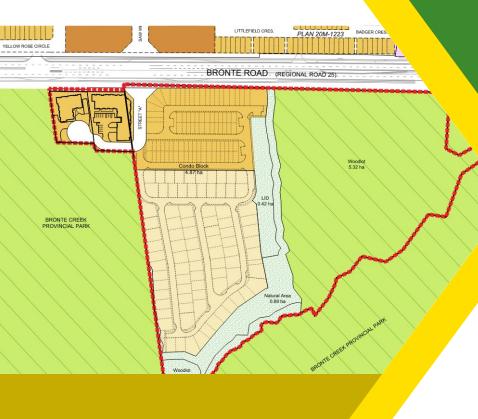
Bronte River

1300-1350 Bronte Road



Transportation
Impact
Study



Bronte River Transportation Impact Study

Prepared for:

Bronte River Limited Partnership 4900 Palladium Way Burlington, ON L7M 0W7

Prepared by:



628 Haines Road Newmarket, ON L3Y 6V5

March 2023

PN: 2020-91

Table of Contents

1	Intr	oduct	ion	1
2	Exis	sting C	onditions	3
	2.1	Area	Road Network	3
	2.2	Exist	ing Intersections	4
	2.3	Cycli	ing and Pedestrian Facilities	7
	2.4	Exist	ing Transit	8
	2.5	Exist	ing Peak Hour Travel Demand	8
3	Futi	ure Ba	ckground Conditions	12
	3.1	Plan	ned Conditions	12
	3.1.	.1	Bronte Street HOV / RBL Lanes	12
	3.1.	.2	Other Study Area Developments	12
	3.1.	.3	Background Growth	17
	3.1.	.4	Future Background Traffic Volumes	17
4	For	ecasti	ng	20
	4.1	Deve	elopment-Generated Travel Demand	20
	4.1.	.1	Trip Generation and Mode Shares	20
	4.1.	.2	Trip Distribution	22
	4.1.	.3	Trip Assignment	22
	4.1.	.4	Future Total Travel Demands	22
5	Dev	elopn/	nent Design	27
	5.1.	.1	Transportation Demand Management	27
	5.1.	.2	Parking	31
	5.1.	.3	Site Circulation	32
	5.1.	.4	Development Access	32
6	Оре	eratio	nal Analysis	33
	6.1	2023	B Existing Conditions	33
	6.2	2026	5 Future Background Conditions	37
	6.3	2026	5 Future Total Conditions	39
	6.4	2031	L Future Background Traffic Conditions	41
	6.5	2031	L Future Total Conditions	44
7	Rec	omme	endations	46
8	Con	nclusic	ns	46



List of Figures

Figure 1: Site Context	1
Figure 2: Concept Plan	2
Figure 3: Intersection of Upper Middle Road at Bronte Road	4
Figure 4: Charles Cornwall Road at Bronte Road	5
Figure 5: North Service Road West at Bronte Road	6
Figure 6: QEW WB Off Ramp at Bronte Road	6
Figure 7: QEW EB Ramps at Bronte Road	7
Figure 8: Existing Study Area Transit	8
Figure 9: 2023 Existing Traffic Volumes	. 10
Figure 10: 2023 Pedestrian Volumes	. 11
Figure 11: Proposed Bronte Road Cross-section	. 12
Figure 12: Bronte Green TIA Residential Traffic Generation	. 13
Figure 13: Bronte Green TIA Commercial Traffic Generation	. 14
Figure 14: Bronte Green Mid-Rise Traffic Generation	. 15
Figure 15: 1354 Bronte 2026 and 2031 Site Generated Traffic Volumes	. 16
Figure 16: 2026 Future Background Traffic Volumes	. 18
Figure 17: 2031 Future Background Traffic Volumes	. 19
Figure 18: 2026 Site Trip Generation	. 23
Figure 19: 2031 Site Trip Generation	. 24
Figure 20: 2026 Total Future Traffic Volumes	. 25
Figure 21: 2031 Total Future Traffic Volumes	. 26
Figure 22: Site Specific Cycling Concept Plan	. 28
Figure 23: Site Specific Transit Concept Plan	. 29
Figure 24: Site Specific Pedestrian Concept Plan	. 30



List of Tables

Table 1: TMC Data Dates	8
Table 2: ITE Trip Generation Vehicle Trip Rates	20
Table 3: Total Trip Generation	20
Table 4: Halton Region Mode Share Assumptions	21
Table 5: 2026 Trip Generation by Mode	21
Table 6: 2031 Trip Generation by Mode	21
Table 7: 2016 TTS Trip Distribution	22
Table 8: Vehicle Parking Requirements – Zoning By-Law Approach	31
Table 9: Vehicle Parking Requirements – ZBA Proposed Parking Rate	31
Table 10: ITE Parking Demand	32
Table 11: 2023 Existing Conditions Operational Analysis	34
Table 12: 2026 Future Background Conditions Operational Analysis	37
Table 13: 2026 Total Future Conditions Operational Analysis	40
Table 14: 2031 Future Background Conditions Operational Analysis	42
Table 15: 2031 Total Future Conditions Operational Analysis	44

List of Appendices

Appendix A – Scope Confirmation

Appendix B – Town of Oakville and Halton Region Active Transportation Maps

Appendix C - Turning Movement Count Data

Appendix D – Trail Plans

Appendix E – Parking Plan

Appendix F - Condominium Road Cross Section

Appendix G – Traffic Signal Warrants

Appendix H - Left Turn Lane Warrants

Appendix I – Turning Template Drawings

Appendix J – Heavy Vehicle Percent Calculations

Appendix K – 2023 Existing Conditions Synchro Worksheets

Appendix L – 2026 Future Background Conditions Synchro Worksheets

Appendix M – 2026 Future Total Conditions Synchro Worksheets

Appendix N – 2031 Future Background Conditions Synchro Worksheets

Appendix O – 2031 Future Total Conditions Synchro Worksheets



Introduction

This Transportation Impact Study (TIS) has been prepared to support the Bronte River Limited Partnership properties located at 1300-1350 Bronte Road in Oakville, Ontario. Directly across from these properties is the Bronte Green development, which is currently under construction east of Bronte Road. The proposed Bronte River development includes 86 single detached units (including one heritage house) and 89 townhouses. Condominium roads have been proposed to facilitate the traffic throughout the development to maximize the densities on site, aside from Street A which is an extension of the public right-of-way connection from Bronte Road to the adjacent landowner's property located at 1354 Bronte Road. Figure 1 illustrates the site context. Figure 2 illustrates the proposed development concept plan.



Figure 1: Site Context

The site is currently zoned as Existing Development (ED), Parkway Belt Complementary Use (PB2), Natural Area (N), and Greenbelt (GB). The subject property is bordered by and will have a primary access on Bronte Road. The scope of this TIS has been confirmed with transportation staff from the Town of Oakville and Halton Region as shown in Appendix A.





- All Units In Metric Unless Otherwise Noted.
 Base Information Obtained From Various Sources And Is Approximate.
 Schedule / Plan Information Is Conceptual And Requires Verification by Appropriate Agency.
 Aerial Photo: Google





MAR 14, 2023

2 Existing Conditions

2.1 Area Road Network

Bronte Road

Bronte Road is a Region of Halton arterial road with a four-lane and divided urban cross-section. The Halton Region Transportation Master Plan (TMP) protects a 47-metre right-of-way for class C4 arterial roads, which includes Bronte Road. Boulevard-separated sidewalks are provided on both sides of the road and a multi-use trail is provided on the west side adjacent to the sidewalk. Left turn lanes are included at major intersections. A 60 km/h posted speed limit applies. The Region's TMP includes the widening of Bronte Road to six lanes in the future from Speers Road to Highway 407 starting in 2025. Bronte Road will be designated as a transit corridor with two of the lanes implemented as HOV lanes.

Upper Middle Road

Upper Middle Road is a Region of Halton arterial road with a four-lane and divided urban cross-section. The Halton Region Transportation Master Plan protects a 47-metre right-of-way for class C4 arterial roads, which includes Upper Middle Road. Boulevard-separated sidewalks are provided on both sides of the road east of the intersection at Bronte Road and only on the north side west of the intersection. A multi-use trail is provided on the north side of the road adjacent to the sidewalk. West of the intersection at Bronte Road, the road transitions to two lanes. Left turn lanes are included at major intersections. A 60 km/h posted speed limit applies. The Region's TMP includes the widening of Upper Middle Road to six lanes in the future from Bronte Road to Neyagawa Boulevard starting in 2027.

Saw Whet Boulevard

Saw Whet Boulevard is a new road constructed in 2021 with a two-lane cross section. Without the official road classification information from the Town of Oakville, it is assumed to be a collector road. It provides access to the future residential developments east of Bronte Road. The right-of-way is assumed to be 22 metres. An unposted speed limit of 50 km/h is assumed and could be reduced to 40 km/h after the speed limit and traffic calming pilot project at the Lakeshore Woods neighbourhood is expanded to other neighbourhoods.

Charles Cornwall Road

Charles Cornwall Road is a Town of Oakville local road with a two-lane cross section. It provides access to the Woodlands Operations Centre. The right-of-way is measured to be 22 metres. A 20 km/h posted speed limit applies.

North Service Road West

North Service Road West is a Town of Oakville major collector with a two-lane cross-section. It serves the lands immediately north of the QEW and runs from Bronte Road east to Third Line and continues easterly across Oakville to Dorval Drive and Kerr Street. The right-of-way is measured to be 30 metres. An unposted speed limit of 50 km/h is assumed and could be reduced to 40 km/h should the pilot project at the Lakeshore Woods neighbourhood be successful.



Queen Elizabeth Way

The Queen Elizabeth Way (QEW) is a provincial highway with a six-lane plus two HOV lanes cross-section at this location. An interchange is located at Bronte Road. This highway provides connection to the east to Toronto and beyond and to the west to Hamilton and beyond. A 100 km/h posted speed limit applies to the QEW at this location.

2.2 Existing Intersections

Upper Middle Road at Bronte Road

The intersection of Upper Middle Road at Bronte Road is a signalized intersection with two auxiliary left turn lanes on the westbound approach and one auxiliary left turn lane on all other approaches. Right turn lanes are provided on all approaches. Crosswalks and associated pedestrian signal heads and call buttons are provided on the west, north, and east legs of the intersection. There is a multi-use pathway on the west side of Bronte Road and the north side of Upper Middle Road, alongside the sidewalks. Figure 3 illustrates the intersection of Upper Middle Road at Bronte Road.



Figure 3: Intersection of Upper Middle Road at Bronte Road

Saw Whet Boulevard at Bronte Road

The newly constructed Saw Whet Boulevard forms a T-intersection with Bronte Road. The intersection is stop-controlled on the minor road, Saw Whet Boulevard. The northbound approach consists of two through lanes and a dedicated right-turn lane. The southbound approach consists of two through lanes and a dedicated left-turn lane. The westbound approach consists of one lane and is reserved for right turns only with signage and bollards installed to block the left turns as of April 2022. The intersection will be further developed as the surrounding developments and the west leg are being constructed. A north-south crosswalk is present on the east leg of the intersection. An up-to-date aerial figure illustrating the current configuration is not yet available.

Charles Cornwall Road at Bronte Road

The signalized intersection to the Halton Regional Centre at Bronte Road includes auxiliary left turn lanes on the north and south approaches. The west approach is a driveway to a few residential properties adjacent to Bronte



Road. An exclusive right turn lane and exclusive left turn lane are provided on the east approach. An exclusive right turn lane is provided on the south approach into the Halton Regional Centre Access. The only east-west crosswalk that is provided is present on the north leg of the intersection. Pedestrian signal heads and call buttons are present on the north, west, and east legs of the intersection. Figure 4 illustrates the signalized intersection at Charles Cornwall Road at Bronte Road.



Figure 4: Charles Cornwall Road at Bronte Road

North Service Road West at Bronte Road

The signalized intersection of North Service Road West at Bronte Road includes auxiliary left turn lanes on the north, south, and east approaches. The west approach is a driveway to a few residential properties adjacent to Bronte Road. Exclusive right turn lanes are provided on the south and east approaches. The only east-west crosswalk that is provided is present on the north leg of the intersection. Pedestrian signal heads and call buttons are present on the north and west legs of the intersection. Figure 5 illustrates the signalized intersection at North Service Road West at Bronte Road.





Figure 5: North Service Road West at Bronte Road

QEW Westbound Off Ramp at Bronte Road

The signalized intersection the QEW Westbound Off Ramp at Bronte Road includes two left turn lanes and an auxiliary right turn lane on the west approach. The north and south approaches contain two through lanes each. There is no crosswalk provided at this intersection and no pedestrian signal heads and call buttons are present. Pedestrians are directed away from the intersection on a dedicated trail around the interchange and under the highway. However, pedestrians have been recorded to cross on the east leg of this intersection. Figure 6 illustrates the signalized intersection at the QEW Westbound Off Ramp at Bronte Road.



Figure 6: QEW WB Off Ramp at Bronte Road



QEW Eastbound Ramps at Bronte Road

The signalized intersection the QEW Eastbound Ramps at Bronte Road includes an auxiliary left turn lane, an auxiliary right turn lane, and a shared through/right/left lane on the west approach. An auxiliary left turn lane is provided on all approaches. An auxiliary right turn lane is also provided on the north approach. Pedestrian signal heads and crosswalks are present on the north, south, and west approaches with call buttons present on the north leg of the intersection. Figure 7 illustrates the signalized intersection at the QEW Eastbound Ramps at Bronte Road.



2.3 Cycling and Pedestrian Facilities

Cycling facilities in the Study Area are currently provided via a boulevard multi-use trail adjacent to the sidewalk along the west side of Bronte Road and the north side of Upper Middle Road. Crosswalks are present at all the Study Area intersections except for the QEW Westbound Off Ramp at Bronte Road. Sidewalks are provided along both sides of Bronte Road from Upper Middle Road to North Service Road West and Upper Middle Road east of Bronte Road. Sidewalks are provided along the north side of Upper Middle Road east of Bronte and the north side of North Service Road. The sidewalk is boulevard-separated on the east side for these extents and on the west side from Upper Middle Road to Charles Cornwall Road. An existing multi-use trail located on the west side of Bronte Road provides north-south active transportation connections and opportunities for additional trails through the protected parkland system along Bronte River.

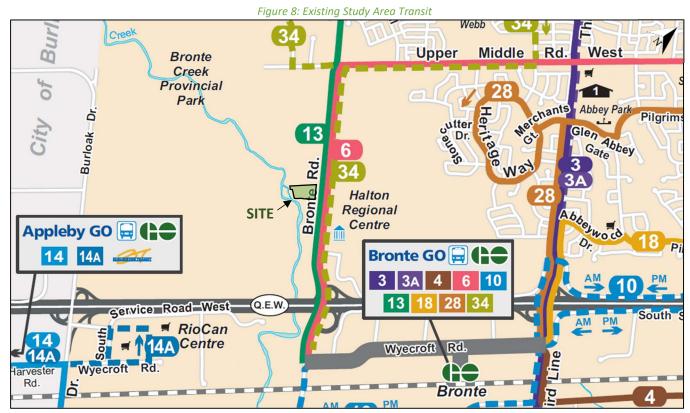
The Technical Appendix K in the Town of Oakville Active Transportation Master Plan (ATMP) refers to the Halton Region Active Transportation Network and Road Capital Projects. This document outlines proposed bike lanes along Bronte Road and Upper Middle Road as well as interchange improvements at the QEW intersections. Currently, no crosswalks exist at the QEW westbound off ramp, but there is a grade separated pedestrian / cycling trail along Bronte Road that extends west of the interchange and under the QEW. The Halton Region Transportation Development and Non-Development Capital Implementation plan as part of this Appendix notes that the infrastructure improvements will have a start year of construction of 2025. For more information on



cycling and pedestrian facilities, the Town of Oakville and Halton Region Active Transportation Maps are attached in Appendix B.

2.4 Existing Transit

As of 2023, Oakville Transit Route #13 runs along Bronte Road with an eastbound destination of Oakville GO station and a westbound destination of Bronte GO station. Routes #6 and #34 also run along Bronte Road as well as Upper Middle Road. The existing Study Area Oakville Transit service is presented in Figure 8.



Source: www.oakvilletransit.ca

2.5 Existing Peak Hour Travel Demand

To understand the existing AM and PM peak hour traffic volumes, turning movement counts for the Study Area intersections have been acquired from Halton Region. Table 1 summarizes the dates of the most recent turning movement counts at each Study Area intersection.

Data Type

Location

QEW EB Ramps

QEW WB Off Ramp

December 4, 2019

North Service Road at Bronte Road

Charles Cornwall Road at Bronte Road

Upper Middle Road at Bronte Road

October 29, 2019

Table 1: TMC Data Dates

The turning movement counts were undertaken in 2019, approximately two years prior to the original study horizon of 2021 for existing conditions. To reflect a 2021 horizon, a compound annual growth rate (CAGR) had



been applied to reflect growth outside of the Study Area. The Region proposes a 2% CAGR for Bronte Road to be applied to the Study Area Traffic Volumes.

This March 2023 update to the transportation impact study considered 2023 as the existing conditions. Typically, more recent turning movement counts would be collected for the purpose of such exercise. However, the traffic volumes in the past few years had been impacted by the travel restrictions imposed due to the COVID-19 pandemic and long-term observation was also required to determine whether the current traffic volumes had settled for a "new normal". Therefore, the 2019 data were considered to be appropriate as they represent the peak volumes in the recent years, providing a conservative and reliable base year volume. The same 2% CAGR for Bronte Road were applied to the Study Area Traffic Volumes to adjust the volumes to the 2023 level. The low-rise components of the Bronte Green residential development included as part of the future background traffic in the original TIS have been constructed as of 2023. Therefore, the site traffic from these developments are also included in the existing 2023 horizon volumes.

Turning movement count data is included in Appendix C. Figure 9 illustrates the existing 2023 traffic volumes. Figure 10 illustrates the existing pedestrian volumes. Cyclists are assumed to utilize the multi-use pathway along Bronte Road.



Figure 9: 2023 Existing Traffic Volumes



Figure 10: 2023 Existing Pedestrian Volumes



3 Future Background Conditions

3.1 Planned Conditions

3.1.1 Bronte Street HOV / RBL Lanes

Bronte Road is currently a two-lane road in each direction, with all lanes operating as general-purpose traffic lanes with no vehicle restrictions. The widening of Bronte Road from four to six lanes between Speers Road and Highway 407 is planned for 2025. Once widened, the two outer lanes of Bronte Road will be dedicated to high occupancy vehicles including transit as Bronte Road has been identified as a priority bus corridor as part of the Preliminary 2031 Halton Region Transit Priority Network. Additionally, Transit Signal Priority will be implemented throughout the entirety of Bronte Road within the study area. The cross-section for 47-metre-wide roadways, proposed as part of the Halton Region TMP, can be seen in Figure 11.

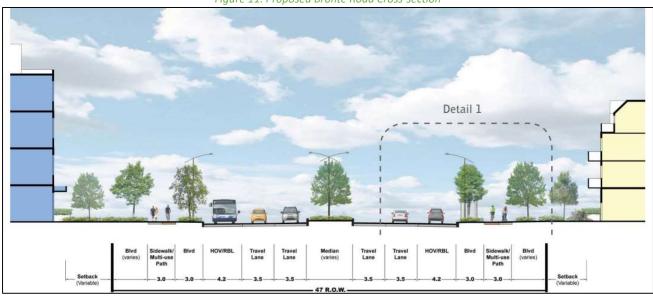


Figure 11: Proposed Bronte Road Cross-section

Source: Halton Region Transportation Master Plan (2011)

3.1.2 Other Study Area Developments

Adjacent to ARGO's Bronte River development are the Bronte Green and Valery 1354 Bronte Road developments, which will share a full-movement access with the subject property via a future signalized intersection along Bronte Road at Saw Whet Boulevard.

3.1.2.1 Bronte Green Development

The Bronte Green subdivision is located on the former Saw Whet golf course lands, east of the proposed development. This development includes 164 freehold townhouse units, 443 detached units, 498 units in a residential condominium block, 76 units in a common elements condominium block, and some future commercial lands at the south end of the property. Adjacent to the central access at Saw Whet Boulevard are two mid-rise residential condominiums. The 2017 TIS update for Bronte Green assumes 270 units between the two condo blocks. One of these developments has since been updated with a new unit count, and as a result, 335 units have been considered for this block. Figure 12 and Figure 13 illustrate the residential and commercial components of traffic generation of Bronte Green Development in the 2017 update. Figure 14 illustrates the site trips generated in addition due to the updated unit count. That study is ongoing and the volumes below have not yet been approved by the Town of Oakville or Halton Region.



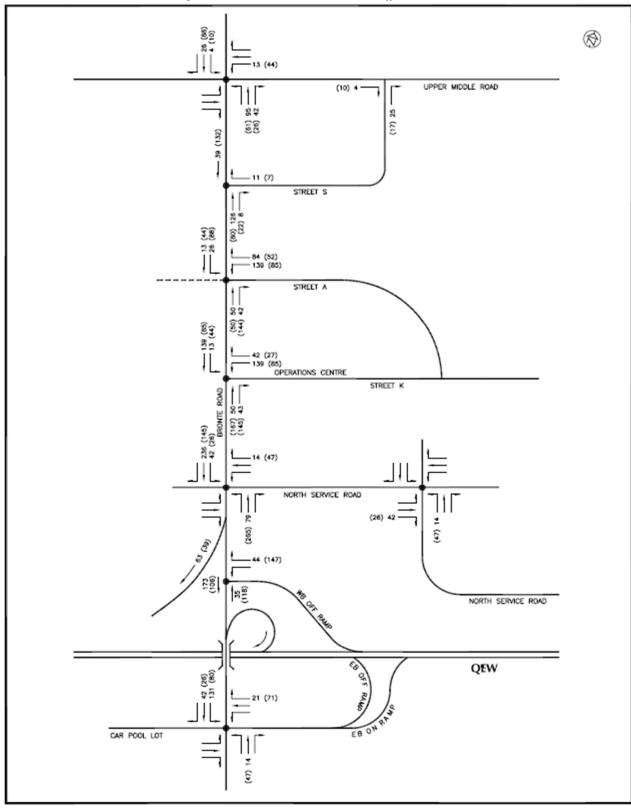


Figure 12: Bronte Green TIA Residential Traffic Generation

Source: Bronte Green Subdivision Traffic Impact Study; Read, Voorhees & Associates; April 2017



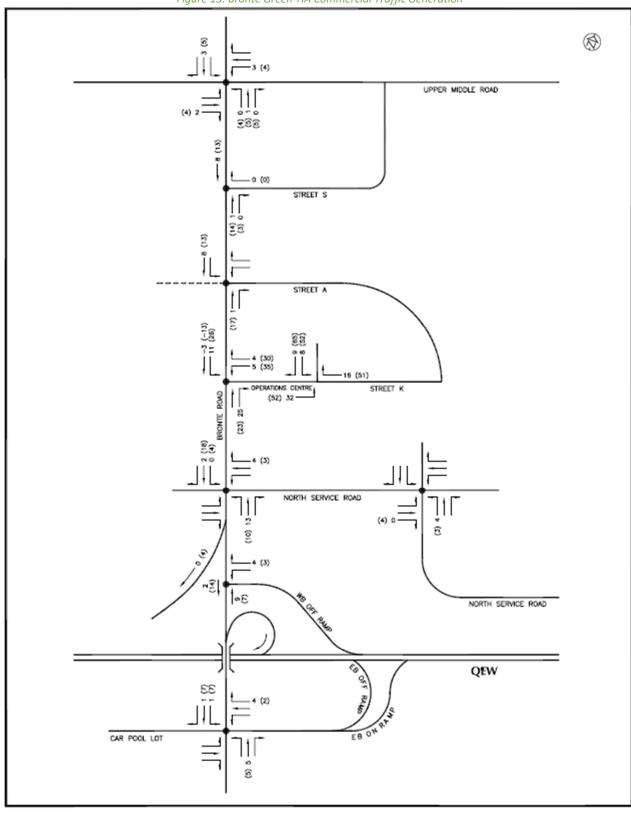


Figure 13: Bronte Green TIA Commercial Traffic Generation

Source: Bronte Green Subdivision Traffic Impact Study; Read, Voorhees & Associates; April 2017



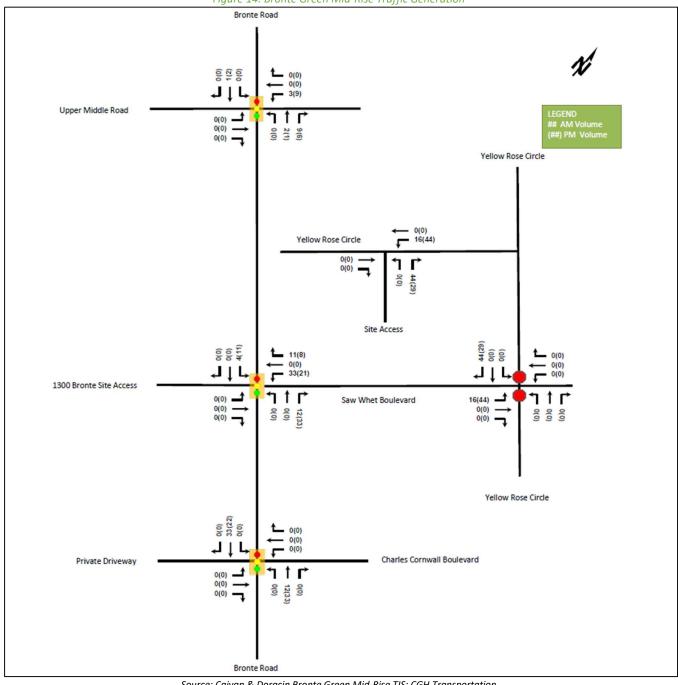


Figure 14: Bronte Green Mid-Rise Traffic Generation

Source: Caivan & Doracin Bronte Green Mid-Rise TIS; CGH Transportation

Valery 1354 Bronte Road 3.1.2.2

Valery Homes is proposing to develop a four-storey residential building at 1354 Bronte Road which includes 71 mid-rise units north of the Bronte River development. This development will utilize the Saw Whet Boulevard at Bronte Road intersection as its primary access. Figure 15 illustrate the traffic generation figure for the Valery 1354 Bronte Road development for 2026 and 2031. That study is ongoing and the volumes below have not yet been approved by the Town of Oakville or Halton Region.



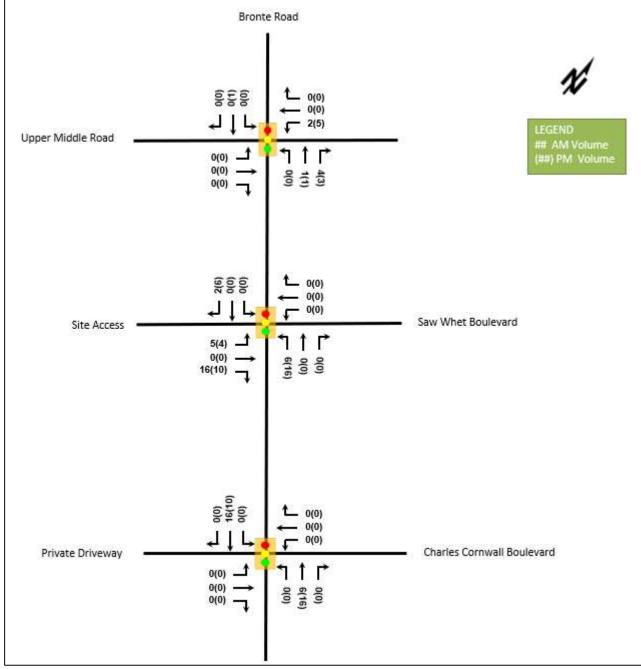


Figure 15: 1354 Bronte 2026 and 2031 Site Generated Traffic Volumes

Source: Valery Homes 1354 Bronte Road Transportation Impact Study; CGH Transportation



3.1.3 Background Growth

As discussed in Section 2.5 historical traffic counts have been reviewed to determine the historical growth rate. A 2% compound annual growth rate was selected.

3.1.4 Future Background Traffic Volumes

Combining the background development traffic, the background growth rate, and the existing traffic volumes, the Future Background traffic volumes were projected. Figure 16 illustrates the 2026 Future Background traffic volumes and Figure 17 illustrates the 2031 Future Background traffic volumes.



Figure 16: 2026 Future Background Traffic Volumes

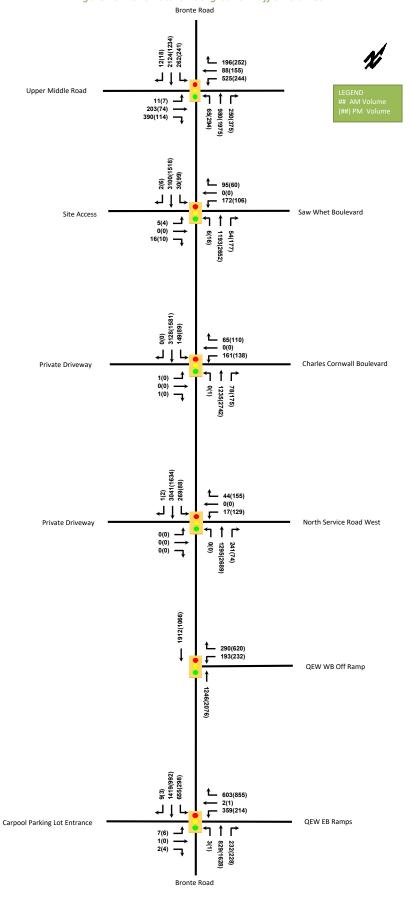
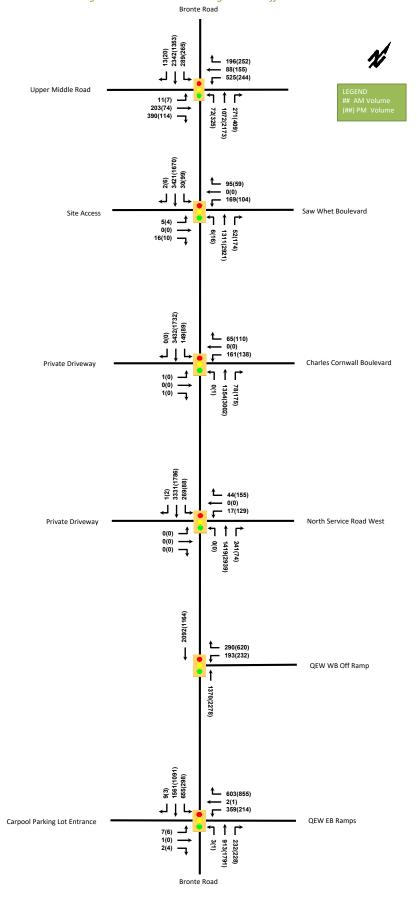


Figure 17: 2031 Future Background Traffic Volumes



4 Forecasting

4.1 Development-Generated Travel Demand

4.1.1 Trip Generation and Mode Shares

The ITE Trip Generation Manual 10th Edition has been reviewed to determine the appropriate trip generation rate equations for the proposed land uses. The rate equations were used to determine appropriate vehicle trip generation rates. The Multifamily Housing (Low-Rise) is used to estimate trips for townhouses and the Single Family Detached Housing is used to estimate trips for the detached houses. Table 2 summarizes the vehicle trip rates for the proposed land uses.

Table 2: ITE Trip Generation Vehicle Trip Rates

Dwelling Type	ITE Land Use Code	Unit Count	Peak Hour	Vehicle Trip Rate	Method
Single Family Detached	210	86	AM	0.77	Fitted Curve
Single Family Detached			PM	1.02	Fitted Curve
Multifamily Housing (Low-Rise)	220	89	AM	0.48	Fitted Curve
with an in a nousing (Low-Rise)			PM	0.60	Fitted Curve

Using the above trip rates, the total trip generation for the Bronte River development is summarized in Table 3. No synergy or pass-by trip reduction factors have been applied to the trip generation as there is only residential land use.

Table 3: Total Trip Generation

Table of Total Tilp Contraction							
Land Use	AM Peak Hour			PM Peak Hour			
	In	Out	Total	In	Out	Total	
Single Family Detached	16	50	66	55	33	88	
Multifamily Housing (Low-Rise)	10	33	43	33	20	53	
Total Trips	26	83	109	88	53	141	

The mode shares used for 2031 and 2036 are the mode share targets achievable by Scenario D outlined in the Town of Oakville Transportation Master Plan Review, as indicated by the Town staff. Scenario D sees growth in active transportation, transportation demand management, and local transit, and higher growth in inter-regional transit. The 20% transit mode split target identified under the previous TMP is still the goal, however, it is considered to be beyond 2031. This mode split has a lower transit percentage than the Halton Region Transportation Master Plan projections to 2031. The Town's projections would be considered more accurate in describing the mode share changes in the Town of Oakville rather than those across the entire Region. The existing and projected mode share percentages during peak hours are summarized in Table 4.

The 2036 and 2041 horizon mode shares were not covered in this Transportation Master Plan. While the auto driver percentage will likely decrease with the implementation of more transit routes and more cycling and pedestrian facilities, the 2031 percentages are used for the 2036 and 2041 horizons as a conservative estimate, as confirmed in the TOR. Therefore, the Bronte River property will generate the same two-way vehicle trips during the AM and PM peak hours in 2026 and 2031. Using the above mode shares and person trip rates, the person trips by mode have been projected. While the 2026 mode shares are generally interpolated using the existing mode share and 2031 mode share targets, the same mode share as 2031 is used in the case as the TTS data on which basis the existing mode share is calculated has already yielded a lower auto share.



Table 4: Halton Region Mode Share Assumptions

Travel Mode	2016 TTS Mode Share	2031 Regional Projection	2031 Oakville Projection Scenario D	2026 Applied	2031 Applied
Auto Driver	66%	72%	76%	76%	76%
Transit	10%	20%	12%	12%	12%
Active Transportation	11%	5%	6%	6%	6%
TDM	13%	3%	6%	6%	6%
Total	100%	100%	100%	100%	100%

Using the above mode shares and person trip rates, the person trips by mode have been projected. Table 5 summarizes the 2026 trip generation by mode.

Table 5: 2026 Trip Generation by Mode

Travel Mode	Mode		AM Peak Hour			PM Peak Hour		
Travel Mode	Share	In	Out	Total	In	Out	Total	
Auto Driver	76%	20	63	83	67	40	107	
Transit	12%	3	10	13	11	6	17	
Active Transportation	6%	2	5	7	5	3	8	
TDM	6%	2	5	7	5	3	8	
Total	100%	26	83	109	88	53	141	

Table 6 summarizes the 2031 trip generation by mode.

Table 6: 2031 Trip Generation by Mode

Traval Mada	Mode Mode		AM Peak Hour			PM Peak Hour		
Travel Mode	Share	In	Out	Total	In	Out	Total	
Auto Driver	76%	20	63	83	67	40	107	
Transit	12%	3	10	13	11	6	17	
Active Transportation	6%	3	10	13	11	6	17	
TDM	6%	2	5	7	5	3	8	
Total	100%	26	83	109	88	53	141	

As shown above, the site is projected to generate 68 AM and 86 PM peak hour two-way auto trips during the 2026 horizon. With the shift in mode share, it will generate 63 AM and 79 PM peak hour two-way vehicle trips in 2031.



4.1.2 Trip Distribution

To understand the travel patterns of the subject development, the Transportation Tomorrow Survey (TTS) has been reviewed to determine the existing travel patterns for Oakville. Table 7 below summarizes the distribution.

Table 7: 2016 TTS Trip Distribution

To/From	Percent of Trips
North	34%
South	14%
East	47%
West	5%
Total	100%

4.1.3 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. The intersection at Saw Whet Boulevard and Bronte Road has been assumed to be actuated on the minor approach and coordinated along the Bronte corridor. The 2026 and 2031 trip generation are illustrated in Figure 18 and Figure 19, respectively.

4.1.4 Future Total Travel Demands

The site generated traffic has been combined with the 2026 and 2031 Future Background traffic volumes to estimate the Future Total traffic volumes. Figure 20 illustrates the 2026 Total Future traffic volumes and Figure 21 illustrates the 2031 Total Future traffic volumes.



Figure 18: 2026 Site Trip Generation



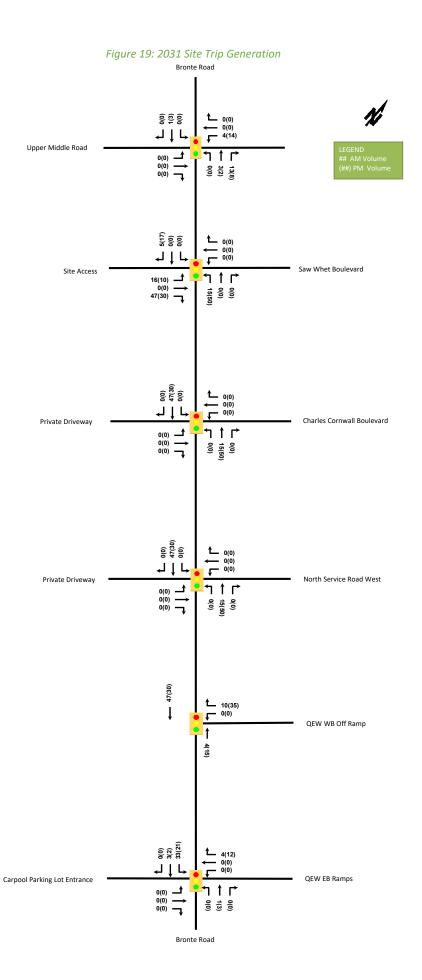


Figure 20: 2026 Future Total Traffic Volumes

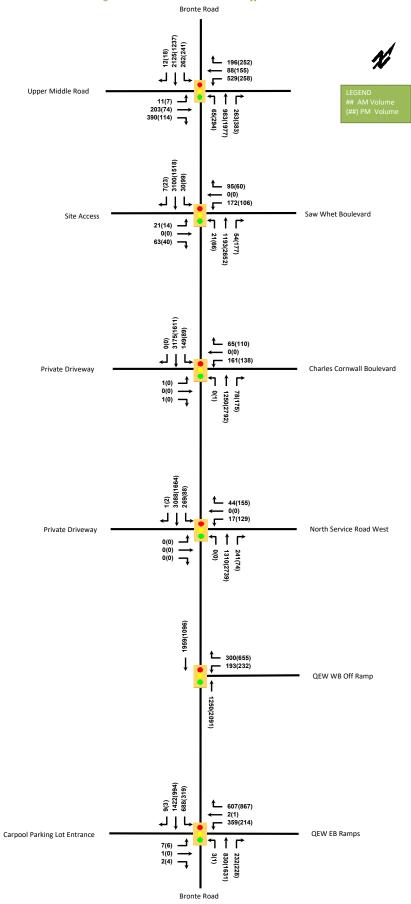
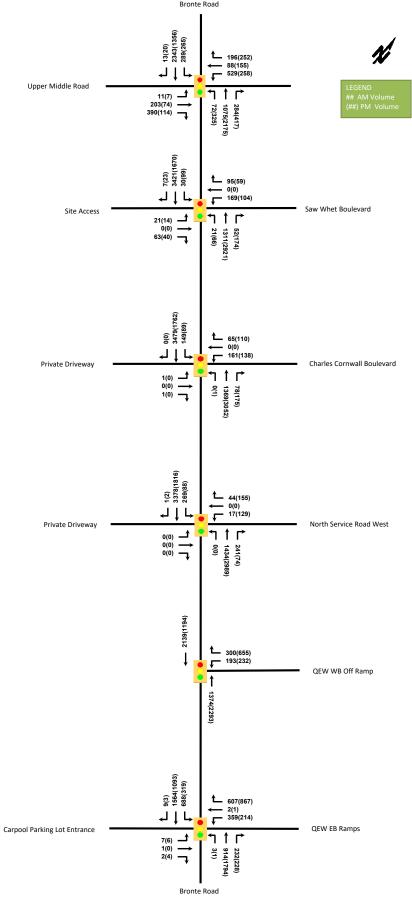


Figure 21: 2031 Future Total Traffic Volumes



5 Development Design

5.1.1 Transportation Demand Management

The proposed developments are residential units with a mix of unit types including detached single-family homes and townhouses. In these types of development, one of the most effective Transportation Demand Management (TDM) measures address access and usability of transit, cycling, and pedestrian facilities. To this end, the following plans have been created to illustrate the appropriate cycling (Figure 22), transit (Figure 23), and pedestrian (Figure 24) facilities. Transit stops have been assumed at the intersection of Saw Whet Boulevard and Bronte Road for transit along Bronte Road. As a result, the entire development is within a 400-metre walking distance of transit facilities. In addition, a multi-use pathway on the west side of Bronte Road provides residents with a cycling facility near the proposed development. Sidewalks are provided for site circulation and a direct connection to the Bronte Road corridor. In addition to pedestrian facilities on Bronte Road, Saw Whet, and the internal condo roads, there are also opportunities for trails to connect this development to the adjacent roads, and to nearby walking and trail facilities through the nearby natural heritage system.

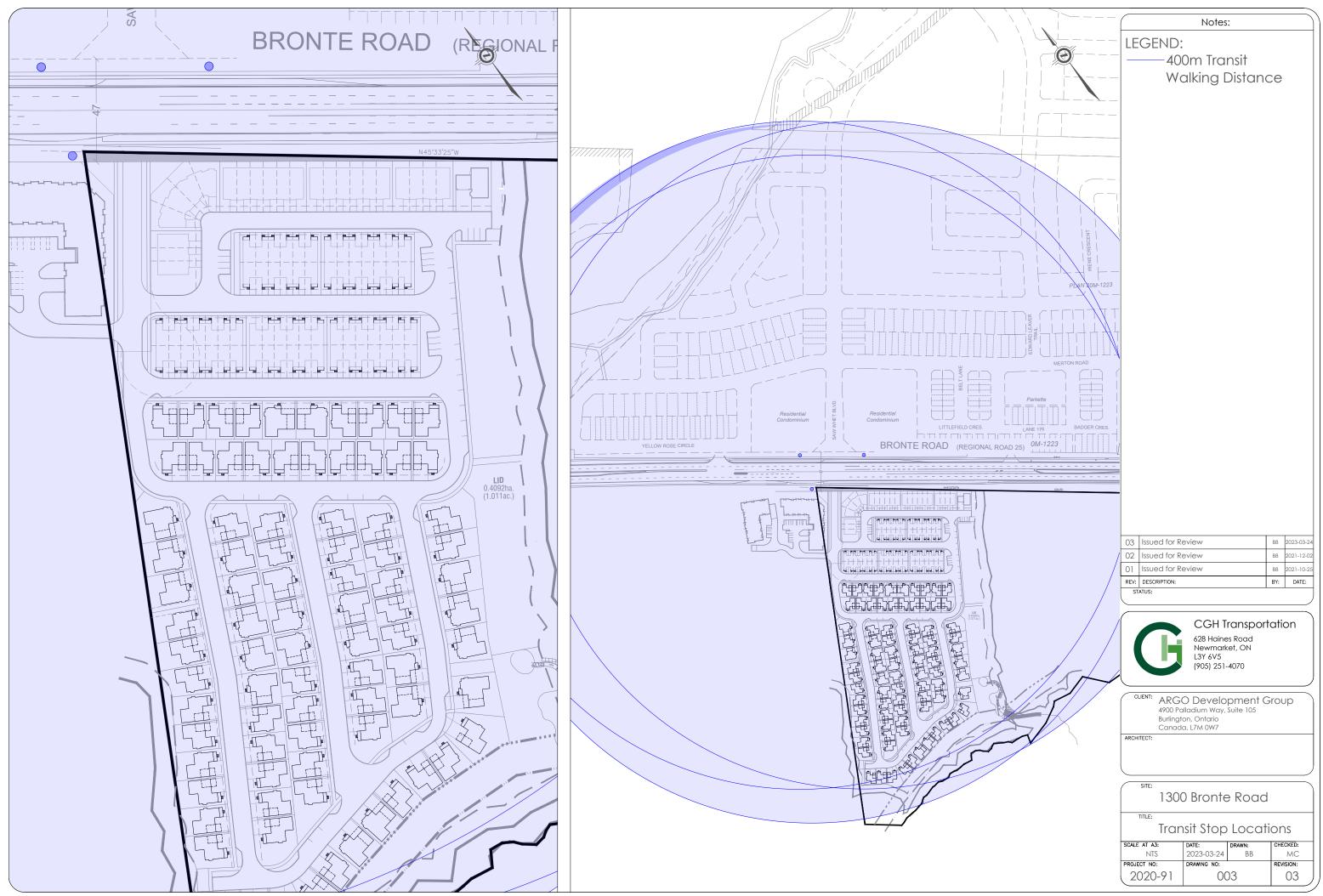
Two options of trail layouts have been proposed in the Urban Design Brief and the Environmental Impact Assessment for review. Option A proposes that there be no access points from the Bronte River community to existing trail systems in the adjacent natural heritage system woodlot and Bronte Creek Provincial Park. The existing access points would be closed and existing trails and driveways in the woodland decommissioned and rehabilitated by restoring to affected areas with woodland vegetation. Option B proposes to retain and provide a minimal number of trails, while removing other trail connections and restoring the woodland with native species. The existing central loop would be repurposed, and mitigation measures would be implemented to minimize the ecological impact. The trail plans are included in Appendix D. Either trail design scenario would satisfy the active transportation needs of the community.

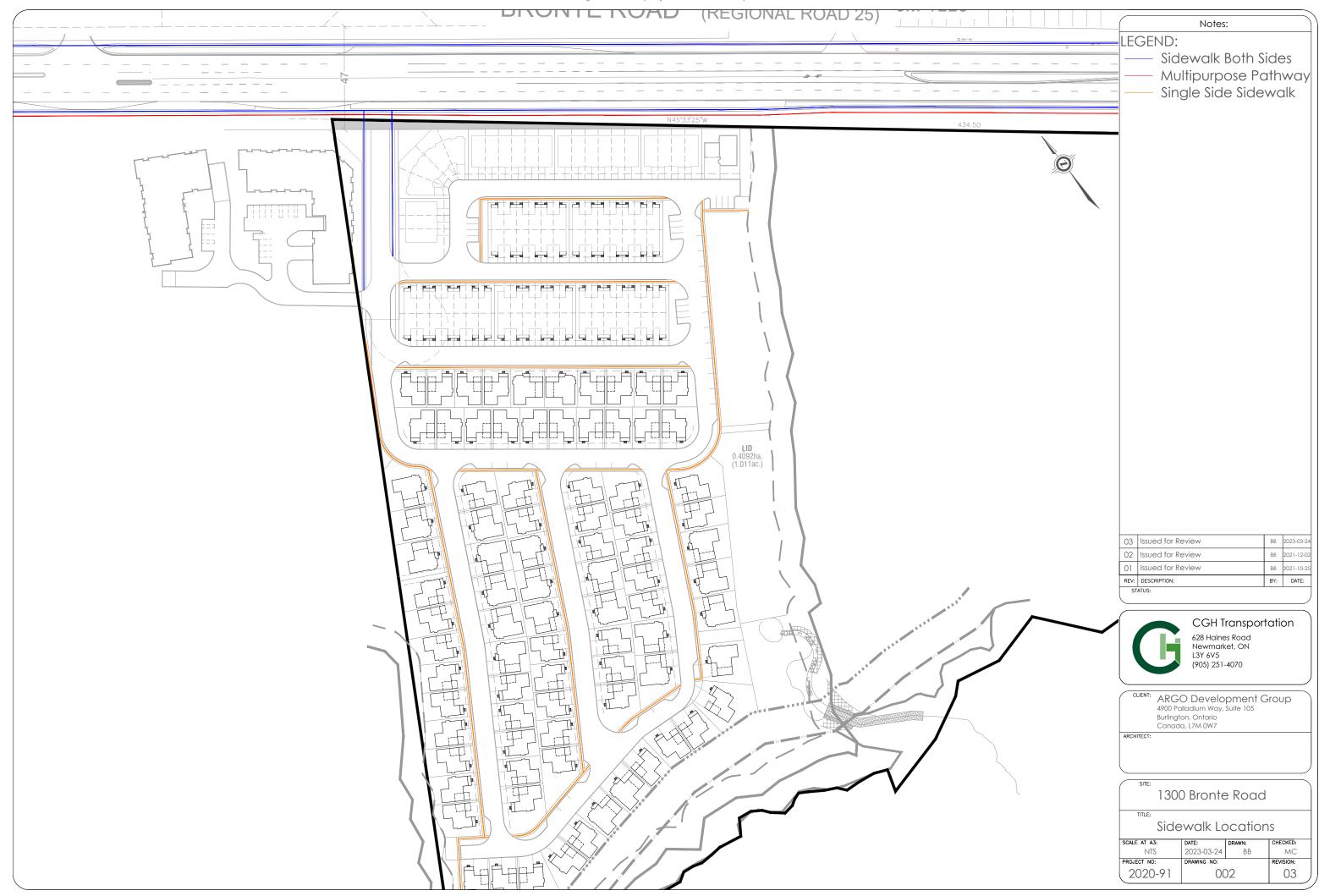
The following TDM Measures are anticipated to be provided, but the details will be confirmed through the final design and implementation of the site:

- Provide a multimodal travel option information package to new residents
- Provide visitor and resident bicycle parking to encourage the use of active transportation modes









5.1.2 Parking

The parking provisions for the proposed development have been reviewed using the Town of Oakville By-law 2014-014. Table 8 documents the required parking along with the parking provisions.

Table 8: Vehicle Parking Requirements – Zoning By-Law Approach

Parking Classification	GFA (sq.m.)/ Units	Residential Parking Rate		Parking Spaces Required	Parking Spaces Provided
Single-Detached	86	2 spaces / unit		172	172
Back-to-back townhouses	66	2 spaces/unit		132	66 + 58
Townhouses	23	2 spaces/unit (including 0.25 visitor spaces /	unit)	46 (incl. 12)	46
		Total		350	342

As noted above, the resident parking space requirement for the proposed land uses at 1300 – 1350 Bronte Road is 350 resident parking spaces, whereas 342 resident parking spaces are provided. Two parking spaces are provided for each detached dwelling unit either inside or in front of the garages, satisfying the zoning by-law requirement. Dual frontage townhouse units are provided with one parking space in garage and another in their driveways. Only one parking space is provided for each back-to-back townhouse unit in the driveway. In addition, 58 parking spaces will be provided on the roadside of the condo roads, at the ends of the townhouse blocks, and along a portion of the low impact development facilities (LIDs). The parking plan is attached as Appendix E. In total, there will be an 8-parking-space deficiency for the back-to-back townhouses according to the zoning by-law requirements. A site specific ZBA on parking reduction from 2 spaces per dwelling unit to 1 space plus 0.25 spaces for visitor parking per dwelling unit is proposed for these townhouses. Table 9 documents the required parking if the proposed parking rates were applied. In this case, the parking space provision would meet the requirements with an excess of 41 parking spaces.

Table 9: Vehicle Parking Requirements – ZBA Proposed Parking Rate

Parking Classification	GFA (sq.m.)/ Units	Residential Parking Rate	Parking Spaces Required	Parking Spaces Provided	
Single-Detached	Single-Detached 86 2 spaces / unit		172	172	
Back-to-back townhouses	66	1 space plus 0.25 spaces for visitor parking / unit	66 + 17	66 + 58	
Townhouses	23	2 spaces/unit (including 0.25 visitor spaces / unit)	46 (incl. 12)	46	
	Total				

The North Oakville Zoning By-law was used as a reference for the proposed parking rate. The area where the development is located along Bronte Road exhibits similarities to the North Oakville Secondary Plan area in terms of the land use context. They both contain a new residential neighbourhood with a mix of residential developments on a previously undeveloped large tract of land. Active transportation modes are encouraged, and facility improvements planned. The requirement for townhouse dwellings located outside the Trafalgar Urban Core Zone is 1 parking space per dwelling unit minimum. Therefore, the proposed site specific ZBA of 1 space plus 0.25 spaces for visitor parking per dwelling unit would meet the North Oakville Zoning By-law requirements, although they only apply to the lands north of Dundas Road.



In addition, the ITE Parking Generation Manual (5th Edition) was employed to evaluate the parking demand of the townhouse units to provide further proof on the sufficiency of the parking supply. Table 10 summarizes this analysis.

Table 10: ITE Parking Demand

Parking Classification	GFA (sq.m.)/ Units	ITE Parking Demand	Parking Spaces Provided	Parking Spaces in Excess of Demand
LU220 Multifamily Housing (Low-Rise)	66	44 (Monday to Friday – Fitted Curve Equation)	124	80

The Monday to Friday time period for analysis was selected for comparison as the Saturday time period does not have sufficient data to generate a reliable parking rate and the size of the development is outside the Saturday dataset. The value is also under the context of general urban / suburban with no nearby rail transit. It can be shown that the 124 parking spaces provided are in excess of demand for these units in this development. Besides, Bronte Road has been identified as a priority bus corridor and the increase of transit usage will reduce the private vehicle parking demand. As a result, parking needs can be accommodated at this site.

5.1.3 Site Circulation

The proposed development utilizes condo roads throughout, aside from Street A, which is an extension of the public ROW connection from Bronte Road to the adjacent landowner's property located at 1354 Bronte Road. The condominium roads will contain all the basic elements of local roads – sufficient pavement width, sidewalks on both sides, streetlights on both sides, etc.

Bronte River is an enclave that does not and will not connect further to the west or south. Due to the shape of the surrounding natural heritage features a grid like layout of local roads would not create a pattern land use pattern. Condominium roads have been proposed to facilitate compact development at higher development densities, which make efficient use of land, and support higher order transit services. The design of the condominium roads provides an efficient grid like system that ensures a connected system for the development for all travel modes while ensuring that all required services can be adequately accommodated. Condo road cross sections are included in Appendix F.

5.1.4 Development Access

The primary access to the proposed development will be accommodated via Street A, aligning with Saw Whet Boulevard to the east. Using OTM Book 12 Justification 7, and the volume projections herein, the traffic control signal warrant for the intersection at Saw Whet Boulevard and Bronte Road has been assessed in Appendix G for the 2031 Future Total horizon. Although a signal is not warranted for this intersection using Justification 7, it has been proposed to address high V/C ratios and delays. As the intersection is planned to be a signalized access, left turn lanes are provided for each approach. The eastbound left approach requires a 15-metre storage lane. The intersection configuration is included in Appendix H. To ensure lane alignment, there is a 3.5-metre-wide left-turn lane and a 5.0-metre-wide shared through / right-turn lane on the westbound approach and a 3.5-metre-wide left-turn lane and a 3.5-metre-wide shared through / right-turn lane on the westbound approach.

The Town Staff would like to see the west side bus bay on Bronte Road move back to the intersection, at the far side, where it is more accessible by residents on either side of Bronte Road at the signalized intersection. The relocation of the bus stop should be considered in the detailed design stage. During detailed design the current T-intersection will transition to a full-moves intersection that is signalized and incorporating the bus stop at the most



appropriate location will be feasible at that time. Concrete bus stop platform infrastructure will be included to ensure accessibility and allow amenities to be installed.

The TIS has shown that a single access can support the vehicular traffic from a traffic operations perspective. However, given the size of the development, and the depth of the property from Bronte Road, a secondary access for emergency vehicles has been provided at the south end of the property adjacent to the NHS buffer and south of the relocated heritage home. While the exact design and method of control would be designed through the SPA process and consultation with Town Emergency Service departments, this could include a hard-surface walkway to serve the emergency vehicles and pedestrians and bollards or chains to control non-emergency vehicle access.

The proposed site plan and access configuration have been reviewed using a heavy single unit truck (HSU) and a fire truck. The HSU and fire truck will enter through the site access at Saw Whet Boulevard and Bronte Road. The fire truck will use the secondary access only in the event that the main access becomes blocked or unusable. Appendix I includes drawings illustrating the turning paths for the design vehicles. The turning radii of the turns are labelled on the plan included in the same appendix. All turning paths are accommodated by the proposed curbs and driveways. The front of the fire truck may overhang the curb, but the wheel path of the truck will be accommodated by the curb.

6 Operational Analysis

To understand the operational characteristics of the Study Area intersections, a Synchro model has been created using Trafficware's Synchro (Version 11). The Synchro model has been coded using the existing traffic signal timing, provided by Halton Region. The Heavy Vehicle percentage (HV %) has been calculated for each turning movement at the Study Area intersection. All Heavy Vehicle percentages calculated to be less than 2% were entered into the Synchro model as 2% in order to produce a conservative analysis. These calculations are shown in Appendix J. All other parameters have been coded using accepted best practices and default parameters where applicable.

6.1 2023 Existing Conditions

The existing intersection volumes have been analyzed to establish a baseline condition and determine the impact of the subject development as well as the surrounding background developments on the Study Area road network. The Saw Whet Boulevard at Bronte Road intersection was not modelled with the 2022 interim configuration of a right-turn-only westbound approach as described in Section 2.2, instead, it was modelled with full movements as the westbound approach was constructed with the intention of allowing left turns and right turns. The intersection in its final configuration will allow all movements, by the time that configuration is implemented the current local traffic will reroute and more comparable results with the future conditions can be attained this way. Table 11 summarizes the operational analysis of the 2023 existing conditions. Appendix K contains the 2023 Existing Conditions Synchro Sheets.



Table 11: 2023 Existing Conditions Operational Analysis

Intersection	Mymnt		AM Pe	ak Hour			PM Pe	ak Hour	
intersection	WWITHIL	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)
	EBL	D	0.06	50	8	D	0.05	55	6
	EBT	Е	0.81	75	#111	E	0.38	59	39
	EBR	F	1.26	207	#172	E	0.08	56	19
	WBL	Е	0.97	78	#91	D	0.40	45	41
	WBT	D	0.22	44	41	D	0.45	50	68
	WBR	D	0.13	43	23	D	0.39	50	53
	NBL	D	0.53	48	14	E	0.91	59	m#54
	NBT	В	0.56	14	123	D	1.06	39	m91
	NBR	D	0.16	35	29	Α	0.33	2	m0
	SBL	С	0.72	22	40	F	0.98	99	#136
	SBT	F	1.09	80	#394	С	0.67	26	152
	SBR	В	0.01	14	0	В	0.01	16	0
Upper Middle Road	Overall	Е	1.09	70	-	D	0.90	39	-
and Bronte Road			Mitigation N	√leasure: Al	M Peak Hour	Signal Opt	imization		
(Signalized)	EBL	D	0.04	44	7	-	-	-	-
	EBT	D	0.57	53	86	-	-	-	-
	EBR	F	0.92	87	#150	-	-	-	-
	WBL	Е	0.92	66	#98	-	-	-	-
	WBT	D	0.20	41	39	-	-	-	-
	WBR	D	0.13	40	22	-	_	-	-
	NBL	D	0.58	40	19	-	_	_	-
	NBT	С	0.61	29	133	-	-	-	-
	NBR	С	0.16	22	15	_	_	_	_
	SBL	С	0.72	25	44	_	_	_	_
	SBT	F	1.12	95	#403	-	_	-	-
	SBR	В	0.01	15	0	_	_	_	_
	Overall	E	1.07	66	-	-	_	-	-
	WBL/R	F	11.98	Err	Err	F	87.72	Err	Err
	NBT	_	0.36	0	0	_	0.78	0	0
	NBR	-	0.03	0	0	-	0.09	0	0
	SBL	В	0.05	1	12	F	0.72	33	82
	SBT	-	0.92	0	0	<u> </u>	0.45	0	0
	Overall	F	0.52	517	-	F	-	325	-
Saw Whet Boulevard			Measures: S		n, protected (ssive SBI in		
and Bronte Road	WBL	E	0.73	70	67	<i>Е</i>	0.57	63	44
(Unsignalized)	WBR	D	0.06	54	17	E	0.04	56	14
	NBT	A	0.42	4	59	C	0.98	27	#466
	NBR	A	0.03	2	4	A	0.12	4	16
	SBL	A	0.09	3	4	E	0.79	78	#45
	SBT	E	1.09	58	#584	A	0.73	4	77
	Overall	D	1.09 1.04	43	π304	C	0.32 0.93	21	-
	EBL/T/R	D	0.00	48	0	-	-	-	-
	WBL	E	0.00	73	69	E	0.73	71	61
	WBR	D	0.79	48	13	D	0.73	54	23
Chambas Camarral Bass	NBL	- -	- 0.05	-	-		0.16		m0
Charles Cornwall Road						A		52	
and Bronte Road	NBT	В	0.53	19	152	D	1.10	52	m13
(Signalized)	NBR	C	0.07	25	m22	A	0.18	0	m0
	SBL	A	0.47	9	m14	F	0.56	82	m31
	SBT/R	F	1.17	91	m#542	A	0.56	5	56
	Overall	Ε	1.13	67	-	D	1.01	36	-



Intersection	Mymnt		AM Pe	ak Hour			PM Pe	ak Hour					
intersection	IVIVITIT	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)				
	EBL/T/R	-	-	-	-	-	-	-	-				
	WBL	E	0.05	57	7	D	0.17	43	31				
	WBT/L	E	0.05	57	8	D	0.17	43	31				
North Service Road and	WBR	E	0.03	57	0	D	0.10	42	19				
Bronte Road	NBL	-	-	-	-	-	-	-	-				
(Signalized)	NBT	В	0.62	18	206	F	1.28	147	m#478				
(Signanzeu)	NBR	В	0.19	18	27	Α	0.05	7	m0				
	SBL	С	0.54	24	m14	D	0.55	48	33				
	SBT/R	С	1.04	24	m#424	В	0.68	16	140				
	Overall	С	1.02	23	-	F	1.00	92	-				
	WBL	С	0.25	21	18	D	0.26	39	42				
	WBR	С	0.74	31	57	F	1.50	285	#347				
	NBT	С	0.66	22	177	С	0.97	23	m76				
	SBT	С	1.00	24	m#259	В	0.50	15	56				
QEW WB Off Ramp and	Overall	С	0.92	24	-	Ε	1.13	64	-				
Bronte Road	Mitigation Measure: PM Peak Signal Optimization												
(Signalized)	WBL	-	-	-	- 1	C	0.20	31	37				
	WBR	-	-	-	-	F	1.18	141	#311				
	NBT	-	-	-	-	Е	1.11	70	m#372				
	SBT	-	-	-	-	D	0.57	36	167				
	Overall	-	-	-	-	E	1.13	70	-				
	EBL	Е	0.22	71	8	Е	0.19	70	7				
	EBT/R	Е	0.09	68	4	Е	0.12	69	5				
	WBL	Е	0.86	68	#141	Е	0.68	59	82				
	WBL/T/R	D	0.43	45	59	D	0.50	53	58				
	WBR	D	0.24	43	27	D	0.47	52	52				
	NBL	С	0.03	35	3	С	0.00	24	2				
	NBT	D	0.83	53	142	F	1.12	105	#387				
	NBR	D	0.16	37	20	С	0.26	27	48				
	SBL	F	1.33	199	m#300	D	0.78	55	#137				
	SBT/R	В	0.71	15	m149	В	0.44	14	119				
QEW EB Ramps and	Overall	E	1.19	63	-	E	0.91	63	-				
Bronte Road	0.10.0	_			AM Peak Sig								
(Signalized)	EBL	Е	0.23	71	8	-		_	_				
(1.3.1.1)	EBT/R	E	0.09	69	4	_	_	_	_				
	WBL	F	0.97	95	#176	_	_	_	_				
	WB	D	0.50	50	72	_	_	_	_				
	WBR	D	0.24	46	30	_	_	_	_				
	NBL	D	0.03	40	2	_	_	_	_				
	NBT	F	1.04	96	#168	_	_	_	_				
	NBR	D	0.16	43	22	_	_	_	-				
	SBL	E	1.05	63	m#238	_							
	SBT/R		0.72	29	m234		_	_	_				
	Overall	C E	1.04	57	111234		_	_	_				
	Overun	E			ntile exceed:	-		_	-				

The above table summarizes the intersection operational analysis of the 2023 projected volumes. The Charles Cornwall Road at Bronte Road intersection and the North Service Road at Bronte Road intersection are operating with acceptable overall LOS and delays, but the rest of the Study Area intersections experience operational constraints.



The eastbound right and southbound through movements at Upper Middle Road and Bronte Road during the AM peak period experience v/c ratios of 1.26 and 1.09 respectively. Signal optimization was explored as a mitigation measure for these movements. At the intersection of Upper Middle Road and Bronte Road the signal optimization improved operations, however, this mitigation was not sufficient to reduce the V/C ratio below one and decrease delays at all movements. Given that the opposing westbound left phase is at capacity, providing more green time to the southbound through movement would increase the westbound left movement's V/C ratio, which would exceed 1. Given the fact that both Upper Middle Road and Bronte Road are busy arterial roads with high traffic volumes in competing north-south and east-west directions, high delays during the peak hours may be expected at this intersection. Conditions are expected to improve in future analysis horizons given additional lanes on Bronte Road.

At the Saw Whet Boulevard and Bronte Road intersection, the southbound left movement experiences a V/C ratio of 11.98 and 87.72 during the AM and PM peak periods and the delays and queues are shown to be "Err". This indicates that the stop-controlled intersection cannot accommodate the traffic volumes. The high volumes in the northbound and southbound directions restrict the time during which the westbound traffic can turn onto the arterial road Bronte, resulting in severe congestion at the westbound approach. To improve conditions, the intersection need to be signalized and a permissive and protected southbound left turn phase implemented in the signal timing plan. An exclusive westbound left turn lane is installed as the intersection is signalized, resulting in V/C ratio reductions to 0.73 and 0.57 during the AM and PM peak periods. After the implementation of the mitigation measures, however, the southbound through movement in the AM peak period still experiences a V/C ratio of 1.09 with a 95th percentile queue that exceeds capacity. This minor overcapacity is acceptable as the intersection will be further modified once the right-of-way from the 1354 Bronte Road property is connected to the existing intersection and the additional lanes on Bronte Road in the future horizon. The traffic conditions are expected to improve.

At Charles Cornwall Road and Bronte Road, the southbound shared through/right movement in the AM peak period experiences a V/C ratio of 1.17 with a high delay and a 95th percentile queue that exceeds capacity. In the PM period at this intersection, the northbound through movement experiences a V/C ratio of 1.10 with a high delay and a 95th percentile queue that exceeds capacity. Similarly, the northbound through movement in the PM period at the North Service Road and Bronte Road intersection experiences a V/C ratio of 1.28 with a high delay and a 95th percentile queue that exceeds capacity. Although these movements are experiencing constraints, providing more green time to these movements will reduce the splits for opposing movements below the minimum splits. These conditions are expected to improve in the next future horizon given the additional lanes on Bronte Road.

At the QEW westbound off ramp and Bronte Road, the westbound right movement in the PM period experiences a V/C ratio of 1.50 with a high delay and a 95th percentile queue. Signal optimization has been implemented to improve this V/C ratio of the westbound right movement to 1.18, with an increase in V/C ratio from 0.97 to 1.11 for the northbound through movement at this location as a trade-off.

Lastly, at the QEW eastbound ramps and Bronte Road intersection, several movements across both peak periods experience constraints. Signal optimization in the AM period has improved the southbound left movement's V/C ratio from 1.33 to 1.05. In the PM peak period, providing more green time to the northbound through movement, with a V/C ratio of 1.12 will reduce the splits for opposing movements below the minimum splits. Therefore, mitigating the operational constraints using signal optimization is not feasible for the PM peak period.



6.2 2026 Future Background Conditions

The 2026 Future Background conditions have been examined to determine the future traffic conditions without the addition of the proposed development. This will isolate the impact of the subject development on the traffic network. Table 12 summarizes the operational analysis of 2026 Future Background conditions. Synchro worksheets have been included in Appendix L.

Table 12: 2026 Future Background Conditions Operational Analysis

Intersection	Mvmnt			ak Hour				ak Hour				
intersection	IVIVIIIIC	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)			
	EBL	D	0.04	40	7	D	0.05	55	6			
	EBT	D	0.50	48	82	E	0.38	59	39			
	EBR	E	0.89	75	#151	E	0.08	56	11			
	WBL	F	0.99	87	#112	D	0.42	45	43			
	WBT	D	0.20	42	39	D	0.44	50	68			
Upper Middle Road	WBR	D	0.13	41	22	D	0.37	49	51			
and Bronte Road	NBL	D	0.58	51	18	E	0.86	62	m#78			
(Signalized)	NBT	С	0.64	26	139	F	1.12	82	m#345			
	NBR	D	0.19	42	33	В	0.36	19	m24			
	SBL	С	0.78	30	57	F	1.05	120	#145			
	SBT	F	1.19	123	#446	D	0.80	35	189			
	SBR	В	0.01	15	0	В	0.01	20	0			
	Overall	F	1.14	79	-	Ε	0.95	61	-			
	EBL	D	0.03	49	5	D	0.03	54	5			
	EBT/R	D	0.01	49	4	D	0.01	54	0			
	WBL	E	0.81	74	78	E	0.68	70	52			
	WBT/R	D	0.09	49	18	Ε	0.25	57	26			
	NBL	Α	0.13	10	m1	Α	0.09	1	m0			
	NBT	Α	0.49	7	127	С	1.02	26	m403			
	NBR	Α	0.04	4	m5	Α	0.15	0	m0			
	SBL	Α	0.13	4	m2	F	2.08	569	m#73			
	SBT	F	1.26	129	m#592	В	0.58	13	204			
	SBR	Α	0.00	4	m0.0	В	0.00	17	m0			
Saw Whet Boulevard	Overall	F	1.18	91	-	С	1.87	34	-			
and Bronte Road	Mitigation Measure: Protected and Permissive SBL Phase in PM Peak Hour											
(Signalized)	EBL	-	-	-	-	D	0.03	54	5			
	EBT/R	-	-	-	-	D	0.01	54	0			
	WBL	-	-	-	-	E	0.68	70	52			
	WBT/R	-	-	-	-	D	0.06	55	15			
	NBL	-	-	-	-	Α	0.09	2	m1			
	NBT	-	-	-	-	F	1.18	95	m#444			
	NBR	-	-	-	-	Α	0.16	1	m3			
	SBL	-	-	-	-	С	0.57	31	m25			
	SBT	-	_	-	-	В	0.58	16	237			
	SBR	-	-	-	-	В	0.00	17	m0.0			
	Overall	-	_	-	_	E	1.07	63	-			
	EBL/T/R	D	0.00	49	0	-	-	-	-			
	WBL	E	0.82	79	72	E	0.73	71	61			
	WBR	D	0.05	49	13	D	0.17	54	24			
Charles Cornwall Road	NBL	-	-	-	-	A	0.01	1	m0			
and Bronte Road	NBT	С	0.57	22	166	F	1.18	90	m#359			
(Signalized)	NBR	С	0.07	27	m20	A	0.18	0	m0			
15	SBL	A	0.49	5	m2	E	0.56	60	34			
	JUL	, A	0.73	, ,	1112	_	0.50	- 50	J-T			
	SBT/R	F	1.24	115	m#433	Α	0.61	8	132			



Intercection	Mymnt		AM Pe	ak Hour			PM Pe	ak Hour	
Intersection		LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)
	EBL/T/R	-	-	-	-	-	-	-	-
	WBL	E	0.05	57	7	D	0.17	43	31
	WBT/L	E	0.05	57	8	D	0.17	43	31
North Service Road and	WBR	E	0.03	57	0	D	0.10	42	19
Bronte Road	NBL	-	-	-	-	-	-	-	-
(Signalized)	NBT	С	0.69	23	222	F	1.36	183	m#485
(Signanzea)	NBR	С	0.19	21	30	Α	0.05	7	m0
	SBL	С	0.54	32	m18	D	0.55	41	m29
	SBT/R	D	1.11	53	m#422	В	0.72	14	125
	Overall	D	1.08	42	-	F	1.06	111	-
	WBL	С	0.25	21	18	D	0.26	39	42
	WBR	С	0.74	31	58	F	1.51	290	#351
	NBT	С	0.70	24	191	D	1.03	37	m90
	SBT	D	1.07	50	m#260	В	0.53	13	60
QEW WB Off Ramp and	Overall	D	0.96	38	-	Ε	1.18	70	-
Bronte Road			Mitigation N	∕leasure: PN	1 Peak Hour	Signal Opti	mization		
(Signalized)	WBL	-	-	-	-	С	0.21	33	38
	WBR	-	-	-	-	F	1.23	165	#321
	NBT	-	-	-	-	F	1.15	86	m#372
	SBT	-	-	-	-	В	0.59	14	75
	Overall	-	-	-	-	Ε	1.18	76	-
	EBL	E	0.22	71	8	E	0.19	70	7
	EBT/R	Е	0.09	68	4	E	0.12	69	5
	WBL	E	0.86	68	#141	Е	0.68	59	82
	WBL/T/R	D	0.43	45	59	D	0.51	53	60
	WBR	D	0.24	43	27	D	0.48	52	53
	NBL	С	0.03	35	3	С	0.00	24	2
	NBT	E	0.88	57	153	F	1.20	137	#420
	NBR	D	0.16	37	20	С	0.27	28	50
	SBL	F	1.37	218	m#286	D	0.78	47	#139
	SBT/R	В	0.76	16	m149	В	0.47	16	127
QEW EB Ramps and	Overall	Ε	1.22	66	-	Ε	0.95	75	-
Bronte Road			Mitigation N	/leasure: AN	/I Peak Hour	Signal Opt	mization		
(Signalized)	EBL	Е	0.22	71	8	-	-	-	-
	EBT/R	E	0.09	68	4	-	-	-	-
	WBL	F	0.99	98	#177	-	-	-	-
	WBL/T/R	D	0.51	50	73	-	-	-	-
	WBR	D	0.24	46	30	-	-	-	-
	NBL	D	0.05	46	4	-	-	-	-
	NBT	F	1.29	195	#203	-	-	-	-
	NBR	D	0.22	48	29	-	-	-	-
	SBL	D	0.97	49	m#204	-	-	-	-
	SBT/R	С	0.72	20	m166	-	-	-	-
	Overall	E	1.03	72	-	-	-	-	-
Notes:				- 95% perce	ntile exceed				

With the addition of background traffic growth as well as the nearby background development traffic, the Study Area intersections are experiencing operational constraints. At the Upper Middle Road and Bronte Road intersection, the southbound through movement experiences a V/C ratio of 1.19. Given that the opposing westbound left phase is at capacity, providing more green time to the southbound through movement would increase the westbound left movement's V/C ratio, which would exceed 1. As previously mentioned, given the



nature of the two arterial roads at Upper Middle Road and Bronte Road, this high V/C can be expected. Conditions are expected to improve in future analysis horizons given additional lanes on Bronte Road.

At Saw Whet Boulevard and Bronte Road, the southbound through movement in the AM peak period experiences a V/C ratio of 1.26 with a high delay and a 95th percentile queue that exceeds capacity. At Charles Cornwall Road and Bronte Road, the southbound shared through/right movement in the AM peak period experiences a V/C ratio of 1.24 with a high delay and a 95th percentile queue that exceeds capacity. In the PM period at this intersection, the northbound through movement experiences a V/C ratio of 1.18 with a high delay and a 95th percentile queue that exceeds capacity. Similarly, the northbound through movement in the PM period at the North Service Road and Bronte Road intersection experiences a V/C ratio of 1.35 with a high delay and a 95th percentile queue that exceeds capacity. Although these movements are experiencing constraints, providing more green time to these movements will reduce the splits for opposing movements below the minimum splits. However, these conditions are expected to improve in the next future horizon given the additional lanes on Bronte Road.

At the Saw Whet Boulevard and Bronte Road intersection In the PM peak period, the southbound left movement experiences a V/C ratio of 2.08. To improve conditions, a permissive and protected southbound left turn phase has been proposed. The V/C ratio reduces to 0.57 with this implementation, but the northbound through movement experiences an increase in V/C ratio from 1.02 to 1.18. This trade-off is acceptable as through traffic conditions are expected to improve in the next future horizon given the additional lanes on Bronte Road.

At the QEW westbound off ramp and Bronte Road, the westbound right movement in the PM period experiences a V/C ratio of 1.51 with a high delay and a 95th percentile queue. Signal optimization has been implemented to improve this V/C ratio of the westbound right movement to 1.23, with an increase in V/C ratio from 1.03 to 1.15 for the northbound through movement at this location as well.

Lastly, at the QEW east bound ramps and Bronte Road intersection, several movements across both peak periods experience constraints. Signal optimization in the AM period has improved the southbound left movement's V/C ratio from 1.37 to 0.97. In the PM peak period, providing more green time to the northbound through movement, with a V/C ratio of 1.20, will reduce the splits for opposing movements below the minimum splits.

6.3 2026 Future Total Conditions

The analysis parameters used to analyze the 2026 Future Background conditions have been carried forward as part of the analysis of 2026 Total Future conditions. The 2026 trip generation volumes have been added. Table 13 summarizes the results of the Synchro Analysis. Synchro worksheets have been included in Appendix M.



Table 13: 2026 Total Future Conditions Operational Analysis

				ak Hour	Operational .	, , , , ,	PM Pe	ak Hour	
Intersection	Mvmnt	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)
	EBL	D	0.04	40	7	D	0.05	55	6
	EBT	D	0.50	48	82	E	0.38	59	39
	EBR	Е	0.89	75	#151	E	0.08	56	19
	WBL	F	1.00	89	#114	D	0.44	45	45
	WBT	D	0.20	42	39	D	0.44	50	68
Upper Middle Road	WBR	D	0.13	41	22	D	0.39	49	54
and Bronte Road	NBL	Е	0.58	58	23	F	1.05	100	#117
(Signalized)	NBT	С	0.66	30	187	F	1.12	95	#400
	NBR	С	0.21	31	32	С	0.37	21	50
	SBL	С	0.76	28	58	F	1.06	125	#145
	SBT	F	1.19	123	#446	С	0.72	27	166
	SBR	В	0.01	15	0	В	0.01	16	0
	Overall	E	1.15	80	-	Ε	0.96	66	-
	EBL	D	0.11	49	14	E	0.09	59	11
	EBT/R	D	0.19	50	26	Е	0.03	58	9
	WBL	Е	0.82	76	79	Е	0.71	76	55
	WBT/R	D	0.09	49	18	Е	0.09	59	17
Saw Whet Boulevard	NBL	С	0.43	33	m6	В	0.39	16	24
and Bronte Road	NBT	В	0.49	14	138	F	1.17	102	#617
(Signalized)	NBR	Α	0.05	8	m9	Α	0.16	8	26
	SBL	Α	0.13	7	m4	D	0.58	55	#43
	SBT	F	1.27	146	m#591	Α	0.58	6	127
	SBR	В	0.01	11	m0	Α	0.02	3	3
	Overall	F	1.19	104	-	Ε	1.06	64	-
	EBL/T/R	D	0.00	49	0	-	-	-	-
	WBL	Е	0.82	79	72	Е	0.73	71	61
	WBR	D	0.05	49	13	D	0.17	54	24
Charles Cornwall Road	NBL	-	-	-	-	Α	0.01	1	m0.0
and Bronte Road	NBT	В	0.58	14	97	F	1.20	100	m#360
(Signalized)	NBR	В	0.07	17	m11	Α	0.18	0	m0
	SBL	Α	0.50	6	m3	D	0.56	47	29
	SBT/R	F	1.26	123	m#445	Α	0.62	8	145
	Overall	F	1.22	88	-	Ε	1.09	64	-
	EBL/T/R	-	-	-	-	-	-	-	-
	WBL	Е	0.05	57	7	D	0.17	43	31
	WBT/L	Е	0.05	57	8	D	0.17	43	31
	WBR	Е	0.03	56	0	D	0.10	42	19
North Service Road and	NBL	-	-	-	-	-	-	-	-
Bronte Road	NBT	В	0.68	14	147	F	1.38	196	m#485
(Signalized)	NBR	Α	0.22	8	m29	Α	0.05	7	m0
	SBL	D	0.56	37	m31	D	0.55	49	m30
	SBT/R	Е	1.13	68	m#424	В	0.73	14	132
	Overall	D	1.10	49	-	F	1.08	119	-



lutana atian	D. d		AM Pe	ak Hour			PM Pe	ak Hour	
Intersection	Mvmnt	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)
	WBL	С	0.27	22	20	D	0.26	39	42
	WBR	D	0.81	38	#75	F	1.59	327	#375
	NBT	С	0.68	20	m130	D	1.04	36	m72
	SBT	D	1.05	49	m248	Α	0.54	10	61
QEW WB Off Ramp and	Overall	D	0.98	37	-	E	1.21	76	-
Bronte Road			Mitigation N	/leasure: PN	1 Peak Hour	Signal Opti	mization		
(Signalized)	WBL	-	-	-	-	С	0.21	32	37
	WBR	-	-	-	-	F	1.27	182	#342
	NBT	-	-	-	-	F	1.17	95	m72
	SBT	-	-	-	-	В	0.61	17	103
	Overall	-	-	-	-	F	1.21	84	-
	EBL	E	0.22	71	8	Е	0.19	70	7
	EBT/R	Е	0.09	68	4	Е	0.12	69	5
	WBL	E	0.83	62	133	Е	0.68	60	83
	WBL/T/R	D	0.39	44	51	D	0.42	52	47
QEW EB Ramps and	WBR	D	0.24	42	25	D	0.33	50	34
Bronte Road	NBL	D	0.05	47	4	D	0.01	35	2
(Signalized)	NBT	F	1.35	225	#208	F	1.71	374	#460
	NBR	D	0.23	49	31	D	0.36	42	60
	SBL	F	1.10	89	m#278	С	0.54	28	120
	SBT/R	С	0.77	26	m207	В	0.47	18	158
	Overall	F	1.05	83	-	F	0.98	165	-
Notes:	# - 95% percentile exceeds capacity m - volume for the 95th percentile queue is metered by an upstream signal								

The projected 2026 Total Future conditions are similar to those projected for 2026 Future Background conditions, with the north-south through volumes on Bronte Road projected to operate over capacity. At Upper Middle Road and Bronte Road in the AM peak period, the westbound left and southbound through movements are constrained. Given that they are in opposing directions, providing more green time to one movement to reduce its V/C ratio will increase the other movement's V/C ratio which will not be a viable solution to improve the overall operational conditions. These constraints are expected given the nature of the two arterial roads at this intersection. Applying signal timing adjustments at Saw Whet Boulevard, Charles Cornwall Road, and North Service Road will reduce splits below minimum splits for movements opposing those that are constrained. Similar to the 2026 Future Background horizon, the PM peak hour signal optimization mitigation measure at the QEW westbound off-ramp has been proposed to reduce the V/C ratio of the westbound right movement from 1.59 to 1.27. The signal timing at the QEW eastbound ramps at Bronte Road intersection cannot be improved without reducing the splits for some phases below minimum splits. However, conditions are expected to improve in the next future horizon.

6.4 2031 Future Background Traffic Conditions

The 2031 Future Background horizon has been examined to determine the future traffic conditions without the addition of the proposed development. This will isolate the impact of the subject development on the traffic network. By 2031 it is anticipated that the outer lanes of Bronte Road will be converted to an HOV / Transit lane. To reflect this, as instructed by Region Staff, a lane utilization factor of 0.80 has been used to estimate the impact of this reduction in north-south vehicle capacity along Bronte Road. Table 14 summarizes the operational analysis of 2031 Future Background conditions. Synchro worksheets are included as Appendix N.



Table 14: 2031 Future Background Conditions Operational Analysis

Intorcostion	Museum		AM Pe	ak Hour			PM Pe	PM Peak Hour		
Intersection	Mvmnt	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)	
	EBL	D	0.04	40	7	D	0.04	52	5	
	EBT	D	0.50	48	82	Е	0.33	56	35	
	EBR	Е	0.89	75	#151	D	0.08	54	17	
	WBL	Е	0.92	67	#100	D	0.54	50	41	
	WBT	D	0.19	40	38	E	0.53	55	65	
Upper Middle Road	WBR	D	0.13	39	21	D	0.40	53	47	
and Bronte Road	NBL	Е	0.64	61	#27	E	0.86	61	m85	
(Signalized)	NBT	D	0.62	39	129	D	1.03	46	m#304	
	NBR	F	0.20	85	37	В	0.40	19	m27	
	SBL	D	0.82	42	81	E	0.79	55	#170	
	SBT	Е	1.06	71	#354	С	0.67	29	183	
	SBR	В	0.01	16	0	В	0.01	19	0	
	Overall	Ε	1.04	61	-	D	0.93	42	-	
	EBL	D	0.03	49	5	D	0.03	55	5	
	EBT/R	D	0.01	49	6	D	0.01	54	0	
	WBL	E	0.80	74	76	E	0.68	70	51	
	WBT/R	D	0.16	50	24	D	0.05	55	14	
Saw Whet Boulevard	NBL	В	0.13	11	m2	Α	0.17	3	m1	
and Bronte Road	NBT	В	0.42	12	120	Α	0.97	8	m#400	
(Signalized)	NBR	Α	0.04	7	8	Α	0.15	1	m1	
, , ,	SBL	Α	0.18	4	m3	F	0.93	122	m#56	
	SBT	E	1.10	56	m#536	В	0.51	10	213	
	SBR	A	0.00	4	m0	C	0.00	22	m1	
	Overall	D	1.05	45	-	В	0.93	13	-	
	EBL/T/R	D	0.00	49	0	-	-	-	_	
	WBL	E	0.82	79	72	E	0.73	71	61	
	WBR	D	0.05	49	13	D	0.27	55	31	
Charles Cornwall Road	NBL	_	-	_	-	A	0.01	1	m0	
and Bronte Road	NBT	В	0.50	13	77	C	1.02	24	m338	
(Signalized)	NBR	В	0.07	16	m11.9	A	0.17	1	m3	
(erg	SBL	В	0.59	13	m0	E	0.59	67	#34	
	SBT/R	D	1.08	44	m#435	A	0.53	2	48	
	Overall	D	1.07	36	-	В	0.94	19	-	
	EBL/T/R	-		-	-	-	-	-	_	
	WBL	Е	0.05	57	7	D	0.16	42	30	
	WBT/L	E	0.05	57	8	D	0.16	42	31	
	WBR	E	0.03	56	0	D	0.10	41	19	
North Service Road and	NBL	-	-	-	-	-	-	-	_	
Bronte Road	NBT	В	0.58	11	93	F	1.19	106	m#395	
(Signalized)	NBR	A	0.21	5	m15	A	0.05	7	m0	
	SBL	D	0.59	40	m47		0.55	38	23	
	SBT/R	A	0.96	9	m#414	В	0.63	13	167	
	Overall	В	0.94	11	-	E	0.93	68	-	
	WBL	C	0.27	22	20	C	0.19	28	35	
QEW WB Off Ramp and	WBR	D	0.27	38	#73	F	1.10	109	#301	
Bronte Road	NBT	В	0.59	17	m117	D	1.08	53	m48	
(Signalized)	SBT	С	0.39	22	218	В	0.55	20	87	
(Jigiiuiizeu)	Overall	<i>c</i>	0.89 0.86	21	210	D D	1.09	51	-	
	Overun	L	0.00	21		U	1.03	31		



Intersection	Mymnt		AM Pe	ak Hour			PM Pe	ak Hour			
intersection	ivivmnt	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)		
	EBL	Е	0.22	71	8	Е	0.19	70	7		
	EBT/R	Е	0.09	68	4	Е	0.12	69	5		
	WBL	Е	0.83	62	133	Е	0.68	60	83		
	WBL/T/R	D	0.39	44	51	D	0.41	52	47		
	WBR	D	0.24	42	25	D	0.32	50	34		
	NBL	D	0.06	48	4	С	0.01	34	2		
	NBT	F	1.18	148	#163	F	1.41	237	#364		
	NBR	D	0.16	48	23	D	0.33	39	53		
	SBL	Е	1.05	75	m#327	D	0.53	37	123		
	SBT/R	С	0.67	22	154	С	0.41	23	131		
QEW EB Ramps and	Overall	Ε	0.99	64	-	F	0.88	117	-		
Bronte Road	Mitigation Measure: PM Peak Signal Optimization										
(Signalized)	EBL	-	-	-	-	Е	0.19	70	7		
	EBT/R	-	-	-	-	Е	0.12	69	5		
	WBL	-	-	-	-	Е	0.72	63	88		
	WBL/T/R	-	-	-	-	D	0.42	53	50		
	WBR	-	-	-	-	D	0.32	51	36		
	NBL	-	-	-	-	С	0.01	31	2		
	NBT	-	-	-	-	F	1.28	178	#348		
	NBR	-	-	-	-	D	0.29	35	47		
	SBL	-	-	-	-	D	0.56	43	121		
	SBT/R	-	-	-	-	В	0.40	15	103		
	Overall	-	-	-	-	F	0.88	92	-		
Notes:		# - 95% percentile exceeds capacity m - volume for the 95 th percentile queue is metered by an upstream signal									

With the addition of background growth to the 2026 Future Background horizon as well as additional lanes along Bronte Road to project the 2031 Future Background traffic volumes, the operational performance of the Study Area intersections increased, with lower delays and V/C ratios at movements that were previously constrained. Further, the LOS of all intersections either improved or stayed the same. Several movements exceeded capacity constraints and could not be improved using signal timing adjustments. For example, the northbound through movement at North Service Road West and Bronte Road in the PM period experiences a V/C ratio of 1.19. Despite this, providing this movement with more green time reduces the splits for other movements below the minimum splits. Moreover, the westbound right movement at the QEW westbound off ramp at Bronte Road experiences a V/C ratio of 1.10 in the PM peak period. The opposing northbound through movement at this intersection experiences a V/C ratio of 1.08. Providing more green time to the westbound right movement will increase this V/C ratio.

At the QEW eastbound ramps at Bronte Road in the AM period, the northbound through and the southbound left movements exceed capacity. Similar to the previously mentioned movements, adjusting the signal timing in favour of one movement exacerbates the other movement in terms of capacity constraints. In contrast, in the PM period at this intersection, only the northbound through movement is constrained. It experiences a V/C ratio of 1.41 with a high delay of 237 seconds and a 95th percentile queue that exceeds capacity. As a result, signal optimization is proposed for this peak period. This movement's V/C ratio can be improved to 1.28 with this improvement.



6.5 2031 Future Total Conditions

The analysis parameters used to analyze the 2031 Future Background conditions have been carried forward as part of the analysis of 2031 Total Future conditions. The 2031 site trip generation volumes were added. Table 15 summarizes the results of the Synchro Analysis. Synchro worksheets have been included in Appendix O.

Table 15: 2031 Total Future Conditions Operational Analysis

Intersection	D. de consent		AM Pe	ak Hour			PM Pe	ak Hour	
intersection	Mvmnt	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)
	EBL	D	0.04	40	7	D	0.04	52	5
	EBT	D	0.50	48	82	Е	0.33	56	35
	EBR	Е	0.89	75	#151	D	0.08	54	17
	WBL	Е	0.93	67	#100	D	0.57	51	43
	WBT	D	0.19	40	38	Е	0.53	55	65
Upper Middle Road	WBR	D	0.13	39	21	D	0.17	50	25
and Bronte Road	NBL	Е	0.64	64	#27	Е	0.86	63	m74
(Signalized)	NBT	D	0.63	40	145	E	1.08	61	m#297
	NBR	Е	0.21	75	47	Α	0.43	9	m17
	SBL	D	0.82	43	82	D	0.71	48	#147
	SBT	Е	1.06	72	#354	С	0.68	29	184
	SBR	В	0.01	16	0	В	0.01	19	0
	Overall	Ε	1.04	61	-	D	0.93	47	-
	EBL	D	0.11	49	14	D	0.09	55	11
	EBT/R	D	0.19	50	26	D	0.03	54	8
	WBL	Е	0.82	76	77	E	0.68	70	51
	WBT/R	D	0.15	50	24	D	0.04	54	0
Saw Whet Boulevard	NBL	С	0.43	33	m8	В	0.63	15	m6
and Bronte Road	NBT	Α	0.42	5	96	С	1.02	24	m#430
(Signalized)	NBR	Α	0.04	3	3	Α	0.16	6	m7
	SBL	Α	0.19	5	m3	D	0.61	40	m28
	SBT	E	1.11	63	m#549	В	0.51	14	208
	SBR	Α	0.01	2	m0	Α	0.02	5	m2
	Overall	D	1.05	47	-	С	0.94	22	-
	EBL/T/R	D	0.00	49	0	-	-	-	-
	WBL	Е	0.82	79	72	Е	0.73	71	61
	WBR	D	0.05	49	13	D	0.27	55	31
Charles Cornwall Road	NBL	-	-	-	-	A	0.01	1	m0
and Bronte Road	NBT	С	0.50	23	142	С	1.03	31	m341
(Signalized)	NBR	С	0.07	29	m22	A	0.17	1	m3
, , ,	SBL	В	0.59	15	m3	F	0.59	87	#33.5
	SBT/R	D	1.09	48	m#430	A	0.53	1	11
	Overall	D	1.08	41	-	С	0.96	23	-
	EBL/T/R	-	-	-	_	-	-	_	_
	WBL	Е	0.05	57	7	D	0.16	42	30
	WBT/L	E	0.05	57	8	D	0.16	42	31
	WBR	E	0.03	57	0	D	0.10	41	19
North Service Road and	NBL	-	-	-	-	-	-	-	-
Bronte Road	NBT	С	0.62	21	165	F	1.21	111	m#390
(Signalized)	NBR	В	0.18	16	m9	A	0.05	7	m0
	SBL	D	0.18	36	m39	C	0.55	30	24
	SBT/R	A	0.98	4	m#422	С	0.64	29	227
	Overall	В	0.95	11	-	<i>E</i>	0.04	76	-



lasta na a ati a n	B. d		AM Pe	ak Hour			PM Pe	ak Hour	
Intersection	Mvmnt	LOS	V/C	Del (s)	Q (95 th)	LOS	V/C	Del. (s)	Q (95 th)
	WBL	С	0.27	22	20	С	0.19	28	35
QEW WB Off Ramp and	WBR	D	0.83	39	#78	F	1.13	121	#319
Bronte Road	NBT	В	0.59	17	m114	E	1.10	64	m#345
(Signalized)	SBT	В	0.91	17	m204	Α	0.57	9	25
	Overall	В	0.89	19	-	E	1.11	55	-
	EBL	E	0.22	71	8	E	0.19	70	7
	EBT/R	Е	0.09	68	4	Е	0.12	69	5
	WBL	Е	0.83	62	133	Е	0.67	59	81
	WBL/T/R	D	0.39	44	51	D	0.53	53	61
QEW EB Ramps and	WBR	D	0.24	42	25	D	0.49	52	54
Bronte Road	NBL	D	0.06	48	4	С	0.01	26	2
(Signalized)	NBT	F	1.22	168	#167	F	1.10	98	#336
	NBR	D	0.16	49	24	С	0.26	30	45
	SBL	F	1.08	87	m#335	E	0.75	55	#155
	SBT/R	С	0.67	25	164	В	0.41	15	98
	Overall	Ε	1.01	71	-	Ε	0.89	61	-
Notes:	# - 95% percentile exceeds capacity m - volume for the 95 th percentile queue is metered by an upstream signal								

The addition of the site generated traffic to the 2031 Future Background volumes at the Study Area intersections along Bronte Road resulted in lower level of service at Upper Middle Road, Saw Whet Boulevard, Charles Cornwall Road, and the QEW westbound off ramp during the PM peak period. This is expected given the 2023 Existing and 2031 Future Background operational performances along the Bronte Road corridor. It should be noted, however, that the proposed development only contributes to slight increases in V/C ratio to previously constrained intersections throughout the corridor. This horizon includes existing traffic volumes, background development trips, and growth. At the QEW eastbound ramps at Bronte Road during the PM peak period, the intersection LOS improved from F to E with the previously implemented signal optimization. At the QEW westbound off ramp at Bronte Road during the AM peak period, the LOS improved from C to B.

With the addition of the HOV lanes northbound and southbound on Bronte Road, the southbound and northbound movements continue to operate at or above a V/C ratio of 1.0 in the AM and PM peak periods, respectively. However, the active mode share used in this study is conservative as the TTS data shows that the active mode share in 2016 was 11%, higher than the Town's projections for future horizons. As the lands along Bronte Road develop, walking and cycling trips are expected to increase further, as more destinations will be available within one-to-five-kilometer radius. Considering the foregoing, it is likely that the number of active mode trips generated by future phases of the proposed development has been underestimated, resulting in a conservative analysis.

It is important to note that although conservative assumptions were used throughout this report, it is evident from existing conditions operational analysis, and the trips generated by the background developments that the Study Area will experience capacity constraints northbound and southbound along Bronte Road. In locations with low transit accessibility and where surplus of right-of-way exists, the capacity can be increased to allow the continued growth in single occupant vehicles. However, given the lack of ROW along Bronte Road, as well as the planned intensification, and the Town's initiative to increase high occupancy vehicle trips along this corridor, the two inner lanes are expected to operate at capacity. Any additional auto trips resulting in a V/C ratio above one will be further incentivized to transfer to alternative routes or modes. As policy around transportation planning transformed in the recent decade, with key performance indicator shifting from vehicle to person trips per hour per kilometer, this trade-off is considered acceptable.



7 Recommendations

The proposed development will fit into the existing road network. The Saw Whet Boulevard access will support the proposed development as well as the surrounding background developments. However, it is noted that, due to the large existing volume northbound in the PM peak hour and southbound in the AM peak hour, the north and south movements through along Bronte Road are projected to operate with capacity constraints. This will be partially alleviated by the proposed widening of Bronte Road that will accommodate HOV lanes. This will also provide additional transit capacity, promoting further transit usage along this corridor as commuters may choose transit or seek out carpooling opportunities to avoid congestion. The proposed intersection of Saw Whet Boulevard at Bronte Road will be a signalized intersection, with auxiliary turn lanes on all approaches, and with a southbound protected/permissive left turn phase.

8 Conclusions

This Transportation Impact Study has examined the trip generation, access requirements, and Study Area road network impact of the proposed Bronte River residential development. The TIS has shown the following:

- a) The proposed development analyzed herein will include 86 single detached units (including one heritage house) and 89 townhouses (including both dual frontage units and back-to-back units).
- b) The proposed development will have one public access via signalized intersection at Saw Whet Boulevard and Bronte Road.
- c) It was found that the adjacent developments of Bronte Green, Bronte Green Mid-Rise, and Valery 1354 Bronte Road, with direct connections between the developments, should be included in the background traffic projections.
- d) The proposed development utilizes condo roads throughout, aside from Street 'A', which is an extension of the public right-of-way connection from Bronte Road to the adjacent landowner's property located at 1354 Bronte Road. Condominium roads have been proposed to maximize access to the lands while ensuring that all required services can be adequately accommodated due to the surrounding natural heritage features and Bronte River development being an enclave.
- e) The primary access to the development will be via Street 'A', aligning with Saw Whet Boulevard to the east, forming a signalized access with Bronte Road. This single access can support the vehicular traffic from a traffic operations perspective. The bus stop relocation at this intersection will be considered in the detailed design stage.
- f) Given the size of the development and the depth of the property from Bronte Road, a secondary access for emergency vehicles has been provided at the south end of the property. This emergency access will be located just west of the heritage house that is to be retained on the property. The detailed design and method of control will be determined through the SPA process and consultation with Town Emergency Service departments.
- g) Parking requirements for the single-detached units in this development are satisfied as 172 resident parking spaces are provided. Parking requirements for the dual frontage townhouse units in this development are also satisfied with the 46 parking spaces provided. With a demand of 132 parking spaces for the back-to-back townhouse units, 124 parking spaces are provided in the driveways and on the side of the condo roads. A parking reduction of 8 spaces is requested and justified via comparison to the North Oakville parking rate requirements and ITE Parking Generation data for the same type of dwelling.
- h) The Region of Halton proposed a compound annual growth rate of 2% along Bronte Road. This conservative estimate of traffic growth was applied to the Study Area turning movement counts and traffic volumes.



- i) To estimate the impact of the subject development on the Study Area, a trip generation exercise has been undertaken based on the ITE trip generation rates. The 2016 TTS data and the Town of Oakville's Transportation Master Plan Review document have been used to determine the mode share for the future horizons. The subject development is anticipated to generate 83 AM and 107 PM peak hour two-way auto trips during the 2026 and 2031 horizon.
- j) Using the existing traffic volumes, projected to 2023, an operational analysis of existing conditions was undertaken. Through this analysis, it was determined that overall every intersection operate at level of service E or better except for the Saw Whet Boulevard at Bronte Road intersection. Several Study Area intersections operate with constraints at certain movements. Signal optimization was explored as a mitigation measure, which improved conditions for several critical movements. Some movements at the intersection of Upper Middle Road and Bronte Road still experienced capacity constraints and considerable delays after this implementation, but this is expected at an intersection of two arterial roads with high traffic volumes. The Saw Whet Boulevard at Bronte Road intersection is currently stop-controlled which is anticipated to be signalized and exclusive left turn lanes added to improve its traffic conditions.
- k) The 2026 Future Background traffic volumes, including background growth and the nearby background developments, were analysed. It was found that traffic volumes exceeded theoretical capacity for many movements, especially for through movements along Bronte Road. A protective and permissive phase was assigned to the southbound left-turn movement at Saw Whet Boulevard and Bronte Road during the PM peak period, which resulted in a significant operational improvement for this movement while reducing the service efficiency of the northbound through movement on a smaller scale. Where applicable, signal optimization was implemented to improve conditions. Where volumes exceeded capacity, improvements were expected in the future horizon given additional lanes on Bronte Road.
- I) The 2026 Future Total horizon operates similarly to the 2026 Future Background horizon. Signal optimization was applied where applicable to improve conditions. Many intersections could not be improved through signal timing adjustments due to opposing movements being constrained while already operating at minimum splits. The future road widening at Bronte Road is anticipated to provide extra capacity to relieve the experienced congestion along this corridor.
- m) The traffic operations within the Study Area improve in the 2031 Future Background horizon with the additional capacity along Bronte Road provided by the two additional lanes in the urban cross-section despite an additional five years of 2% compounding annual growth. The level of service of all intersections either improved or stayed the same compared to the 2026 Future Background scenario. Some movements still experienced capacity constraints that could not be improved by implementing signal timing adjustments.
- n) In the 2031 Future Total horizon, several study intersections experienced lower level of services in the PM peak period. The proposed development only contributed to slight increases in V/C ratio to previously constrained intersection movements. With the addition of the HOV lanes in this horizon northbound and southbound on Bronte Road, the northbound and southbound movements continue to operate at or above a V/C ratio of one. Despite this, walking and cycling trips are expected to increase in the future, and it is likely that the number of active mode trips generated by future phases of the proposed development has been underestimated, resulting in a conservative analysis.
- o) Given the lack of ROW along Bronte Road, planned intensification, and the Town's initiative to increase high occupancy vehicle trips along this corridor, the two inner lanes of Bronte Road are expected to operate at capacity. Any additional auto trips resulting in a V/C ratio above one will be further incentivized to transfer to alternative routes or modes. As policy around transportation planning transformed in the



- recent decade, with key performance indicators shifting from vehicle to person trips per hour per kilometer, this trade-off is considered favourable.
- p) TDM measures are proposed to further encourage commuters to shift away from single occupant vehicle trips. For this development, which primarily consists of low-rise residential units, the most effective measures involve access and usability of transit, cycling and pedestrian facilities. To ensure that the transit, cycling, and pedestrian modes are served appropriately by the proposed development, concept plans have been prepared. In addition to pedestrian facilities on Bronte Road, Saw Whet, and the internal condo roads, there are also opportunities for trails to connect this development to the adjacent roads, and to nearby walking and trail facilities through the nearby natural heritage system. Two trail layout options have been proposed for review.

The Bronte River development will have a minor impact on the Study Area road network. The proposed access will operate with reasonable LOS and delays on the turning movements into and out of the site. The concept plan prepared will provide a good pedestrian and cycling network along with good access to transit throughout the development. It is recommended that, from a transportation perspective, the proposed development application proceed.

Prepared By:

Zhengxuan Lai, E.I.T. 289-834-0646

May.Lai@CGHTransportation.com

Reviewed By:



Mark Crockford, P. Eng. 905-251-4070

Mark.Crockford@CGHTransportation.com

