4
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	5.0	5.0		5.0	5.0		73.0	73.0	73.0	73.0	73.0	73.0
Effective Green, g (s)	5.0	5.0		5.0	5.0		73.0	73.0	73.0	73.0	73.0	73.0
Actuated g/C Ratio	0.06	0.06		0.06	0.06		0.81	0.81	0.81	0.81	0.81	0.81
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	82	95		82	97		661	2870	1283	684	2870	1283
v/s Ratio Prot		0.01			0.01			0.15			0.16	
v/s Ratio Perm	c0.02			0.02			c0.18		0.08	0.17		0.00
v/c Ratio	0.30	0.11		0.30	0.27		0.22	0.19	0.10	0.21	0.20	0.00
Uniform Delay, d1	40.8	40.4		40.8	40.7		2.0	1.9	1.7	1.9	1.9	1.6
Progression Factor	1.00	1.00		1.00	1.00		0.82	0.83	0.55	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.5		2.1	1.5		0.7	0.1	0.1	0.7	0.2	0.0
Delay (s)	42.9	40.9		42.9	42.2		2.3	1.7	1.1	2.6	2.1	1.6
Level of Service	D	D		D	D		A	A	A	A	A	A
Approach Delay (s)		42.0			42.5			1.7			2.2	
Approach LOS		D			D			A			A	

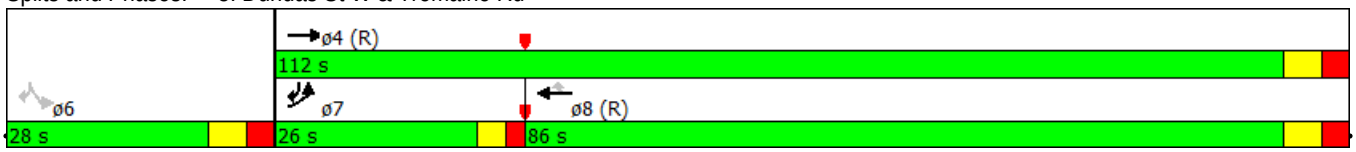
Intersection Summary			
HCM 2000 Control Delay	4.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	425	1285	2340	180	230	1185
Lane Group Flow (vph)	425	1285	2340	180	230	1185
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Detector Phase	7	4	8	8	6	7
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0	9.0
Total Split (s)	26.0	112.0	86.0	86.0	28.0	26.0
Total Split (%)	18.6%	80.0%	61.4%	61.4%	20.0%	18.6%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lead/Lag	Lead		Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes	Yes		Yes
Recall Mode	None	C-Max	C-Max	C-Max	Max	None
v/c Ratio	0.76	0.46	1.06	0.19	0.90	1.08
Control Delay	63.1	8.3	48.9	2.6	94.2	92.6
Queue Delay	0.0	0.0	17.8	0.0	0.0	0.4
Total Delay	63.1	8.3	66.7	2.6	94.2	93.0
Queue Length 50th (m)	65.2	68.9	~366.8	0.0	66.8	~191.1
Queue Length 95th (m)	82.6	70.7 m	#298.7	m1.8	#116.9	#234.0
Internal Link Dist (m)		254.7	1908.9		217.2	
Turn Bay Length (m)	200.0			75.0	85.0	80.0
Base Capacity (vph)	558	2766	2204	943	255	1102
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	951	0	0	1
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.46	1.87	0.19	0.90	1.08

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 49 (35%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Dundas St W & Tremaine Rd





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	425	1285	2340	180	230	1185
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	5.0	7.0	5.0	7.0	7.0	5.0
Lane Util. Factor	*1.00	*1.00	*1.00	1.00	1.00	*1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3725	3689	3810	1599	1703	3136
Flt Permitted	1.00	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3725	3689	3810	1599	1703	3136
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	425	1285	2340	180	230	1185
RTOR Reduction (vph)	0	0	0	41	0	6
Lane Group Flow (vph)	425	1285	2340	139	230	1179
Heavy Vehicles (%)	2%	3%	5%	1%	6%	3%
Turn Type	Prot	NA	NA	Perm	Perm	pm+ov
Protected Phases	7	4	8			7
Permitted Phases				8	6	6
Actuated Green, G (s)	21.0	105.0	79.0	79.0	21.0	42.0
Effective Green, g (s)	21.0	105.0	81.0	79.0	21.0	42.0
Actuated g/C Ratio	0.15	0.75	0.58	0.56	0.15	0.30
Clearance Time (s)	5.0	7.0	7.0	7.0	7.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	558	2766	2204	902	255	940
v/s Ratio Prot	0.11	0.35	c0.61			c0.19
v/s Ratio Perm				0.09	0.14	0.19
v/c Ratio	0.76	0.46	1.06	0.15	0.90	1.25
Uniform Delay, d1	57.1	6.7	29.5	14.6	58.5	49.0
Progression Factor	0.96	1.16	0.38	0.33	1.00	1.00
Incremental Delay, d2	5.0	0.5	35.0	0.2	35.8	123.4
Delay (s)	59.9	8.3	46.3	5.1	94.3	172.4
Level of Service	E	A	D	A	F	F
Approach Delay (s)		21.1	43.4		159.7	
Approach LOS		C	D		F	

Intersection Summary			
HCM 2000 Control Delay	65.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	111.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	165	1680	3435	85	25	320
Lane Group Flow (vph)	165	1680	3435	85	25	320
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4			8	6	6
Detector Phase	7	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	28.0	28.0	28.0	28.0	28.0
Total Split (s)	15.0	112.0	97.0	97.0	28.0	28.0
Total Split (%)	10.7%	80.0%	69.3%	69.3%	20.0%	20.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	-2.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	7.0	5.0	7.0	7.0	7.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	C-Max	C-Max	Max	Max
v/c Ratio	0.88	0.60	1.33	0.08	0.09	0.95
Control Delay	72.0	2.5	170.1	4.7	52.5	73.8
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	72.0	2.5	170.3	4.7	52.5	73.8
Queue Length 50th (m)	35.0	14.8	~663.4	4.4	6.4	61.3
Queue Length 95th (m)	m38.6	m26.6	m#597.8	m4.0	15.6	#122.1
Internal Link Dist (m)		1758.3	254.7		122.8	
Turn Bay Length (m)	105.0			65.0		
Base Capacity (vph)	193	2793	2590	1034	265	338
Starvation Cap Reductn	0	0	133	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.60	1.40	0.08	0.09	0.95

Intersection Summary

Cycle Length: 140
Actuated Cycle Length: 140
Offset: 61 (44%), Referenced to phase 4:EBTL and 8:WBT, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 17: Dundas St W & Street A





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	165	1680	3435	85	25	320
Ideal Flow (vphpl)	1900	1900	2000	1900	1900	1900
Total Lost time (s)	4.0	7.0	5.0	7.0	7.0	7.0
Lane Util. Factor	1.00	*1.00	*1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3725	3922	1583	1770	1583
Flt Permitted	0.04	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	79	3725	3922	1583	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	165	1680	3435	85	25	320
RTOR Reduction (vph)	0	0	0	12	0	101
Lane Group Flow (vph)	165	1680	3435	73	25	219
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	7	4	8			
Permitted Phases	4			8	6	6
Actuated Green, G (s)	105.0	105.0	90.5	90.5	21.0	21.0
Effective Green, g (s)	105.0	105.0	92.5	90.5	21.0	21.0
Actuated g/C Ratio	0.75	0.75	0.66	0.65	0.15	0.15
Clearance Time (s)	4.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	186	2793	2591	1023	265	237
v/s Ratio Prot	c0.07	0.45	c0.88			
v/s Ratio Perm	0.60			0.05	0.01	c0.14
v/c Ratio	0.89	0.60	1.33	0.07	0.09	0.92
Uniform Delay, d1	50.6	8.0	23.8	9.2	51.3	58.7
Progression Factor	1.72	0.28	0.88	0.79	1.00	1.00
Incremental Delay, d2	12.4	0.2	146.8	0.0	0.7	41.5
Delay (s)	99.6	2.5	167.8	7.3	52.0	100.2
Level of Service	F	A	F	A	D	F
Approach Delay (s)		11.2	163.9		96.7	
Approach LOS		B	F		F	

Intersection Summary			
HCM 2000 Control Delay	110.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	120.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	45	0	605	1365	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	45	0	605	1365	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				241	292	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1668	682	1365			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1413	239	1052			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	108	640	552			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	0	45	302	302	910	455
Volume Left	0	0	0	0	0	0
Volume Right	0	45	0	0	0	0
cSH	1700	640	1700	1700	1700	1700
Volume to Capacity	0.00	0.07	0.18	0.18	0.54	0.27
Queue Length 95th (m)	0.0	1.8	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	11.1	0.0	0.0	0.0	0.0
Lane LOS	A	B				
Approach Delay (s)	11.1		0.0		0.0	
Approach LOS	B					

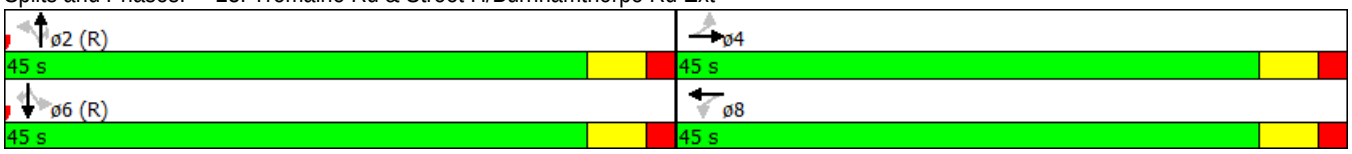
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Volume (vph)	60	10	395	115	85	475	45	60	895
Lane Group Flow (vph)	60	85	395	240	85	475	45	60	895
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4		8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.16	0.14	0.85	0.36	0.36	0.26	0.05	0.13	0.50
Control Delay	18.6	6.2	43.5	14.5	21.5	14.1	4.9	16.6	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	6.2	43.5	14.5	21.5	14.1	4.9	16.6	16.1
Queue Length 50th (m)	7.2	1.8	64.0	20.4	9.0	25.1	0.0	3.3	26.2
Queue Length 95th (m)	14.5	10.0	92.6	34.6	25.0	40.4	6.1	m14.8	92.8
Internal Link Dist (m)		179.8		384.3		268.1			227.9
Turn Bay Length (m)					65.0		85.0	85.0	
Base Capacity (vph)	447	739	566	787	239	1807	830	446	1807
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.12	0.70	0.30	0.36	0.26	0.05	0.13	0.50

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 79 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Tremaine Rd & Street H/Burnhamthorpe Rd Ext



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	10	75	395	115	125	85	475	45	60	895	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.87		1.00	0.92		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1616		1770	1717		1770	3539	1583	1770	3539	
Flt Permitted	0.55	1.00		0.70	1.00		0.25	1.00	1.00	0.47	1.00	
Satd. Flow (perm)	1032	1616		1307	1717		469	3539	1583	873	3539	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	10	75	395	115	125	85	475	45	60	895	0
RTOR Reduction (vph)	0	44	0	0	50	0	0	0	22	0	0	0
Lane Group Flow (vph)	60	41	0	395	190	0	85	475	23	60	895	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	32.0	32.0		32.0	32.0		46.0	46.0	46.0	46.0	46.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0		46.0	46.0	46.0	46.0	46.0	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.51	0.51	0.51	0.51	0.51	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	366	574		464	610		239	1808	809	446	1808	
v/s Ratio Prot		0.03			0.11			0.13			c0.25	
v/s Ratio Perm	0.06			c0.30			0.18		0.01	0.07		
v/c Ratio	0.16	0.07		0.85	0.31		0.36	0.26	0.03	0.13	0.50	
Uniform Delay, d1	19.8	19.2		26.8	21.0		13.1	12.4	10.9	11.5	14.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.10	0.96	
Incremental Delay, d2	0.2	0.1		14.0	0.3		4.1	0.4	0.1	0.6	0.9	
Delay (s)	20.1	19.2		40.8	21.3		17.2	12.8	11.0	13.3	14.7	
Level of Service	C	B		D	C		B	B	B	B	B	
Approach Delay (s)		19.6			33.4			13.3			14.6	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	80	0	660	875	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	80	0	660	875	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				252	212	
pX, platoon unblocked	0.98	0.96	0.96			
vC, conflicting volume	1205	438	875			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	956	319	777			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	88	100			
cM capacity (veh/h)	250	647	798			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	80	220	440	583	292
Volume Left	0	0	0	0	0
Volume Right	80	0	0	0	0
cSH	647	798	1700	1700	1700
Volume to Capacity	0.12	0.00	0.26	0.34	0.17
Queue Length 95th (m)	3.4	0.0	0.0	0.0	0.0
Control Delay (s)	11.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	11.4	0.0		0.0	
Approach LOS	B				

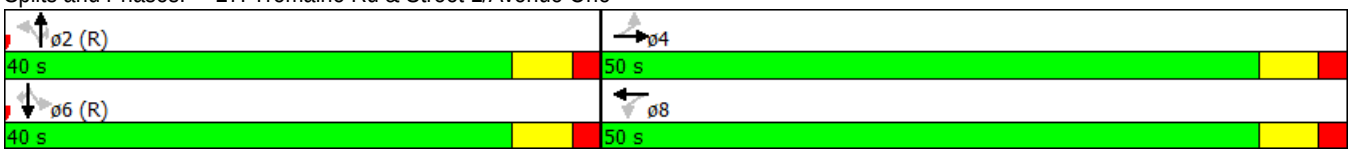
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

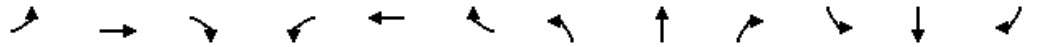
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	40	10	370	25	50	600	5	50	435	5
Lane Group Flow (vph)	40	80	370	155	50	600	5	50	435	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4		8		2			6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	2	2	2	6	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Total Split (s)	50.0	50.0	50.0	50.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.09	0.13	0.80	0.24	0.11	0.33	0.01	0.13	0.24	0.01
Control Delay	16.8	5.3	38.5	5.1	11.7	11.2	0.0	16.0	14.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	5.3	38.5	5.1	11.7	11.2	0.0	16.0	14.2	0.0
Queue Length 50th (m)	4.8	1.2	59.5	2.9	4.0	26.3	0.0	4.6	22.1	0.0
Queue Length 95th (m)	9.5	8.4	78.0	12.8	9.7	36.1	m0.0	14.2	39.7	0.0
Internal Link Dist (m)		193.9		333.9		188.2			1151.3	
Turn Bay Length (m)					95.0		85.0	85.0		95.0
Base Capacity (vph)	600	827	641	862	473	1816	829	377	1816	829
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.10	0.58	0.18	0.11	0.33	0.01	0.13	0.24	0.01

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 27: Tremaine Rd & Street L/Avenue One





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	10	70	370	25	130	50	600	5	50	435	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.87		1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1618		1770	1628		1770	3539	1583	1770	3539	1583
Flt Permitted	0.66	1.00		0.70	1.00		0.50	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	1227	1618		1313	1628		922	3539	1583	735	3539	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	10	70	370	25	130	50	600	5	50	435	5
RTOR Reduction (vph)	0	45	0	0	84	0	0	0	2	0	0	2
Lane Group Flow (vph)	40	35	0	370	71	0	50	600	3	50	435	3
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	31.8	31.8		31.8	31.8		46.2	46.2	46.2	46.2	46.2	46.2
Effective Green, g (s)	31.8	31.8		31.8	31.8		46.2	46.2	46.2	46.2	46.2	46.2
Actuated g/C Ratio	0.35	0.35		0.35	0.35		0.51	0.51	0.51	0.51	0.51	0.51
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	571		463	575		473	1816	812	377	1816	812
v/s Ratio Prot		0.02			0.04			c0.17			0.12	
v/s Ratio Perm	0.03			c0.28			0.05		0.00	0.07		0.00
v/c Ratio	0.09	0.06		0.80	0.12		0.11	0.33	0.00	0.13	0.24	0.00
Uniform Delay, d1	19.5	19.2		26.2	19.7		11.3	12.8	10.7	11.4	12.2	10.7
Progression Factor	1.00	1.00		1.00	1.00		0.75	0.74	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0		9.3	0.1		0.4	0.5	0.0	0.7	0.3	0.0
Delay (s)	19.5	19.3		35.6	19.8		8.9	9.9	10.7	12.2	12.5	10.7
Level of Service	B	B		D	B		A	A	B	B	B	B
Approach Delay (s)		19.4			30.9			9.9			12.4	
Approach LOS		B			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			