OLENDER VETERINARIAN CLINIC
4 CAMPBELL REID COURT
OTTAWA, ONTARIO

TRAFFIC ASSESSMENT

August 12, 2022

Prepared for:

Dr. Olender

735 Traffic Assessment_2.doc

D. J. Halpenny & Associates Ltd.
Consulting Transportation Engineers
P.O. Box 774, Manotick, ON K4M 1A7 - Tel (613) 692-8662 - David@DJHalpenny.com

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TRAFFIC ASSESSMENT

1. INTRODUCTION

The Olender Veterinarian Clinic proposes a new clinic located at the northeast corner of the intersection of March Road and Dunrobin Road. The property has a municipal address of 4 Campbell Reid Court and is approximately 7,917 m^2 in size. The property is zoned "RU" (Rural Countryside Zone) which will support the development. The site is currently occupied by one single-family home which has been demolished due to fire damage, and replaced by another single-family home with access onto Campbell Reid Court. The lot has a 15.7 m frontage onto Campbell Reid Court which is sufficient for the existing single-family home. The clinic will be located behind the house, but the lack of frontage means that Campbell Reid Court cannot accommodate both the clinic access and single-family home. It is proposed that the clinic utilize the existing access to Dunrobin Road which would provide a more visible access and eliminate patrons of the clinic from traveling along a local street (Campbell Reid Court).

This Traffic Assessment study will examine the possibility of providing a site access onto Dunrobin Road. The analysis will further determine the geometry of the access and turning movements, and the impact the access may have on the operation of the adjacent roads and intersections.

2. ROADS AND INTERSECTIONS

CAMPBELL REID COURT

Campbell Reid Court is a two lane local street with a rural cross section, gravel shoulders and no sidewalks. The street is 375 m in length which connects to Cameron Harvey Drive at the north end and a cul-de-sac at the south. The intersection of Campbell Reid/Cameron Harvey is located 20 m from Dunrobin Road (centre to centre). The speed limit is unposted along Campbell Reid Court.

DUNROBIN ROAD

Dunrobin Road (Ottawa Road 9) is a two lane arterial road with 2 m paved shoulders. Dunrobin Road is identified in the Transportation Master Plan (TMP) as a Spine Route in the Cycling Network - Primary Rural. The speed limit is posted at 60 km./h. past the site, and increases to 80 km./h. approximately 1.8 km north of the site.

MARCH ROAD

March Road (Ottawa Road 49) is identified in the TMP as a two lane arterial road and a Spine Route in the Cycling Network. The roadway has gravel shoulders which change to paved shoulders in the vicinity of the Dunrobin/March intersection. The posted speed limit is 80 km./h.

DUNROBIN/MARCH INTERSECTION

The intersection of Dunrobin Road and March Road is a "T" intersection where March Road forms the eastbound and westbound approaches, and Dunrobin Road the southbound approach. The southbound Dunrobin Road approach has an exclusive left turn lane with 70 m of vehicular storage and a 90 m taper. The intersection is controlled by three phase traffic signals. The intersection has the following lane configuration:

Southbound Dunrobin Approach	One exclusive left turn lane (70 m storage) One shared left/right turn lane
Eastbound March Approach	One exclusive left turn lane (100 m storage) One through lane
Westbound March Approach	One through lane One exclusive right turn lane (100 m storage)

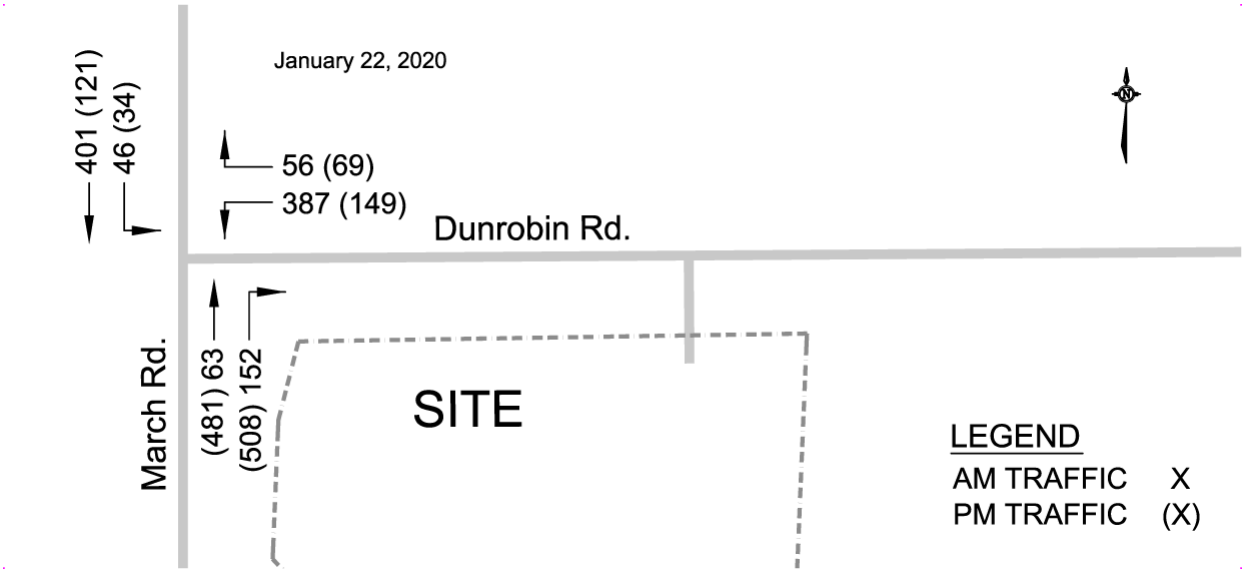
Below is an aerial photograph of the Dunrobin/March intersection.

DUNROBIN ROAD AND MARCH ROAD INTERSECTION

Traffic counts taken on January 22, 2020 were obtained from the City of Ottawa. The peak AM hour count is provided in the Appendix as Exhibit 1 and the peak PM hour

count as Exhibit 2. Figure 1 shows the 2020 peak AM and PM hour traffic at the Dunrobin/March intersection taken pre-COVID-19.

FIGURE 1 - 2020 PEAK AM AND PM HOUR TRAFFIC COUNTS



FUTURE ROAD PROJECTS

The TMP has identified the widening of March Road from a two lane road to a four lane road under the "Road Network - 2031 Network Concept". The future road widening would provide additional vehicle capacity to growth areas in north Kanata.

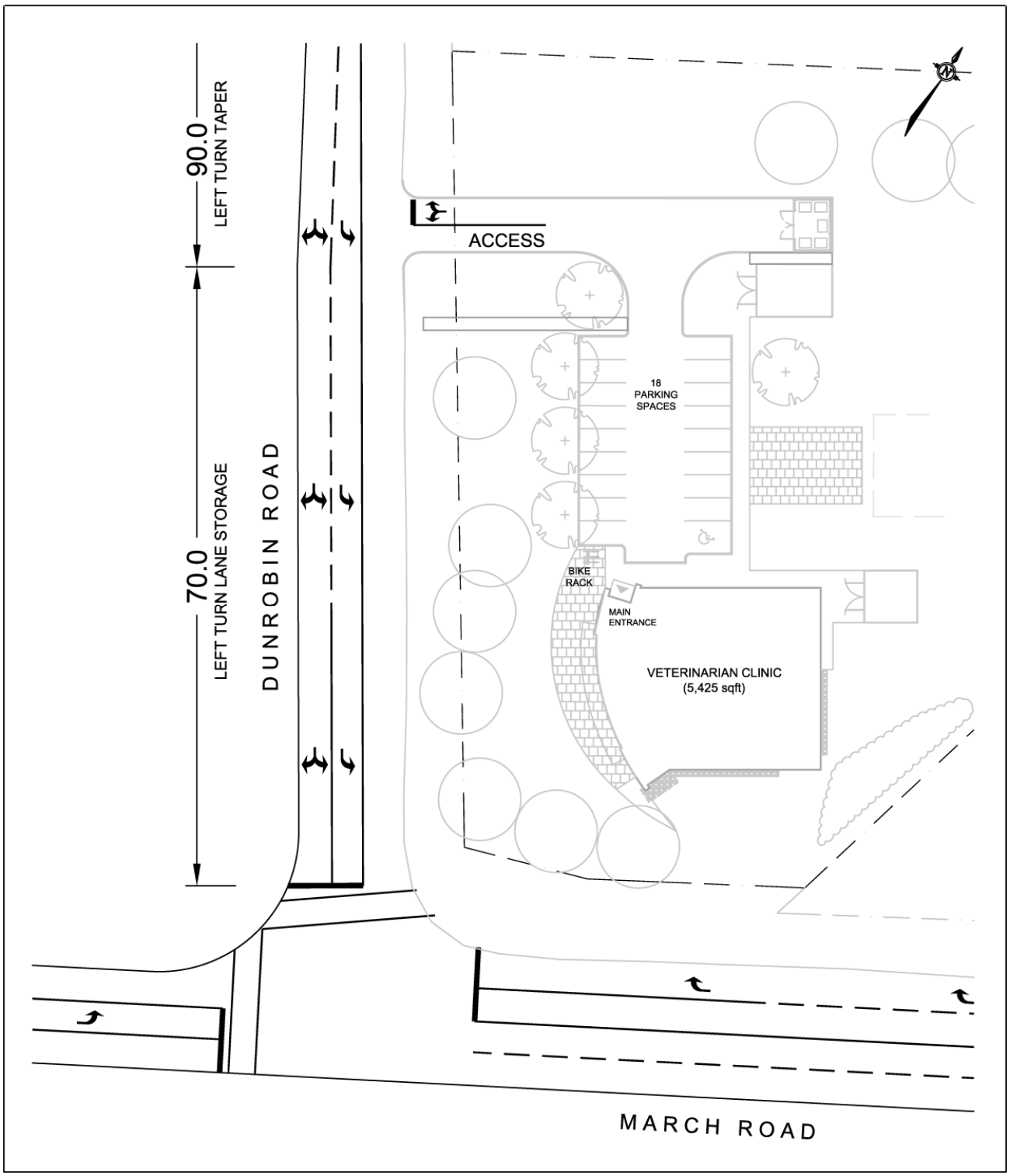
3. OLENDER VETERINARY CLINIC

The proposed Olender clinic will be a one storey building located at the northeast corner of the intersection of Dunrobin Road and March Road. The clinic will be replacing the existing clinic at 591 March Road in Kanata.

The clinic is proposed to have a gross floor area of approximately 5,425 ft^2 (504.0 m^2) and one access point onto Dunrobin Road. The site access would be located at approximately the same location as the existing access at a distance of 90 m from the Dunrobin/March intersection (centreline to centreline). The site will provide 18 parking spaces including one barrier free space in the parking lot for use by staff and patrons.

The site will have one access point onto Dunrobin Road. The access for the clinic will be 6.0 m in width with one lane entering and one lane exiting. The exiting lane will have a shared left/right turning movement onto Dunrobin Road. The access will be located 70 m north of the stop bar at the southbound approach to the Dunrobin/March intersection. Figure 2 shows a site plan and lane arrangement for the site.

FIGURE 2 - CONCEPTUAL SITE PLAN



NOT TO SCALE

3.1 Site Generated Trips

The veterinary clinic will be open to the public between the hours of 8:00 AM to 8:00 PM Tuesday to Thursday, and from 8:00 AM to 5:00 PM Monday and Friday. The clinic will also be open on Saturday.

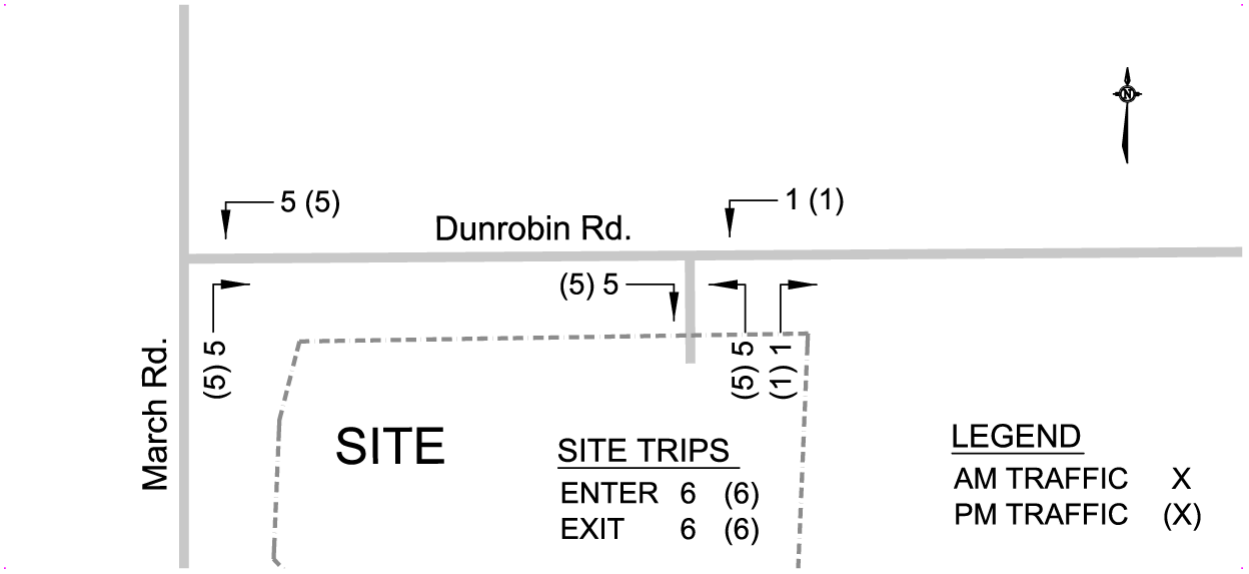
A survey was taken at the existing clinic during the week of March 15-20, 2021. The survey shown below recorded patrons arriving for veterinary visits, and to pick up medication and pet food.

MARCH ROAD VETERINARY HOSPITAL Traffic Flow Survaillance
591 March Road, Kanata, ON March 15 to March 20

Hours	Mon. March 15 (8am -5pm)			Tues. March 16 (8am -8pm)			Wed. March 17 (8am -8pm)			Thurs. March 18 (8am -8pm)			Fri. March 19 (8am -5pm)			Sat. March 20 (9am -4pm)			Weekly Total
	Appt.	Med P/U	Food P/U	Appt.	Med P/U	Food P/U	Appt.	Med P/U	Food P/U	Appt.	Med P/U	Food P/U	Appt.	Med P/U	Food P/U	Appt.	Med P/U	Food P/U	
8am - 9am		1		2		1	4			4			2		1				15
9am - 10am				1					1	1	1	2	4	1	1	2			14
10am - 11am	1	1				1			3	1			2			2	1		12
11am - 12pm	2	1		1	2	1		1				1	1			1		1	12
12pm - 1pm	1	1	1	1			2					1	1	2	1	1		1	13
1pm - 2pm	2	1	2	4	2	1	2		1	3		3	1	3		2	1		28
2pm - 3pm	1	1	1	2			4	1	1	2	2		4	2	1	2		1	25
3pm - 4pm	1	1	2	3	1	2	1			3	2	1	1		1			2	21
4pm - 5pm		2	1		1			2				2	2	1	1				12
5pm - 6pm				1	1	1	2	3	1	2	1	2							14
6pm - 7pm				1		2				1	1								5
7pm - 8pm				1							1								2
Daily TOTAL	8	9	7	17	7	9	15	7	7	17	8	12	18	9	6	10	2	5	173

The survey shows that during the period between 8:00 AM and 9:00 AM Monday to Friday there was an average of 3 patrons entering the site, and between 3:00 PM and 4:00 PM there was an average of 4 patrons entering the site. The analysis has assumed an average of 4 patrons per hour, and applied a 1.5 peaking factor producing a total of 6 patrons entering and 6 patrons exiting during both the weekday peak AM and PM hours. The client has further said that approximately 75 percent of their patrons are from the Kanata area. The expected peak AM and PM hour site generated trips are shown Figure 3.

FIGURE 3 - PEAK HOUR SITE GENERATED TRIPS



3.2 Traffic Analysis

The analysis of the site access and the Dunrobin/March intersection will use the *Highway Capacity Software, Version 7.9.5,* which uses the capacity analysis procedure as documented in the *Highway Capacity Manual (HCM) 2010 and HCM 6th Edition*.

For signalized intersections (Dunrobin/March intersection), the operation or level of service of an intersection is determined from the volume to capacity ratio (v/c) for each lane movement as documented by the City of Ottawa in the *Transportation Impact Assessment Guidelines (2017)*. The following relates the level of service with the volume to capacity ratio at each lane movement.

LEVEL OF SERVICE	VOLUME TO CAPACITY RATIO
Level of Service A	0 to 0.60
Level of Service B	0.61 to 0.70
Level of Service C	0.71 to 0.80
Level of Service D	0.81 to 0.90
Level of Service E	0.91 to 1.00
Level of Service F	> 1.00

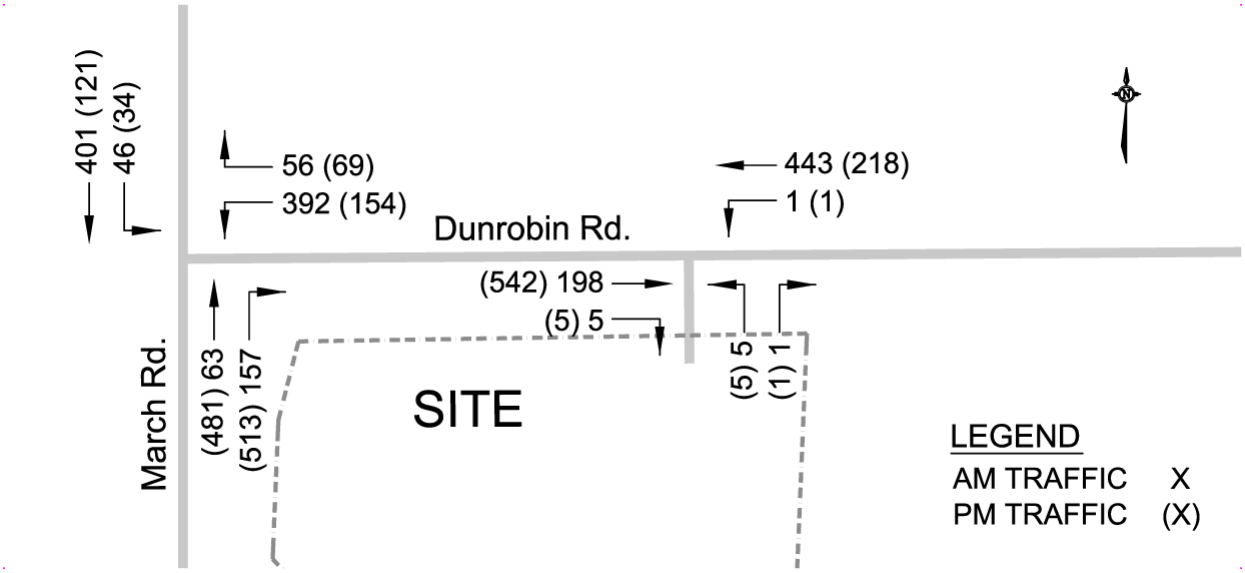
For unsignalized intersections (Access/Dunrobin intersection), the level of service of each lane movement and approach is determined as a function of the average control delay of vehicles at the approach. The following relates the level of service of each lane movement with the expected control delay at the approach.

LEVEL OF SERVICE	AVERAGE CONTROL DELAY	
Level of Service A	0-10 sec./vehicle	Little or No Delay
Level of Service B	>10-15 sec./vehicle	Short Traffic Delays
Level of Service C	>15-25 sec./vehicle	Average Traffic Delays
Level of Service D	>25-35 sec./vehicle	Long Traffic Delays
Level of Service E	>35-50 sec./vehicle	Very Long Traffic Delays
Level of Service F	>50 sec./vehicle	Extreme Delays – Demand Exceeds Capacity

The expected length of queue at the critical lane movements for an unsignalized two-way stop controlled intersection was determined by the calculation of the 95th percentile queue at the lane approach. The 95th percentile queue length is the calculated 95th greatest queue length out of 100 occurrences at a movement during a 15-minute peak period. The 95th percentile queue length is a function of the capacity of a movement and the total expected traffic, with the calculated value determining the magnitude of the queue by representing the queue length as fractions of vehicles.

The traffic analysis was conducted at both the site access onto Dunrobin Road and the Dunrobin/March signalized intersection. The analysis utilized the 2020 traffic counts taken at the Dunrobin/March intersection. The existing 2020 counts of Figure 1 were added to the expected site generated trips of Figure 3 to produce the total traffic which is shown in Figure 4. The result is the expected traffic at the site access and Dunrobin/March intersection (Figure 4) using the pre-COVID-19 traffic.

FIGURE 4 - TOTAL PEAK AM AND PM HOUR TRAFFIC



DUNROBIN/MARCH INTERSECTION

The intersection of Dunrobin Road and March Road is a traffic signal controlled intersection with Dunrobin Road forming the southbound approach. The operational analysis has utilized a 98 second signal cycle for the two phase cycle in the peak AM hour, and 114 second cycle for the three phase cycle during the peak PM hour. The traffic signal timing plan is provided as Exhibit 3 in the Appendix.

The operational analysis used the 2020 traffic volumes and included the trips from the proposed site. The analysis determined that the intersection functioned at an acceptable level of service (LOS) for all lane movements, with the intersection functioning at an overall LOS "A" during both the weekday peak AM and PM hour. Table 1 summarizes the operation of the Dunrobin/March intersection with the analysis work sheet for the total traffic provided as Exhibit 4 for the peak AM hour and Exhibit 5 for the peak PM hour.

The analysis examined the length of vehicular queuing (50^{th} percentile) at all approaches to the Dunrobin/March intersection. The critical time period for queuing at the southbound Dunrobin Road approach is during the weekday peak AM hour. The analysis determined that the vehicular queue at the southbound left turn movement was 120.6 ft (36.8 m) and at the shared left/right turn movement 133.5 ft (40.7 m). The conceptual site plan of Figure 2 shows that the site access is located 70 m north of the stop bar at the southbound approach. The peak AM hour queuing would result in only a minor impact on the operation of the site access and would not extend past the proposed site access as calculated in the 50^{th} percentile queuing analysis.

TABLE 1
DUNROBIN/MARCH INTERSECTION – LOS & v/c Ratio

INTERSECTION APPROACH	WEEKDAY PEAK AM HOUR 2020 Total		WEEKDAY PEAK PM HOUR 2020 Total	
	LOS	v/c Ratio	LOS	v/c Ratio
EB Left - March	A	0.068	A	0.075
EB Through - March	A	0.465	A	0.116
WB Through - March	A	0.075	B	0.653
WB Right - March	A	0.137	A	0.598
SB Left - Dunrobin	A	0.450	A	0.274
SB Left/Through - Dunrobin	A	0.354	A	0.275
Total Intersection	**A**	0.252	**A**	0.336

ACCESS/DUNROBIN INTERSECTION

The proposed site access will be located onto Dunrobin Road approximately 90 m (centreline to centreline) from the Dunrobin/March intersection. The site access will be located at the same location as the existing access to the site which is shown in the photograph below.

SITE ACCESS AND DUNROBIN ROAD INTERSECTION

The southbound approach to the Dunrobin/March intersection comprises of a shared left/right turn lane and an exclusive left turn lane with 70 m of vehicular storage and a 90 m taper. The site access intersection will be located at approximately the transition from the southbound left turn taper to full width storage lane. The photograph shows the location of the existing/proposed access, which is also shown in the conceptual site plan of Figure 2.

The intersection will be a two-way stop control "T" intersection with a stop sign at the westbound access approach. The access will be 6.0 m in width with one lane entering and one lane exiting. The westbound exiting lane will contain a shared left/right turn lane. The intersection has the following lane configuration:

Northbound Dunrobin Approach	One shared through/right lane
Southbound Dunrobin Approach	One exclusive left turn lane (90 m taper) One through lane
Westbound Site Access Approach	One shared left/right turn lane (stop sign)

The operational analysis determined that during both the peak AM and PM hours the southbound March Road left/through lane would function at a LOS "A" and the site access approach at a LOS "B", with the intersection operating at an overall level of service LOS "B". Table 2 summarizes the operation of the intersection with the analysis work sheets provided as Exhibit 6 and Exhibit 7.

TABLE 2
ACCESS/DUNROBIN INTERSECTION – LOS & Control Delay

INTERSECTION APPROACH	**WEEKDAY PEAK AM HOUR** 2020 Total		**WEEKDAY PEAK PM HOUR** 2020 Total	
	LOS	**Delay (sec.)**	**LOS**	**Delay (sec.)**
WB Right - Site Access	B	11.4	B	11.4
SB Left/Through - Dunrobin	A	7.6	A	8.6
Total Intersection	**B**		**B**	

The operational analysis determined that during the peak AM and PM hour the southbound left turn movement would experience a 95th percentile queue of 0.0 vehicles. The southbound Dunrobin Road through movement traffic would be able to pass any left turning queued vehicles using the southbound left/right turn lane. The westbound site access approach would experience a 95th percentile queue of 0.0 vehicles during the peak AM hour and 0.1 vehicles during the peak PM hour.

SUMMARY

A Site Plan Application is being prepared for the Olender Veterinarian Clinic which will be located on a parcel of land at the northeast corner of the intersection of Dunrobin Road and March Road. The property has a municipal address of 4 Campbell Reid Court and currently is occupied by one single-family home. The width of the municipal road frontage onto Campbell Reid Court is 15.7 m which would not provide sufficient width for the single-family home and an access road to the clinic. It is proposed that the access to the clinic be located at the same location as the existing property access onto Dunrobin Road at 90 m (centreline to centreline) from the Dunrobin/March intersection.

The following is a summary of the findings of the assessment:

1) Trip counts of patrons of the clinic obtained from the client determined that during the weekday peak AM and PM hour the clinic would expect 6 patrons who would be both entering and exiting the site.

2) The access would be located at the transition point between the 70 m storage lane and 90 m taper for the southbound Dunrobin Road approach to the Dunrobin/March intersection (See Figure 2).

3) The access will be 6 m in width with one lane entering and one lane exiting. It is proposed that the access provide full turning movements entering and exiting.

4) Preliminary comments from City of Ottawa staff in an email dated April 9, 2021 stated that staff has no immediate concerns with a full movement access to the site. A copy of the email is provided as Exhibit 8 in the Appendix.

5) An operational analysis determined that the proposed access and traffic would have a minor impact on the adjacent roads triggering no requirement for roadway modifications. The access is proposed to provide full turning movements.

6) Vehicular queuing (50th percentile) at the southbound Dunrobin Road approach to the Dunrobin/March intersection during the weekday peak AM hour was determined to be 40.7 m. The queue would not extend past the site access or have an impact on the operation of the access or traffic along Dunrobin Road.

Prepared by:

David J. Halpenny

David J. Halpenny, M. Eng., P. Eng.

APPENDIX

TRAFFIC COUNTS

TRAFFIC SIGNAL TIMING PLAN

INTERSECTION ANALYSIS WORK SHEETS

PRELIMINARY COMMENTS FROM CITY OF OTTAWA STAFF

EXHIBIT 1
2020 PEAK AM HOUR TRAFFIC COUNTS - DUNROBIN/MARCH INTERSECTION

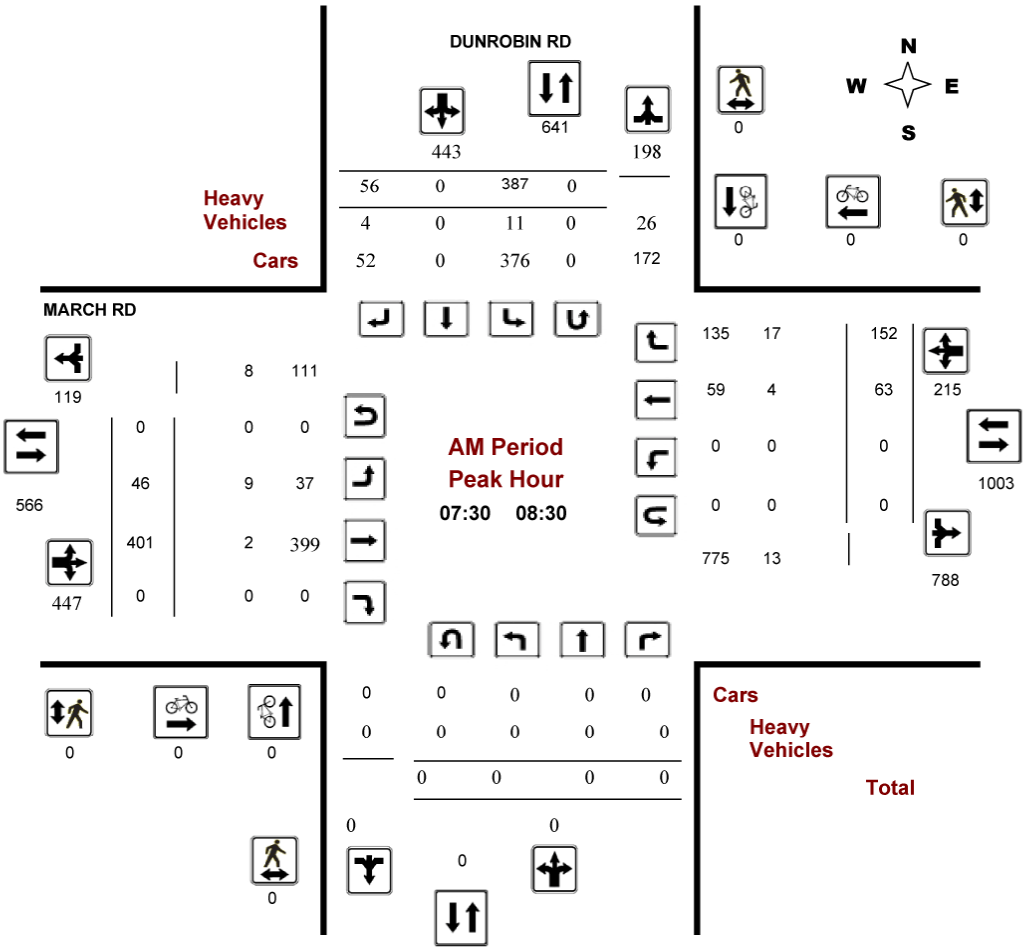
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

DUNROBIN RD @ MARCH RD

Survey Date: Wednesday, January 22, 2020 **WO No:** 39373

Start Time: 07:00 **Device:** Miovision



Comments 5472188 - WED JAN 22, 2020 - 8HRS - LORETTA

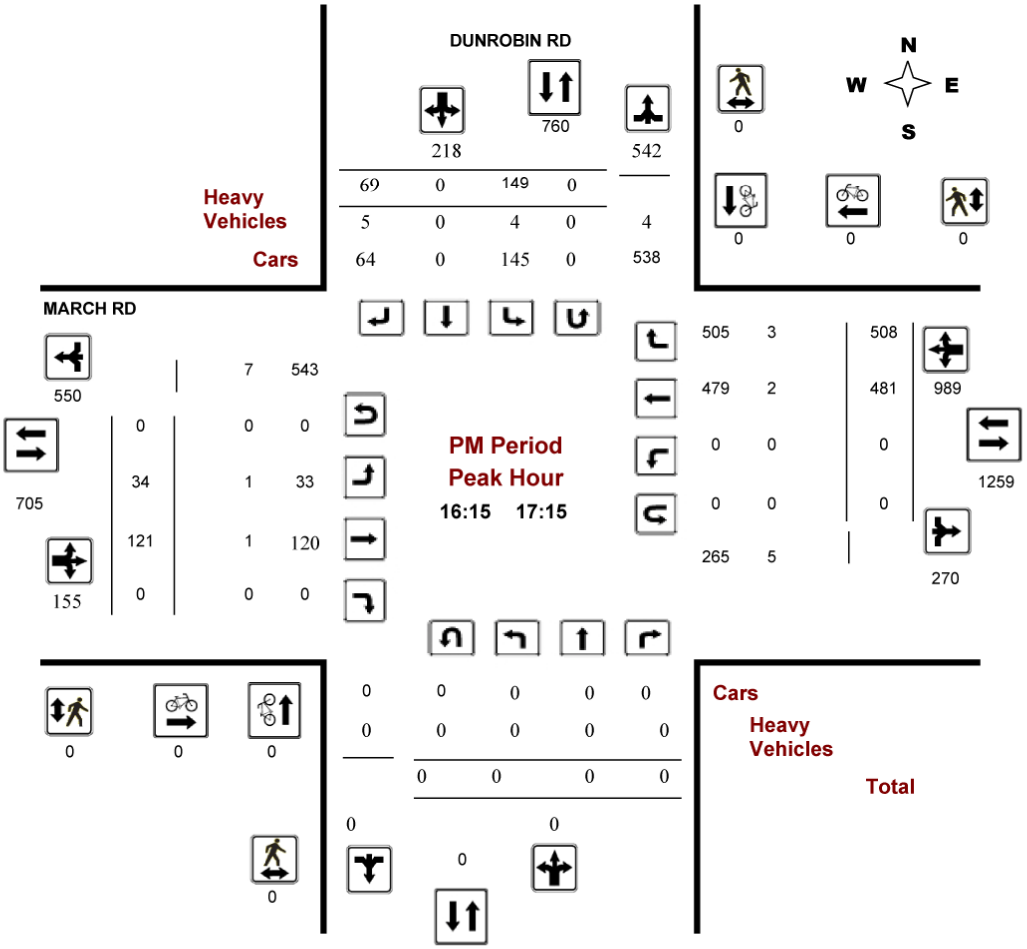
EXHIBIT 2
2020 PEAK PM HOUR TRAFFIC COUNTS - DUNROBIN/MARCH INTERSECTION

Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

DUNROBIN RD @ MARCH RD

Survey Date: Wednesday, January 22, 2020 **WO No:** 39373
Start Time: 07:00 **Device:** Miovision



Comments 5472188 - WED JAN 22, 2020 - 8HRS - LORETTA

EXHIBIT 3
TRAFFIC SIGNAL TIMING PLAN - DUNROBIN/MARCH INTERSECTION

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

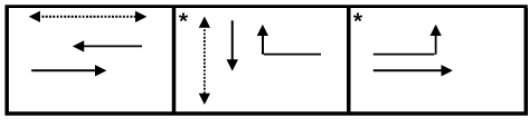
Intersection:	**Main:** March	**Side:**	Dunrobin
Controller:	**MS-3200**	**TSD:**	**5645**
Author:	Matthew Anderson	**Date:**	17-Mar-2021

Existing Timing Plans†

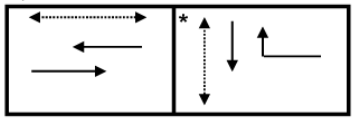
	Plan				Ped Minimum Time		
	AM Peak 1	Off Peak 2	PM Peak 3	Night 4	*Walk*	*DW*	*A+R*
Cycle	Free	Free	Free	Free			
Offset	X	X	X	X			
EB Thru	min=56.3	min=41.3	min=56.3	min=41.3	-	-	4.6+1.7
WB Thru	min=56.3	min=41.3	min=56.3	min=41.3	7	13	4.6+1.7
SB Thru	max=41.3	max=31.3	max=36.3	max=26.3	7	14	3.7+2.6
WBRT	max=41.3	max=31.3	max=36.3	max=26.3	-	-	3.7+2.6
EBLT	-	-	max=21.3	-	-	-	4.6+1.7

Phasing Sequence‡

Plan: 3



Plan: 1, 2 & 4



Schedule

Weekday

Time	Plan
0:10	4
6:00	1
9:30	2
14:20	3
18:00	2
22:00	4

Weekend

Time	Plan
0:10	4
10:00	2
21:00	4

Notes

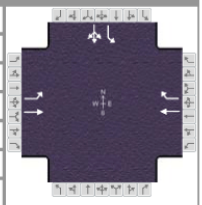
†: Time for each direction includes amber and all red intervals
‡: Start of first phase should be used as reference point for offset
Asterisk (*) Indicates actuated phase
(fp): Fully Protected Left Turn
◄·····► Pedestrian signal

Cost is $59.96 ($53.06 + HST)

EXHIBIT 4
2020 PEAK AM HOUR TRAFFIC ANALYSIS - DUNROBIN/MARCH INTERSECTION

HCS7 Signalized Intersection Results Summary

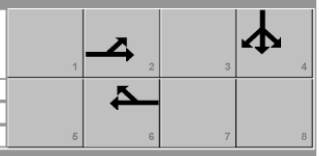
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	3/24/2021	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak AM Hour	PHF	0.92
Urban Street	Dunrobin Road	Analysis Year	2020	Analysis Period	1> 7:00
Intersection	Dunrobin/March	File Name	2020_AM.xus		
Project Description	Dr. Olender Vet Clinic				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	46	401			63	157				392	0	56

Signal Information			
Cycle, s	98.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	50.4	35.0	0.0	0.0	0.0	0.0	
Yellow	4.6	3.7	0.0	0.0	0.0	0.0	
Red	1.7	2.6	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6				4
Case Number		6.0		7.0				10.0
Phase Duration, s		56.7		56.7				41.3
Change Period, (*Y+R c*), s		6.3		6.3				6.3
Max Allow Headway (*MAH*), s		0.0		0.0				3.2
Queue Clearance Time (*g s*), s								14.3
Green Extension Time (*g e*), s		0.0		0.0				1.0
Phase Call Probability								1.00
Max Out Probability								0.00

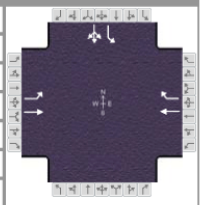
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (*v*), veh/h	50	436			68	105				277	210	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1301	1786			1730	1466				1674	1614	
Queue Service Time (*g s*), s	1.9	15.0			1.9	3.6				12.3	11.8	
Cycle Queue Clearance Time (*g c*), s	3.9	15.0			1.9	3.6				12.3	11.8	
Green Ratio (*g/C*)	0.52	0.52			0.52	0.52				0.37	0.37	
Capacity (*c*), veh/h	730	937			907	769				615	593	
Volume-to-Capacity Ratio (*X*)	0.068	0.465			0.075	0.137				0.450	0.354	
Back of Queue (*Q*), ft/ln (50 th percentile)	15	154			19.3	31.2				120.6	133.5	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.6	6.1			0.7	1.2				4.7	5.1	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.04	0.00			0.00	0.08				0.56	0.00	
Uniform Delay (*d 1*), s/veh	12.5	14.7			11.5	11.9				23.5	33.0	
Incremental Delay (*d 2*), s/veh	0.2	1.7			0.2	0.4				0.2	0.1	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (*d*), s/veh	12.7	16.3			11.7	12.3				23.7	33.1	
Level of Service (LOS)	B	B			B	B				C	C	
Approach Delay, s/veh / LOS	15.9	B		12.1	B		0.0			27.8	C	
Intersection Delay, s/veh / LOS	20.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.38	A	1.90	B	2.04	B	1.96	B
Bicycle LOS Score / LOS	1.29	A	0.77	A			1.29	A

EXHIBIT 5
2020 PEAK PM HOUR TRAFFIC ANALYSIS - DUNROBIN/MARCH INTERSECTION

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	3/24/2021	Area Type	Other
Jurisdiction	City of Ottawa	Time Period	Peak PM Hour	PHF	0.92
Urban Street	Dunrobin Road	Analysis Year	2020	Analysis Period	1> 7:00
Intersection	Dunrobin/March	File Name	2020_PM.xus		
Project Description	Dr. Olender Vet Clinic				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	34	121			481	513				154	0	69

Signal Information			
Cycle, s	114.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	15.0	50.1	30.0	0.0	0.0	0.0
Yellow	4.6	4.6	3.7	0.0	0.0	0.0
Red	1.7	1.7	2.6	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6				4
Case Number	1.0	4.0		7.3				10.0
Phase Duration, s	21.3	77.7		56.4				36.3
Change Period, (*Y+R c*), s	6.3	6.3		6.3				6.3
Max Allow Headway (*MAH*), s	3.1	0.0		0.0				3.3
Queue Clearance Time (*g s*), s	3.0							9.4
Green Extension Time (*g e*), s	0.0	0.0		0.0				0.4
Phase Call Probability	1.00							1.00
Max Out Probability	0.00							0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6	16				7	4	14
Adjusted Flow Rate (*v*), veh/h	37	132			523	405				126	117	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1674	1786			1786	1514				1688	1561	
Queue Service Time (*g s*), s	1.0	3.3			26.0	23.0				6.7	7.4	
Cycle Queue Clearance Time (*g c*), s	1.0	3.3			26.0	23.0				6.7	7.4	
Green Ratio (*g/C*)	0.61	0.64			0.45	0.45				0.27	0.27	
Capacity (*c*), veh/h	490	1134			801	678				459	424	
Volume-to-Capacity Ratio (*X*)	0.075	0.116			0.653	0.598				0.274	0.275	
Back of Queue (*Q*), ft/ln (50 th percentile)	9.1	31.9			290.3	218.7				69	74.2	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.4	1.3			11.5	8.7				2.7	2.9	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.00			0.00	0.53				0.32	0.00	
Uniform Delay (*d 1*), s/veh	12.6	8.4			24.5	23.7				32.6	37.3	
Incremental Delay (*d 2*), s/veh	0.0	0.2			4.1	3.9				0.1	0.1	
Initial Queue Delay (*d 3*), s/veh	0.0	0.0			0.0	0.0				0.0	0.0	
Control Delay (*d*), s/veh	12.7	8.6			28.7	27.6				32.8	37.4	
Level of Service (LOS)	B	A			C	C				C	D	
Approach Delay, s/veh / LOS	9.5	A		28.2	C		0.0			35.0	D	
Intersection Delay, s/veh / LOS	27.1						C					

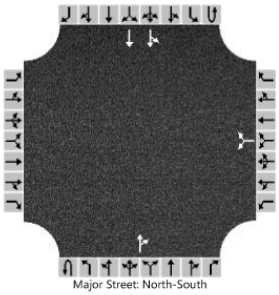
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.36	A	1.91	B	2.16	B	1.96	B
Bicycle LOS Score / LOS	0.77	A	2.02	B			0.89	A

EXHIBIT 6
PEAK AM HOUR TRAFFIC ANALYSIS - SITE ACCESS/DUNROBIN INTERSECTION

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Site Access/Dunrobin Road
Agency/Co.		Jurisdiction	City of Ottawa
Date Performed	4/12/2021	East/West Street	Site Access
Analysis Year	2020	North/South Street	Dunrobin Road
Time Analyzed	Peak AM Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Olender Veternary Clinic		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	2	0
Configuration							LR					TR		LT	T	
Volume (veh/h)						5		1			198	5		1	443	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							7							1		
Capacity, c (veh/h)							567							1360		
v/c Ratio							0.01							0.00		
95% Queue Length, Q_{95} (veh)							0.0							0.0		
Control Delay (s/veh)							11.4							7.6		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						11.4								0.0		
Approach LOS						B										

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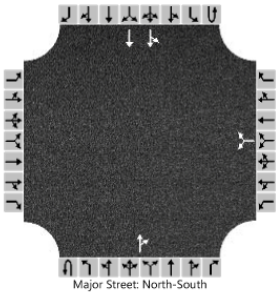
EXHIBIT 7
PEAK PM HOUR TRAFFIC ANALYSIS - SITE ACCESS/DUNROBIN INTERSECTION

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst		Intersection	Site Access/Dunrobin Road
Agency/Co.		Jurisdiction	City of Ottawa
Date Performed	4/12/2021	East/West Street	Site Access
Analysis Year	2020	North/South Street	Dunrobin Road
Time Analyzed	Peak PM Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Olender Veternary Clinic		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	2	0
Configuration							LR					TR		LT	T	
Volume (veh/h)						5		1			542	5		1	218	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage						Undivided										

Critical and Follow-up Headways

Base Critical Headway (sec)						7.5		6.2						4.1		
Critical Headway (sec)						6.80		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							7							1		
Capacity, c (veh/h)							388							992		
v/c Ratio							0.02							0.00		
95% Queue Length, Q_{95} (veh)							0.1							0.0		
Control Delay (s/veh)							14.4							8.6		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)						14.4								0.0		
Approach LOS						B										

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EXHIBIT 8
PRELIMINARY CITY OF OTTAWA STAFF COMMENTS

RE: Olender Veterinary Clinic

Subject: RE: Olender Veterinary Clinic
From: "McMahon, Patrick" <patrick.mcmahon@ottawa.ca>
Date: 4/9/2021, 1:57 PM
To: David J Halpenny <david@djhalpenny.com>

Good afternoon Dave,

At this stage, there are no immediate concerns with the provision of a full movement access at this location. The access should be located as far north as possible, and typical review of sight lines and access parameters will be completed once a concept/site plan has been presented.

Thank you,
Pat

Patrick McMahon
Project Manager, Infrastructure Approvals | GPRJ Approbation des demandes d'infrastructure
Development Review Branch | Dir Examen des projets d'aménagement
City of Ottawa | Ville d'Ottawa
Tel |Tél. : 613-580- 2424 ext. | poste 23298
web | Site Web : www.ottawa.ca

-----Original Message-----
From: David J Halpenny <david@djhalpenny.com>
Sent: March 17, 2021 8:39 AM
To: Giampa, Mike <Mike.Giampa@ottawa.ca>
Subject: Olender Veterinary Clinic

CAUTION: This email originated from an External Sender. Please do not click links or open attachments unless you recognize the source.

ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Good Morning Mike,

I am doing some preliminary traffic work for a veterinary clinic located at the northeast corner of the intersection of Dunrobin Road and March Road. The municipal address of the site is 4 Campbell Reid Court.

I believe you would be the Project Manager, Infrastructure Approvals contact.

My client would like to have an access onto Dunrobin Road. The access would be located approximately where the existing access is, approximately 75 m to 80 m from the southbound Dunrobin Rd. stop bar.
The access would be located beyond the left turn storage lane.

The clinic would generate about 4 patients an hour. We would like to provide a full movement access onto Dunrobin Road. Do you have any comments.

Dave

--
David Halpenny, M. Eng., P. Eng.
D. J. Halpenny & Associates Ltd.
Phone: (613) 692-8662
Email: David@DJHalpenny.com
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