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Re: Redtail Winery & Resort

Lot #19538 Loyalist Parkway; Pt Lt 30 Con 3 Hillier Pt 1 47R2107 & Pt 1 47R3032 Except Pt 1 47R7047; Ward of Hillier

Subject: Commercial Entrance Traffic Brief

Greer Galloway Project Number: 1937682

PEC Project Number: OPA1-2019; Z59-19

The following is a summary of available information, including references to the following documents previously provided by The Greer Galloway Group:

- Redtail East Development – Traffic Impact Review, July 15 2019
- Redtail East Development – Entrance Matrix, March 11 2020

The general intent and nature of the development remains similar to that considered in previous submissions, however, the 50 guestroom resort hotel building has been replaced with 38 smaller room clusters in the form of 32 hotel buildings and 6 villas totalling 148 bedrooms.

The following has been updated to reflect the current development plan as illustrated by the Design Concept Package prepared by ERA Architects Inc. dated July 7th, 2021.

1. Existing Conditions

The subject property is rural with a mixture of agricultural and forested lands and is 56 hectare in size. There is a creek running through the property slightly south of its midpoint.

Loyalist Parkway (County Road 33) runs along the west side of the property. Towards the southern tip of the property is the T intersection of County Road 20 and Loyalist Parkway. North of the centre of the property is the T intersection of Partridge Hollow Road.

As is typical with a long narrow rural property such as this there are a number of field entrances along its length with one more formal existing entrance used to access the existing working buildings supporting the existing agricultural activities.

Loyalist Parkway is a former provincial highway with a paved driving surface (7.5m +/-), gravel shoulders (2.0m +/-) and roadside drainage.

Loyalist Parkway has a speed limit of 80 km/h and is identified as a tourism corridor in the Prince Edward County Official Plan.

Partridge Hollow Road is a municipal roadway and its intersection with Loyalist Parkway is located in the top half of the property where the proposed development is planned. Partridge Hollow Road local rural road with a 70 km/h speed limit.



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October 8th, 2021



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The image below shows Loyalist Parkway at Partridge Hollow Road looking south in the direction of the proposed development entrance.



The image below shows the existing entrance to the subject property looking north towards Partridge Hollow Road.



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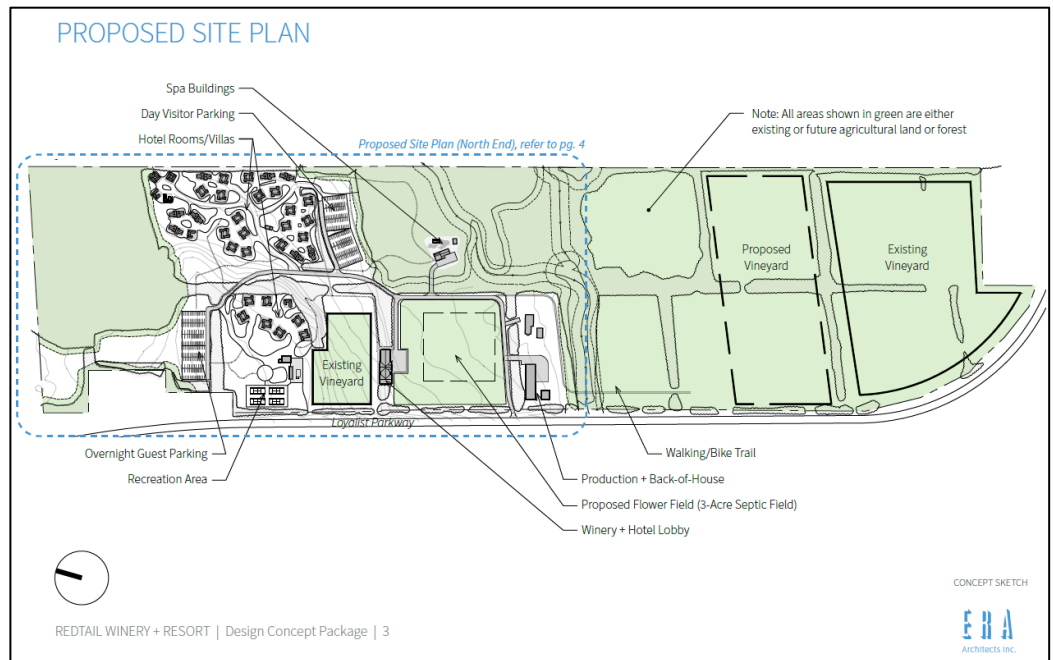
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2. Proposed Development

The proposed development will include:

- 32 hotel buildings and 6 villas totalling 148 bedrooms. These smaller buildings will be modular in design and vary in their shape and size.
- Winery and Hotel Lobby, 15,500 ft². It will include various spaces for a wide range of uses including hotel reception and lobby; staff and meeting rooms; restaurant; retail and venue space.
- Spa Buildings
- Production Buildings
- Parking Areas
- Recreation, Landscaping and Agricultural Areas

An excerpt from the ERA Architects Design Concept Package is provided below for reference.



All development relevant to traffic and the site entrance is located north of the creek crossing.

The Partridge Hollow Road T intersection is located roughly opposite the “Winery + Hotel Lobby” building.

The development entrance will be located roughly 200m south of Partridge Hollow Road.

(Note: It is reasonable to anticipate some minor changes in the site plan as the approval process runs its course. Only changes that are felt to be significant and directly relevant to entrance traffic may warrant a revision to this document.)



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3. Background Traffic

Background traffic count 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 24th, 2018 traffic count on Loyalist Parkway 650m south of County Road 1 indicate a traffic volume of 235 vehicles during the peak hour (3:00 pm), distributed roughly 50% northbound and 50% southbound through the day.

This count was recorded on a Tuesday. As the Prince Edward County region and the proposed development has significant tourist activity, it's important to consider weekend conditions as well.

Referencing the Ontario Ministry of Transportation traffic data (Provincial Highways Traffic Volumes 1988-2016) the closest available section of Highway 33 with similar characteristics to the subject site is located between Bloomfield and Picton. For the period from 2013-2016, this section of highway is categorized as having a "tourist" seasonal variation traffic pattern with summer average daily traffic volumes (SADT) similar to summer average weekday traffic (SAWDT).

Ontario Ministry of Transportation 1988-2016 Traffic Volumes Publication				
	SADT	SAWDT	Difference	
2013	7800	7650	150	1.9%
2014	7900	7850	50	0.6%
2015	8050	8000	50	0.6%
2016	8100	8050	50	0.6%

SADT - Summer Average Daily Traffic
SAWDT - Summer Average Weekday Traffic

These values show that summer weekday traffic is slightly lower than the average for the entire week. Higher weekend traffic is responsible for this increase. As the weekend volumes will be higher than the average weekday volumes, the percentage to convert weekday to weekend volumes will be greater than that shown above (but still minor).

We have applied a 2.5% increase to convert traffic from weekday to weekend volumes.

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

(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.)



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4. Trip Generation

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.

The proposed development is not clearly separated into one land use versus another. Elements of each land use overlap from one building / area to another. Accordingly, assumptions have been made as noted.

Land Use 330: Resort Hotel

A resort hotel is similar to a hotel (Land Use 310) in that it provides sleeping accommodations, restaurants, cocktail lounges, retail shops, and guest services. The primary difference is that a resort hotel caters to the tourist and vacation industry, often providing a wide variety of recreational facilities / programs (golf courses, tennis courts, beach access, or other amenities) rather than convention and meeting business.

Results for this land use are as follows:

- Weekday PM Peak Hour of Generator
(* no weekend records are available.)
- 148 rooms
- Average trip generation rate = 0.50 trips / room during the peak hour.
- Fitted Curve: Trips = 0.48 (# of rooms) + 8.67
- 50% Entering / 50% Exiting
- 80 Total Trips

Land Use 970: Winery

A winery is a property used primarily for the production of wine. Wineries typically include tasting room facilities and may offer special events such as weddings or parties. Wineries often offer complimentary tours and wine tasting. Visitors also may purchase wine or wine-related products.

The winery is contained in a combined Winery + Hotel Lobby building whose total gross floor area is 15,480 ft². In order to isolate winery related facilities hotel lobby, reception, etc. will be removed. Accordingly, the floor area of the winery will reflect the upper floor area illustrated in the ERA Design Concept or roughly 12,000 ft².

Results for this land use are as follows:

- Saturday Peak Hour of Generator
- 12,000 ft²
- Average trip generation rate = 36.5 trips / 1,000 ft² of gross floor area.
- Fitted Curve: Trips = 21.27(Area)+33.21
- 47% Entering / 53% Exiting
- 288 Total Trips

For comparison, a traffic count at a nearby local winery on County Road 33 near Wellington was conducted. Forty-eight (48) vehicles in total were observed entering and leaving the Sandbanks Estate Winery during a one-hour traffic count

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conducted on Sunday, June 9th 2019 from 2 - 3 pm. Despite this seemingly lower local comparable, the ITE trip generation will be used.

Land Use: Spa

The ITE trip generation document does not provide data for a spa land use. Trip generation for the spa will reflect the estimate used in previous traffic documentation and is estimated based on the following assumptions:

- 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 (previous) site plan.
- Spa usage is expected to be appointment-based with guests arriving throughout the day, likely in groups of 2, and staying for approximately 2 - 3 hours.

Given the above, it is assumed that the spa will generate a total of 65 trips during the Saturday peak hour with 50% entering and 50% exiting.

Summary

Based on the above, the following summarizes the estimated trip generation that may be expected resulting from the proposed facility during a typical summer weekend peak hour.

PROPOSED DEVELOPMENT	TRIP GENERATION		
	Total New Trips (Peak Hour)	Entering %	Exiting %
Hotel (+)	80	56%	44%
Winery (+)	288	47%	53%
Spa	65	50%	50%
TOTAL NEW TRIPS	433		

It should be noted that this is not intended to suggest this is the maximum traffic that can be expected 'ever'. There may be special events that may exceed this but for the purpose of typical operation this volume of vehicles during a single hour is felt to be substantial and more likely than not conservative.

5. Traffic Capacity Assessment

Un-signalized intersection capacity analysis techniques based on the Highway Capacity Manual using HCS 7 software were utilized to determine the level of service (LOS); volume to capacity ratio; and other operational characteristics for the intersection.

The LOS of an intersection is determined by the average total delay for specific turning movements - in particular, the left turn movements to and from the minor road.

A Level of Service "F" is considered an undesirable delay. These high delays are indicative of insufficient gaps of suitable size to permit vehicles to execute their turning movement in the preferred amount of time.



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Level of Service	Average Total Delay (seconds)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	> 50

The following traffic volumes are projected for the proposed development entrance including both background and development site traffic during weekend peak hour conditions over a 10 year horizon.

The intersection was modelled with based on simple two lane traffic both on Loyalist Parkway and the proposed entrance. No turning lanes were considered for this operational assessment.

The following is a summary of the resulting intersection performance results.

PEAK HOUR - 10 Yr Background w. Development		Loyalist Parkway / Development Entrance	10 Yr Horizon
(Development Entrance)			
	ST	SL	
	150	107	
EL	Total: 733		WR
0			110
ET			WL
0			110
	NT	NR	
	150	106	
		Southbound Left Turn	
		Vehicle/Capacity Ratio	0.09
		95% Queue Length (vehicles)	0.3
		Delay (seconds/vehicle)	8.1
		Level of Service	A
		Westbound approach	
		Vehicle/Capacity Ratio	0.44
		95% Queue Length (vehicles)	2.2
		Delay (seconds/vehicle)	16.8
		Level of Service	C

All results for all approaches are acceptable and no additional lanes or other improvements are necessary based on these operational elements.

6. Auxiliary Lane Warrant Assessment

Auxiliary lanes will be considered on Loyalist Parkway as this is a higher speed, uncontrolled through road.

Left Turn Lane

When the number of left turning vehicles at an intersection is such that it creates a hazard and reduced the capacity, consideration should be given to separating the turning traffic from the through traffic.

Left turn lane warrants are based on the Ontario Ministry of Transportation supplement to the Transportation Association of Canada (TAC) Geometric Design Standards.

The following considers a volume warrant where opposing traffic volumes are such that left turning vehicles must wait for gap to make their turn which interferes with through traffic. The magnitude of this interference depends on the opposing volume, advancing volume and the percentage of left turning vehicles.

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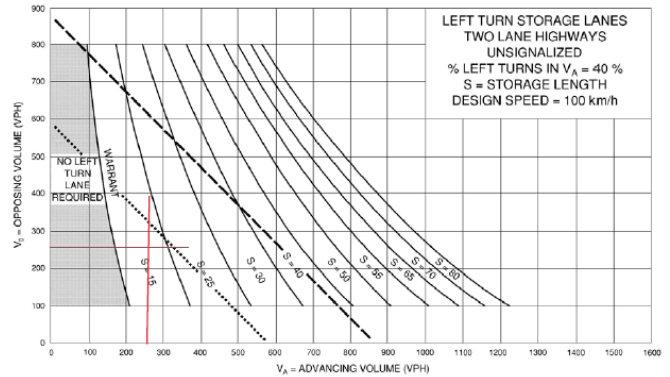
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Conditions at the subject intersection are summarized below.

Loyalist Parkway / Development Entrance	10 Yr Horizon
Southbound Left Turn	
Northbound Through	150
Northbound Right	106
Southbound Left	107
Southbound Through	150
VA (Advancing volume =SL+ST)	257
VA% (% left turns in Advancing Volume)	42%
V0 (Opposing volume = NT + NR)	256
Left Turn Warrant (Y/N)	Yes



Right Turn Lane / Taper

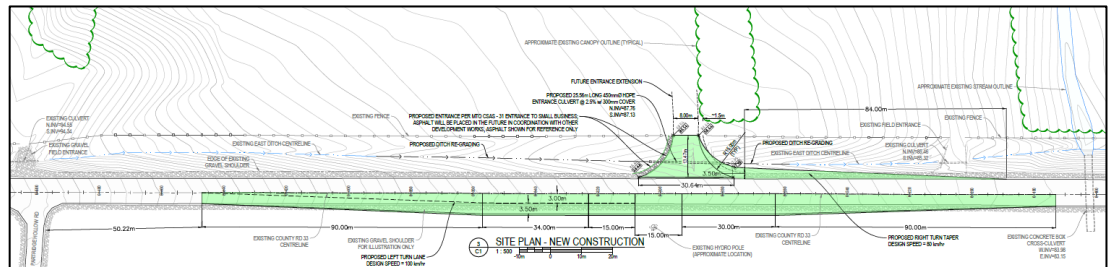
When right turning volumes exceed 60 vehicles per hour, consideration should be given to making provisions to reduce interference with through traffic.

Right turning traffic is estimated to be 106 vehicles per hour during the peak hour.

In this instance we recommend constructing a full right turn taper. This taper would widen to 3.5m over a distance of roughly 85m to separate right turning movement from the through traffic.

Auxiliary Lane Layout

A possible layout of a left turn lane and right turn taper is provided below for reference.



7. Sight Distance Requirements

The Ontario Ministry of Transportation (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.

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 stated in Table 10 of the guideline.

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

The location of the proposed entrance was originally located opposite Partridge Hollow Road. It has now been relocated to the south where sight lines in both directions are maximized.

This location has been accepted and supported by the County and is felt to meet the necessary sight distance requirements.

8. Emergency Vehicle Access

The Ontario Building Code provides the following requirements relating to emergency vehicle access:

THE ONTARIO BUILDING CODE

3.2.5.6. Access Route design

- 1) A portion of a roadway or yard provided as a required access route for fire department use shall,
 - a) have a clear width not less than 6 m, unless it can be shown that lesser widths are satisfactory,
 - b) have a centreline radius not less than 12 m,
 - c) have an overhead clearance not less than 5 m,
 - d) have a change of gradient not more than 1 in 12.5 over a minimum distance of 15 m,
 - e) be designed to support the expected loads imposed by firefighting equipment and be surfaced with concrete, asphalt or other material designed to permit accessibility under all climatic conditions,
 - f) have turnaround facilities for any dead-end portion of the access route more than 90 m long, and
 - g) be connected with a public thoroughfare.

Provisions are being made for these access requirements in the site plan and will be detailed as part of the site plan application process.

9. Entrance Design

Where possible, consistent with Ontario Ministry of Transportation access management standards, we recommend the entrance reflect MTOD 305.140 Commercial Entrance to Small Businesses including a width of 8m and radii of 15m.

10. Conclusion

Based on our review, we can provide the following comments regarding the impact of the proposed Redtail Resort + Winery development on Loyalist Parkway (County Road 33):

- 1) The development is expected to operate at acceptable levels of service at the proposed new entrance onto Loyalist Parkway.
- 2) A left turn lane with 15 metre storage is recommended on Loyalist Parkway (County Road 33) to accommodate traffic entering the proposed development from the north.

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- 3) A right turn taper on Loyalist Parkway is recommended to accommodate traffic entering the proposed development from the south.
- 4) The proposed location of the entrance – south of Partridge Hollow Road – will provide acceptable lines of sight.
- 5) Emergency vehicle access will be provided and detailed as part of the detailed design process.
- 6) An entrance consistent with MTO MTOD 305.140 is recommended.

If there are any questions or comments, please contact the undersigned.

Sincerely,

**THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS**



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