



**Industrial and Commercial
Development,
2004 Hamilton Road,
London**

Transportation Impact Assessment

Paradigm Transportation Solutions Limited

2025-05
230507



Project Summary



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Industrial and Commercial Development, 2004 Hamilton Road, London Transportation Impact Assessment



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Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) has been retained to conduct this Transportation Impact Assessment (TIA) for a proposed Industrial and Commercial development located at 2004 Hamilton Road in the City of London.

This TIA includes an analysis of existing traffic conditions, a description of the proposed development, analysis of future traffic conditions, and assessment of development traffic impacts with recommendations as appropriate to accommodate the proposed development.

Development Concept

The subject site is located in the northwest corner of Hamilton Road and Veterans Memorial Parkway. The proposed development will involve an Industrial/Commercial Subdivision comprising five Development Blocks and two internal roadways running north-south and east-west.

The Proposed north-south road will intersect Hamilton Road at approximately 300 metres west from the VMP and 175 metres east from Venture Gate. The east-west road currently terminates at the westerly property line and is expected to be extended in the future and connect to Hamilton Road at the existing T intersection at Venture Gate.

This present TIA corresponds to a development potential based on the north-south road access only, accommodating a total of 36,790 ft² of office space, 38,610 ft² of commercial uses, and 159,790 ft² of warehouse space.

The commercial uses in the development are expected to include: 28,860 ft² of retail-commercial uses, a 5,000 ft² bank with drive-through, a 3,100 ft² restaurant, and a 1,650 ft² fast-food restaurant with drive-through.

The development based on the above land use assumptions is assumed to be completed by 2030 for the purpose of analysing the 2035 Horizon Year for future traffic conditions analysis corresponding to five years after development, as required by the City of London's TIA guidelines.



It is expected that a future connection to Hamilton Road at Venture will increase the development potential of the subject subdivision which could be addressed through an update to this TIA.

TIA Scope

The scope of the Transportation Impact Assessment for the proposed development includes:

- ▶ **Study Area Intersections:**
 - Hamilton Road and Venture Gate (unsignalized);
 - Hamilton Road and Veterans Memorial Parkway (signalized); and
 - Hamilton Road and Site Access (Street 'B') (new).
- ▶ **Analysis Periods:** Weekday AM and PM peak hours.
- ▶ **Traffic Conditions:** Existing (2025) and five years after development completion (2035).

Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** All study area intersections are currently operating at acceptable levels of service.
- ▶ **Development Trip Generation:** The development is forecast to generate 263 AM peak hour trips and 339 PM peak hour trips.
- ▶ **2035 Background Traffic Conditions:** All study area intersections are forecast to operate within acceptable levels of service, except for the following critical movements:

Veterans Memorial Parkway and Hamilton Road

- The eastbound left-turn movement is forecast to operate with LOS E and F during the AM and PM peak hours, respectively, as well as a v/c ratio greater than 0.90 during both peak hours; and
- The southbound through movement is forecast to operate with LOS E and a v/c ratio greater than 0.90 during the PM peak hour.
- ▶ **2035 Total Traffic Conditions:** All study area intersections are forecast to operate similar to background traffic conditions with the addition of the following critical movements:

Veterans Memorial Parkway and Hamilton Road



- The eastbound left-turn movement is forecast to operate with 95th percentile queues exceeding the available storage of 95 metres during the AM and PM peak hours.

Hamilton Road and Site Access

- The southbound left-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.90 during the PM peak hour.
- ▶ **Site Access (North-South Road, Street B):**
 - Left-Turn Lanes: An eastbound left-turn lane with 40 metres of storage is warranted on Hamilton Road at the proposed site access under total traffic conditions. The required eastbound left-turn lane could be implemented as a back-to-back left-turn arrangement with the existing westbound left-turn lane at Venture Gate, and both having the same storage length of 45 metres as the existing WBLT lane at Venture Gate.
 - Right-Turn Lanes: A westbound right-turn lane should be considered at the site access intersection as the westbound right-turn volumes under total traffic conditions are forecast to exceed the warrant threshold of 60 vph. The added lane could be part of the planned future widening of Hamilton Road to a four-lane cross-section.
- ▶ **Transportation Demand Management:** The following TDM measures should be considered at the subject development:
 - Site design to include internal walkways to facilitate active transportation and transit access;
 - Bicycle parking in accordance with the City's Zoning By-Law; and
 - Transit and active transportation information provided in a welcome package to new employees and/or posted in central locations on-site.

Recommendations

Based on the findings of this study, it is recommended that the subject subdivision be considered for approval as proposed, with the following turn-lane improvements:

- ▶ An eastbound left-turn lane with 40 metres of storage on Hamilton Road at the Site Access; and
- ▶ A westbound right-turn lane on Hamilton Road at the Site Access.



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1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) has been retained to conduct this Transportation Impact Assessment (TIA) for a proposed Industrial and Commercial development located at 2004 Hamilton Road, in the northwest corner of Hamilton Road and Veterans Memorial Parkway.

Figure 1.1 illustrates the site location.

The proposed development will involve an Industrial/Commercial Subdivision comprising five Development Blocks and two internal roadways running north-south and east-west.

The Proposed north-south road will intersect Hamilton Road at approximately 300 metres west from the VMP and 175 metres east from Venture Gate. The east-west road currently terminates at the westerly property line and is expected to be extended in the future and connect to Hamilton Road at the existing T intersection at Venture Gate.

This present TIA corresponds to a development potential based on the north-south road access only, which will accommodate a total of 36,790 ft² of office space, 38,610 ft² of commercial uses, and 159,790 ft² of warehouse space.

The commercial uses in the development are expected to include: 28,860 ft² of retail-commercial uses, a 5,000 ft² bank with drive-through, a 3,100 ft² restaurant, and a 1,650 ft² fast-food restaurant with drive-through.

The development based on the above land use assumptions is assumed to be completed by 2030 for the purpose of analysing the 2035 Horizon Year for future traffic conditions analysis corresponding to five years after development, as required by the City of London's TIA guidelines.

It is expected that a future connection to Hamilton Road at Venture will increase the development potential of the subject subdivision which could be addressed through an update to this TIA.



1.2 Purpose and Scope

The purpose of this report is to identify and assess the potential traffic impact resulting from the proposed development. The scope of the study based on pre-consultation transportation planning comments provided by City of London staff, includes:

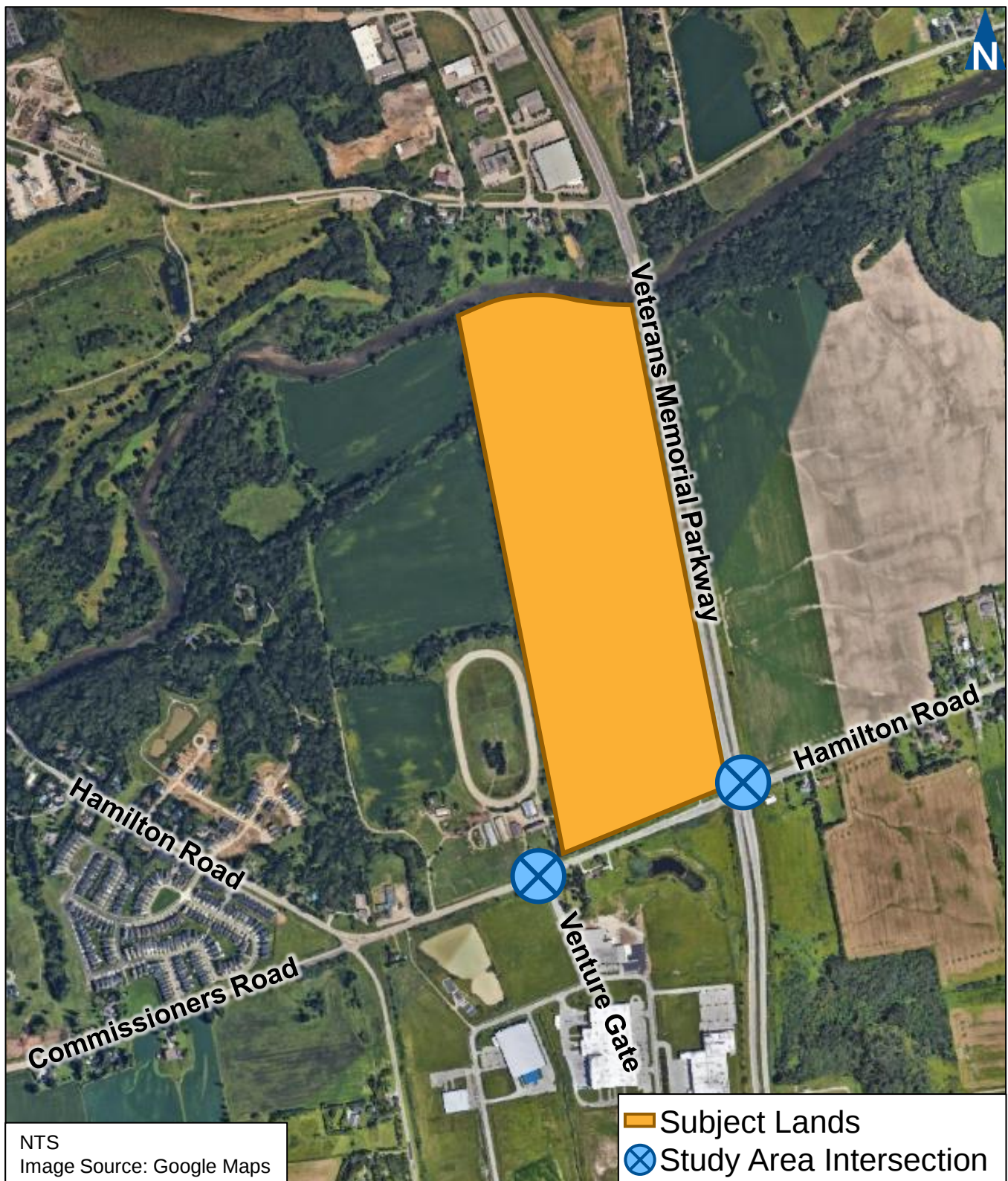
- ▶ assessment of the current traffic and site conditions within the study area;
- ▶ estimates of background traffic growth for five years after build-out (2035);
- ▶ estimates of additional traffic generated by the subject site;
- ▶ analyses of the impact of the future traffic on the surrounding road network, including the following study area intersections:
 - Hamilton Road and Venture Gate (unsignalized);
 - Hamilton Road and Veterans Memorial Parkway (signalized); and
 - Hamilton Road and Site Access (Street 'B') (new).
- ▶ recommendations, if necessary, to mitigate the site generated traffic in a satisfactory manner.

Appendix A contains the updated IPR Summary (September 2024) including transportation planning comments from the City of London.

This study has been prepared in accordance with the requirements detailed by the City of London Transportation Impact Assessment Guidelines¹.

¹ Transportation Impact Assessment Guidelines, City of London, April 2012.





2 Existing Conditions

2.1 Existing Roadways

The main roadways near the subject development considered in assessing the traffic impacts of the development include:

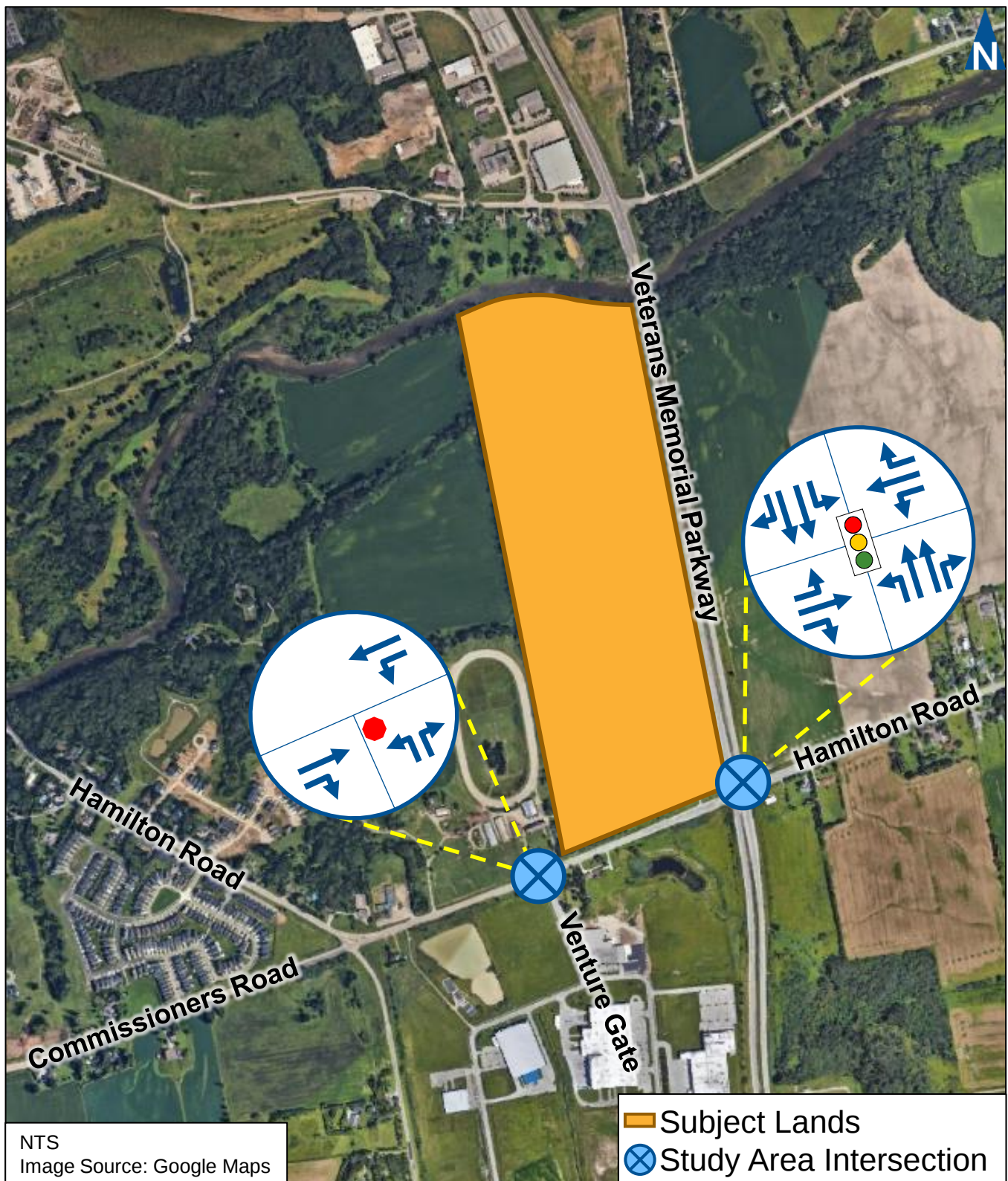
- ▶ **Veterans Memorial Parkway** is a north-south Expressway² with a four-lane cross-section. The northbound and southbound lanes are divided by a raised centre median. No sidewalks or cycling facilities are provided on the roadway. The posted speed limit is 90 km/h.
- ▶ **Hamilton Road** is an east-west Civic Boulevard with a two-lane cross section. There are no sidewalks or cycling facilities provided along Hamilton Road within the study area. The posted speed limit is 80 km/h.
- ▶ **Venture Gate** is a north-south Neighbourhood Connector with a two-lane cross section. A sidewalk is provided on the west side of the roadway, and no cycling facilities are provided. The assumed speed limit is 50 km/h.

Traffic signals are provided at the intersection of Veterans Memorial Parkway and Hamilton Road. Side-street stop-control is provided at the intersection of Hamilton Road and Venture Gate.

Figure 2.1 illustrates the traffic control and lane configuration at the intersections of Veterans Memorial Parkway and Hamilton Road, and Hamilton Road and Venture Gate.

² City of London, The London Plan, Map 3: Street Classifications, 2016.





2.2 Transit Service

London Transit operates one route, **Route 38 (Argyle Mall – Innovation Park)**, within the study area. Route 38 provides service primarily on Clarke Road and Old Victoria Road between Innovation Park to the south and Argyle Mall to the north. The route operates on weekdays from 6:30 to 8:50 AM and from 1:30 to 11:45 PM with 40-minute headways.

Figure 2.2 illustrates the existing transit service.

2.3 Traffic Volumes

Paradigm conducted turning movement counts at the intersections of Veterans Memorial Parkway and Hamilton Road, and Hamilton Road and Venture Gate on 12 December 2023.

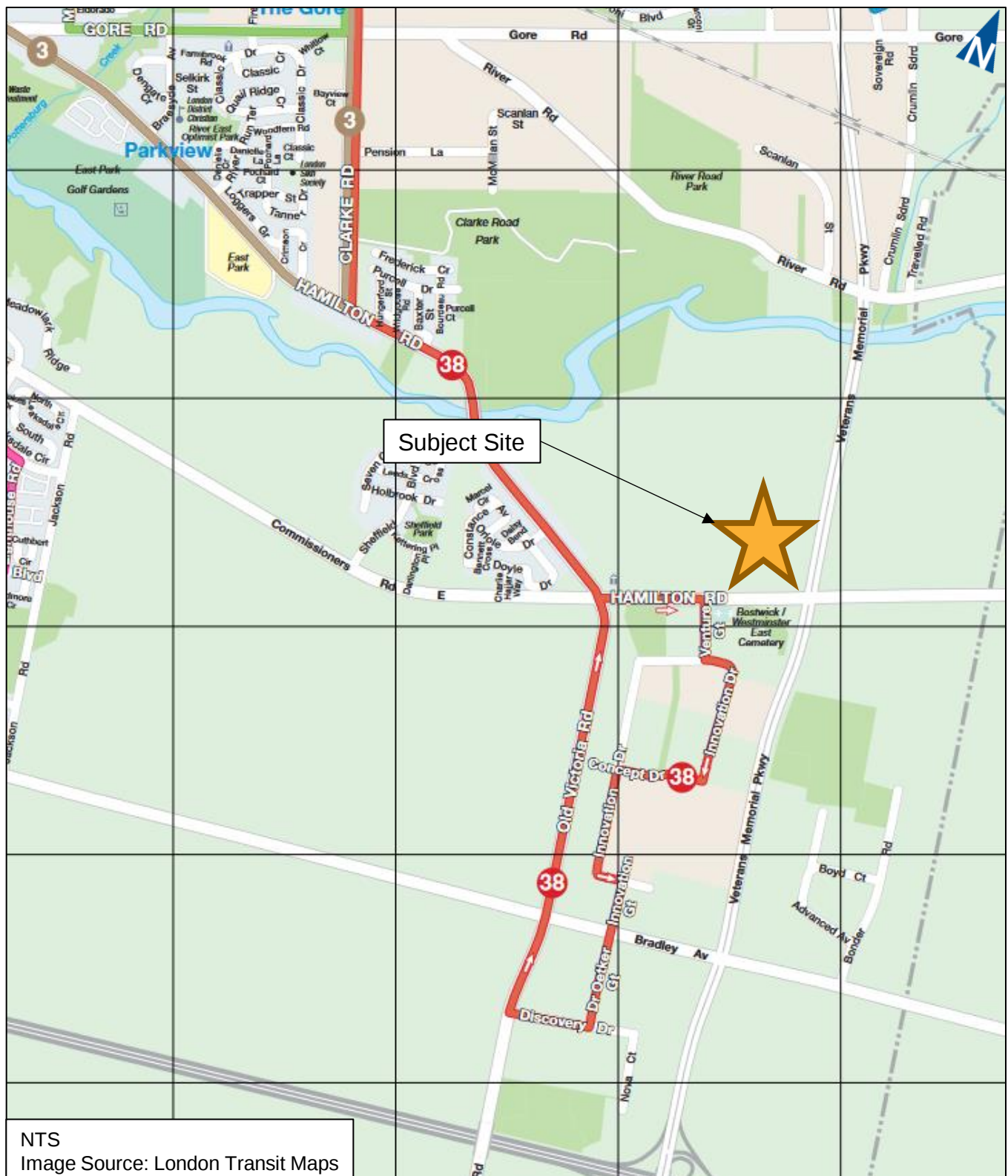
Figure 2.3 illustrates the existing AM and PM weekday peak hour turning movement traffic volumes. **Table 2.1** summarizes the peak hours at each intersection.

TABLE 2.1: INTERSECTION PEAK HOURS

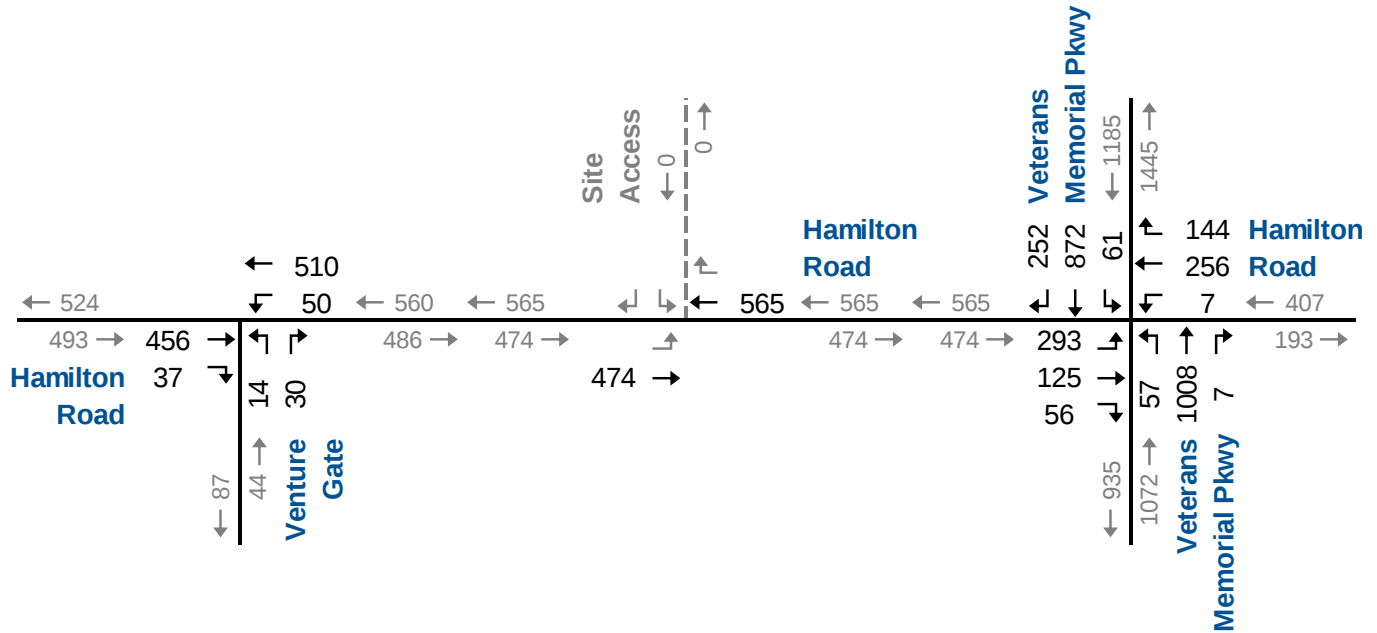
Intersection	AM Peak Hour	PM Peak Hour
Veterans Memorial Parkway and Hamilton Road	7:30 – 8:30	4:15 – 5:15
Hamilton Road and Venture Gate	7:30 – 8:30	4:30 – 5:30

Appendix B contains the detailed traffic counts and signal timings for the intersections.

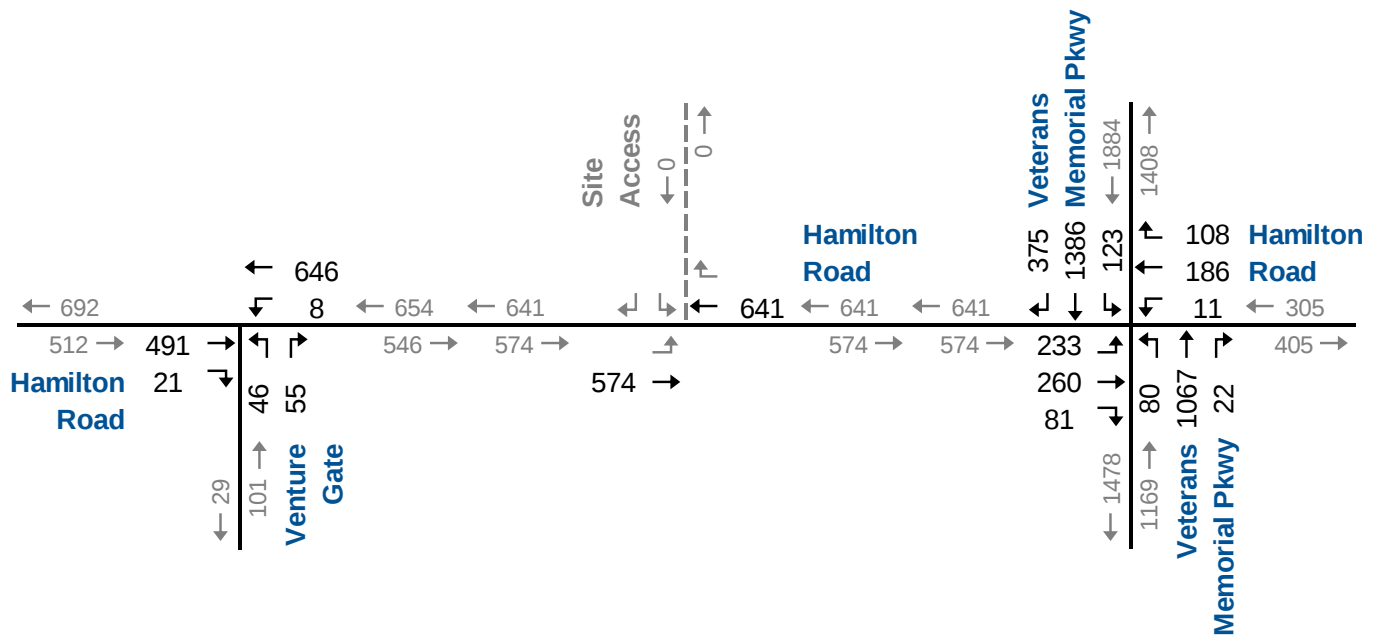




AM Peak Hour



PM Peak Hour



2.4 Traffic Operations

The level of service conditions at the intersections of Veterans Memorial Parkway and Hamilton Road, and Hamilton Road and Venture Gate have been assessed through intersection operational analysis using Synchro 12.

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity (v/c) ratio is greater than 1.00, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

Movements are considered critical under the following conditions:

- ▶ v/c ratios for overall intersection operations, through movements or shared through/turning movements increased to 0.90 or above and LOS 'E' or worse;
- ▶ v/c ratios for dedicated turning movements increased to 0.90 or above and LOS 'E' or worse; or
- ▶ 95th percentile queue lengths for individual movements exceeds available lane storage.

Table 2.2 summarizes the results of the intersection operational analysis under existing conditions, including the AM and PM peak hour LOS, v/c ratios, and 95th percentile queues experienced.

The results indicate that the study area intersections are operating at acceptable levels of service, and with no problem movements.

Appendix C contains the detailed Synchro 12 reports.



TABLE 2.2: EXISTING TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Venture Gate & Hamilton Road	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.00 0 -	A 0 0.00 65 65	A 0	A 9 0.06 2 45 43	A 0 0.00 0 -		A 1	C 24 0.08 2 90 88		B 12 0.06 2 -	C 16					A 1 0.41
	Veterans Memorial Parkway & Hamilton Road	TCS	LOS Delay V/C Q Stor. Avail.	D 48 0.85 42 95 53	C 26 0.20 10 -	C 25 0.11 4 75 71	D 40	D 41 0.03 1 85 84	E 57 0.84 46 -	D 47 0.57 22 85 63	D 53	C 23 0.33 4 135 131	C 33 0.77 52 -	B 19 0.02 1 65 64	C 32	C 24 0.32 4 160 156	C 31 0.70 43 -	C 26 0.42 22 110 88	C 29	C 35
PM Peak Hour	Venture Gate & Hamilton Road	TWSC	LOS Delay V/C Q Stor. Avail.		A 0 0.00 0 -	A 0 0.00 65 65	A 0	A 8 0.01 0 45 45	A 0 0.00 0 -		A 0	D 31 0.26 8 90 82		B 12 0.11 3 -	C 21					A 2 0.44
	Veterans Memorial Parkway & Hamilton Road	TCS	LOS Delay V/C Q Stor. Avail.	D 45 0.77 32 95 63	C 33 0.48 28 -	C 29 0.18 8 75 67	D 37	D 44 0.06 2 85 83	D 54 0.79 31 -	D 49 0.55 16 85 69	D 52	C 30 0.56 4 135 131	C 26 0.72 40 -	B 16 0.03 1 65 64	C 27	C 23 0.56 6 160 154	D 36 0.91 68 -	C 23 0.53 26 110 84	C 33	C 33

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

< / > - Shared with through movement



3 Development Concept

3.1 Development Description

The subject site is located in the northwest corner of Hamilton Road and Veterans Memorial Parkway. The proposed development will be based on an Industrial/Commercial Subdivision comprising five Development Blocks and two internal roadways running north-south and east-west.

The Proposed north-south road will intersect Hamilton Road at approximately 300 metres west from the VMP and 175 metres east from Venture Gate. The east-west road currently terminates at the westerly property line and is expected to be extended in the future and connect to Hamilton Road at the existing T intersection at Venture Gate.

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The development based on the above land use assumptions is assumed to be completed by 2030 for the purpose of analysing the 2035 Horizon Year for future traffic conditions analysis corresponding to five years after development, as required by the City of London's TIA guidelines.

It is expected that a future connection to Hamilton Road at Venture will increase the development potential of the subject subdivision which could be addressed through an update to this TIA.

Figure 3.1 shows the Draft Plan of Subdivision Concept.





Figure 3.1

3.2 Development Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual³ rates and equations were used to estimate the peak hour traffic volumes generated by the five Development Blocks of the subject Subdivision, based on the following ITE Land Use Codes:

- ▶ 822, Strip Retail Plaza (<40k);
- ▶ 912, Drive-in Bank;
- ▶ 932, High-Turnover (Sit-Down) Restaurant;
- ▶ 934, Fast-Food Restaurant with Drive-Through;
- ▶ 750, Office Park; and
- ▶ 150, Warehousing.

The ITE Trip Generation Manual also provides pass-by rates for specific commercial land uses, including LUCs 821, 912, 932 and 934. Pass-by rates for LUC 821 (Shopping Plaza (40-150k)) were applied to the trips generated by the retail land uses as pass-by rates are not provided for LUC 822 in the ITE Manual.

Pass-by trips are vehicles already on the road network that may stop at a development on the way to their intended destination. This does not add additional trips on the road network, but rather re-assigns vehicle trips to the development access. Pass-by trips have been assigned to the site access based on the existing distribution as discussed in the subsequent section.

It is noted that pass-by trips coming from the west have been omitted from the site generated traffic volumes as these trips are unlikely to occur. Pass-by trips are generally made when the development can be conveniently accessed. The high east-west through volumes on Hamilton Road may deter drivers from performing an eastbound left-turn into the site and a southbound left-turn out of the site. Therefore, the proposed development is unlikely to be an intermediate stop for trips coming from the west.

Table 3.1 summarizes the distribution of land uses by Development Block and the corresponding AM/PM peak hour trip generation estimates.

³ Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).



TABLE 3.1: TRIP GENERATION

Land Use Code	GFA (1,000 ft²)	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
Block 1									
LUC 822 - Strip Retail Plaza (<40k)	12.0	2.36	17	11	28	Eqn ¹	44	45	89
LUC 821 Pass-by Trips		0%	0	0	0	40%	18	18	36
LUC 912 - Drive-in Bank	5.0	9.95	29	21	50	21.01	53	52	105
LUC 912 Pass-by Trips		29%	7	7	14	35%	18	18	36
Block 1 Trip Generation			39	25	64		61	61	122
Block 2									
LUC 932 - High-Turnover (Sit-Down) Restaurant	3.10	9.57	16	14	30	9.05	17	11	28
LUC 932 Pass-by Trips		0%	0	0	0	43%	6	6	12
LUC 934 - Fast-Food Restaurant with Drive-Through	1.65	44.61	38	36	74	33.03	28	26	54
LUC 934 Pass-by Trips		50%	19	19	38	55%	15	15	30
Block 2 Trip Generation			35	31	66		24	16	40
Block 3									
LUC 822 - Strip Retail Plaza (<40k)	7.05	2.36	10	7	17	Eqn ¹	30	31	61
LUC 821 Pass-by Trips		0%	0	0	0	40%	12	12	24
Block 3 Trip Generation			10	7	17		18	19	37
Block 4									
LUC 822 - Strip Retail Plaza (<40k)	10.0	2.36	14	10	24	Eqn ¹	39	39	78
LUC 821 Pass-by Trips		0%	0	0	0	40%	16	16	32
LUC 750 - Office Park	36.79	1.33	44	5	49	1.30	7	41	48
Block 4 Trip Generation			58	15	73		30	64	94
Block 5									
LUC 150 - Warehousing	159.79	Eqn ²	33	10	43	Eqn ²	13	33	46
Block 5 Trip Generation			33	10	43		13	33	46
Total Trip Generation (Blocks 1-5)			201	114	315		231	278	509
LUC 821 Pass-by Trips		0%	0	0	0	40%	46	46	92
LUC 912 Pass-by Trips		29%	7	7	14	35%	18	18	36
LUC 932 Pass-by Trips		0%	0	0	0	43%	6	6	12
LUC 934 Pass-by Trips		50%	19	19	38	55%	15	15	30
Net Trip Generation (Blocks 1-5)			175	88	263		146	193	339

¹LUC 822 - PM: $\ln(T) = 0.71\ln(X) + 2.72$ ²LUC 150 - AM: $T = 0.12(X) + 23.62$ | PM: $T = 0.12(X) + 26.48$ 

3.3 Development Trip Distribution and Assignment

The trip distribution, including pass-by-trip distribution, was determined based on existing traffic distribution on Hamilton Road/Veterans Memorial Parkway and the likely east/west desire lines corresponding to existing development areas in the City.

Table 3.2 summarizes the breakdown of trip distributions.

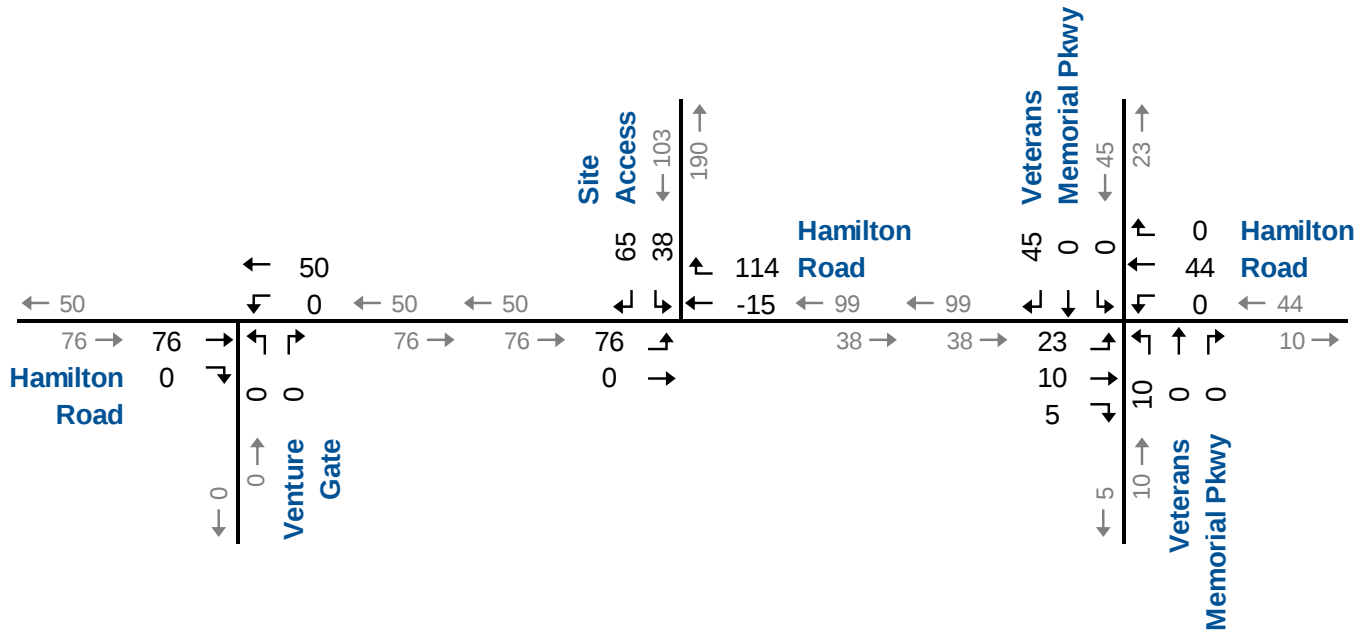
TABLE 3.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	Inbound	Outbound	Inbound	Outbound
North via Veterans Memorial Parkway	25%	25%	30%	20%
South via Veterans Memorial Parkway	5%	5%	5%	5%
East via Hamilton Road	25%	10%	20%	15%
West via Hamilton Road	45%	60%	45%	60%
Total	100%	100%	100%	100%

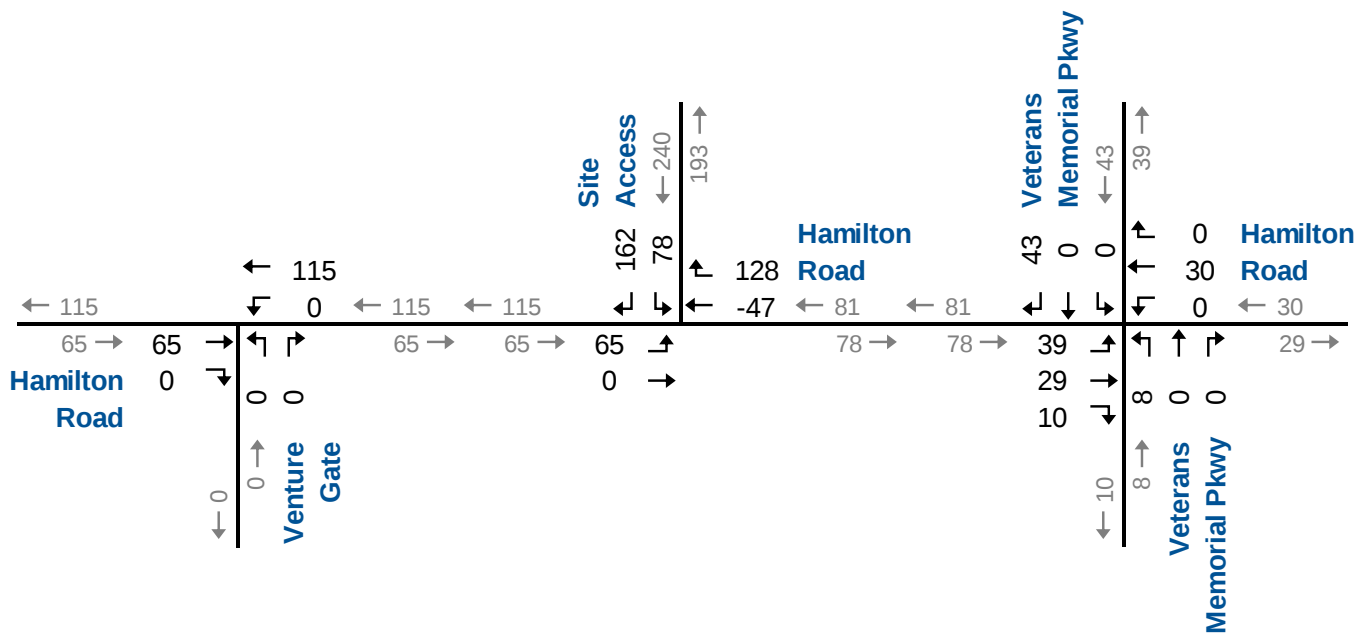
Figure 3.2 illustrates the site-generated traffic volumes for the AM and PM peak hours.



AM Peak Hour



PM Peak Hour



Site Generated Traffic Volumes

4 Evaluation of Future Traffic Conditions

The assessment of future traffic conditions contained in this section includes estimates of future background and total traffic volumes, and the analyses for the traffic conditions five years after development opening (2035).

4.1 Background Traffic Forecasts

In order to derive the 2035 generalized background traffic volumes, a growth rate of 1.5% per annum was applied to the existing roadway traffic volumes. This growth rate was confirmed with the City during the pre-study consultation.

4.2 2035 Background Traffic Operations

Figure 4.1 illustrates the 2035 background traffic volumes, including road traffic growth.

The 2035 background traffic volumes have been analyzed using the same methodology as under existing traffic conditions. Signal timings have been optimized.

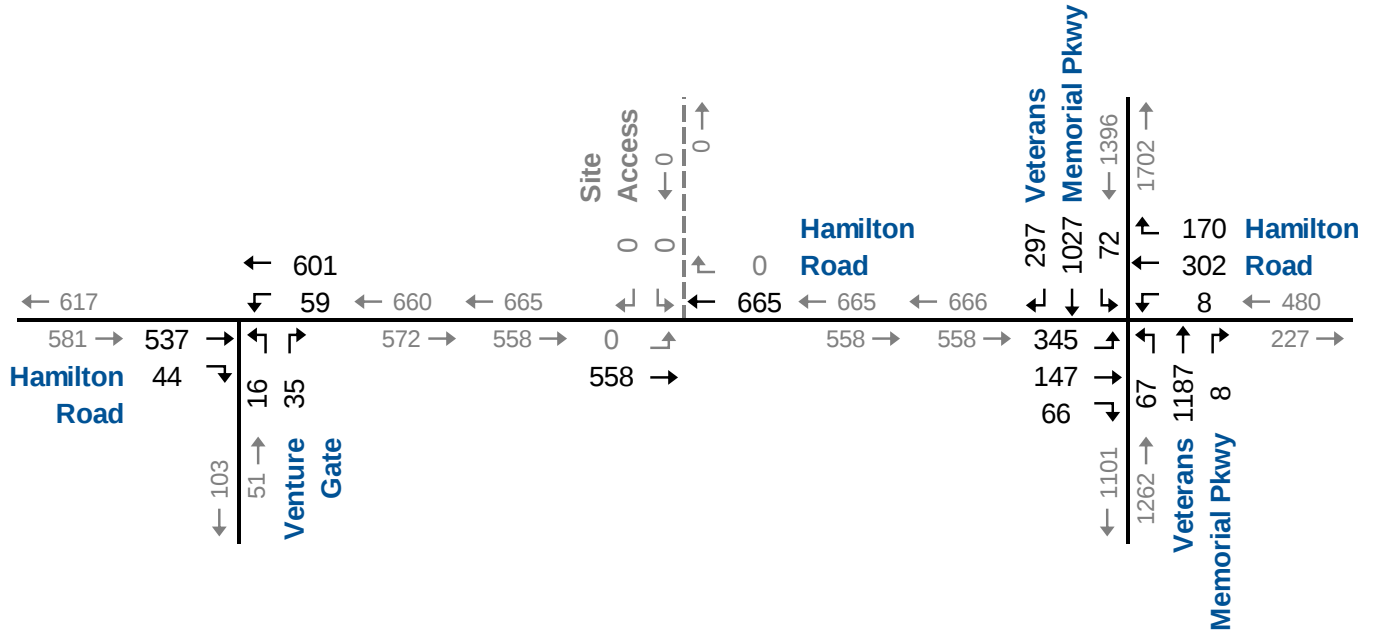
Table 4.1 summarizes the results of the 2035 background traffic operations. The results indicate that the study area intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours, except for the following movements at Veterans Memorial Parkway and Hamilton Road:

- ▶ The eastbound left-turn movement is forecast to operate with LOS E and F during the AM and PM peak hours, respectively and a v/c ratio greater than 0.90 during both peak hours; and
- ▶ The southbound through movement is forecast to operate with LOS E and a v/c ratio greater than 0.90 during the PM peak hour.

Appendix D contains the supporting detailed Synchro 12 reports.



AM Peak Hour



PM Peak Hour

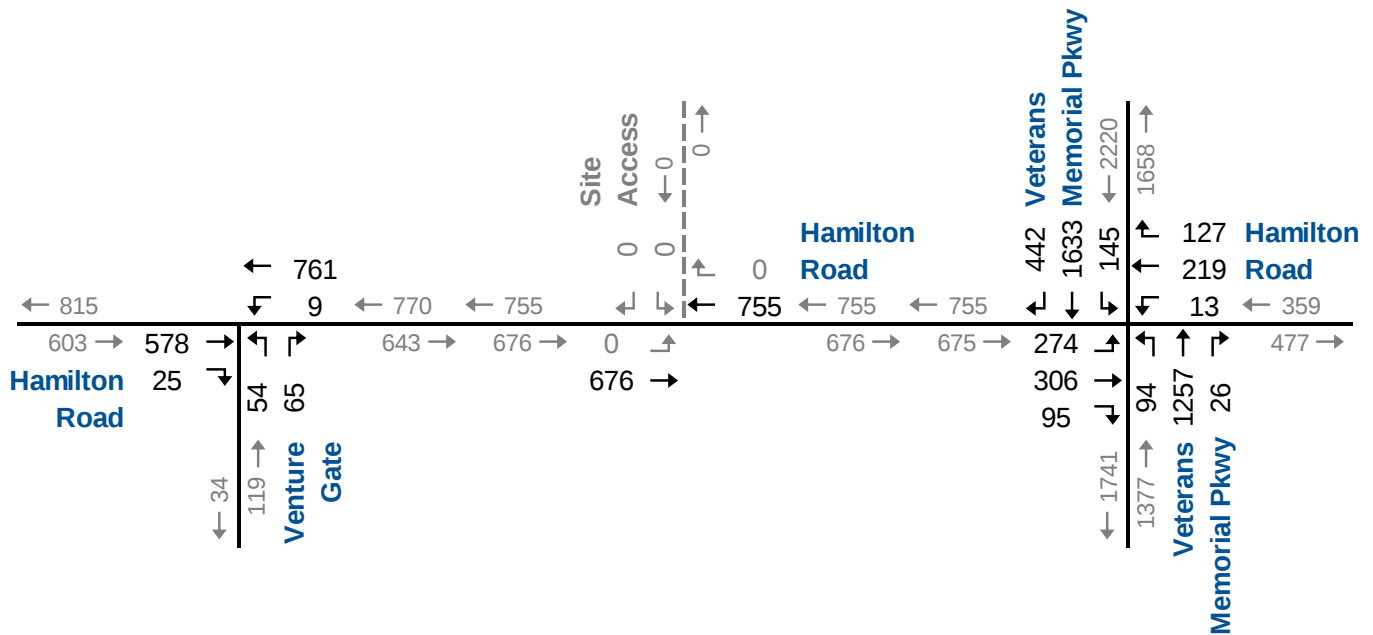


TABLE 4.1: 2035 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Venture Gate & Hamilton Road	TWSC	LOS Delay V/C Stor. Avail.		A 0 0.00 0 -	A 0 0.00 65 65	A 0	A 9 0.07 2 45 43	A 0 0.00 0 -		A 1 0.12 3 90 87	D 33 0.12 3 90 87		B 13 0.08 2 -	C 19					A 1 0.45
	Veterans Memorial Parkway & Hamilton Road	TCS	LOS Delay V/C Stor. Avail.	E 74 0.98 68 27	C 24 0.21 13 -	C 23 0.12 5 75 70	E 55	D 40 0.03 2 85 83	E 64 0.88 61 -	D 47 0.59 27 85 58	E 57	C 32 0.52 5 135 130	D 52 0.96 96 -	C 22 0.02 1 65 64	D 51	D 35 0.56 6 160 154	D 44 0.88 73 -	C 31 0.53 33 110 77	D 40	D 48
PM Peak Hour	Venture Gate & Hamilton Road	TWSC	LOS Delay V/C Stor. Avail.		A 0 0.00 0 -	A 0 0.00 65 65	A 0	A 9 0.01 0 45 45	A 0 0.00 0 -		A 0 0.42 14 90 76	E 48 0.42 14 90 76		B 14 0.15 4 -	D 30					A 2 0.50
	Veterans Memorial Parkway & Hamilton Road	TCS	LOS Delay V/C Stor. Avail.	F 123 1.09 76 19	D 36 0.59 37 -	C 31 0.22 10 75 65	E 71	D 43 0.07 2 85 83	D 53 0.81 37 -	D 48 0.57 20 85 65	D 51	D 47 0.74 9 135 126	C 33 0.85 59 -	B 16 0.04 2 65 63	C 34	C 34 0.73 9 160 151	E 62 1.04 123 -	C 24 0.61 32 110 78	D 53	D 50

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



4.3 2035 Total Traffic Operations

Figure 4.2 illustrates the 2035 total traffic volumes, including trips generated by the proposed development.

The 2035 total traffic volumes have been analyzed using the same methodology as under existing and background traffic conditions. Signal timings have been optimized.

Table 4.2 summarizes the results of the 2035 total traffic operations. The results indicate that the study area intersections are forecast to operate similarly to background traffic conditions during the AM and PM peak hours, with the following additional critical movement at Veterans Memorial Parkway and Hamilton Road

- ▶ The eastbound left-turn movement is forecast to operate with 95th percentile queues exceeding the available storage of 95 metres during the AM and PM peak hours.

Hamilton Road and Site Access

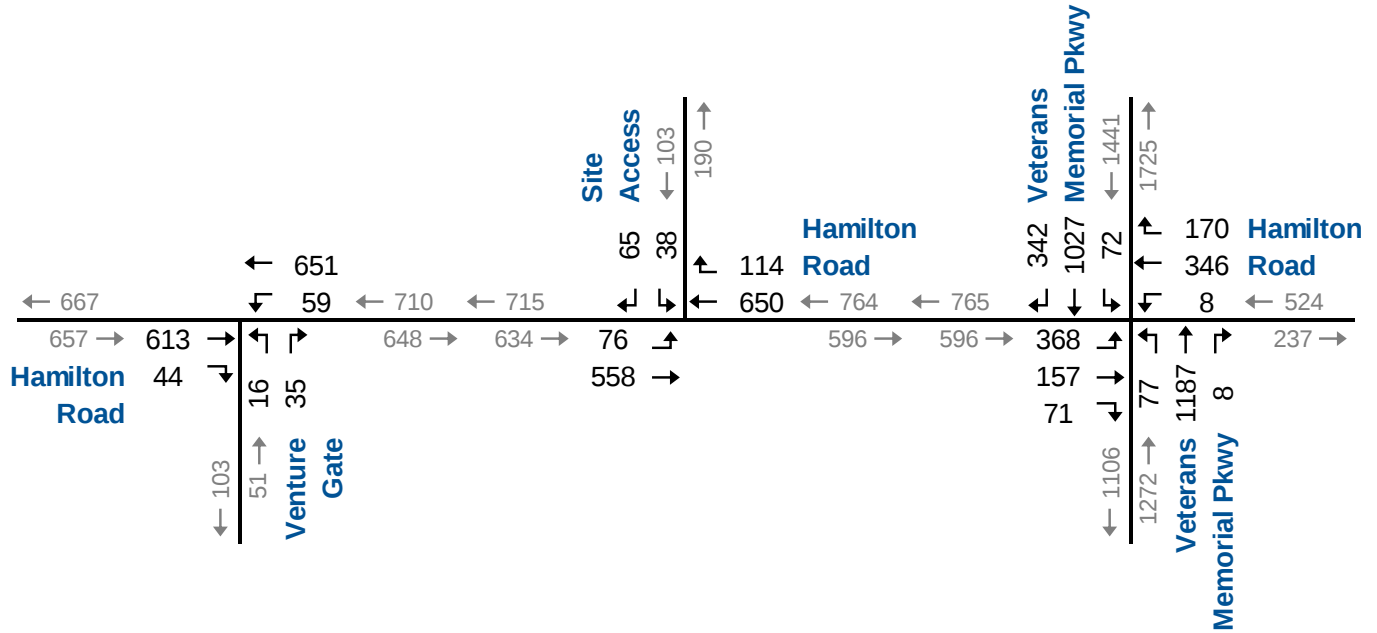
The north-south road (Street B) access operation indicates the following:

- ▶ Acceptable levels of service are projected for the east-west through traffic on Hamilton Road and for three of the four access turning movements, viz., Southbound, Right-turns, Westbound Right-turns, and Eastbound Left-turns.
- ▶ The Southbound Left-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.90 during the PM peak hour. It is noted that the Northbound Left-turn movement at the Venture Gate intersection is also projected to operate at LOS F during the PM peak hour. The outbound Left-turn movement delays are typical for side street traffic entering a major arterial road with significant through-traffic volumes. Also, the projected 95th percentile queue length of 43 metres (approx. six to seven cars) is within acceptable limits.

Appendix E contains the supporting detailed Synchro 12 reports.



AM Peak Hour



PM Peak Hour

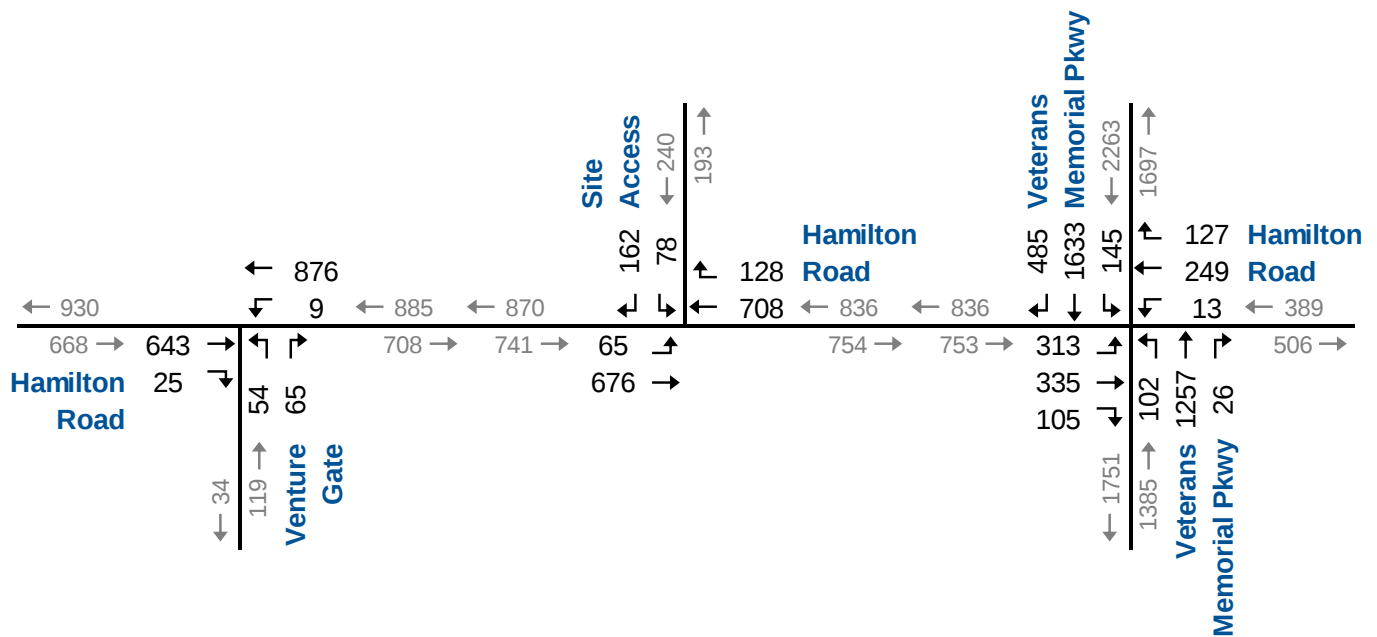


TABLE 4.2: 2035 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Venture Gate & Hamilton Road	TWSC	LOS Delay V/C Stor. Avail.		A 0 0 -	A 0 65 65	A 0	A 10 0.08 2 45 43	A 0 0.00 0 -		A 1	E 40 0.14 4 90 86		B 14 0.09 2 -	C 22					A 1 0.49
	Hamilton Road & Site Access	TWSC	LOS Delay V/C Q	A 10 0.10 2	A 0 0.00 0		A 1		A 0 0.00 0	A 0						F 57 0.38 12		C 16 0.18 5	D 31	A 3 0.88
	Veterans Memorial Parkway & Hamilton Road	TCS	LOS Delay V/C Q Stor. Avail.	F 142 1.18 108 95 -13	C 25 0.23 14 -	C 23 0.12 6 75 69	F 97	D 38 0.03 1 85 84	E 63 0.89 70 -	D 44 0.53 26 85 59	E 56	D 37 0.61 8 135 127	D 53 0.96 98 -	C 22 0.02 1 65 64	D 52	D 36 0.57 7 160 153	D 44 0.89 74 -	C 34 0.62 40 110 70	D 41	E 55
PM Peak Hour	Venture Gate & Hamilton Road	TWSC	LOS Delay V/C Stor. Avail.		A 0 0 -	A 0 65 65	A 0	A 9 0.01 0 45 45	A 0 0.00 0 -		A 0	F 75 0.56 20 90 70		B 15 0.16 4 -	E 42					A 3 0.56
	Hamilton Road & Site Access	TWSC	LOS Delay V/C Q	B 10 0.09 2	A 0 0.00 0		A 1		A 0 0.00 0	A 0						F 188 1.00 43		C 23 0.48 19	F 77	B 10 0.98
	Veterans Memorial Parkway & Hamilton Road	TCS	LOS Delay V/C Q Stor. Avail.	F 152 1.19 98 95 -3	C 35 0.59 40 -	C 30 0.23 10 75 65	F 83	D 43 0.07 2 85 83	E 57 0.84 45 -	D 47 0.51 20 85 65	D 53	E 61 0.82 14 135 121	D 39 0.90 74 -	B 18 0.04 2 65 63	D 40	D 42 0.78 12 160 148	F 80 1.08 157 -	C 30 0.69 45 110 65	E 67	E 61

MOE - Measure of Effectiveness

LOS - Level of Service

Delay - Average Delay per Vehicle in Seconds

V/C - Volume to Capacity Ratio

Q - 95th Percentile Queue Length (m)

Stor. - Existing Storage (m)

Avail. - Available Storage (m)

TCS - Traffic Control Signal

TWSC - Two-Way Stop Control

</> - Shared with through movement



4.4 Auxiliary Turn-Lanes

Auxiliary turn-lanes for the eastbound left-turn movement and the westbound right-turn movement were assessed for the Street B access on Hamilton Road based on the existing two-lane cross-section.

4.4.1 Eastbound Left-Turn Lane

The need for an auxiliary eastbound left-turn lane on Hamilton Road at the proposed driveway was assessed based on the requirements and procedures detailed in the Ministry of Transportation Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads⁴. The assessment is based on the nomographs for left-turn lanes on a two-lane undivided highway at an unsignalized intersection with a design speed of 20 km/h over the posted speed limit (100 km/h).

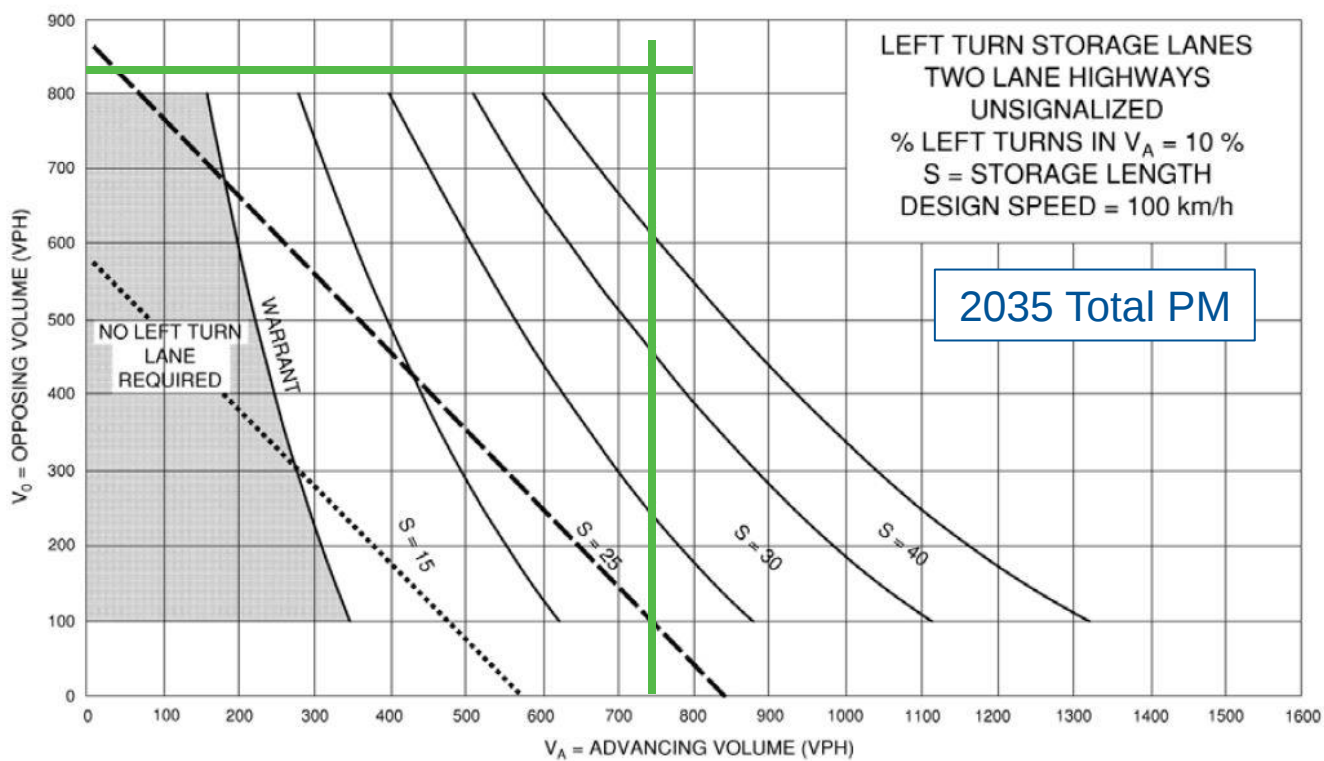
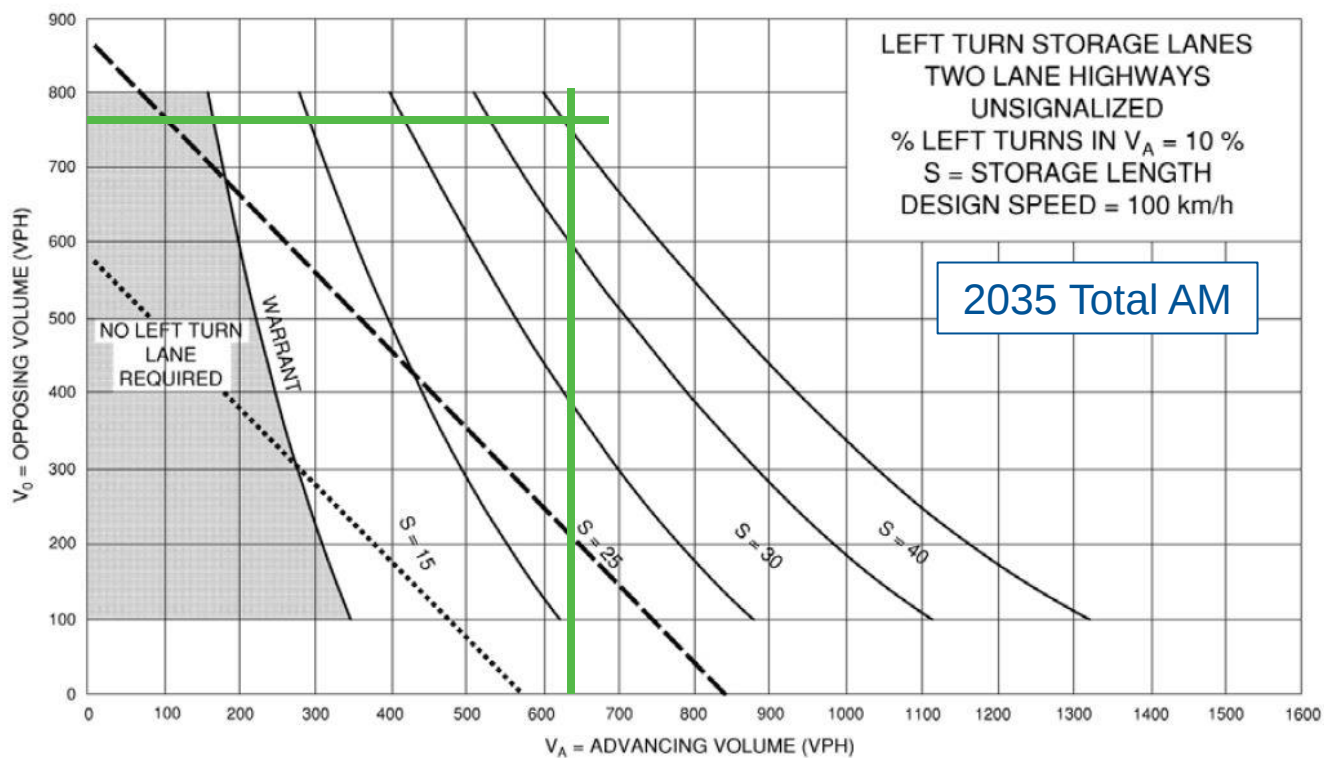
Based on these criteria, an eastbound left-turn lane with 40 metres of storage is warranted on Hamilton Road at the proposed driveway under 2035 total traffic conditions.

The eastbound left-turn lane at the Site Access could be implemented as a back-to-back left-turn arrangement with the existing westbound left-turn lane at Venture Gate, and both having the same storage length of 45 metres as the existing WBLT lane at Venture Gate.

Figure 4.3 contains the warrant nomographs.

⁴ MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, June 2017.





4.4.2 Westbound Right-Turn Lane

MTO Geometric Design Standards for Ontario Highways⁵ notes that right-turn lanes or tapers may be considered when right-turn volumes create a hazard or reduces capacity at an intersection or when the volume approaches the channelization warrant threshold of 60 vehicles per hour (vph).

- The westbound right-turn volume at the site access intersection is forecast to reach 114 vph during the AM peak hour and 128 vph during the PM peak hours under total traffic conditions. Providing WBRT lane is also noted to improve intersection operations and facilitate westbound through traffic movement on Hamilton Road. It would be appropriate to construct a westbound right-turn lane be constructed at the time of the proposed development. The added WBRT lane could be part of the planned future widening of Hamilton Road to a four-lane cross-section.

⁵ Ontario Ministry of Transportation, *Geometric Design Standards for Ontario Highways*, (Toronto: Queen's Printer for Ontario, 1985).



5 Transportation Demand Management

Transportation Demand Management (TDM) refers to ways of making the capacity of roads more efficient by reducing vehicle demand. TDM approaches consider how people's choices of travel mode are affected by land use patterns, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel. Various TDM strategies are used to influence those factors so that the alternatives are more competitive with single-occupancy travel and potentially reduce reliance on motor vehicles.

The City of London requires TIA submissions to include a suitable travel demand management plan with reasonable measures to facilitate reduced automobile reliance and promote transit, cycling and walking for trips to and from the site. This requirement is consistent with the goal established by the 2030 Transportation Master Plan to achieve a mode share target of 35% by 2030⁶.

Potential TDM measures appropriate for the proposed development include the following:

5.1 Walking

The pedestrian accessibility of a development is essential in helping to ensure that those that can walk, have access to accessible pedestrian connections.

There are currently no sidewalks fronting the subject site on Hamilton Road and Veterans Memorial Parkway. The nearest sidewalk is provided on the west side of Venture Gate. The nearest signalized intersection at Veterans Memorial Parkway and Hamilton Road operates with crosswalks and pedestrian phases on all approaches.

Proper pedestrian connections from the surrounding community to the development should be available to ensure safety and to enhance the experience of those that choose to walk. Additionally, the site design should consider internal walkways to facilitate active transportation and future transit connectivity.

⁶ City of London, *2030 Transportation Master Plan: Smart Moves*, January 2013.



5.2 Cycling

To promote cycling to/from the development, the City of London Zoning By-law Z.-1⁷ indicates the following minimum bicycle requirements:

- ▶ Retail Store (all sizes):
 - 3 short-term spaces plus 0.3 spaces for each 100 m² GFA (12 spaces).
- ▶ Restaurant:
 - 3 short-term spaces plus 0.3 spaces for each 100 m² GFA (5 spaces).
- ▶ Office (all types except medical/dental):
 - 3 short-term spaces plus 0.2 spaces for each 100 m² GFA (10 spaces).
- ▶ Warehouse Establishment:
 - 3 short-term spaces plus 0.1 spaces for each 100 m² GFA (18 spaces).

Based on the above, a minimum of 45 short-term bicycle parking spaces are required under the City's Zoning By-law. It is noted that the City's Zoning By-law does not provide a rate for banks. Bicycle parking should be provided in accordance with bicycle parking requirements.

The Zoning By-law defines long-term bicycle parking as "parking that is indoors in an accessible, secure, and weather protected area", whereas short-term bicycle parking "may include outdoor spaces".

5.3 Transit

The availability of convenient and desirable transit options can reduce the number of person automobile trips. As discussed in **Section 2.2**, London Transit currently operates Route 38 within the study area. The closest stop (Stop # 2959) is located on the west side of Venture Gate, approximately 350 metres from the subject site.

5.4 Wayfinding and Travel Planning

Increasing awareness of sustainable transportation opportunities for employees of the development should be considered.

⁷ City of London Zoning By-Law Z.-1, Section 4.19.



Providing a welcome package that outlines the available active transportation options can be helpful to encourage employees to educate themselves on the support for alternative modes near the subject site. Posting real-time transit and active transportation information in common areas can further support this education.



6 Conclusions and Recommendations

6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- ▶ **Existing Traffic Conditions:** All study area intersections are currently operating at acceptable levels of service.
- ▶ **Development Trip Generation:** The development is forecast to generate 263 AM peak hour trips and 339 PM peak hour trips.
- ▶ **2035 Background Traffic Conditions:** All study area intersections are forecast to operate within acceptable levels of service, except for the following critical movements:

Veterans Memorial Parkway and Hamilton Road

- The eastbound left-turn movement is forecast to operate with LOS E and F during the AM and PM peak hours, respectively, as well as a v/c ratio greater than 0.90 during both peak hours; and
- The southbound through movement is forecast to operate with LOS E and a v/c ratio greater than 0.90 during the PM peak hour.
- ▶ **2035 Total Traffic Conditions:** All study area intersections are forecast to operate similar to background traffic conditions with the addition of the following critical movements:

Veterans Memorial Parkway and Hamilton Road

- The eastbound left-turn movement is forecast to operate with 95th percentile queues exceeding the available storage of 95 metres during the AM and PM peak hours.

Hamilton Road and Site Access

- The southbound left-turn movement is forecast to operate with LOS F and a v/c ratio greater than 0.90 during the PM peak hour.
- ▶ **Site Access (North-South Road, Street B):**
 - Left-Turn Lanes: An eastbound left-turn lane with 40 metres of storage is warranted on Hamilton Road at the proposed site access under total traffic conditions. The required eastbound left-turn lane could be implemented as a back-to-back left-turn arrangement with the existing westbound left-turn lane at Venture Gate, and both having the same storage length of 45 metres as the existing WBLT lane at Venture Gate.



- **Right-Turn Lanes:** A westbound right-turn lane should be considered at the site access intersection as the westbound right-turn volumes under total traffic conditions are forecast to exceed the warrant threshold of 60 vph. The added lane could be part of the planned future widening of Hamilton Road to a four-lane cross-section.
- ▶ **Transportation Demand Management:** The following TDM measures should be considered at the subject development:
 - Site design to include internal walkways to facilitate active transportation and transit access;
 - Bicycle parking in accordance with the City's Zoning By-Law; and
 - Transit and active transportation information provided in a welcome package to new employees and/or posted in central locations on-site.

6.2 Recommendations

Based on the findings of this study, it is recommended that the subject subdivision be considered for approval as proposed, with the following turning-lane improvements:

- ▶ An eastbound left-turn lane with 40 metres of storage on Hamilton Road at the Site Access; and
- ▶ A westbound right-turn lane on Hamilton Road at the Site Access.



Appendix A

Pre-Study Consultation



Appendix B

Existing Traffic Data



Appendix C

Existing Traffic Operations Reports



Appendix D

2035 Background Traffic Operations Reports



Appendix E

2035 Total Traffic Operations Reports

