

TRANSPORTATION IMPACT STUDY

530 GUELPH STREET

TOWN OF HALTON HILLS
REGIONAL MUNICIPALITY OF HALTON

PREPARED FOR:

HALTON MANAGEMENT INC. (C/O ROBERT
RUSSELL PLANNING CONSULTANTS INC.)

PREPARED BY:

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MILTON, ON L9T 6P4

AUGUST 2025

CFCA FILE NO. 2783-7276

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Revision Number	Date	Comments
Rev.0	August 2025	Issued for First Submission

Executive Summary

Halton Management Inc. (c/o Robert Russell Planning Consultants Inc.) retained C.F. Crozier & Associates Inc. (Crozier) to complete a Transportation Impact Study to support of the Official Plan Amendment and Zoning By-Law Amendment for a commercial development situated at 530 Guelph Street, in the community of Georgetown.

The development proposal consists of converting an existing 960 m² building into a convention centre, and converting an existing 396 m² building into an ATV rental. In addition, a 95.9 m² storage space is proposed.

In the 2025 existing conditions, the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard operates at a v/c ratio of 0.90 and 0.91 in the p.m. and Saturday peak hours, which is above the MTO and Halton Region's critical threshold. The existing site access operates efficiently with reserve capacity to accommodate future traffic volumes. No queuing exceedances of the auxiliary turn storage lanes were recorded in this assessment.

Similar to existing conditions, in the 2036 future background conditions, the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard is expected to operate at a v/c ratio of 1.24 and 1.10 in the p.m. and Saturday peak hours, respectively, which is above the MTO and Halton Region's critical threshold.

The existing site access is expected to operate at a v/c ratio of 1.27 in the p.m. peak hour. However, the intersection experiences the most delays in the southbound direction, which is typical for minor road approaches connecting to major roads. Due to the high volume of eastbound/westbound traffic at the intersection, vehicles turning left onto Guelph Street/Highway 7 from Noble Street have to wait a significant amount of time for a gap to appear.

The proposed development is expected to generate a total of 12 and 28 two-way trips during the weekday p.m. and Saturday peak hours, respectively.

Similar to existing and future background conditions, in the 2036 future total conditions, the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard is expected to operate at a v/c ratio of 1.25 and 1.11 in the p.m. and Saturday peak hours, respectively, which is above the MTO and Halton Region's critical threshold. However, the increase in v/c ratio is negligible compared to the future background (1.24 and 1.10 in the p.m. and Saturday peak hours, respectively). Thus, the site-generated trips are not expected to have a significant impact on traffic operations at this intersection.

Furthermore, the existing site access is expected to operate at a v/c ratio of 1.45 in the p.m. peak hour. However, similar to future background conditions, the intersection experiences the most delays in the southbound direction, which is typical for minor road approaches connecting to major roads.

Under 2036 future total conditions, signals are not warranted at the intersection of Guelph Street/Highway 7 and Existing Site Access. Furthermore, due to the close spacing between this intersection and the downstream intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard (approximately 93.4 m), signalization is not feasible. It is recommended that the intersection of Guelph Street/Highway 7 and Existing Site Access be monitored in the future for improvements.

To mitigate the delays and congestion observed at Guelph Street/Highway 7 and Winston Churchill Boulevard during the 2036 future total conditions, the impacts of signal optimization were assessed. The results of the signal adjustments indicate that, similar to the future total scenario, the intersection is expected to operate above capacity with a maximum v/c ratio of 1.05 and 1.01 in the p.m. and Saturday peak hours, respectively. Furthermore, the queues are longer than the queues generated before implementing the signal timing adjustments. It is recommended that the eastbound, westbound and northbound left-turn lanes at the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard be monitored for future storage lane expansion.

As the Town/Region/MTO have not provided comments on the Terms of Reference at the time of submission of this report, there is a possibility of planned road improvements at the study intersections that may help improve traffic operations in the future. It is known that the Norval Bypass is planned to the west of this development, but no details on its timing or its expected effect on traffic along Highway 7 have been provided. If the bypass were to lower the through volume along Highway, this would have an impact on the v/c ratios seen at the study intersections since waiting for gaps in the through traffic is the main cause of the expected conditions.

The available sight distance, corner clearance, access spacing for the existing site access meets the requirements set out in the TAC GDGCR. The existing site access is in compliance with the access width requirements outlined in the TAC GDGCR and the Ontario Building Code.

The intersection spacing for the existing site access was found to be insufficient per the MTO's Highway Corridor Management Manual. However, per section 4.5.3.3 and 4.6.9 of the HCMM, as this is an existing site access that was approved before the Highway 7 was designated, it is permitted to exist, regardless of the intersection. Moreover, since the site is landlocked by residential units to the west and Credit River to the east, there is no alternative site access option available. Finally, as the site access meets all other geometric and safety requirements, the intersection spacing was found to be sufficient.

Based on the study findings, the proposed development can be supported from a traffic operations perspective as the development will not materially impact the study road network.

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1.0 Introduction

Halton Management Inc. (c/o Robert Russell Planning Consultants Inc.) retained C.F. Crozier & Associates Inc. (Crozier) to complete a Transportation Impact Study to support the proposed commercial development located within the Town of Halton Hills (Town), Regional Municipality of Halton (Halton Region). The proposed development is located at 530 Guelph Street, in the community of Georgetown.

1.1 Development Lands

The subject lands cover an area of approximately 2.6 ha and currently consist of an existing commercial building with an addition and associated parking lot. The property, located in a mixed-use area, is bounded by Guelph Street (Highway 7) to the north, the Credit River to the east, forested areas to the south, and commercial and residential properties to the west. The lands are currently zoned HC (Hamlet Commercial).

Figure 1 includes the Site Location Plan.

1.2 Development Proposal

Per the concept plan prepared by BJC architects + assocs. inc., dated July 18, 2025, the proposed development includes the following:

- Converting an existing 960 m² building into a convention centre
- Converting an existing 396 m² building into an ATV rental
- A 95.9 m² storage space

Figure 2 outlines the current concept plan (dated July 18, 2025).



Legend



Approximate Boundary

530 Guelph Street

Site Location



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Figure 1

Project No. 2783-7276
Date. 2025-08-01
Analyst. AK



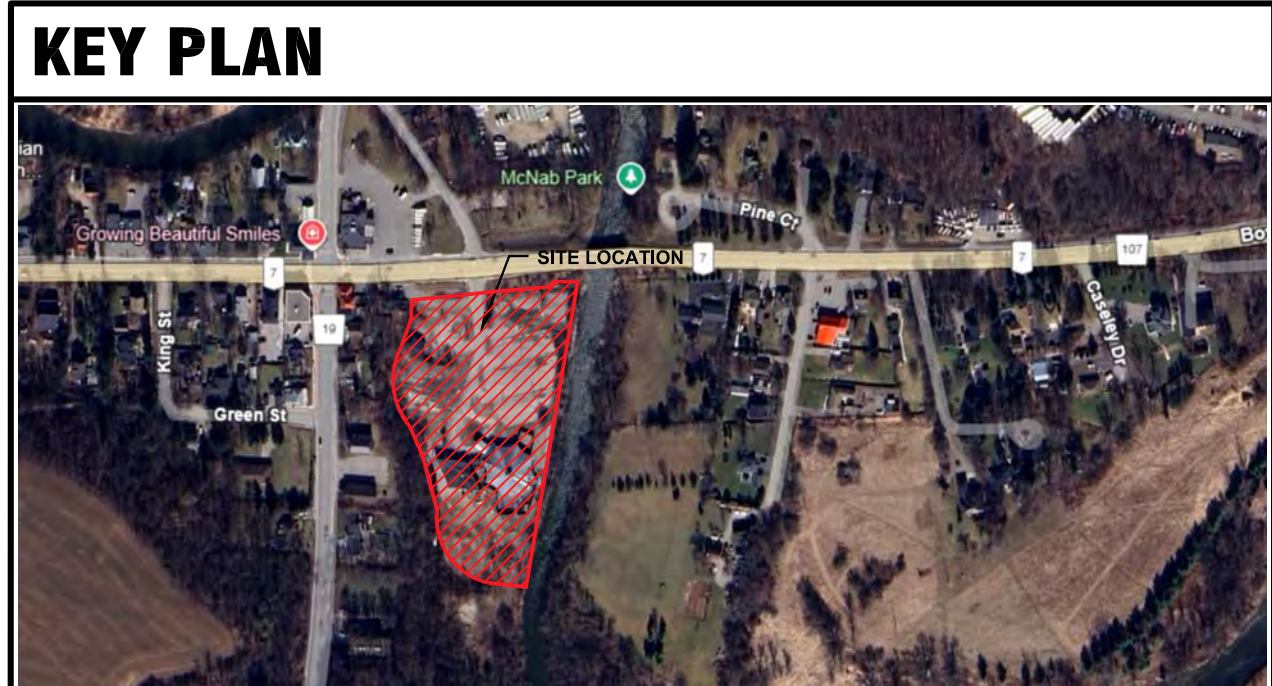
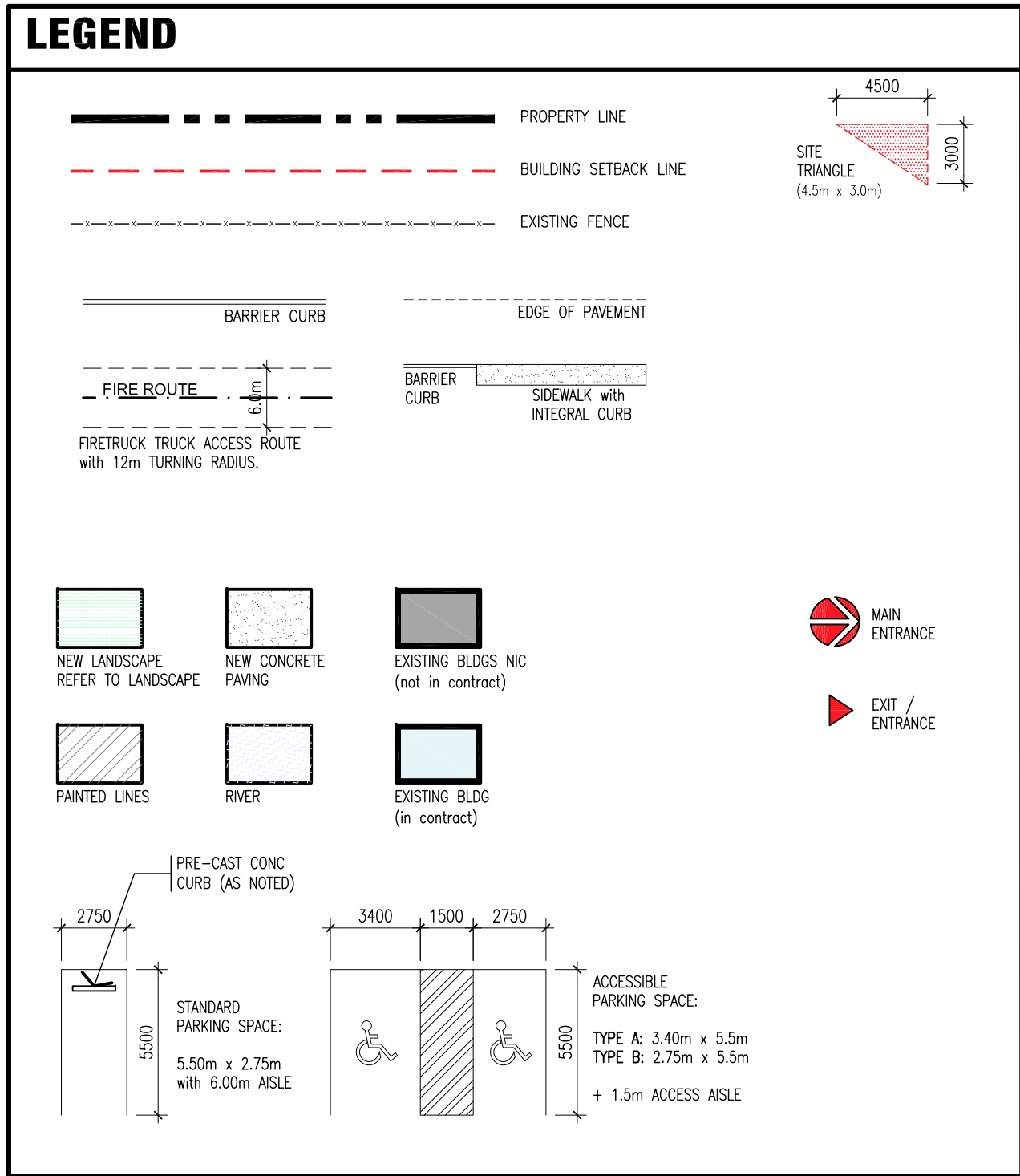
1 SITE PLAN

scale: 1 : 500

ZONE: HC zone (HAMLET COMMERCIAL)			
PERMITTED USES:	CONFERENCE CENTER	AUTOMOTIVE RENTAL	
ZONING REGULATION	REQUIRED	PROVIDED	COMPLIANCE
MIN. LOT FRONTAGE	30.0 m	155.7 m	YES
MIN. LOT AREA	2,000 sq.m	26741 sq.m	YES
MINIMUM FRONT YARD	7.50m	XX m	YES
MINIMUM EXTERIOR SIDE YARD	4.50m	XX m	YES
MINIMUM INTERIOR SIDE YARD	4.50m	XX m	YES
MINIMUM REAR YARD	7.50m	XX m	YES
MAXIMUM BUILDING HEIGHT	2 STOREYS (11.00 m)	2 STOREYS (XX m TO U/S DEC)	YES

OFF-STREET PARKING			
ZONING REGULATION	REQUIRED	PROVIDED	COMPLIANCE
PARKING REQUIREMENTS (1st 20m): min. PARKING SPACES = 1 per 10.0 sq.m.	TOTAL min. = 149 spaces REQUIRED	208 spaces PROVIDED (including 4 BF spaces)	YES
PARKING REQUIREMENTS = CONFERENCE CENTER 1 space / 5.8 sq.m = ATY RENTAL 1 space / 20.0 sq.m = STORAGE 1 space / 30.0 sq.m	CONFERENCE CENTER and LINK (997.5 sq.m) = 172 spaces ATY RENTAL (399.9 sq.m) = 20 spaces STORAGE (96.9 sq.m) = 4 spaces TOTAL min. = 196 spaces REQUIRED	208 spaces PROVIDED (including 4 BF spaces)	YES
PARKING DIMENSIONS	2.750m X 5.500m	2.600m X 5.500m (includes a 6.00m aisle)	YES
ACCESSIBLE PARKING REQUIREMENTS IF BETWEEN 15 to 100 REQUIRED PARKING SPACES, then WHEN AS IS SHALL BE SHOWN DIFF.	1 BF space	2 BF space	YES
ACCESSIBLE PARKING DIMENSIONS	TYPE "A" (3.40m x 5.50m) TYPE "B" (2.75m X 5.50m) + 1.50m aisle	TYPE "A" (3.40m x 5.50m) TYPE "B" (2.75m X 5.50m) + 1.50m aisle	YES
MINIMUM WIDTH OF DRIVEWAYS AND PARKING AISLES	6.7 m	7.0 m	YES

BICYCLE PARKING			
ZONING REGULATION	REQUIRED	PROVIDED	COMPLIANCE
2 BICYCLE PARKING SPACES PLUS 1 PER 1000 sq.m. OF GROSS FLOOR AREA.	4 SPACES	4 SPACES	YES



THE LEGAL DESCRIPTION & PROPERTY INFORMATION USED FOR THIS DRAWING HAS BEEN TRANSFERRED FROM THE FOLLOWING DRAWING(S):
PDF OF LAND SURVEY PROVIDED BY CLIENT. VAN HARTEN LAND SURVEYORS, NOVEMBER 28, 2024.

NOTE:

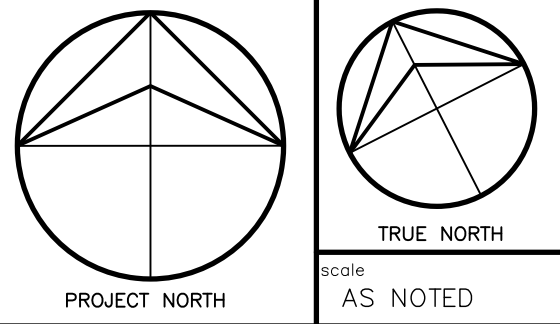
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DESIGN

Option-01b 2025-07-18
(coordinated with Civil & Survey)

02		
01	ISSUED FOR ZBA/CBA	2025. 02.28
No.	REVISIONS	date



client
HALTON
MANAGEMENT INC.

16917 STEELES AVENUE
HORNBY ONTARIO

project
CONFERENCE CENTER

530 GUELPH STREET
NORVAL ONTARIO

drawing title

PROPOSED
SITE PLAN

reference

project no. 24-108	client reference number
-----------------------	-------------------------

Sheet no. A - 101 01

1.3 Study Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the study road network and to recommend or confirm any required mitigation measures, if warranted. This TIS is in support of an Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA).

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

- The existing road network and record information relating to road jurisdiction, road classification, posted speed limit, lane configuration, cross-section elements;
- Forecast the trip generation characteristics of the proposed development using the Institute of Transportation Engineers Manual (11th edition).
- Impacts of development traffic on the study road network through analyzing existing, future background, and future total traffic operations;
- Geometric and safety requirements of the proposed site access; and
- Adequacy of the proposed parking and bicycle parking supply.

The study has been completed in accordance with the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023) and Halton Region TIS Guidelines (2015).

Appendix A includes the Terms of Reference for the study, which were circulated to the Town, the Region and the MTO. At the time of writing this report, no comments were received on the Terms of Reference for the study.

This Transportation Impact Study considers the following study intersections:

- Guelph Street/Highway 7/and Winston Churchill Boulevard
- Guelph Street/Highway 7 and Existing Site Access/Noble Street

The MTO's guidelines require the analysis of the build out year (2026), as well as, the five-year and 10-year horizons from the buildout year (2031 and 2036). Therefore, the 2026, 2031 and 2036 horizon years were analyzed.

2.0 Existing Conditions

This section outlines the current conditions of the transportation network in the vicinity of the site. Details of the study road network, including traffic controls, lane configurations, speed limits, transit routes and stops, active transportation infrastructure and other relevant transportation elements are identified. The existing traffic operations are also summarized.

2.1 Study Road Network

The study road network consists of the existing road network near the site, which includes the study intersections and the adjoining roadway segments. Table 1 delineates the study roadways.

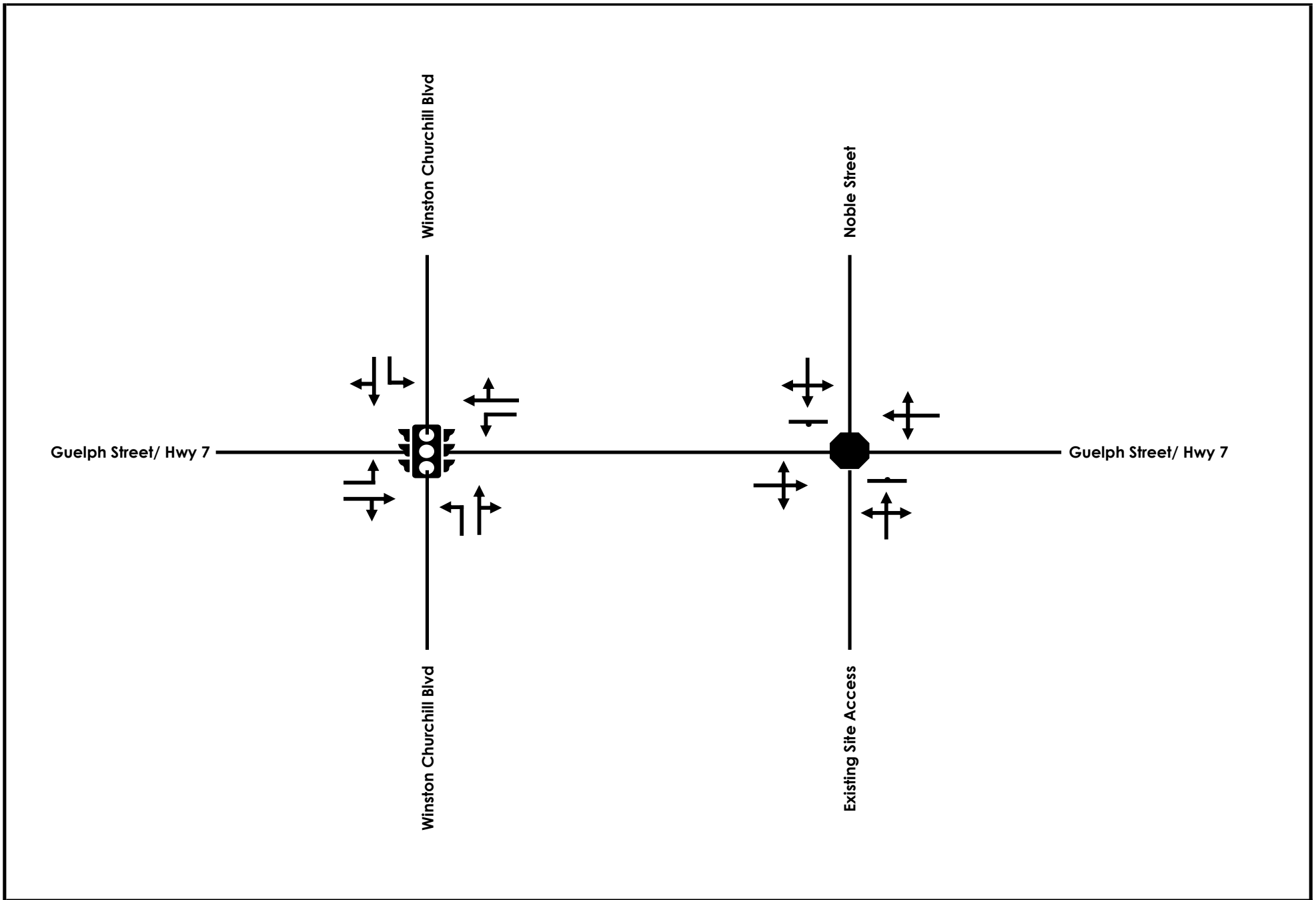
Table 1: Study Roadways

Feature	Roadways		
	Guelph Street (Highway 7)	Winston Churchill Boulevard (Regional Road 19)	Noble Street
Direction	Two-way (East-West)	Two-way (North-South)	Two-way (North-South)
Classification	Collector ¹	Arterial	Local
Jurisdiction	Ministry of Transportation	Halton Region/Peel Region	Town of Halton Hills
Speed Limit	50 km/h	50 km/h	50 km/h ²
Number of travel lanes	Two	Two	Two
Median type	None	None	None
Active Transportation	Sidewalks (Both Sides)	Sidewalks (Both Sides)	Sidewalk on east side of roadway starting 85 m north of Guelph Street (Highway 7)

Note 1: According to Figure 4.5.1: Functional Classification System, Southern Ontario from the Highway Corridor Management Manual (2022)

Note 2: A jurisdictional speed limit of 50 km/h is assumed for roadways with no posted speed limit

Appendix B contains the Regional Municipality of Halton Regional Road Network Map. Figure 3 outlines the existing lane configuration.



Legend

-  Stop-Controlled Intersection
-  Signalized Intersection
-  Stop Sign

530 Guelph Street

Lane Configuration



Figure 3

Project No. 2783-7276
Date. 2025-08-01
Analyst. AK

2.2 Transit Operations

GO Transit operates bus routes within the study area. Table 2 below outlines the existing transit routes, direction, days of operation, peak hour headways, and the location of bus stops in the study area.

Table 2: Transit Operations in Study Area

Route	Direction	Limits	Days of Operation	Peak Hour Headways (min) ¹	Bus Stops in Study Area
31/33 Kitchener	Two-way (East-West)	Union Station to University of Waterloo	Monday to Sunday	30	Guelph Street at Noble Street (140 m, 2-minute walk)

Appendix B contains the GO Transit Map Excerpts.

2.3 Transportation Data

A variety of transportation data was obtained and used to support the analysis in this study. Table 3 summarizes the study intersections, date of data collection and signal timing plans, and the source of the information.

Table 3: Traffic Data

Intersection	TMC Date (Time)	TMC Source
Guelph Street/Highway 7/and Winston Churchill Boulevard	Thursday, July 10, 2025 (3:00 p.m. to 6:45 p.m.)	Accu-Traffic Inc.
Guelph Street/Highway 7 and Existing Site Access	Saturday, July 12, 2025 (11:00 a.m. to 2:45 p.m.)	

It is important to note that the signal timing plan for the intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard was requested by the Town, Region and MTO on July 2, 2025, and was not received at the time of writing this report.

Appendix C contains all transportation data used in support of this study.

2.4 Traffic Modelling and Assumptions

The existing traffic conditions on the study road network were modelled in Synchro 12 based on "Highway Capacity Manual 2000 (HCM 2000)" methodology and using the default Synchro parameters. Roadway geometrics were modelled based on the existing study road network description outlined in Section 2.1.

The traffic volumes used in the existing conditions model are the volumes established in Section 2.3, based on the turning movement count survey data. This survey data was also applied to the model for the heavy vehicle percentages and peak hour factors as calculated for each intersection during each time period. Table 4 outlines the calculated peak hour factors at each intersection during each peak hour.

Table 4: Peak Hour Factors

Intersection	Peak Hour	Peak Hour Factor
Guelph Street/Highway 7/and Winston Churchill Boulevard	P.M. 4:45 p.m. – 5:45 p.m.	0.95
	SAT 1:15 p.m. – 2:15 p.m.	0.95
Guelph Street/Highway 7 and Existing Site Access	P.M. 4:45 p.m. – 5:45 p.m.	0.92
	SAT 1:30 p.m. – 2:30 p.m.	0.94

The signal timing plan identified in Section 2.3 were incorporated into the model for the signalized study intersection, while stop control was applied in the model to the existing site access intersection.

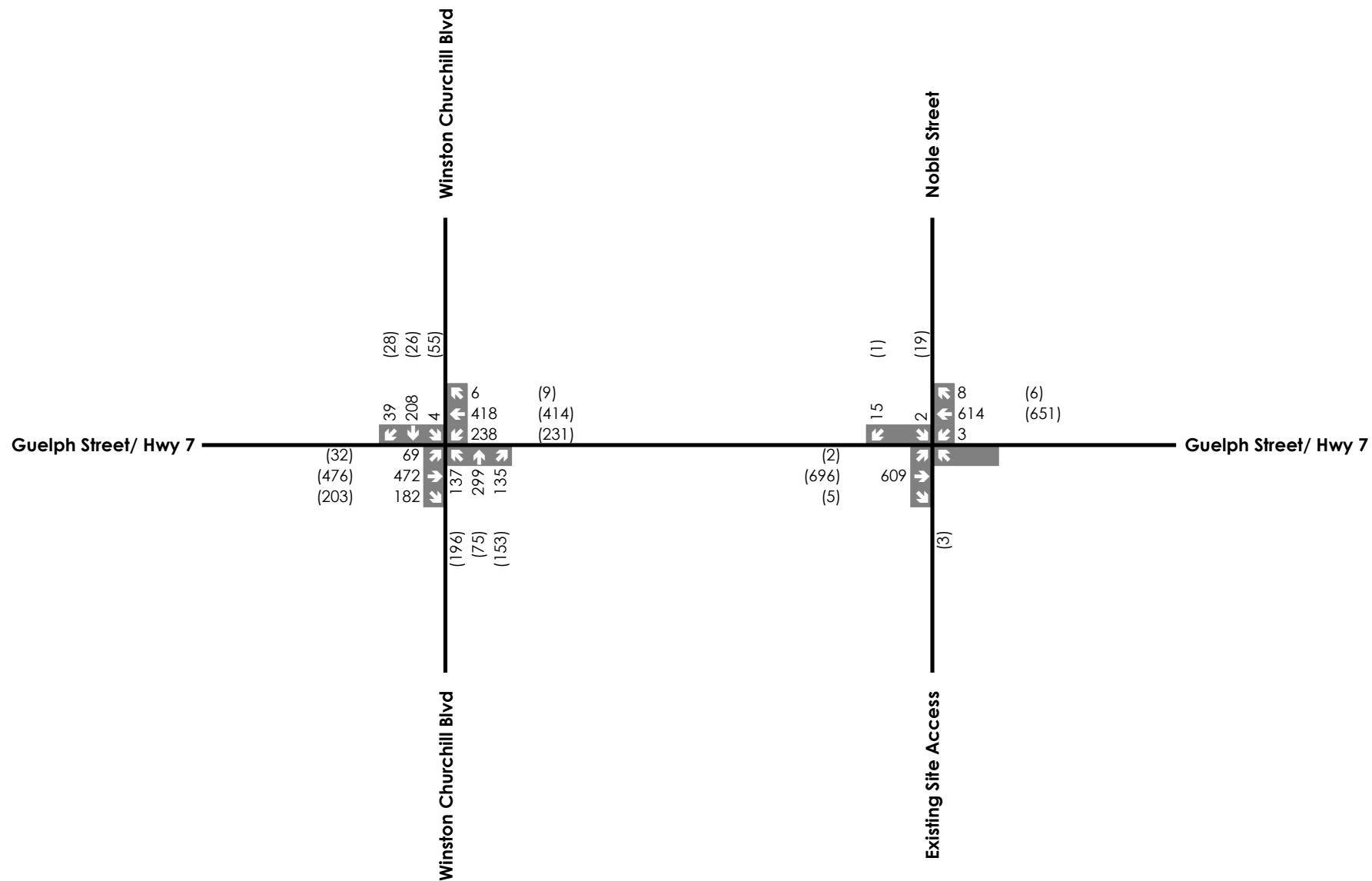
The assessment of the study intersections is based on the “Highway Capacity Manual (HCM)” methodology, which prescribes a method for estimating the Level of Service, control delay, and volume-to-capacity of an intersection along with the approaches and movements of the intersection. The Level of Service (LOS) metric provides a general performance measure of the quality of the service from a driver’s perspective and ranges a letter from “A” to “F”; “A” representing best performance and “F” representing worst performance. Appendix D contains the Level of Service definitions.

Control delay is the additional time added per vehicle as a result of the intersection and its associated control (i.e.. Traffic Signal / Stop Control) compared to the average speed on the adjoining roadway segments. Finally, the volume-to-capacity ratio indicates the fraction of the capacity for a particular movement or lane used by traffic.

Additionally, queuing was analyzed in this study using SimTraffic 12 software. The 95th percentile queue length metric, which represents the 95th percentile queue length of the peak hour traffic simulated in SimTraffic 12, was considered in this study for the auxiliary turn storage lanes. The queues were determined using 15 minutes of seeding, 60 minutes of recording and 5 runs.

2.5 Intersection Operations

Table 5 outlines the 2025 existing conditions traffic operations at the study intersections. Synchro 12 was used to determine intersection operations at the study intersections. Figure 4 illustrates the 2025 existing conditions traffic volumes used in the operational analysis. Appendix E contains the detailed capacity analysis worksheets.



Legend

- xx P.M. Peak Hour Traffic Volumes
- (xx) Weekend Peak Hour Traffic Volumes

530 Guelph Street

2025 Existing Volumes



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Figure 4

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Analyst. AK

Table 5: 2025 Existing Conditions Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7/and Winston Churchill Boulevard	Overall ⁵	D	C	38.1	34.6	0.90	0.91
	EBL	C	B	20.2	17.9	0.19	0.08
	EBTR	D	D	44.2	44.1	0.90	0.91
	WBL	E	E	57.8	58.5	0.90	0.88
	WBTR	B	B	13.8	12.5	0.42	0.41
	NBL	C	D	34.9	36.4	0.49	0.51
	NBTR	D	C	40.4	23.1	0.73	0.41
	SBL	D	D	40.3	45.8	0.04	0.27
	SBTR	D	C	47.4	25.2	0.63	0.16
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	C	F	16.0	68.8	0.05	0.27
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.1	0.0	0.00	0.00
	NBLTR	A	F	0.0	56.2	0.00	0.04
	SBLTR	C	F	16.0	68.8	0.05	0.27

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

In the 2025 existing conditions, the intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard operates at a v/c ratio of 0.90 and 0.91 in the p.m. and Saturday peak hours, which is above the MTO and Halton Region's critical threshold. The existing site access operates efficiently with reserve capacity to accommodate future traffic volumes.

Table 6 outlines the results of the 2025 existing conditions queuing assessment.

Table 6: 2025 Existing Conditions Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	69.1	51.8	85.0
	WBL	70.1	61.5	80.0
	NBL	79.6	53.0	80.0
	SBL	12.2	27.6	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

No queuing exceedances of the auxiliary turn storage lanes were recorded in this assessment. Therefore, queuing on the study road network is not expected to result in notable operational impacts.

3.0 Future Background Conditions

This section summarizes the future background conditions of the study road network and provides details relating to growth rates, future transportation network improvements, and background developments within the study area. As established in Section 1.3, this study considers the 2026, 2031 and 2036 horizon years in the future background traffic analysis, the results of which are summarized herein in Section 3.3. It is important to note that the growth rate, background developments and future roadway improvements assumptions were proposed in the Terms of Reference correspondence. However, no comments were received at the time of writing this report. Thus, the following assumptions were made for the purpose of the analysis.

3.1 Growth Rate

A standard growth rate of 2% compounded annually was applied to all of the study roadways per industry standards.

3.2 Background Developments

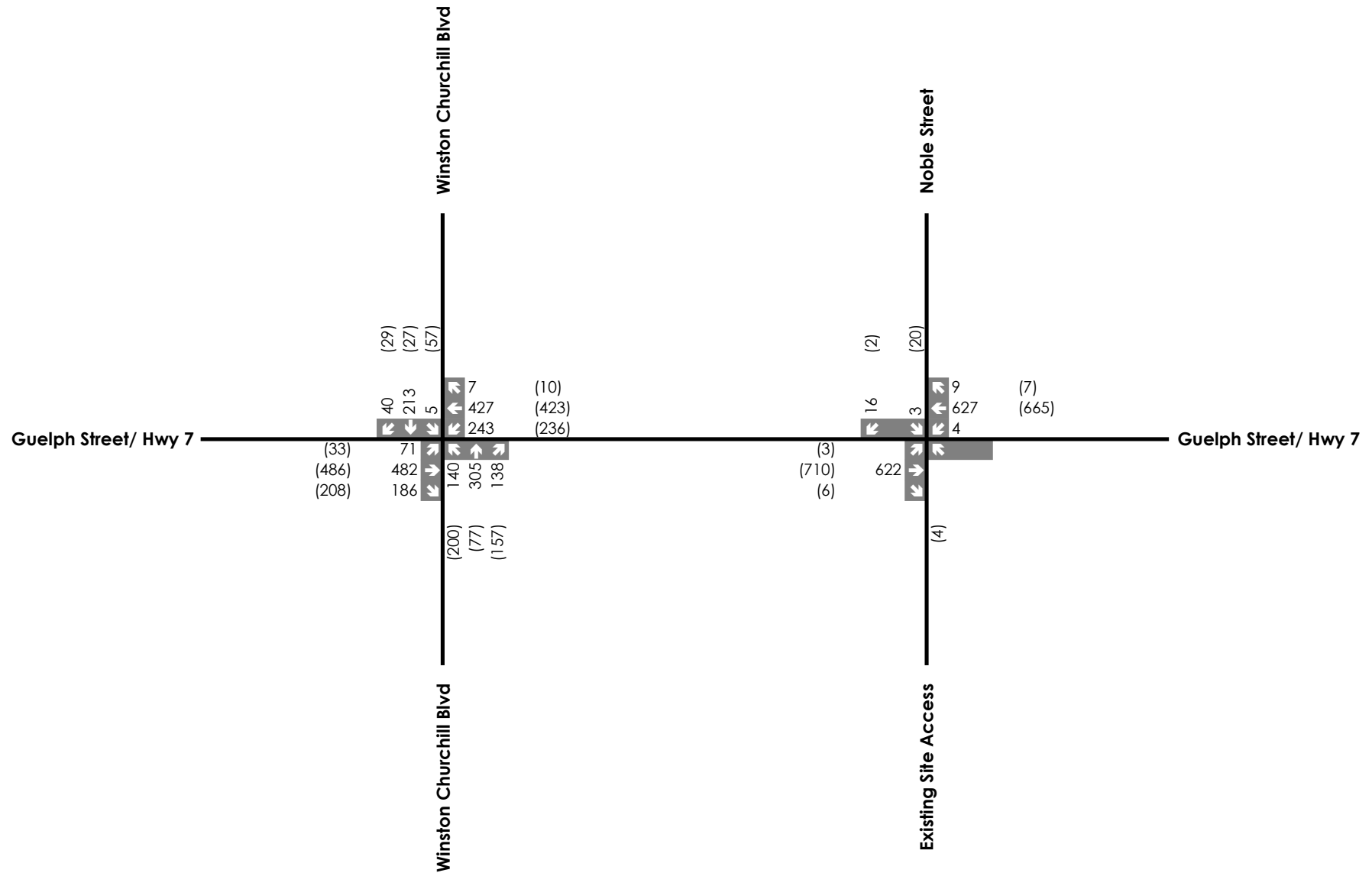
There are currently no background developments within the vicinity of the site.

3.3 Future Roadway Improvements

There are currently no roadway improvements proposed along the study road network.

3.4 Intersection Operations

Table 7, Table 8 and Table 9 outline the 2026, 2031 and 2036 future background traffic operations for the study intersections. Synchro 12 was used to determine intersection operations at the study intersections. Figure 5, Figure 6 and Figure 7 illustrate the 2026, 2031 and 2036 future background traffic volumes. Appendix E contains the detailed capacity analysis worksheets.



Legend

xx P.M. Peak Hour Traffic Volumes
(xx) Weekend Peak Hour Traffic Volumes

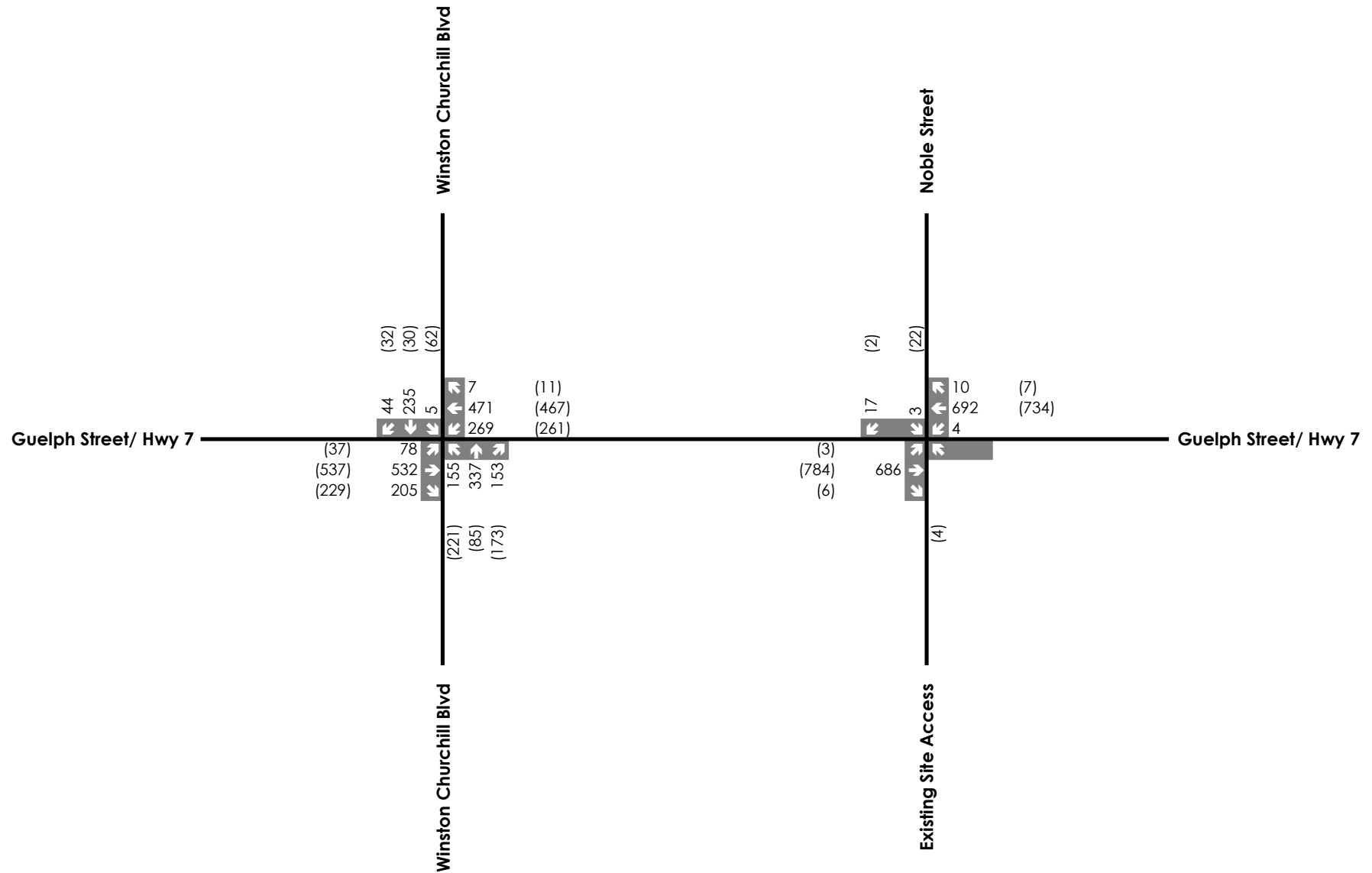
530 Guelph Street

2026 Future Background Traffic Volumes



Figure 5

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Analyst. AK



Legend

xx P.M. Peak Hour Traffic Volumes
(xx) Weekend Peak Hour Traffic Volumes

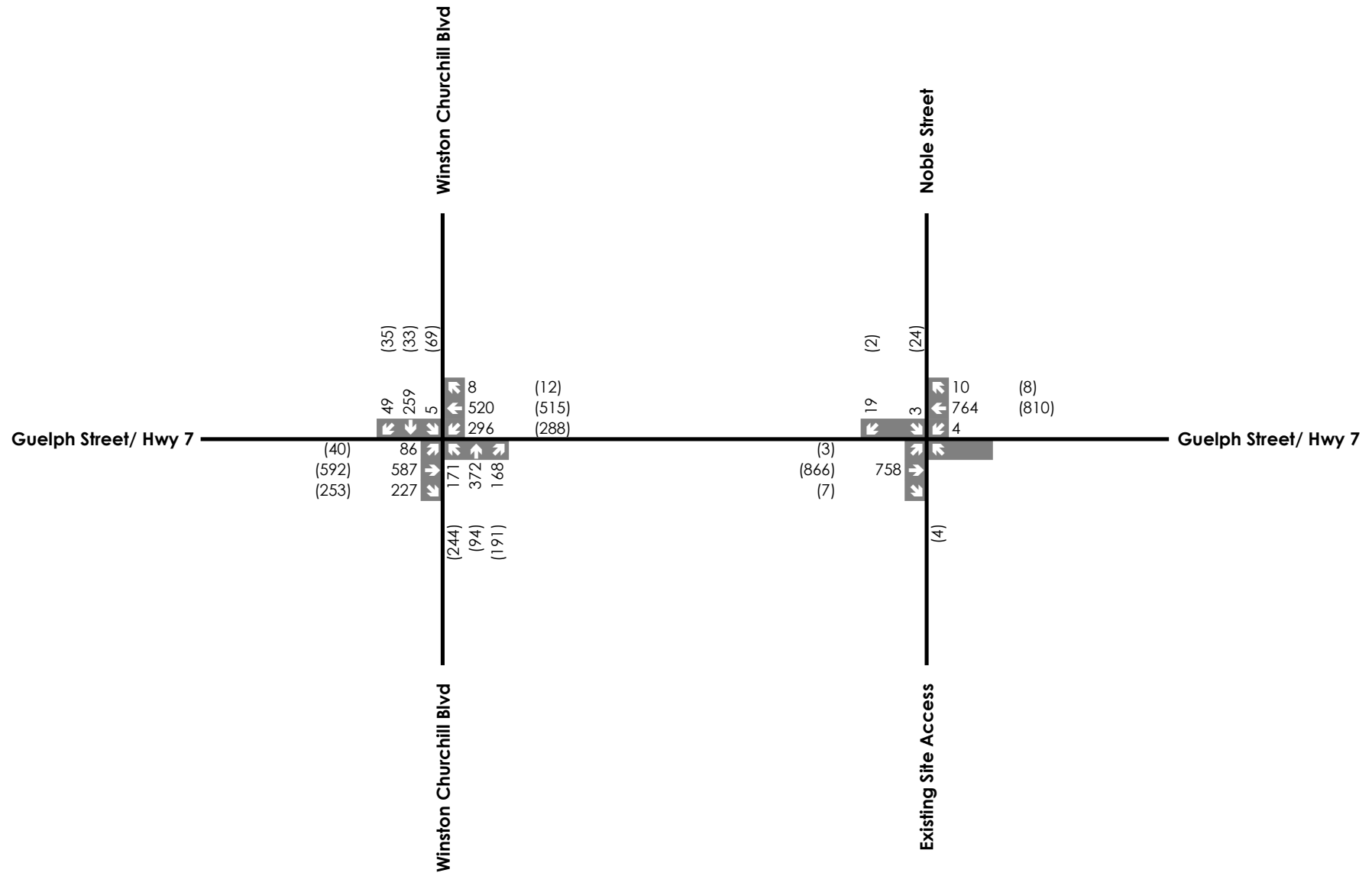
530 Guelph Street

2031 Future Background Traffic Volumes



Figure 6

Project No. 2783-7276
Date. 2025-08-01
Analyst. AK



Legend

- xx P.M. Peak Hour Traffic Volumes
- (xx) Weekend Peak Hour Traffic Volumes

530 Guelph Street

2036 Future Background Traffic Volumes



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Figure 7

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Analyst. AK

Table 7: 2026 Future Background Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	D	D	39.8	35.7	0.93	0.92
	EBL	C	B	20.2	17.9	0.19	0.09
	EBTR	D	D	45.1	45.0	0.91	0.92
	WBL	E	E	65.9	62.8	0.93	0.90
	WBTR	B	B	13.8	12.5	0.42	0.42
	NBL	D	D	36.4	37.7	0.52	0.53
	NBTR	D	C	42.1	24.0	0.76	0.43
	SBL	D	D	40.8	46.8	0.05	0.29
	SBTR	D	C	48.8	25.2	0.65	0.17
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	C	F	17.8	77.0	0.07	0.32
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.1	0.0	0.00	0.00
	NBLTR	A	F	0.0	63.0	0.00	0.06
	SBLTR	C	F	17.8	77.0	0.07	0.32

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

Table 8: 2031 Future Background Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	D	D	50.7	41.7	1.08	0.98
	EBL	C	B	20.1	17.9	0.21	0.09
	EBTR	D	D	50.6	52.6	0.95	0.96
	WBL	F	F	111.9	81.3	1.08	0.98
	WBTR	B	B	13.9	12.4	0.45	0.44
	NBL	D	D	48.0	43.5	0.69	0.63
	NBTR	E	C	55.1	27.5	0.88	0.50
	SBL	D	D	45.2	49.5	0.10	0.34
	SBTR	E	C	57.8	25.7	0.77	0.21
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	C	F	21.4	179.3	0.09	0.60
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.1	0.0	0.00	0.00
	NBLTR	A	F	0.0	110.1	0.00	0.10
	SBLTR	C	F	21.4	179.3	0.09	0.60

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

Table 9: 2036 Future Background Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	E	D	69.1	53.4	1.24	1.10
	EBL	C	B	20.5	18.1	0.23	0.10
	EBTR	E	E	62.6	70.7	1.00	1.04
	WBL	F	F	169.0	115.6	1.24	1.10
	WBTR	B	B	14.2	12.9	0.48	0.48
	NBL	F	D	80.3	48.4	0.91	0.71
	NBTR	F	C	80.9	30.4	1.01	0.57
	SBL	D	D	47.6	51.8	0.12	0.40
	SBTR	E	C	71.2	25.4	0.88	0.23
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	D	F	27.9	539.7	0.13	1.27
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.1	0.0	0.01	0.00
	NBLTR	A	F	0.0	221.1	0.00	0.20
	SBLTR	D	F	27.9	539.7	0.13	1.27

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

In the 2036 future background conditions, the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard is expected to operate at a v/c ratio of 1.24 and 1.10 in the p.m. and Saturday peak hours, respectively, which is above the MTO and Halton Region's critical threshold. However, it is important to note that the intersection already operates above the critical threshold in the existing conditions. Furthermore, the existing site access is expected to operate at a v/c ratio of 1.27 in the p.m. peak hour. However, the intersection experiences the most delays in the southbound direction, which is typical for minor road approaches connecting to major roads. Due to the high volume of eastbound/westbound traffic at the intersection, vehicles turning southbound-left onto Guelph Street/Highway 7 have to wait for a gap, which results in high delays.

Table 10, Table 11 and Table 12 outline the results of the 2026, 2031 and 2036 future background queuing assessment. The queuing assessment results in a few instances where 95th percentile queues exceed the auxiliary turn lane storage length. This is typical for major road intersections.

Table 10: 2026 Future Background Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	82.2	59.9	85.0
	WBL	75.4	64.2	80.0
	NBL	89.6	60.0	80.0
	SBL	20.0	26.3	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

Table 11: 2031 Future Background Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	102.8	76.7	85.0
	WBL	96.8	84.8	80.0
	NBL	113.4	70.8	80.0
	SBL	32.0	41.8	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

Table 12: 2036 Future Background Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	112.5	85.5	85.0
	WBL	90.5	94.9	80.0
	NBL	114.2	81.3	80.0
	SBL	37.8	44.7	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

4.0 Site Generated Traffic

The proposed development will result in additional turning movements at the study intersections. Therefore, this section describes the trip forecasting methodology and results of this forecast for the development proposal.

The site generated traffic forecasting methodology for this study consists of two steps. The first step, Trip Generation, projects the number of trips that originate or are destined for the proposed development. The second step, Trip Distribution and Assignment, assigns trips to the study road network based on the expected distribution of trips to catchment areas and expected shortest paths for trips destined for particular locations.

4.1 Trip Generation

As noted, the proposed development consists of converting the existing building into a convention centre. The re-use of the site will result in additional vehicles on the boundary road network that previously did not exist. As previously stated, the weekday p.m. and Saturday mid-day peak hours were assessed given the nature of the proposed land use. The convention centre land use does not conform to a specific Land Use Category (LUC) described in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Traffic data collected at event venues in the GTA were reviewed to assess anticipated weekday p.m. and Saturday peak hour trips. It is expected that event guests will arrive to and depart from the site outside of the typical roadway peak hours. It is noted that since the ATV rental building is expected to operate in tangent with the convention centre, the trip generation from the ATV rental land use is expected to be captured by the trip generation associated with the convention centre.

Table 13 summarizes the trip generation from the various surrogate sites. Appendix F contains the proxy sites traffic data and peak hour calculation.

Table 13: Surrogate Site Trip Generation

Proxy Site	GFA	Date	Source	PM				SAT			
				Trips Generated				Trips Generated			
				In	Out	Total	Trips/1000 ft ²	In	Out	Total	Trips/1000 ft ²
Chateau Le Jardin Convention Centre (8440 Highway 27)	4855 m ² ; 52,258.8 ft ²	Saturday, May 28, 2016	Ontario Traffic Inc.	-	-	-	-	116	25	141	2.69
		Thursday, March 1, 2018 & Saturday, March 3, 2018	Spectrum Traffic Data Inc.	28	17	45	0.86	12	14	26	0.49
Mississauga Convention Centre (75 Derry Road West)	2369.03 m ² ; 25,500 ft ²	Friday August 22, 2014 & Saturday August 23, 2014	Ontario Traffic Inc.	25	4	29	1.14	28	16	44	1.73
Maximum Rate							1.14				2.69

Per Table 13, the maximum trip rate for the p.m. and Saturday peak hours is 1.14 and 2.69 trips per 1000 ft² GFA. The trips for the proposed development were estimated using these rates and are tabulated in Table 14.

Table 14: Site Trip Generation

Proposed Development (Building)	GFA	PM				SAT			
		Trips Generated				Trips Generated			
		Trips/1000 ft ²	In	Out	Total	Trips/1000 ft ²	In	Out	Total
530 Guelph Street (Convention Centre + ATV Rental) ¹	960 m ² ; 10,333 ft ²	1.14 ²	10 (86%) ³	2 (14%) ³	12	2.69 ²	23 (82%) ³	5 (18%) ³	28
Total Trips			10	2	12		23	5	28

Note 1: It is noted that since the ATV rental building is expected to operate in tangent with the convention centre, the trip generation from the ATV rental land use is expected to be captured by the trip generation associated with the convention centre.

Note 2: Based on Table 13

Note 3: Based on inbound/outbound splits from respective surrogate site data

Therefore, the full-buildout of the proposed development is expected to generate a total of 12 and 28 two-way trips during the weekday p.m. and Saturday peak hours, respectively.

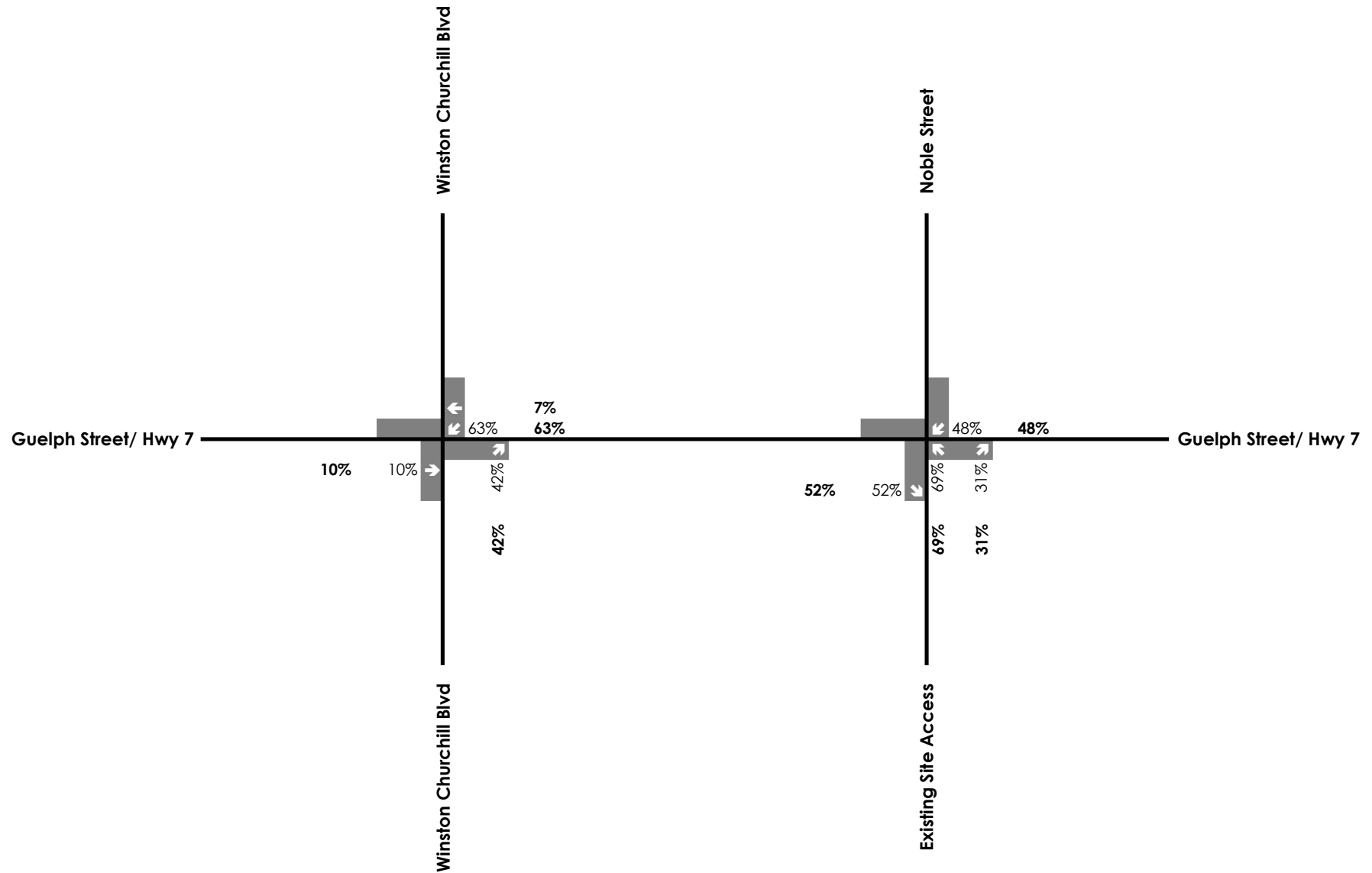
4.2 Trip Distribution and Assignment

The trips generated by the proposed development were distributed to the study road network using 2016 Transportation Tomorrow Survey (TTS) data. Excerpts from the TTS query have been included in Appendix G. Table 15 outlines the trip distribution for the proposed development divided into time and direction of travel.

Table 15: Trip Distribution

Distribution	A.M.		P.M.	
	Inbound	Outbound	Inbound	Outbound
East via Guelph Street	48%	31%	48.0%	31.0%
West via Guelph Street	10%	7%	9.6%	6.6%
North via Winston Churchill	0%	0%	0.0%	0.0%
South via Winston Churchill	42%	63%	42.5%	62.5%
Total	100%	100%	100%	100%

Figure 8 illustrates the trip distribution and Figure 9 outlines the primary trip assignment.



Legend

- xx P.M. Peak Hour Traffic Volumes
- xx Weekend Peak Hour Traffic Volumes

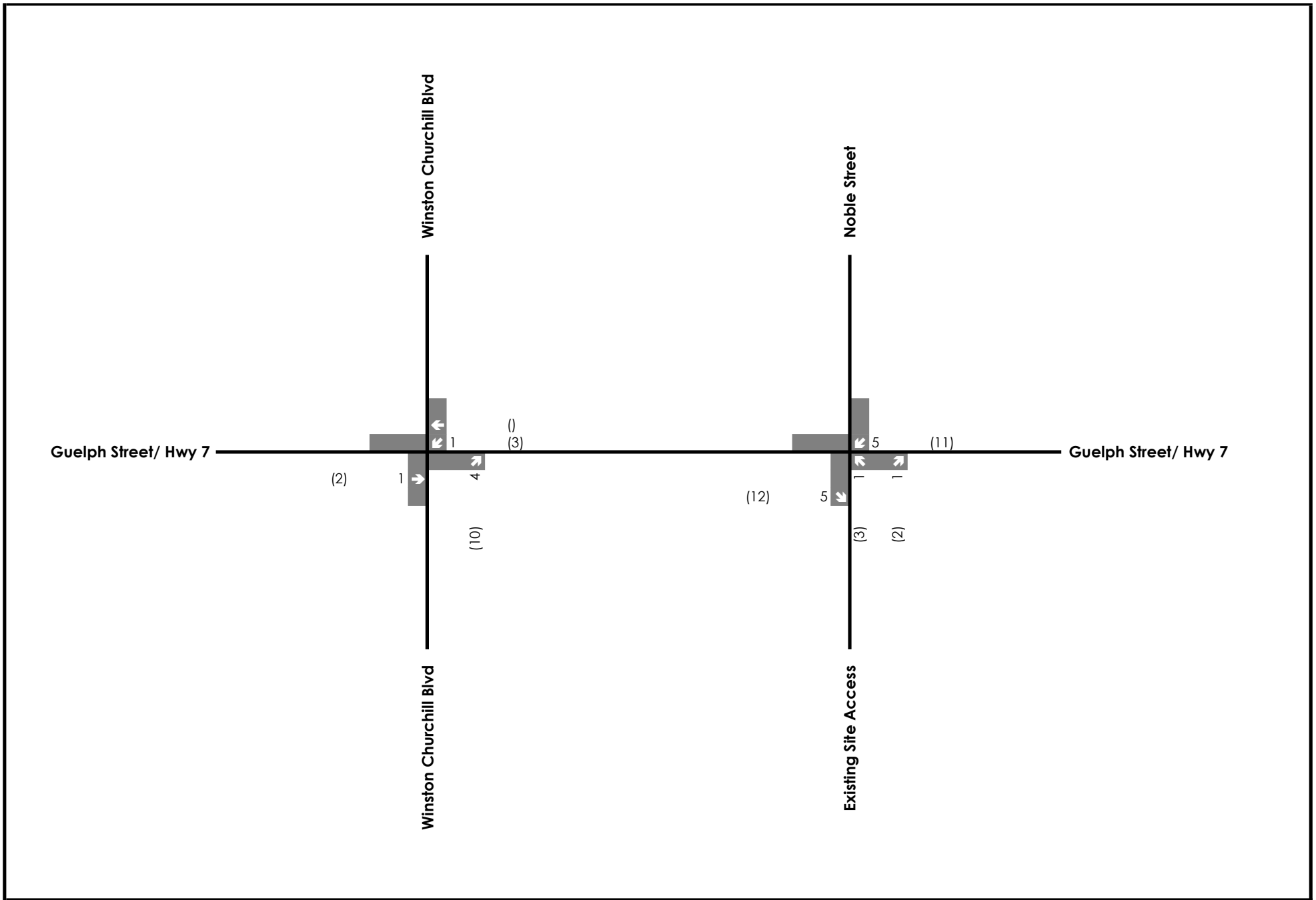
530 Guelph Street

Trip Distribution



Figure 8

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Legend

xx P.M. Peak Hour Traffic Volumes
(xx) Weekend Peak Hour Traffic Volumes

530 Guelph Street

Trip Assignment



Figure 9

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Analyst. AK

5.0 Future Total Conditions

This section will summarize the future total conditions of the study road network. The future total traffic volumes for the horizon years consist of the following components:

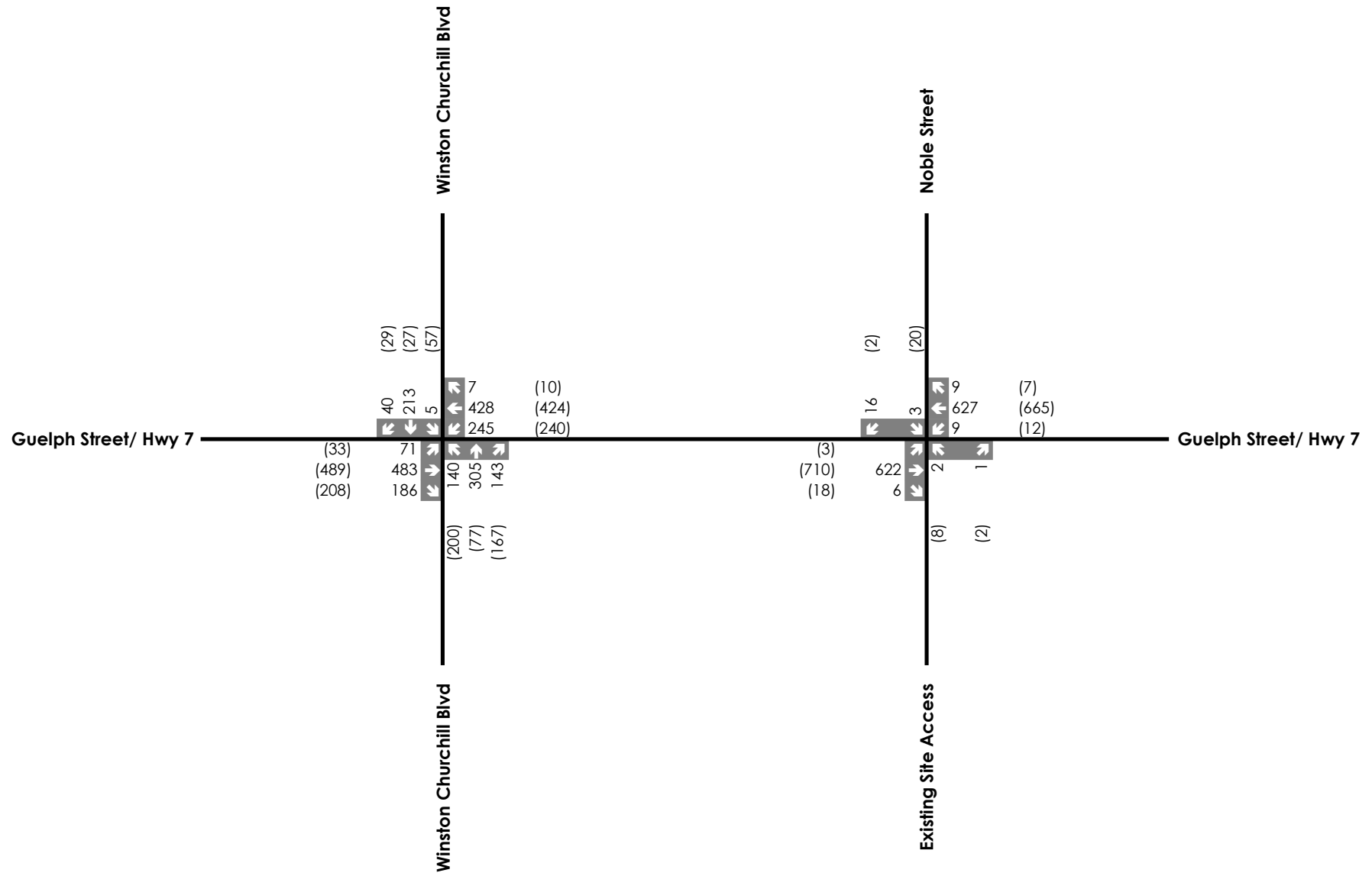
- Future background traffic volumes from the corresponding horizon year.
- Proposed development site generated traffic volumes.

The resulting total volumes in the 2026, 2031 and 2036 horizon years are presented in Figure 10, Figure 11, and Figure 12.

5.1 Intersection Operations

Table 16, Table 17, Table 18 outline the 2026, 2031 and 2036 future total traffic operations for the study intersections. Synchro 12 was used to determine intersection operations at the study intersections.

Appendix E contains the detailed capacity analysis worksheets.



Legend

- xx P.M. Peak Hour Traffic Volumes
- (xx) Weekend Peak Hour Traffic Volumes

530 Guelph Street

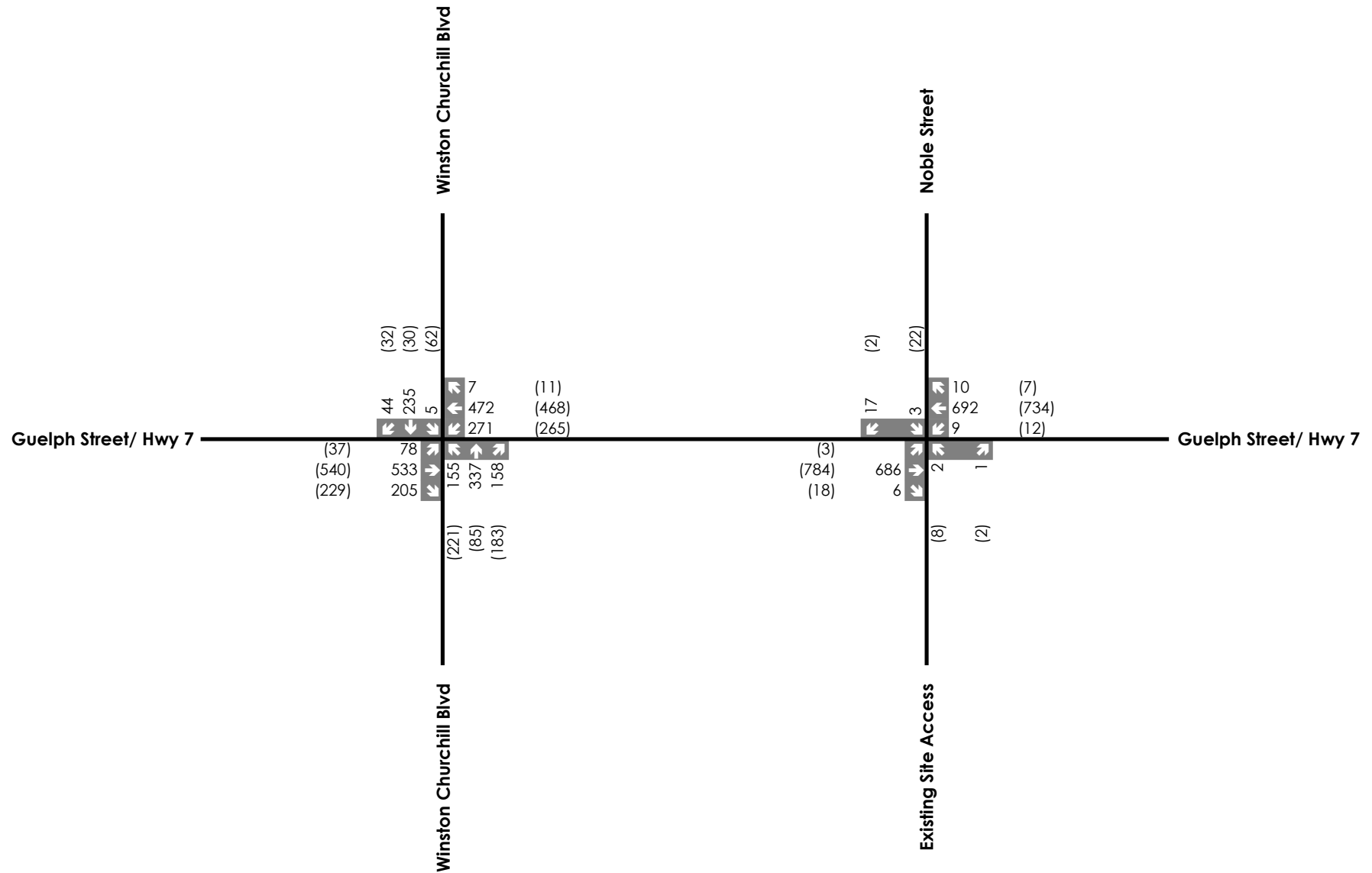
2026 Future Total Traffic Volumes



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Figure 10

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Legend

xx P.M. Peak Hour Traffic Volumes
(xx) Weekend Peak Hour Traffic Volumes

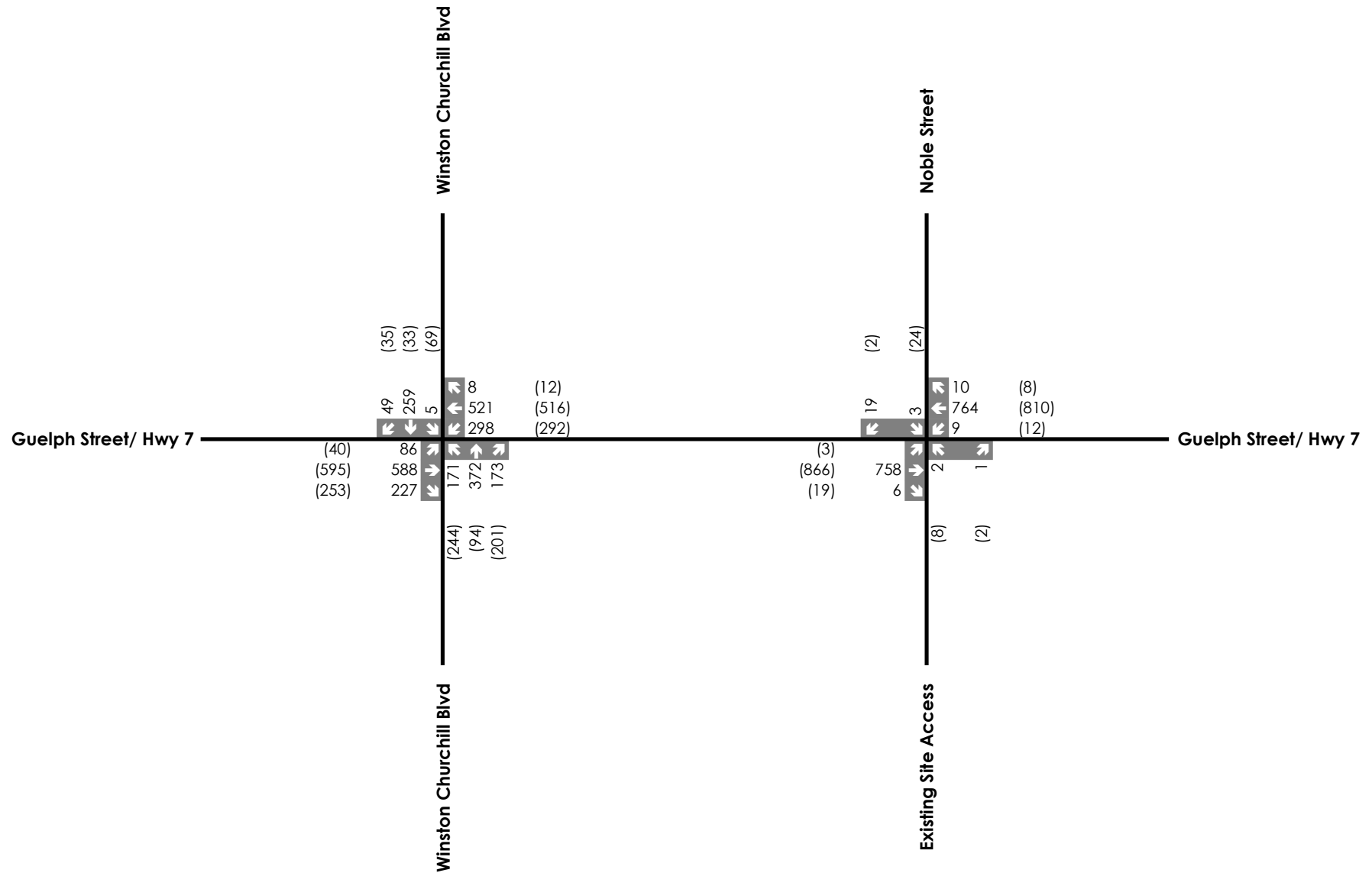
530 Guelph Street

2031 Future Total Traffic Volumes



Figure 11

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Analyst. AK



Legend

xx P.M. Peak Hour Traffic Volumes
(xx) Weekend Peak Hour Traffic Volumes

530 Guelph Street

2036 Future Total Traffic Volumes



Figure 12

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Analyst. AK

Table 16: 2026 Future Total Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	D	D	40.0	36.0	0.93	0.92
	EBL	C	B	20.2	17.9	0.19	0.09
	EBTR	D	D	45.2	45.4	0.91	0.92
	WBL	E	E	66.0	64.1	0.93	0.91
	WBTR	B	B	13.9	12.4	0.42	0.41
	NBL	D	D	36.4	38.0	0.52	0.53
	NBTR	D	C	42.8	24.2	0.77	0.45
	SBL	D	D	41.0	47.2	0.06	0.29
	SBTR	D	C	48.9	25.3	0.65	0.18
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	E	F	35.0	89.2	0.07	0.36
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.3	0.5	0.01	0.02
	NBLTR	E	F	35.0	65.0	0.02	0.16
	SBLTR	C	F	18.1	89.2	0.07	0.36

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

Table 17: 2031 Future Total Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	D	D	51.3	42.4	1.09	0.99
	EBL	C	B	20.1	17.9	0.21	0.09
	EBTR	D	D	50.7	53.1	0.95	0.96
	WBL	F	F	114.6	85.3	1.09	0.99
	WBTR	B	B	13.9	12.4	0.45	0.44
	NBL	D	D	48.1	43.6	0.69	0.63
	NBTR	E	C	56.3	27.7	0.89	0.52
	SBL	D	D	45.8	49.7	0.10	0.35
	SBTR	E	C	57.8	25.7	0.77	0.21
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	F	F	50.4	219.3	0.09	0.68
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.3	0.5	0.01	0.02
	NBLTR	F	F	50.4	123.2	0.04	0.27
	SBLTR	C	F	21.8	219.3	0.09	0.68

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

Table 18: 2036 Future Total Traffic Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	E	D	70.0	54.6	1.25	1.11
	EBL	C	B	20.5	18.1	0.23	0.10
	EBTR	E	E	62.9	72.4	1.00	1.04
	WBL	F	F	172.1	120.2	1.25	1.11
	WBTR	B	B	14.3	13.0	0.48	0.48
	NBL	F	D	80.3	48.4	0.91	0.71
	NBTR	F	C	83.0	30.7	1.02	0.58
	SBL	D	D	47.6	51.9	0.12	0.41
	SBTR	E	C	71.2	25.4	0.88	0.23
Guelph Street/Highway 7 and Existing Site Access	Overall ⁵	F	F	84.1	656.4	0.13	1.45
	EBLTR	A	A	0.0	0.1	0.00	0.00
	WBLTR	A	A	0.3	0.7	0.01	0.02
	NBLTR	F	F	84.1	283.2	0.06	0.51
	SBLTR	D	F	28.7	656.4	0.13	1.45

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

Similar to existing and future background conditions, in the 2036 future total conditions, the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard is expected to operate at a v/c ratio of 1.25 and 1.11 in the p.m. and Saturday peak hours, respectively, which is above the MTO and Halton Region's critical threshold. However, the increase in v/c ratio is negligible compared to the future background (1.24 and 1.10 in the p.m. and Saturday peak hours, respectively). Thus, the site-generated trips are not expected to have a significant impact on traffic operations at this intersection.

Furthermore, the existing site access is expected to operate at a v/c ratio of 1.45 in the p.m. peak hour. However, similar to future background conditions, the intersection experiences the most delays in the southbound direction, which is typical for minor road approaches connecting to major roads. Due to the high volume of eastbound/westbound traffic at the intersection, vehicles turning southbound-left onto Guelph Street/Highway 7 have to wait for a gap, which results in high delays.

Table 19, Table 20 and Table 21 outline the results of the 2026, 2031 and 2036 future total queuing assessment. Similar to the future background conditions, the queuing assessment results in a few instances where 95th percentile queues exceed the auxiliary turn lane storage length. This is typical for major road intersections.

Table 19: 2026 Future Total Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	83.4	64.9	85.0
	WBL	87.3	89.1	80.0
	NBL	83.9	35.4	80.0
	SBL	12.5	17.5	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

Table 20: 2031 Future Total Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	103.6	121.0	85.0
	WBL	95.9	92.1	80.0
	NBL	115.9	38.5	80.0
	SBL	23.5	21.0	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

Table 21: 2036 Future Total Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7/and Winston Churchill Boulevard	EBL	109.3	126.5	85.0
	WBL	88.8	92.0	80.0
	NBL	114.6	42.6	80.0
	SBL	34.9	22.7	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

5.2 Signal Warrants

To mitigate delays at the intersection of Guelph Street/Highway 7 and Existing Site Access, the feasibility of signalizing the intersection was reviewed. The signal warrant followed the procedure outlined in Justification 7, Table 19 in Book 12 of the Ontario Traffic Manual (March 2012). The average hour volume was determined using the following formula from OTM Book 12:

$$AHV = (amPHV + pmPHV) / 4$$

Where;

AHV = average hour volume

PHV = peak hour volume

Under 2036 future total conditions, signals are not warranted at the intersection of Guelph Street/Highway 7 and Existing Site Access. Furthermore, due to the close spacing between this intersection and the downstream intersection of Guelph Street/Highway 7/and Winston Churchill

Boulevard (approximately 93.4 m), signalization is not feasible. It is recommended that the intersection of Guelph Street/Highway 7 and Existing Site Access be monitored in the future for improvements.

5.3 Future Total Recommendations

To mitigate the delays and congestion observed at Guelph Street/Highway 7 and Winston Churchill Boulevard during the 2036 future total conditions, the impacts of signal optimization were assessed. It is noted that the cycle length was increased, and the splits were manually adjusted to improve traffic operations in the 2036 future total conditions. The results of the adjusted signal timing at the intersection are shown in Table 22.

Table 22: 2036 Future Total Traffic Optimized Operations

Intersection	Performance Metrics						
	Movement	LOS ^{1,2}		Delay (s)		v/c ratio ^{3,4}	
		PM	SAT	PM	SAT	PM	SAT
Guelph Street/Highway 7 and Winston Churchill Boulevard	Overall ⁵	E	D	68.8	49.1	1.05	1.01
	EBL	C	B	22.3	17.2	0.24	0.10
	EBTR	E	E	77.5	62.4	1.05	1.01
	WBL	F	F	91.4	90.1	1.02	1.01
	WBTR	B	B	13.5	10.9	0.48	0.46
	NBL	E	E	70.0	60.5	0.86	0.81
	NBTR	F	D	93.1	35.5	1.05	0.64
	SBL	D	E	49.0	61.1	0.12	0.52
	SBTR	F	C	88.4	27.6	0.96	0.25

Note 1: The LOS and delay of a stop-controlled intersection is based on the delay associated with the critical minor road approach. The LOS of a signalized intersection is based on the average control delay per vehicle.

Note 2: According to Halton Region TIS Guidelines, the critical LOS for individual movements at unsignalized intersections is LOS of D or worse.

Note 3: The critical v/c ratio is considered to be the maximum v/c ratio for a movement at the intersection. According to the MTO's General Guidelines for the Preparation of Traffic Impact Studies (2023), movements that experience a v/c ratio of 0.85 or greater shall be evaluated for possible operational improvements. For ramps, v/c ratios for terminal ramp approaches with a value greater than 0.75 would be deemed critical. Critical v/c ratios are bolded with red text.

Note 4: Halton Region identifies the critical v/c ratio to be over 0.85 for through/shared movements; for exclusive movements, the critical v/c ratio is 0.95 or above.

Table 23: 2036 Future Total Optimized Queuing Assessment

Intersection	Performance Metrics			
	Movement	95 th Percentile Queue Length (m)		Auxiliary Lane Storage Length (m)
		PM	SAT	
Guelph Street/Highway 7 and Winston Churchill Boulevard	EBL	115.8	86.9	85.0
	WBL	97.2	91.1	80.0
	NBL	115.9	99.1	80.0
	SBL	48.3	58.7	80.0

Note 1: 95th percentile queue lengths were determined using SimTraffic 11 software with 15 minutes of seeding, 60 minutes of recording and 5 runs.

The results of the signal adjustments indicate that, similar to the future total scenario, in the 2036 future total optimized scenario, the intersection is expected to operate above capacity with a maximum v/c ratio of 1.05 and 1.01 in the p.m. and Saturday peak hours, respectively. It is

important to note that Synchro optimization results in worse traffic operations than the adjustments recommended above.

Furthermore, the queues are longer than the queues generated before implementing the signal timing adjustments. It is recommended that the eastbound, westbound and northbound left-turn lane at the intersection of Guelph Street/Highway 7 and Winston Churchill Boulevard be monitored for future storage lane expansion.

It is important to note that since the Town/Region/MTO have not provided comments on the Terms of Reference at the time of submission, there is a possibility of planned road improvements at the study intersections that may help improve traffic operations in the future.

It is known that the Norval Bypass is planned to the west of this development, but no details on its timing or its expected effect on traffic along Highway 7 have been provided. If the bypass were to lower the through volume along Highway 7, this would have an impact on the v/c ratios seen at the study intersections since waiting for gaps in the through traffic is the main cause of the expected conditions.

6.0 Concept Plan Review

The development proposal includes an existing site access along Guelph Street/Highway 7 that will provide transportation servicing to and from the development areas. This section evaluates the suitability of the site accesses from a transportation safety perspective and recommends mitigation measures, if warranted. The safety review of the accesses includes an assessment of whether turning maneuvers can be made safely at the site accesses without issues related to sight lines, corner clearance, intersection spacing, access spacing and geometry.

6.1 Intersection Sight Distance

The available sightlines at the proposed site accesses were measured and compared to the standard set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

Section 9.9 of TAC GDGCR provides intersection sight distance for different intersection control types. The applicable cases are as follows:

- Case B – Intersections with stop control on the minor road
 - o Case B1 – Left turn from the minor road
 - o Case B2 – Right turn from the minor road

Intersection sight distance is calculated using equation 9.9.1 from the TAC GDGCR as outlined below:

$$ISD = 0.278 * V_{major} * t_g$$

Where;

ISD = Intersection Sight Distance

V_{major} = design speed of roadway (km/h)

t_g = assumed time gap for vehicles to turn from stop onto roadway (s)

Guelph Street/Highway 7 has a posted speed limit of 50 km/h. Per the MTO Design Supplement FOR Tac Geometric Design Guide (GDG) For Canadian Roads (2023), a design speed of 20 km/h above the posted speed limit is required. Accordingly, a design speed of 70 km/h was selected. In this

case, the passenger design vehicle was used for the assessment given that this vehicle is expected to be the most common vehicle profile to use the intersection.

The calculated and design sight distance is further summarized in TAC GDGCR Table 9.9.6 for vehicles turning right from stop and Table 9.9.4 for vehicles turning left from stop. Table 24 summarizes the sight distance calculations.

Table 24: Intersection Sight Distance Assessment

Guelph Street/Highway 7 Site Access Posted Speed = 50 km/h Design Speed = 70 km/h		
Formula (TAC	ISD = $0.278 * V_{\text{major}} * t_g$	
Feature	Case B1 – Left Turn	Case B2/B3 – Right Turn
Time Gap ¹	Left Turn: 7.5s + 0.0s = 7.5	Right Turn: 6.5s + 0.0s = 6.5s
Required Sight Distance	150m (looking east)	130m (looking west)
Available Sight Distance	150m+ (looking east)	130m+ (looking west)

Note 1: To calculate Time Gap, base time gap is required. This default parameter is based on particular turning cases (such as Case B1 and Case B2/B3) and particular design vehicles. Roadways with more than one lane per direction require additions of 0.5s and 0.7s per addition lane for passenger car and truck design vehicles, respectively. For minor street approach upgrades that exceed 3%, additions of 0.2s and 0.1s for Case B1 and Case B2/B3, respectively, are required per percent grade. Refer to Section 9.9 of TAC-GDGCR for additional details.

The available sight distance for the site access along Guelph Street/Highway 7 meets the minimum sight distance requirements for Case B1 (Left Turn from the Minor Road) and Case B2/B3 (Right Turn / Crossing Maneuver from the Minor Road).

6.2 Access Width

Access widths were measured against the standards in Table 8.9.1: Typical Driveway Dimensions in the TAC GDGCR, and the Ontario Building Code. The results are summarized in Table 25.

Table 25: Access Width Requirements

Land Use	TAC Manual	Ontario Building Code	Guelph Street/Highway 7 Site Access Width
Residential	2.0 - 7.3 m	6.0 m	7.0 m

The existing site access is in compliance with the access width requirements outlined in the TAC GDGCR and the Ontario Building Code.

6.3 Corner Clearance

Corner clearance is the minimum distance between the proposed driveway and the adjacent intersection. The minimum corner clearance requirement for residential land uses is made up of the tangent section C (2.0 m) and the corner curb radius (4.5 m), which comes out to a spacing of 6.5 m. The required and provided corner clearance between the driveway and the nearest minor intersection as per Section 8.9.7 in TAC GDGCR are summarized in Table 26.

Table 26: Minimum Corner Clearance to Nearest Minor Intersection

Feature	Nelson Street Site Access
Minimum Spacing Requirement	6.5 m
Available Spacing	~93.4 m
Minimum Spacing Distance Satisfied?	Yes

The available corner clearance for the site access along Guelph Street/Highway 7 meets the minimum requirement as set out in Table 26.

6.4 Access Spacing

Access spacing is the distance between existing or future driveways. The required spacing per Figure 8.9.2 in TAC GDGCR is summarized in Table 27.

Table 27: Access Spacing

Feature	Suggested Minimum Spacing for Residential Land Use	Measured Access Spacing
Guelph Street/Highway 7 Site Access	1.0 m	41.5 m

The minimum access spacing for the site access along Guelph Street/Highway 7 meets the minimum requirements as outlined in the TAC GDGCR.

6.5 Intersection Spacing

Per the MTO's Highway Corridor Management Manual (HCMM)(April 2022), a minimum intersection spacing of 800 meters is requested for classification 3-Collector roadways such as Highway 7. This spacing is measured between intersections regardless of which side of the roadway the intersecting roadway is located and is for both signalized and unsignalized intersections. The measured distance between the intersection of Guelph Street/Highway 7 at Site Access/Noble Street and Guelph Street/Highway 7 at Winston Churchill Boulevard is approximately 93.4 m. Therefore, adequate intersection spacing is not provided for the existing site access location.

However, it is important to note that the minimum 800-meter spacing is based on a 70 km/h posted speed limit or greater on the highway.

Furthermore, MTO states that a reduction in the public road spacing requirement will be considered where "the posted speed limit is lower than 70 km/h, based on the review and approval of a Traffic Impact Study and the recommended reduction meets the requirements of Ontario Traffic Manual Book 12". Per Section 4.5.3.3: Collector (King's Highway), "all private access connections for existing lots of record will be permitted to remain". Furthermore, per Section 4.6.9: First principle: One lot = One access connection, "Unless access rights have been purchased, each lot of record with highway frontage that has been in existence prior to the date of designation of the highway is entitled to one access connection, if no alternative access exists". Therefore, as this is an existing site

access that was approved before the Highway 7 was designated, it is permitted to exist, regardless of the intersection. Moreover, since the site is landlocked by residential units to the west and Credit River to the east, there is no alternative site access option available. Finally, as the site access meets all other geometric and safety requirements, the intersection spacing was found to be sufficient.

Appendix H contains the relevant TAC GDGCR and HCMM excerpts.

7.0 Parking Review

The following section reviews the adequacy of the parking supply of the proposed development. The parking review includes an assessment of the proposed parking supply of the development against the requirements outlined in the Town of Halton Hills Zoning By-Law requirements.

7.1 Vehicle Parking Assessment

Table 5.3 of the Town of Halton Hills Zoning By-Law 2010-0050 (ZBL) was used to calculate the minimum number of vehicle parking spaces required for the proposed development. The minimum parking space rates outlined in Town of Halton Hills ZBL were applied to the development proposal statistics outlined in Section 1.2. Table 28 outlines the calculated vehicle parking requirements according to the Town of Halton Hills ZBL and compares them with the proposed supply.

Table 28: Town of Halton Hills Zoning By-Law 2010-0050 Vehicle Parking Requirements

Building (By-Law Land Use)	Units / GFA	Minimum Parking Space Rate	Required Minimum Vehicle Parking Spaces
Convention Center (Trade or Convention Centre)	960 m ²	1 space per 20 m ² GFA + parking requirements for accessory restaurants and banquet halls	48
ATV Rental (Motor Vehicle Rental Establishment)	396 m ²	1 space per 20 m ² GFA	20
Storage Space (Other uses not listed above)	95.9 m ²	1 space per 30 m ² GFA	4
Total Required Parking Spaces			72
Total Proposed Parking Spaces			208
Surplus/Deficit			+136

The concept plan proposes a parking supply of 208 parking spaces, resulting in a parking surplus of 76 parking spaces according to the Town of Halton Hills ZBL.

7.2 Accessible Parking Assessment

There is no accessible parking requirements outlined in the Town of Halton Hills ZBL. However, the development proposes two Type A and two Type B accessible parking spaces; a total of 4 accessible parking spaces is proposed.

7.3 Bicycle Parking Assessment

Table 5.6 from the Town of Halton Hills ZBL illustrates the minimum bicycle parking requirements. The minimum bicycle parking requirements are outlined in Table 29.

Table 29: Town of Halton Hills Zoning By-Law 2010-0050 Bicycle Parking Requirements

Building (By-Law Land Use)	Units / GFA	Minimum Bicycle Parking Space Rate	Required Minimum Bicycle Parking Spaces
Convention Centre + ATV Rental (Retail, Service Commercial, Institutional)	1356 m ²	2 spaces + 1 space per 1000 m ² GFA	4
Total Required Bicycle Parking Spaces			4
Total Proposed Parking Spaces			4
Surplus/Deficit			0

As outlined in Table 29, the proposed development meets the minimum bicycle parking requirements according to the Town of Halton Hills ZBL.

8.0 Conclusions

This study has analyzed potential traffic impact on the boundary road network in relation to the proposed residential development situated at 530 Guelph Street, in the community of Georgetown. The analyses contained within this report may be summarized with the following key findings:

Existing Conditions:

- In the 2025 existing conditions, the intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard operates at a v/c ratio of 0.90 and 0.91 in the p.m. and Saturday peak hours, which is above the MTO and Halton Region's critical threshold. The existing site access operates efficiently with reserve capacity to accommodate future traffic volumes.
- No queuing exceedances of the auxiliary turn storage lanes were recorded in this assessment.

Future Background Conditions:

- Similar to existing conditions, the intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard is expected to operate at a v/c ratio of 1.24 and 1.10 in the p.m. and Saturday peak hours, respectively, which is above the MTO and Halton Region's critical threshold.
- The existing site access is expected to operate at a v/c ratio of 1.27 in the p.m. peak hour. However, the intersection experiences the most delays in the southbound direction, which is typical for minor road approaches connecting to major roads. Due to the high volume of eastbound/westbound traffic at the intersection, vehicles turning southbound-left onto Guelph Street/Highway 7 have to wait for a gap, which results in high delays.

Future Total Conditions:

- The proposed development is expected to generate a total of 12 and 28 two-way trips during the weekday p.m. and Saturday peak hours, respectively.
- Similar to existing and future background conditions, in the 2036 future total conditions, the intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard is expected to operate at a v/c ratio of 1.25 and 1.11 in the p.m. and Saturday peak hours, respectively, which is above the MTO and Halton Region's critical threshold. However, the increase in v/c ratio is negligible compared to the future background (1.24 and 1.10 in the p.m. and Saturday peak hours, respectively). Thus, the site-generated trips are not expected to have a significant impact on traffic operations at this intersection.
- Furthermore, the existing site access is expected to operate at a v/c ratio of 1.45 in the p.m. peak hour. However, similar to future background conditions, the intersection experiences the most delays in the southbound direction, which is typical for minor road approaches connecting to major roads. Due to the high volume of eastbound/westbound traffic at the intersection, vehicles turning southbound-left onto Guelph Street/Highway 7 have to wait for a gap, which results in high delays.

Future Total Recommended:

- Under 2036 future total conditions, signals are not warranted at the intersection of Guelph Street/Highway 7 and Existing Site Access. Furthermore, due to the close spacing between this intersection and the downstream intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard (approximately 93.4 m), signalization is not feasible. It is recommended that the intersection of Guelph Street/Highway 7 and Existing Site Access be monitored in the future for improvements.
- To mitigate the delays and congestion observed at Guelph Street/Highway 7/and Winston Churchill Boulevard during the 2036 future total conditions, the impacts of signal optimization were assessed. The results of the signal adjustments indicate that, similar to the future total scenario, the intersection is expected to operate above capacity with a maximum v/c ratio of 1.05 and 1.01 in the p.m. and Saturday peak hours, respectively.
- Furthermore, the queues are longer than the queues generated before implementing the signal timing adjustments. It is recommended that the eastbound, westbound and northbound left-turn lane at the intersection of Guelph Street/Highway 7/and Winston Churchill Boulevard be monitored for future storage lane expansion.
- As the Town/Region/MTO have not provided comments on the Terms of Reference at the time of this submission, there is a possibility of planned road improvements at the study intersections that may help improve traffic operations in the future.
- It is known that the Norval Bypass is planned to the west of this development, but no details on its timing or its expected effect on traffic along Highway 7 have been provided. If the bypass were to lower the through volume along Highway, this would have an impact on the v/c ratios seen at the study intersections since waiting for gaps in the through traffic is the main cause of the expected conditions.

Concept Plan Review:

- The available sight distance for the existing site access meets the minimum requirements set out in the TAC GDGCR.
- The existing site access is in compliance with the access width requirements outlined in the TAC GDGCR and the Ontario Building Code.
- The available corner clearance for the existing site access meets the minimum requirements outlined in the TAC GDGCR.
- The minimum access spacing for the existing site access meets the minimum requirements as outlined in the TAC GDGCR.
- The intersection spacing for the existing site access was found to be insufficient per the MTO's HCM. However, per section 4.5.3.3 and 4.6.9 of the HCM, as this is an existing site access that was approved before the Highway 7 was designated, it is permitted to exist, regardless of the intersection. Moreover, since the site is landlocked by residential units to the west and Credit River to the east, there is no alternative site access option available. Finally, as the site access meets all other geometric and safety requirements, the intersection spacing was found to be sufficient.

Parking Review:

- The development proposal meets the minimum requirements for bicycle parking, accessible parking and loading spaces according to the Town of Halton Hills Zoning By-Law 2010-0050.

In conclusion, the proposed development can be supported from a transportation operations perspective. We trust that this review satisfies any transportation concerns associated with the concept plan for this development. Please feel free to contact the undersigned for any further information required.

Respectfully submitted,

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