

**1105 WELLINGTON ROAD
LONDON, ON**

**WHITE OAKS APARTMENTS
HIGH-RISE DEVELOPMENT**

TRAFFIC IMPACT STUDY



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INTRODUCTION AND BACKGROUND

A high-rise residential development is proposed for lands situated at 1105 Wellington Road, in London, Ontario; an existing parking garage (which is not currently in use) will be redeveloped to accommodate the proposed high-rise building. As noted on Figure 1, the site is in the northwest quadrant of the White Oaks Mall property, southwest of the intersection of Bradley Avenue at Wellington Road. Bradley Avenue and Wellington Road are part of the arterial grid system in London and the principal means of external access to and from the area. Wellington Road is a north / south arterial roadway which runs south from the centre of London to St. Thomas. Bradley Avenue is an east / west arterial roadway that runs through the City of London, from White Oak Road to east of Veterans Memorial Parkway. Jalna Boulevard is a circular collector road between Wellington Road and White Oak Road; it crosses Bradley Avenue at two locations. Montgomery Road runs south from Southdale Road East to Bradley Avenue, providing “back door” access to numerous businesses facing Wellington Road.

Figure 2 defines the study area. Bradley Avenue is signal controlled at its intersections with Jalna Boulevard, Montgomery Road / Site Access, and Wellington Road. The right-in / right-out tee intersection of the site access at Wellington Road (at the north end of the property) is stop controlled on the eastbound approach. In consideration of the proposed high-rise location, it is anticipated that the access at Montgomery Road and the northerly right-in / right-out access at Wellington Road will be the primary means of access to and from the development (based on the observed “path of least resistance”). No new site accesses will be introduced as part of the proposed intensification project.

As illustrated on Figure 3, the proposed residential development is comprised of a total of 568 residential units (accommodated within a building complex with six- and eight-storey podiums and 30- and 32-floor towers); the footprint of the proposed building will replace the existing parking garage. A total of 734 residential parking spaces will be provided on Levels 1 to 6 of the tower, and 141 commercial parking spaces will be provided in a lower parking level.

Although the proposed development is residential in nature, since the proposed high-rise is located on a commercial property, the road authority requested that the Saturday peak hour scenario be evaluated as well. All applicable correspondence with the City of London (which was referenced in determining the scope of work for this report) is provided in Appendix A.

TRAFFIC DATA COLLECTION

As provided in Appendix B, weekday and weekend turning movement counts were collected by RC Spencer Associates Inc. on 15 and 16 December 2023 for the intersections of:

- Jalna Boulevard at Bradley Avenue (signal controlled);
- Montgomery Road / Site Access at Bradley Avenue (signal controlled); and
- Bradley Avenue at Wellington Road (signal controlled);

Weekday turning movement counts were also provided by the City of London. However, new weekday traffic data was collected alongside the weekend counts; the City’s data was only referenced for comparative purposes.

METHODOLOGY

These counts provided the basis for analyzing area traffic operations in accordance with industry-standard traffic operations analysis. The software package utilized for the analysis (Synchro 11) calculates various parameters of intersection performance, such as level of service (LOS), intersection capacity utilization (ICU), control delay, and queue lengths on individual approaches. Synchro 11 outputs reference the Highway Capacity Manual (HCM) 6th Edition methodology.

Signalized level of service results are reported based on the following industry standard:

Level of Service	Average Control Delay (sec/veh)	General Description (Signalized Intersections)
A	≤10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable flow (acceptable delays)
D	>35 - 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 - 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

Unsignalized level of service results are reported based on the following industry standard:

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

TRIP GENERATION AND DISTRIBUTION

Trip generation for the proposed development was estimated from the 11th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The dataset's average rate was used instead of the fitted curve equation because the fitted curve equation does not pass through the origin. ITE Land Use Code 222 (High-Rise Multifamily Housing) is the most appropriate and conservative land use code for the subject development proposal:

- Land Use Code 222 (residential) provides the following average trip generation rates:
 - Weekday Peak Hours:
 - AM Peak Hour: 0.27 trips per unit, with 34% entering and 66% exiting;
 - PM Peak Hour: 0.32 trips per unit, with 56% entering and 44% exiting;
 - Saturday Peak Hour: 0.36 trips per unit, with 57% entering and 43% exiting.

The details of the trip generation analysis are contained in Appendix C; separate estimates were developed for AM, PM, and Saturday peak hours. The total trips generated by the proposed development are estimated to be:

- Weekday AM Peak Hour: 52 entering and 101 exiting;
- Weekday PM Peak Hour: 102 entering and 80 exiting;
- Saturday Peak Hour: 117 entering and 87 exiting.

The City of London requested that no reductions be considered for internal capture; however, due to the nature of the commercial developments on the site (the availability of shopping options, restaurants, and even medical treatment options), it is conceivable that a reduction could be realized. Furthermore, the City requested that 20% of all site generated trips be attributed to a non-auto mode (given the location of the proposed development and its accessibility to active transportation facilities and transit stops). The City of London is in the process of developing their BRT (Bus Rapid Transit) program with a north / south route and an east / west route. The City's goal is to see 20% choosing this method of travel by the year 2030. The north / south route utilizes Richmond Street / Wellington Road and will extend south to the intersection of Bradley Avenue at Wellington Road; sidewalks are already provided within the area. Therefore, assuming a 20% modal split, it is estimated that the proposed development will generate the following peak hour auto trips:

- Weekday AM Peak Hour: 42 entering and 80 exiting;
- Weekday PM Peak Hour: 82 entering and 64 exiting;
- Saturday Peak Hour: 94 entering and 69 exiting.

The site generated auto traffic was predominantly distributed to and from Bradley Avenue, with some southbound trips utilizing the existing (northerly) right-in / right-out access at Wellington Road; it is highly unlikely that traffic leaving the proposed redevelopment site will wind through the on-site parking area to utilize the southerly site accesses to Jalna Boulevard or Wellington Road. The distribution of turning movements at each intersection was based on the origin / destination of existing traffic volumes within the study area, as taken from the turning movement counts collected at the intersection of Bradley Avenue at Wellington Road.

The resulting site generated turning movements are illustrated on Figure 4, and the percentages attributed to and from each cardinal direction are provided in the table below:

Table 1: Trip Distribution

Origin / Destination	AM Percentage		PM Percentage		Saturday Percentage	
	From	To	From	To	From	To
East (Bradley Avenue)	18	21	23	18	20	17
West (Bradley Avenue)	24	18	20	24	19	21
North (Wellington Road)	29	32	31	27	33	28
South (Wellington Road)	29	29	26	31	28	34

CAPACITY AND LEVEL OF SERVICE ANALYSIS

Detailed Synchro 11 analysis was carried out with respect to the following traffic scenarios:

- Existing Traffic;
- Background Traffic 2028;
- Total Traffic 2028 (Background Traffic 2028 + Site Generated Traffic);
- Background Traffic 2033; and
- Total Traffic 2033 (Background Traffic 2033 + Site Generated Traffic).

To be conservative, the analysis was carried out assuming full build-out conditions for the 2028 and 2033 horizon years. As confirmed with City’s transportation staff in the submitted Terms of Reference, traffic was increased by 1.5% per year, compounded annually, for the 2028 and 2033 horizon forecasts.

Figures 5 to 9 summarize total traffic estimates that result from the addition of site generated traffic and the 2028 and 2033 horizon year forecasts for background traffic within the study area. The effect of adding site generated traffic to horizon traffic volumes at each specific intersection can be found in Appendix D, and the resulting Synchro 11 simulation reports are provided in Appendix E; existing signal timings were provided by the City of London.

To quantify the effect of traffic growth on area intersections and to assess the need for geometric and / or traffic control improvements, the Synchro results were summarized below:

Jalna Boulevard at Bradley Avenue

Jalna Boulevard at Bradley Avenue is a signalized intersection; the northbound and southbound approaches (Jalna Boulevard) accommodate dedicated left turn lanes and through / right turn lanes on each approach. Bradley Avenue is a divided roadway, with each approach consisting of a dedicated left turn lane, a through lane, and a through / right turn lane.

As observed from the below Tables 2 to 6, the intersection is anticipated to perform well on the eastbound and westbound approaches. However, the northbound and southbound approaches experience delays for left turns; these left turns operate at a LOS E or LOS F in all existing and horizon AM and PM peak hours. The southbound left turn also experiences a LOS F during all Saturday peak hour scenarios.

The level of service results and control delay worsen somewhat for northbound and southbound left turns; however, the results suggest that this is exclusively the result of future background traffic growth. Levels of service are consistent between the background traffic and total traffic in each horizon year. Even though the critical southbound approach experiences significant delays within the studied horizon years, the queue lengths for this approach should not exceed 13 vehicle lengths in the most critical total traffic peak hour horizon scenarios.

Table 2: Overall Signalized Intersection Level of Service – Jalna Boulevard at Bradley Avenue

Scenario	Jalna Boulevard at Bradley Avenue		
	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Existing Traffic	C	C	C
Background Traffic 2028	C	D	C
Total Traffic 2028	C	D	C
Background Traffic 2033	C	D	D
Total Traffic 2033	C	D	D

Table 3a: Level of Service by Approach – Jalna Boulevard at Bradley Avenue (AM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	AM Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	A	A	A	A	A	A	E	C	C	E	D	D
Background Traffic 2028	A	A	A	B	A	A	F	C	C	E	D	D
Total Traffic 2028	A	A	A	B	A	A	F	C	C	E	D	D
Background Traffic 2033	A	A	A	B	A	A	F	C	C	E	D	D
Total Traffic 2033	A	A	A	B	A	A	F	C	C	E	D	D

Table 3b: Level of Service by Approach – Jalna Boulevard at Bradley Avenue (PM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	PM Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	B	B	B	C	B	B	D	E	E	F	C	C
Background Traffic 2028	B	B	B	C	B	B	E	E	E	F	C	C
Total Traffic 2028	B	B	B	C	B	B	E	E	E	F	C	C
Background Traffic 2033	B	B	B	D	B	B	E	F	F	F	C	C
Total Traffic 2033	B	B	B	D	B	B	E	F	F	F	C	C

Table 3c: Level of Service by Approach – Jalna Boulevard at Bradley Avenue (Saturday Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	Saturday Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	A	B	B	B	B	B	D	D	D	F	C	C
Background Traffic 2028	B	B	B	C	B	B	D	D	D	F	C	C
Total Traffic 2028	B	B	B	C	B	B	D	D	D	F	C	C
Background Traffic 2033	B	B	B	C	B	B	D	D	D	F	C	C
Total Traffic 2033	B	B	B	C	B	B	D	D	D	F	C	C

Table 4a: Control Delay by Approach – Jalna Boulevard at Bradley Avenue (AM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	AM Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	7.9	7.3	7.3	9.4	6.3	6.3	76.9	32.6	32.6	55.4	39.7	39.7
Background Traffic 2028	8.5	8.1	8.1	10.6	6.7	6.7	80.5	33.2	33.2	56.2	39.1	39.1
Total Traffic 2028	8.6	8.2	8.2	11.4	7.5	7.5	80.5	33.2	33.2	56.2	39.1	39.1
Background Traffic 2033	9.4	9.1	9.1	12.7	7.4	7.4	82.9	33.1	33.1	56.3	38.1	38.1
Total Traffic 2033	9.4	9.2	9.2	13.3	8.1	8.1	82.9	33.1	33.1	56.3	38.1	38.1

Table 4b: Control Delay by Approach – Jalna Boulevard at Bradley Avenue (PM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	PM Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	12.1	11.3	11.3	23.0	12.5	12.5	53.1	58.2	58.2	311.8	31.5	31.5
Background Traffic 2028	13.3	11.8	11.8	29.1	12.0	12.0	60.5	70.4	70.4	528.1	32.5	32.5
Total Traffic 2028	13.6	12.0	12.0	30.7	12.0	12.0	60.5	70.4	70.4	528.1	32.5	32.5
Background Traffic 2033	15.2	12.4	12.4	43.0	11.3	11.3	73.3	88.4	88.4	596.3	33.5	33.5
Total Traffic 2033	15.5	12.5	12.5	47.7	11.3	11.3	73.3	88.4	88.4	596.3	33.5	33.5

Table 4c: Control Delay by Approach – Jalna Boulevard at Bradley Avenue (Saturday Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	Saturday Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	9.9	10.2	10.2	19.2	10.5	10.5	46.2	48.5	48.5	154.9	29.3	29.3
Background Traffic 2028	10.5	11.4	11.4	24.5	11.1	11.1	45.3	47.5	47.5	155.0	29.5	29.5
Total Traffic 2028	10.5	11.6	11.6	25.7	10.7	10.7	45.3	47.5	47.5	155.0	29.5	29.5
Background Traffic 2033	11.0	11.9	11.9	32.7	10.4	10.4	48.7	54.2	54.2	321.3	30.2	30.2
Total Traffic 2033	11.1	12.1	12.1	35.5	10.7	10.7	48.7	54.2	54.2	321.3	30.2	30.2

Table 5a: Queue Length by Approach – Jalna Boulevard at Bradley Avenue (AM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	AM Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	8.2	44.2	44.2	13.3	25.8	25.8	31.8	43.6	43.6	24.4	30.8	30.8
Background Traffic 2028	8.6	48.5	48.5	14.3	27.8	27.8	34.2	47.6	47.6	37.8	28.6	28.6
Total Traffic 2028	8.7	49.6	49.6	15.5	31.3	31.3	34.2	47.6	47.6	37.8	28.6	28.6
Background Traffic 2033	8.4	43.1	43.1	10.5	20.6	20.6	51.0	36.6	36.6	27.4	34.3	34.3
Total Traffic 2033	9.3	54.7	54.7	16.8	33.7	33.7	37.2	52.5	52.5	41.3	30.8	30.8

Table 5b: Queue Length by Approach – Jalna Boulevard at Bradley Avenue (PM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	PM Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	9.9	67.9	67.9	43.2	45.6	45.6	59.7	156.1	156.1	78.6	49.2	49.2
Background Traffic 2028	10.9	75.1	75.1	46.4	48.7	48.7	65.6	175.5	175.5	88.2	53.3	53.3
Total Traffic 2028	9.6	77.1	77.1	46.7	54.8	54.8	65.6	175.5	175.5	88.2	53.3	53.3
Background Traffic 2033	12.1	83.7	83.7	78.5	57.6	57.6	77.4	196.5	196.5	94.4	57.6	57.6
Total Traffic 2033	12.2	85.8	85.8	80.3	63.2	63.2	77.4	196.5	196.5	94.4	57.6	57.6

Table 5c: Queue Length by Approach – Jalna Boulevard at Bradley Avenue (Saturday Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	8.5	56.0	56.0	40.0	37.1	37.1	51.8	100.1	100.1	59.5	40.3	40.3
Background Traffic 2028	9.1	61.6	61.6	42.0	39.3	39.3	55.8	109.7	109.7	65.4	43.6	43.6
Total Traffic 2028	9.2	63.6	63.6	43.1	41.9	41.9	55.8	109.7	109.7	65.4	43.6	43.6
Background Traffic 2033	10.0	68.0	68.0	45.5	42.4	42.4	61.5	131.5	131.5	77.4	47.0	47.0
Total Traffic 2033	10.0	70.1	70.1	45.9	43.4	43.4	61.5	131.5	131.5	77.4	47.0	47.0

Table 6a: V/C Ratio by Approach – Jalna Boulevard at Bradley Avenue (AM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	AM Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.12	0.31	0.31	0.24	0.17	0.17	0.85	0.52	0.52	0.59	0.43	0.43
Bkgd. Traffic 2028	0.14	0.34	0.34	0.28	0.19	0.19	0.88	0.54	0.54	0.62	0.44	0.44
Total Traffic 2028	0.14	0.34	0.34	0.28	0.20	0.20	0.88	0.54	0.54	0.62	0.44	0.44
Bkgd. Traffic 2033	0.16	0.37	0.37	0.34	0.21	0.21	0.91	0.54	0.54	0.64	0.44	0.44
Total Traffic 2033	0.17	0.38	0.38	0.34	0.22	0.22	0.91	0.54	0.54	0.64	0.44	0.44

Table 6b: V/C Ratio by Approach – Jalna Boulevard at Bradley Avenue (PM Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	PM Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.25	0.44	0.44	0.57	0.40	0.40	0.69	0.90	0.90	1.49	0.36	0.36
Bkgd. Traffic 2028	0.30	0.48	0.48	0.68	0.43	0.43	0.78	0.96	0.96	2.00	0.39	0.39
Total Traffic 2028	0.31	0.48	0.48	0.70	0.44	0.44	0.78	0.96	0.96	2.00	0.39	0.39
Bkgd. Traffic 2033	0.36	0.51	0.51	0.83	0.46	0.46	0.87	1.04	1.04	2.16	0.42	0.42
Total Traffic 2033	0.37	0.52	0.52	0.85	0.47	0.47	0.87	1.04	1.04	2.16	0.42	0.42

Table 6c: V/C Ratio by Approach – Jalna Boulevard at Bradley Avenue (Saturday Peak Hour)

Scenario	Jalna Boulevard at Bradley Avenue											
	Saturday Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.14	0.40	0.40	0.49	0.29	0.29	0.55	0.81	0.81	1.08	0.32	0.32
Bkgd. Traffic 2028	0.17	0.44	0.44	0.61	0.33	0.33	0.55	0.81	0.81	1.09	0.32	0.32
Total Traffic 2028	0.17	0.45	0.45	0.63	0.34	0.34	0.55	0.81	0.81	1.09	0.32	0.32
Bkgd. Traffic 2033	0.20	0.48	0.48	0.73	0.35	0.35	0.62	0.87	0.87	1.53	0.34	0.34
Total Traffic 2033	0.20	0.49	0.49	0.75	0.36	0.36	0.62	0.87	0.87	1.53	0.34	0.34

Currently, there are no protected left turns phases, but the results suggest that signal timings should be reevaluated to determine if dedicated left turn phases would benefit traffic operations.

Montgomery Road / Site Access at Bradley Avenue

Montgomery Road at Bradley Avenue is a signalized intersection. The northbound approach (the site access) is a divided roadway which accommodates a dedicated left turn lane and a through / right turn lane. The southbound approach (Montgomery Road) is an undivided roadway which accommodates a dedicated left turn lane and a through / right turn lane. Bradley Avenue is a divided roadway, with each approach consisting of a dedicated left turn lane, a through lane, and a through / right turn lane.

As observed from the below Tables 7 to 11, the intersection is currently operating at satisfactory levels of service in all peak hours; however, the northbound and southbound approaches experience delays for left turns. None of the site generated traffic is expected to perform a southbound left turn; however, there will be additional northbound left turns. In the critical Saturday peak hour, northbound and southbound left turns exhibit a LOS F in all scenarios. Most northbound queueing can be stored on-site without any adverse impacts to internal site circulation; however, the 95th percentile queue length may exceed the available storage by approximately two vehicles during the horizon PM peak hours.

Table 7: Overall Signalized Intersection Level of Service – Montgomery Rd / Site Access at Bradley Ave

Scenario	Montgomery Rd / Site Access at Bradley Ave		
	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Existing Traffic	B	C	D
Background Traffic 2028	B	C	D
Total Traffic 2028	B	C	D
Background Traffic 2033	B	C	D
Total Traffic 2033	B	C	E

Table 8a: Level of Service by Approach – Montgomery Rd / Site Access at Bradley Ave (AM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	AM Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	A	A	A	A	A	A	D	D	D	D	D	D
Background Traffic 2028	A	A	A	A	A	A	D	D	D	D	D	D
Total Traffic 2028	A	A	A	A	A	A	D	D	D	D	D	D
Background Traffic 2033	A	A	A	A	A	A	D	D	D	D	D	D
Total Traffic 2033	A	A	A	A	A	A	D	D	D	D	D	D

Table 8b: Level of Service by Approach – Montgomery Rd / Site Access at Bradley Ave (PM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	PM Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	C	B	B	C	A	A	F	D	D	D	D	D
Background Traffic 2028	C	C	C	C	B	B	F	D	D	D	D	D
Total Traffic 2028	C	C	C	D	B	B	F	D	D	D	C	C
Background Traffic 2033	D	C	C	D	B	B	F	D	D	D	C	C
Total Traffic 2033	D	C	C	E	B	B	F	D	D	D	C	C

Table 8c: Level of Service by Approach – Montgomery Rd / Site Access at Bradley Ave (Sat. Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	Saturday Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	C	C	C	D	A	A	F	D	D	F	D	D
Background Traffic 2028	D	C	C	D	B	B	F	D	D	F	D	D
Total Traffic 2028	D	C	C	F	B	B	F	D	D	F	D	D
Background Traffic 2033	D	C	C	F	B	B	F	D	D	F	D	D
Total Traffic 2033	D	C	C	F	B	B	F	D	D	F	D	D

Table 9a: Control Delay by Approach – Montgomery Rd / Site Access at Bradley Ave (AM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	AM Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	4.8	4.4	4.4	1.9	1.8	1.8	56.1	47.1	47.1	49.6	41.2	41.2
Background Traffic 2028	5.0	4.9	4.9	2.2	1.9	1.9	55.3	48.5	48.5	49.4	41.6	41.6
Total Traffic 2028	6.3	6.1	6.1	4.4	2.5	2.5	54.0	44.1	44.1	50.4	37.4	37.4
Background Traffic 2033	5.3	5.2	5.2	2.5	2.1	2.1	54.8	50.1	50.1	48.8	41.6	41.6
Total Traffic 2033	6.8	6.7	6.7	5.8	2.7	2.7	54.7	45.9	45.9	49.0	37.0	37.0

Table 9b: Control Delay by Approach – Montgomery Rd / Site Access at Bradley Ave (PM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	PM Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	23.2	17.1	17.1	22.8	8.5	8.5	146.2	48.3	48.3	55.4	38.1	38.1
Background Traffic 2028	29.8	20.7	20.7	31.0	10.6	10.6	136.4	45.2	45.2	51.9	36.4	36.4
Total Traffic 2028	33.9	24.0	24.0	42.1	11.8	11.8	115.4	44.1	44.1	50.9	33.8	33.8
Background Traffic 2033	42.2	25.7	25.7	38.8	12.6	12.6	110.2	41.4	41.4	45.3	34.3	34.3
Total Traffic 2033	48.9	28.9	28.9	59.6	13.9	13.9	99.5	40.9	40.9	45.8	32.5	32.5

Table 9c: Control Delay by Approach – Montgomery Rd / Site Access at Bradley Ave (Sat. Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	Saturday Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	28.9	20.0	20.0	38.8	8.8	8.8	111.4	54.1	54.1	191.8	42.9	42.9
Background Traffic 2028	38.2	23.7	23.7	51.2	10.1	10.1	114.7	52.0	52.0	192.8	41.2	41.2
Total Traffic 2028	38.9	24.3	24.3	147.9	11.9	11.9	74.6	46.3	46.3	123.2	36.3	36.3
Background Traffic 2033	46.7	25.2	25.2	132.1	11.9	11.9	92.9	47.3	47.3	148.2	38.2	38.2
Total Traffic 2033	46.4	25.2	25.2	212.4	12.3	12.3	115.7	53.8	53.8	276.9	38.2	38.2

Table 10a: Queue Length by Approach – Montgomery Rd / Site Access at Bradley Ave (AM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	AM Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	4.8	25.2	25.2	3.5	10.5	10.5	17.5	23.2	23.2	6.5	21.7	21.7
Background Traffic 2028	5.2	27.0	27.0	3.9	10.5	10.5	17.8	25.0	25.0	6.6	23.4	23.4
Total Traffic 2028	5.8	40.4	40.4	5.8	15.6	15.6	22.4	28.0	28.0	6.5	22.4	22.4
Background Traffic 2033	5.4	31.5	31.5	4.1	10.3	10.3	18.8	27.2	27.2	6.6	24.9	24.9
Total Traffic 2033	6.4	46.9	46.9	6.3	18.3	18.3	23.3	30.8	30.8	6.4	23.6	23.6

Table 10b: Queue Length by Approach – Montgomery Rd / Site Access at Bradley Ave (PM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	PM Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	50.6	94.7	94.7	44.2	57.8	57.8	73.8	87.3	87.3	27.6	82.3	82.3
Background Traffic 2028	54.3	100.6	100.6	48.0	62.3	62.3	81.6	95.5	95.5	30.1	90.9	90.9
Total Traffic 2028	54.4	102.5	102.5	65.7	61.4	61.4	87.8	103.7	103.7	30.8	90.9	90.9
Background Traffic 2033	63.1	107.5	107.5	53.2	63.7	63.7	88.0	105.0	105.0	31.2	100.8	100.8
Total Traffic 2033	64.2	109.6	109.6	71.3	61.7	61.7	95.3	113.7	113.7	32.1	100.8	100.8

Table 10c: Queue Length by Approach – Montgomery Rd / Site Access at Bradley Ave (Sat. Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	57.5	101.8	101.8	96.3	41.0	41.0	64.6	123.3	123.3	45.8	91.8	91.8
Background Traffic 2028	61.6	110.9	110.9	103.4	41.3	41.3	72.6	136.1	136.1	50.5	100.5	100.5
Total Traffic 2028	61.9	97.7	97.7	137.0	41.7	41.7	76.5	159.8	159.8	48.5	100.5	100.5
Background Traffic 2033	65.0	115.1	115.1	127.3	45.7	45.7	78.8	162.4	162.4	53.5	109.7	109.7
Total Traffic 2033	65.6	103.7	103.7	157.9	47.2	47.2	88.6	181.6	181.6	60.4	109.7	109.7

Table 11a: V/C Ratio by Approach – Montgomery Rd / Site Access at Bradley Ave (AM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	AM Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.07	0.26	0.26	0.13	0.17	0.17	0.33	0.60	0.60	0.11	0.38	0.38
Bkgd. Traffic 2028	0.08	0.28	0.28	0.15	0.18	0.18	0.33	0.62	0.62	0.12	0.40	0.40
Total Traffic 2028	0.08	0.30	0.30	0.23	0.19	0.19	0.39	0.74	0.74	0.19	0.34	0.34
Bkgd. Traffic 2033	0.09	0.31	0.31	0.17	0.20	0.20	0.34	0.65	0.65	0.13	0.41	0.41
Total Traffic 2033	0.09	0.33	0.33	0.26	0.20	0.20	0.39	0.75	0.75	0.18	0.34	0.34

Table 11b: V/C Ratio by Approach – Montgomery Rd / Site Access at Bradley Ave (PM Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	PM Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.49	0.53	0.53	0.57	0.38	0.38	1.10	0.77	0.77	0.57	0.69	0.69
Bkgd. Traffic 2028	0.60	0.61	0.61	0.68	0.43	0.43	1.08	0.76	0.76	0.56	0.68	0.68
Total Traffic 2028	0.65	0.68	0.68	0.84	0.44	0.44	1.03	0.77	0.77	0.56	0.65	0.65
Bkgd. Traffic 2033	0.78	0.74	0.74	0.81	0.49	0.49	1.01	0.73	0.73	0.50	0.66	0.66
Total Traffic 2033	0.84	0.81	0.81	1.00	0.50	0.50	0.98	0.74	0.74	0.51	0.63	0.63

Table 11c: V/C Ratio by Approach – Montgomery Rd / Site Access at Bradley Ave (Saturday Peak Hour)

Scenario	Montgomery Rd / Site Access at Bradley Ave											
	Saturday Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.56	0.53	0.53	0.80	0.31	0.31	0.98	0.87	0.87	1.18	0.71	0.71
Bkgd. Traffic 2028	0.70	0.64	0.64	0.90	0.35	0.35	1.01	0.87	0.87	1.19	0.70	0.70
Total Traffic 2028	0.71	0.66	0.66	1.23	0.37	0.37	0.86	0.84	0.84	0.98	0.63	0.63
Bkgd. Traffic 2033	0.81	0.70	0.70	1.19	0.40	0.40	0.94	0.84	0.84	1.07	0.68	0.68
Total Traffic 2033	0.81	0.71	0.71	1.40	0.40	0.40	1.03	0.90	0.90	1.41	0.68	0.68

Currently, only the westbound approach accommodates a protected left turn phase (for traffic accessing the mall). Remedial action, such as optimization of signal timings, is the most practical course of action for this intersection; however, in the existing Saturday peak hour, the westbound left turn volumes exceed the MTO’s recommended threshold (of 300 vehicles / hour) for implementation of a fully protected double left turn lane. Therefore, since the proposed infilling development is expected to add an additional 60 vehicles / hour to the existing Saturday peak hour volume of 339 left turns, it is recommended that the City of London and the developer immediately collaborate to implement a westbound (protected) double left turn lane at the subject signalized intersection.

Bradley Avenue at Wellington Road

The four-legged signalized intersection of Bradley Avenue at Wellington Road is a major intersection of two arterial roads. The eastbound approach of Bradley Avenue is comprised of a dedicated left turn lane, a through lane, and a through / right turn lane, while the westbound approach is comprised of a dedicated left turn lane, two through lanes, and a channelized right turn lane. The northbound approach is comprised of a dedicated left turn lane, two through lanes, and a dedicated right turn lane, while the southbound approach provides a dedicated left turn lane, two through lanes, and a shared through / right turn lane. All legs incorporate a raised centre median.

The intersection is approaching unstable flow in the PM and Saturday peak hours; within the five-year horizon, the intersection exhibits an overall LOS F during these peak hours. However, as is evident in the below level of service results and the corresponding performance metrics reported in Tables 12 to 16, traffic generated by the proposed redevelopment does not change the operating characteristics of the intersection.

Table 12: Overall Signalized Intersection Level of Service – Bradley Avenue at Wellington Road

Scenario	Bradley Avenue at Wellington Road		
	AM Peak Hour	PM Peak Hour	Saturday Peak Hour
Existing Traffic	C	E	E
Background Traffic 2028	C	F	E
Total Traffic 2028	D	F	F
Background Traffic 2033	D	F	F
Total Traffic 2033	D	F	F

Table 13a: Level of Service by Approach – Bradley Avenue at Wellington Road (AM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	AM Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	C	D	D	E	D	A	B	C	A	B	C	C
Background Traffic 2028	C	D	D	F	D	A	B	C	A	B	C	C
Total Traffic 2028	C	D	D	F	D	A	B	C	A	B	C	C
Background Traffic 2033	C	D	D	F	D	A	B	C	A	B	C	C
Total Traffic 2033	D	D	D	F	D	A	B	C	A	B	C	C

Table 13b: Level of Service by Approach – Bradley Avenue at Wellington Road (PM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	PM Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	F	D	D	F	D	B	F	C	A	F	C	C
Background Traffic 2028	F	D	D	F	D	B	F	C	A	F	C	C
Total Traffic 2028	F	D	D	F	D	B	F	C	A	F	C	C
Background Traffic 2033	F	D	D	F	E	B	F	D	A	F	C	C
Total Traffic 2033	F	D	D	F	E	B	F	D	A	F	C	C

Table 13c: Level of Service by Approach – Bradley Avenue at Wellington Road (Saturday Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	Saturday Peak Hour – Level of Service											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	E	D	D	F	D	B	F	C	A	C	C	C
Background Traffic 2028	F	D	D	F	D	B	F	C	A	D	C	C
Total Traffic 2028	F	D	D	F	D	B	F	C	A	D	C	C
Background Traffic 2033	F	D	D	F	D	B	F	C	A	F	C	C
Total Traffic 2033	F	E	E	F	D	B	F	C	A	F	C	C

Table 14a: Control Delay by Approach – Bradley Avenue at Wellington Road (AM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	AM Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	29.2	45.9	45.9	78.4	41.5	0.4	13.5	23.5	0.1	14.3	20.5	20.5
Background Traffic 2028	29.5	45.8	45.8	105.6	40.7	0.4	14.5	24.9	0.2	15.8	21.6	21.6
Total Traffic 2028	34.7	47.3	47.3	111.0	40.5	0.4	15.2	25.2	0.2	16.0	22.0	22.0
Background Traffic 2033	31.0	47.0	47.0	145.2	40.4	0.4	15.5	26.2	0.1	17.5	22.6	22.6
Total Traffic 2033	37.3	48.3	48.3	149.8	40.1	0.4	16.5	26.5	0.1	17.9	23.1	23.1

Table 14b: Control Delay by Approach – Bradley Avenue at Wellington Road (PM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	PM Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	174.6	39.1	39.1	292.5	51.4	14.2	120.6	31.3	1.2	83.2	28.2	28.2
Background Traffic 2028	246.3	43.1	43.1	344.6	53.2	15.5	231.5	33.2	1.5	184.2	29.6	29.6
Total Traffic 2028	289.7	44.3	44.3	344.5	54.6	15.5	305.6	33.2	1.5	190.2	29.9	29.9
Background Traffic 2033	285.8	49.5	49.5	398.3	57.0	16.9	325.9	35.6	1.9	329.6	31.4	31.4
Total Traffic 2033	331.7	49.2	49.2	399.9	58.1	16.8	410.7	35.6	1.9	350.6	31.8	31.8

Table 14c: Control Delay by Approach – Bradley Avenue at Wellington Road (Saturday Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	Saturday Peak Hour – Control Delay (sec)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	79.7	41.1	41.1	383.9	44.4	14.2	128.1	28.6	4.0	28.0	28.3	28.3
Bkgd Traffic 2028	117.9	44.7	44.7	447.7	44.9	15.6	242.7	30.5	3.9	43.1	29.8	29.8
Total Traffic 2028	165.2	46.4	46.4	444.9	45.3	16.2	332.7	30.8	3.9	44.3	30.2	30.2
Bkgd Traffic 2033	175.4	53.8	53.8	509.1	45.8	17.0	327.2	32.4	3.9	86.9	31.6	31.6
Total Traffic 2033	237.8	57.5	57.5	509.1	46.8	17.7	404.7	32.4	3.9	86.9	32.1	32.1

Table 15a: Queue Length by Approach – Bradley Avenue at Wellington Road (AM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	AM Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	38.6	62.6	62.6	41.3	50.3	0.0	15.7	81.6	0.0	25.1	49.2	49.2
Background Traffic 2028	40.5	69.6	69.6	54.3	54.0	0.0	16.8	89.1	0.0	26.8	53.4	53.4
Total Traffic 2028	48.8	75.0	75.0	56.9	55.2	0.0	18.9	89.1	0.0	26.8	54.3	54.3
Background Traffic 2033	424.7	77.0	77.0	69.2	58.1	0.0	17.8	97.3	0.0	28.7	58.0	58.0
Total Traffic 2033	50.8	82.5	82.5	70.9	59.4	0.0	20.0	97.3	0.0	28.7	58.9	58.9

Table 15b: Queue Length by Approach – Bradley Avenue at Wellington Road (PM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	PM Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	94.0	80.4	80.4	136.0	110.8	16.4	90.9	126.7	0.0	58.9	103.0	103.0
Bkgd Traffic 2028	111.9	113.0	113.0	151.0	121.0	18.6	110.6	140.3	0.0	81.9	114.0	114.0
Total Traffic 2028	124.5	131.7	131.7	151.3	126.1	18.6	126.2	140.3	0.0	81.9	116.9	116.9
Bkgd Traffic 2033	123.6	146.2	146.2	165.9	141.4	21.2	123.0	155.4	0.0	103.7	126.3	126.3
Total Traffic 2033	133.0	150.0	150.0	166.6	147.4	21.2	137.2	155.4	0.0	103.7	129.7	129.7

Table 15c: Queue Length by Approach – Bradley Avenue at Wellington Road (Saturday Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	Saturday Peak Hour – 95 th Percentile Queuing (m)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	60.0	83.5	83.5	160.3	81.2	17.6	90.8	118.4	9.2	39.3	113.8	113.8
Bkgd Traffic 2028	73.9	105.0	105.0	177.3	88.2	20.1	109.9	130.4	9.4	56.3	126.3	126.3
Total Traffic 2028	97.0	126.8	126.8	177.5	91.6	20.9	127.2	130.4	9.4	56.9	130.1	130.1
Bkgd Traffic 2033	98.9	139.0	139.0	193.8	95.5	23.0	120.9	144.3	9.5	83.3	140.6	140.6
Total Traffic 2033	108.9	137.8	137.8	193.8	99.1	23.8	137.7	144.3	9.5	83.3	144.7	144.7

Table 16a: V/C Ratio by Approach – Bradley Avenue at Wellington Road (AM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	AM Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	0.53	0.82	0.82	0.92	0.46	0.09	0.23	0.43	0.04	0.32	0.32	0.32
Bkgd. Traffic 2028	0.57	0.84	0.84	1.03	0.47	0.09	0.27	0.48	0.04	0.37	0.36	0.36
Total Traffic 2028	0.67	0.86	0.86	1.04	0.48	0.09	0.32	0.48	0.04	0.38	0.37	0.37
Bkgd. Traffic 2033	0.63	0.87	0.87	1.15	0.49	0.09	0.31	0.52	0.04	0.44	0.39	0.39
Total Traffic 2033	0.73	0.89	0.89	1.17	0.49	0.09	0.37	0.53	0.04	0.45	0.40	0.40

Table 16b: V/C Ratio by Approach – Bradley Avenue at Wellington Road (PM Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	PM Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	1.25	0.87	0.87	1.54	0.83	0.32	1.12	0.70	0.10	1.02	0.67	0.67
Bkgd. Traffic 2028	1.42	0.91	0.91	1.66	0.86	0.33	1.39	0.75	0.11	1.29	0.72	0.72
Total Traffic 2028	1.53	0.91	0.91	1.66	0.88	0.33	1.57	0.75	0.11	1.31	0.73	0.73
Bkgd. Traffic 2033	1.52	0.95	0.95	1.79	0.91	0.35	1.62	0.81	0.11	1.63	0.77	0.77
Total Traffic 2033	1.63	0.95	0.95	1.79	0.92	0.34	1.81	0.81	0.11	1.68	0.79	0.79

Table 16c: V/C Ratio by Approach – Bradley Avenue at Wellington Road (Saturday Peak Hour)

Scenario	Bradley Avenue at Wellington Road											
	Saturday Peak Hour – Volume / Capacity Ratio (%)											
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Existing Traffic	1.00	0.89	0.89	1.76	0.67	0.33	1.13	0.62	0.19	0.68	0.67	0.67
Bkgd. Traffic 2028	1.12	0.94	0.94	1.90	0.70	0.34	1.42	0.68	0.21	0.82	0.72	0.72
Total Traffic 2028	1.25	0.94	0.94	1.90	0.72	0.34	1.64	0.68	0.21	0.83	0.74	0.74
Bkgd. Traffic 2033	1.27	0.98	0.98	2.04	0.74	0.36	1.62	0.73	0.22	1.02	0.78	0.78
Total Traffic 2033	1.43	1.00	1.00	2.04	0.77	0.36	1.80	0.73	0.22	1.02	0.80	0.80

The westbound left turn, a movement that is not affected by site generated traffic, experiences the most queueing (up to 193m). Remedial action, such as optimization of signal timings, is the most practical course of action for this intersection; however, within a five-year horizon, the westbound left turn volumes are expected to exceed the MTO’s recommended threshold (of 300 vehicles / hour) for implementation of a fully protected double left turn lane. Therefore, it is recommended that the City of London consider upgrading the subject signalized intersection within a five-year horizon.

Site Access at Wellington Road

The site access at Wellington Road is a right-in / right-out tee intersection with no deceleration or acceleration lanes. Wellington Road is comprised of a seven-lane cross-section; a raised median separates bidirectional traffic at the existing site access. This site access will most likely be utilized by vehicles destined to the south, as well as some vehicles originating from the north. Since this is a right-in / right-out access, there will be no conflicting cross traffic; vehicles leaving the site will take advantage of gaps in the southbound traffic stream (created by the signalized intersection at Bradley Avenue, located less than 100m to the north). Accordingly, it is not necessary to model this intersection; the levels of service will remain satisfactory due to its configuration.

SUMMARY AND CONCLUSIONS

A high-rise residential development is proposed for lands situated at 1105 Wellington Road in London, Ontario; an existing parking garage (which is not currently in use) will be redeveloped to accommodate the proposed high-rise building. The site is in the northwest quadrant of the White Oaks Mall property, southwest of the intersection of Bradley Avenue at Wellington Road.

Bradley Avenue is signal controlled at its intersections with Jalna Boulevard, Montgomery Road / Site Access, and Wellington Road. The right-in / right-out tee intersection of the site access at Wellington Road (at the north end of the property) is stop controlled on the eastbound approach. In consideration of the proposed high-rise location, it is anticipated that the access at Montgomery Road and the northerly right-in / right-out access at Wellington Road will be the primary means of access to and from the development (based on the observed “path of least resistance”). No new site accesses will be introduced as part of the proposed intensification.

The proposed residential development is comprised of a total of 568 residential units (accommodated within a building complex with six- and eight-storey podiums and 30- and 32-floor towers); the footprint of the proposed building will replace the existing parking garage. A total of 734 residential parking spaces will be provided on Levels 1 to 6 of the tower, and 141 commercial parking spaces will be provided in a lower parking level.

Upon completion of the analysis, it was concluded that:

- The signalized intersection of Jalna Boulevard at Bradley Avenue is operating at satisfactory levels of service, but the northbound and southbound left turns experience some significant delay during the critical (weekday PM and Saturday) peak hours; the traffic generated by the proposed residential infilling development does not directly impact these movements, so the City is encouraged to reevaluate the signal timings and to consider implementing dedicated northbound / southbound left turn phases;
- At the signalized intersection of Montgomery Road / Site Access at Bradley Avenue, only the westbound approach currently accommodates a protected left turn phase (for traffic accessing the mall); in the existing Saturday peak hour, the westbound left turn volumes exceed the MTO’s recommended threshold (of 300 vehicles / hour) for implementation of a fully protected double left turn lane, so the City of London and the developer should immediately collaborate to implement a westbound (protected) double left turn lane at the subject signalized intersection (because the proposed infilling development is expected to add an additional 60 vehicles / hour to the existing Saturday peak hour volume of 339 left turns);

- Since the intersection of Bradley Avenue at Wellington Road is already operating near capacity during the critical (weekday PM and Saturday) peak hours and because the westbound left turn volumes are expected to exceed the MTO's recommended threshold (of 300 vehicles / hour) for implementation of a fully protected double left turn lane within a five-year horizon, the City of London should consider upgrading the subject signalized intersection within a five-year horizon; however, since the site generated traffic does not add any westbound left turns to the subject intersection, the developer should not be responsible for the recommended geometric and traffic control improvements;
- The northerly right-in / right-out site access at Wellington Road is expected to exhibit satisfactory levels of service due to its configuration and location (100m south of the signalized intersection at Bradley Avenue); proximity to the signal will create natural gaps for eastbound traffic from the site to enter the southbound traffic stream;
- The proposed infilling redevelopment is sustainable and encourages increased use of non-auto modes of travel, particularly due to its location relative to current transit routes and the forthcoming bus rapid transit (BRT) route; its proximity to the existing mall is also expected to result in some internal capture (although no internal capture was considered within the context of this report).

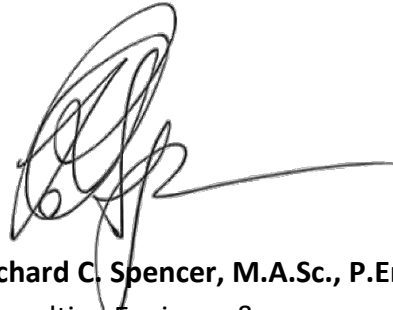
If the recommended geometric and traffic control improvements are made to area roadways and intersections, it is the engineers' opinion that the proposed redevelopment will not adversely impact area traffic operations. Since there are no specific development-driven system improvements that are the sole responsibility of the developer, it is the engineers' opinion that the City of London should review the conclusions of this report and then collaborate with the developer to immediately initiate improvements to the existing signalized site access at Bradley Avenue (opposite Montgomery Road). All geometric and / or traffic control improvements should be designed by a certified Professional Traffic Operations Engineer.

All of which is respectfully submitted,

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Figures and Appendices available upon request.