



G R E E R
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July 15, 2019

Blocknote Canada Inc.

c/o Mr. Treat Hull, Project Manager
106 Barton Blvd.
Clarksburg, ON
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**Re: Redtail East Development - Traffic Impact Review
Project No. 1937682**

This letter provides a preliminary traffic impact review in consideration of the rezoning application for the proposed Redtail East winery, hotel, restaurant and spa development on Loyalist Parkway (County Road 33) south of Consecon in Prince Edward County. It provides general comment on the impact that the development may have on Loyalist Parkway and more specifically whether any improvements to the road infrastructure are likely to be required as a result of this development.

Site Description

The subject property consists of approximately 56 hectares of rural agricultural lands on the east side of Loyalist Parkway, between County Road 27 and the Lafarge Quarry north of Partridge Hollow Road.

The proposed development covering approximately 29.2 hectares is expected to contain the following:

- Resort hotel with 50 guestrooms, 50-seat restaurant and 125-person capacity meeting space.
- Nordic spa with hydrotherapy and thermotherapy pools/outdoor baths.
- 25-seat spa café for spa/resort guests.
- Winery / vineyard with retail/hospitality building.
- Parking areas associated with each of the above (approximately 130 parking spaces for the hotel, 130 for the spa, and 60 for the winery).

Access to the property will be provided by a new development entrance onto Loyalist Parkway. According to the preliminary site plan, the entrance is proposed to be constructed at an existing field entrance opposite Partridge Hollow Road (however the size of the property and significant frontage provides numerous alternative locations that may be considered as the development plans are refined).

Loyalist Parkway is a two-lane former provincial highway (Highway 33) with posted speed limit of 80 km/h, identified as a tourism corridor in the Prince Edward County Official Plan. Partridge Hollow Road is a local rural road with 70 km/h speed limit, also considered a tourism route.



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Figure 1: Proposed Entrance Location on Loyalist Parkway (CR33) Looking South (Google Street View, May 2018)

Background Traffic

Background traffic information provided by Prince Edward County was used to establish a baseline for determining the impact of additional traffic generated by the proposed development. The results of a July 2018 traffic count on Loyalist Parkway south of County Road 1 indicate a traffic volume of 235 vehicles during the peak hour, distributed roughly 50% northbound and 50% southbound.

Since the traffic count was conducted on a Tuesday, and the proposed development is likely to generate weekend as well as weekday traffic, an increase of 2.5% was applied to represent the peak hour traffic on a Saturday during the summer tourist season.

This weekday to weekend adjustment factor was derived based on Ministry of Transportation traffic data (*Provincial Highways Traffic Volumes 1988-2016*) for a section of Highway 33 with similar characteristics east of Bloomfield. For the period from 2012-2016, this section of highway from Bloomfield to the roundabout at County Road 1 displayed a “tourist” seasonal variation pattern traffic with summer average daily traffic volumes (SADT) exceeding summer average weekday traffic (SAWD) by approximately 2.5% on average, indicating higher traffic volumes on weekends. (Other sections of Highway 33 near Picton with seasonal variation patterns that were less strongly tourist-based or included a commuter component had the reverse pattern of lower weekend traffic during the summer peak season so this 2.5% increase is felt to be conservative.)



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In addition to the 2.5% adjustment for weekend traffic, an annual increase of 2% is assumed to account for surrounding development growth over time, resulting in a peak hour traffic volume of 246 vehicles on County Road 33 during the current year.

Note: Prince Edward County Staff suggested that traffic counts spanning an entire week may be required but confirmation of this requirement could not be obtained prior to the submission of this traffic review. Additional traffic count requirements will be addressed as part of a more detailed traffic impact study in support of future site plan application.

Trip Generation

In order to assess the traffic impact of a proposed development on the surrounding road network, it is necessary to estimate the total number of new vehicles trips that will be entering and/or leaving the property as a direct result of new development. The ITE (Institute of Transportation Engineers) Trip Generation Manual (10th ed) provides models to estimate trip generation for various common land uses.

Trip generation for the proposed hotel including restaurant and event space is based on the “*Hotel (310)*” land use. Average peak hour trip generation rates for this land use are generally higher than for the related “*Resort Hotel (330)*” land use, with the highest average rate of 0.72 trips per guestroom occurring during the Saturday peak hour. Using the maximum trip generation rate for the Saturday peak hour of 1.23 trips per hotel guestroom results in 62 trips during the peak hour associated with the hotel.

Trip generation for the proposed winery is based on the “*Winery (970)*” land use model, calculated using a gross floor area of 7,500 ft² (assumed to be the area of “the building that houses the tasting room”). This results in 193 trips during the Saturday peak hour. A recent traffic count at a nearby local winery on County Road 33 near Wellington suggests that the ITE model may overstate the traffic generated by the proposed development. Forty-eight (48) vehicles in total were observed entering and leaving the Sandbanks Estate Winery during a one-hour traffic count conducted on Sunday, June 9th from 2 - 3 pm. However, in the absence of more site-specific trip generation data, the ITE model is considered the most reliable and conservative.

Since the ITE document does not provide suitable data for the spa land use, trip generation for the Nordic spa and café is estimated based on the following assumptions concerning spa usage:

- The spa is expected to generate mainly day trips by local clientele, although some spa users may also be guests of the hotel.
- A maximum capacity of 125 guests is assumed based on the 125 lockers and 130 parking spaces provided in the site plan.
- Spa usage is expected to be appointment-based with guests arriving



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throughout the day, likely in groups of 2, and staying for approximately 2 - 3 hours.

- The spa café would only serve spa guests and would not generate any additional traffic.

Given the above, it is assumed that the spa and café will generate a total of 65 trips during the Saturday peak hour.

The proportion of the total new trips entering versus leaving the proposed development is assumed based on the ITE guidelines for the relevant land use (where available). Trips are distributed 50% northbound and 50% southbound on Loyalist Parkway based on the background traffic patterns.

The trip generation assumptions for the proposed new development are summarized in the following table and more detailed calculations are attached.

PROPOSED DEVELOPMENT	TRIP GENERATION		
	Total New Trips (Saturday Peak Hour)	Entering %	Exiting %
Hotel, Restaurant, Event Space	62	56%	44%
Winery	193	47%	53%
Nordic Spa and Café	65	50%	50%
TOTAL NEW TRIPS	320		

Traffic Impact

An assessment of the traffic impact of the proposed development using the ITE trip generation guidelines and HCS2010 modelling software indicates that levels of service for southbound left turns from Loyalist Parkway (County Road 33) into the development site will be in the “A” range with delays of approximately 8 seconds and minimal queueing. The levels of service for traffic exiting the development will be slightly lower (in the “B” range with delays of approximately 13 seconds and a 95% queue length of 1.1 vehicles). These results indicate that the proposed new entrance onto County Road 33 will operate under capacity without excessive delay. These levels of service will be comparable regardless of the location of the new entrance.

Our evaluation of the left turn lane warrants based on the Ministry of Transportation supplement to the Transportation Association of Canada (TAC) Geometric Design Standards, using a 100 km/h design speed, indicates that a left turn lane with 15-metre storage should be considered on Loyalist Parkway to accommodate the additional traffic from the proposed development. In addition, since right-turning volumes during the Saturday peak hour (79 vehicles) are expected to exceed the channelization volume warrant of 60 vehicles per hour (TAC 9.15.5), a right turn lane or taper should



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be considered to reduce interference with through traffic on Loyalist Parkway.

These geometric improvements will need to be confirmed through a comprehensive traffic impact study when site plan approval application is made, however, if they are found to be required there appears to be sufficient existing Municipal right of way available and roadside obstructions such as hydro pole lines appear to be set back a sufficient distance to allow these improvements to be made.

Sight Distance Requirements

The MTO Highway Access Management Guideline provides the following sight distance requirements for private road accesses onto a 2-lane highway, assuming a design speed of 100 km/h and downhill approach grade of 3 - 5%. The stopping sight distance applies to motorists travelling along the highway while the entering sight distance is from the point of view of a motorist waiting to enter or cross the highway. These values are based on travel times for multi-unit trucks. Since preliminary measurements indicate a grade of 3.5% to the north of the proposed entrance, the sight distance requirements from Tables 7 and 9 have been increased by the 1.1 adjustment factor in Table 10 of the MTO Guideline.

- **Minimum Stopping Sight Distance** (Table 9) - $185 \text{ m} \times 1.1 = \mathbf{204 \text{ m}}$
- **Entering Sight Distance** (Table 7) - $320 \text{ m} \times 1.1 = \mathbf{352 \text{ m}}$

Preliminary field measurements of sight lines at the proposed new entrance opposite Partridge Hollow Road indicate that the sight distance to the north is limited to approximately 190 metres which does not meet the MTO minimum stopping sight distance requirement.

However, sightlines to the south were observed to be at least 500 metres or more, and alternative entrance locations are possible to the south that would provide the required entering sight distance in both directions.

Prince Edward County will need to be consulted on their preference to align the proposed entrance with Partridge Hollow Road – which would have similar sight distances as noted but no accident history that we are aware of – or relocating the entrance to the south to provide a separate, independent site entrance.

Conclusions

Based on our preliminary traffic review, we can provide the following comments regarding the impact of the proposed Redtail East hotel, spa and winery development on Loyalist Parkway (County Road 33):

- 1) The proposed development is expected to operate at acceptable levels of service at the proposed new entrance onto Loyalist Parkway.



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- 2) Based on the TAC/MTO left turn lane warrant criteria and the trip generation estimates noted earlier, a left turn lane with 15 metre storage should be considered on Loyalist Parkway (County Road 33) to accommodate traffic entering the proposed development from the north.
- 3) A right turn taper on Loyalist Parkway should be considered to accommodate traffic entering the proposed development from the south. Since the expected right-turning traffic volumes are only slightly higher than the 60 vehicle per hour threshold and visibility to the south is not a concern, a full right turn lane is not believed to be warranted and right turn taper as part of the new entrance construction would suffice.
- 4) Although aligning the proposed development entrance with Partridge Hollow Road, as shown on the preliminary site plan, has benefits in terms of reducing the number of intersection points onto Loyalist Parkway, this location does not meet the MTO stopping sight distance requirements. Since alternative entrance locations that provide the required sight distances are available to the south, we recommend that these be considered after review with the County.
- 5) As part of site plan approval, a more comprehensive traffic impact study will be required. Additional traffic counts during peak traffic conditions (July / August) to confirm background traffic and refine trip generation estimates are recommended.

Sincerely,

THE GREER GALLOWAY GROUP INC.

CONSULTING ENGINEERS



Matt McIntosh, P. Eng.

Shannon O'Rourke, B.Sc.

Attachments:

- 1) Trip Generation Calculations
- 2) HCS2010 Output
- 3) Left Turn Lane Warrant Illustration

Saturday Peak Hour Trip Generation

Redtail East Winery/Hotel/Restaurant/Spa

Project 1937682

Assumptions:

Yearly increase in background traffic	2%
¹ Weekend volume adjustment factor	2.5%

Trip Generation

		Entering		Leaving		
		%	trips	%	trips	
Hotel, Restaurant, Event Space (ITE Land Use 310)	62	56%	35	44%	27	(T = 1.23 trips x 50 guestrooms)
Nordic Spa	65	50%	33	50%	32	
Winery (ITE Land Use 970)	193	47%	91	53%	102	(T = 21.27x + 33.21 where x=7.5)
TOTAL	320		159		161	based on ft ² gross floor area)

New Trip Distribution Calculations

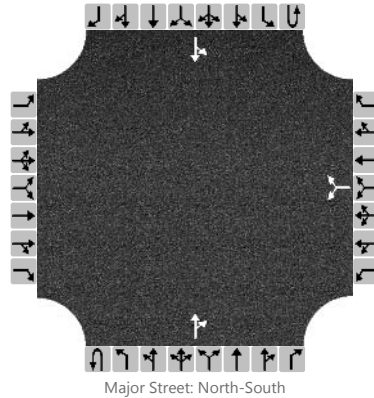
Northbound/Southbound Distribution	50% N, 50% S (based on background traffic)
Total Trips Entering (SL+NR)	159
Total Trips Exiting (WR +WL)	161

SATURDAY PEAK HOUR TOTALS	DEVELOPMENT ENTRANCE		LOYALIST PARKWAY (CR33)				TOTALS
	WL	WR	NT	NR	SL	ST	
Weekday Background (July 2018)			118			118	235
Estimated Saturday Background ¹			120			120	241
Projected Background 2019			123			123	246
Projected Background 2029			150			150	300
Trip Generation	81	80		79	80		320
PEAK HOUR 2019	81	80	123	79	80	123	566
PEAK HOUR 2029	81	80	150	79	80	150	620

HCS 2010 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	Shannon O'Rourke	Intersection	CR33 Development Entrance
Agency/Co.	Greer Galloway	Jurisdiction	Prince Edward County
Date Performed	6/13/2019	East/West Street	Development Entrance
Analysis Year	2019	North/South Street	Loyalist Parkway
Time Analyzed	Saturday Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	1937682		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0		0	1	0		0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						81		80			123	79		80	123	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

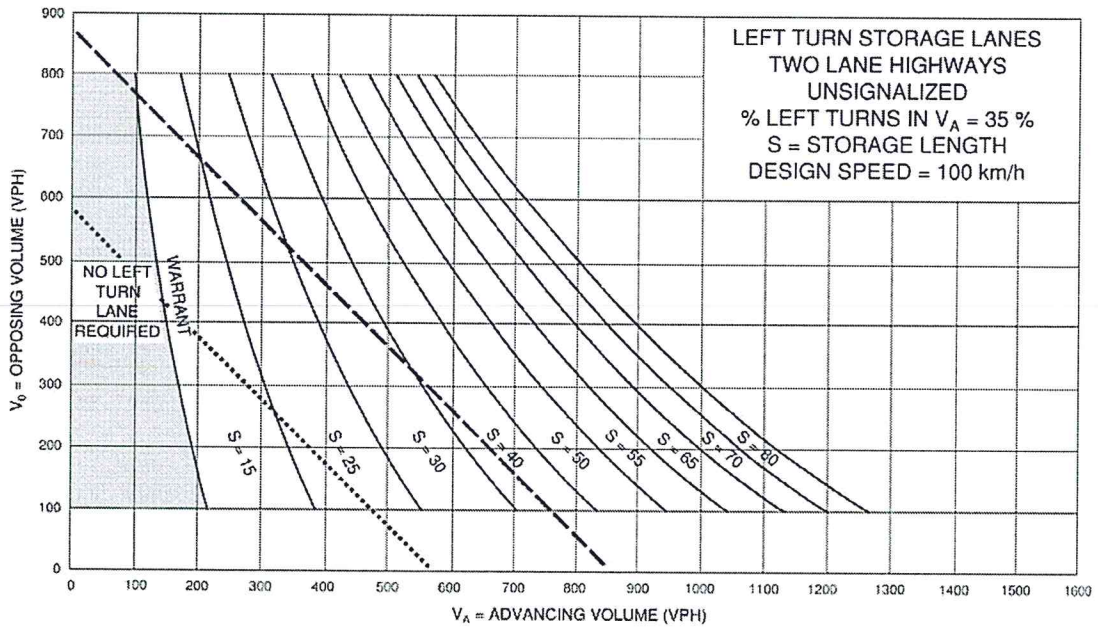
Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						175								87		
Capacity, c (veh/h)						635								1342		
v/c Ratio						0.28								0.06		
95% Queue Length, Q ₉₅ (veh)						1.1								0.2		
Control Delay (s/veh)						12.8								7.9		
Level of Service, LOS						B								A		
Approach Delay (s/veh)					12.8								3.4			
Approach LOS					B											

Exhibit 9A-25



- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW
- TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

