

1244 County Road 2 Event Venue and Cabins Traffic Impact Study

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Prepared for:

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1 INTRODUCTION

The Greer Galloway Group has been retained to complete a Traffic Impact Study (TIS) in consideration of the proposed development of a new event venue and 15 rental cabins at 1244 County Road 2, north of Wellington in Prince Edward County (see Figure 1: Proposed Development Location below). The proposed site plan is provided in Appendix A.



Figure 1: Proposed Development Location

This TIS will address the approval process requirements for the County by considering traffic impacts under anticipated future conditions. It will determine what (if any) impact the development may have on the adjacent road network and provide recommendations regarding the continued provision of appropriate operational levels of service and safety.

2 EXISTING CONDITIONS

The subject property is located in a rural area on the east side of County Road 2, approximately 5 km north of the community of Wellington. Access to the development will be provided by two proposed new entrances onto County Road 2 (see Figure 2 below).

County Road 2 is a paved, two-lane rural arterial/collector road with a posted speed limit of 80 km/h near the development site. It provides a direct route into Wellington from County Road 1, one of the County's east-west tourism corridors from Consecon to Highway 62. The intersection of County Road 2 with County Road 1 (approximately 700 m north of the proposed north development entrance) is a 4-way stop-controlled intersection with overhead flashing beacon.

Other nearby roads include:

- Closson Road - local rural road with 50 km/h speed limit (intersects with County Road 2 approximately 500 metres north of the proposed north development entrance).
- Wilson Road - local rural road with 70 km/h speed limit (approximately 1.5 km south of the proposed south entrance).

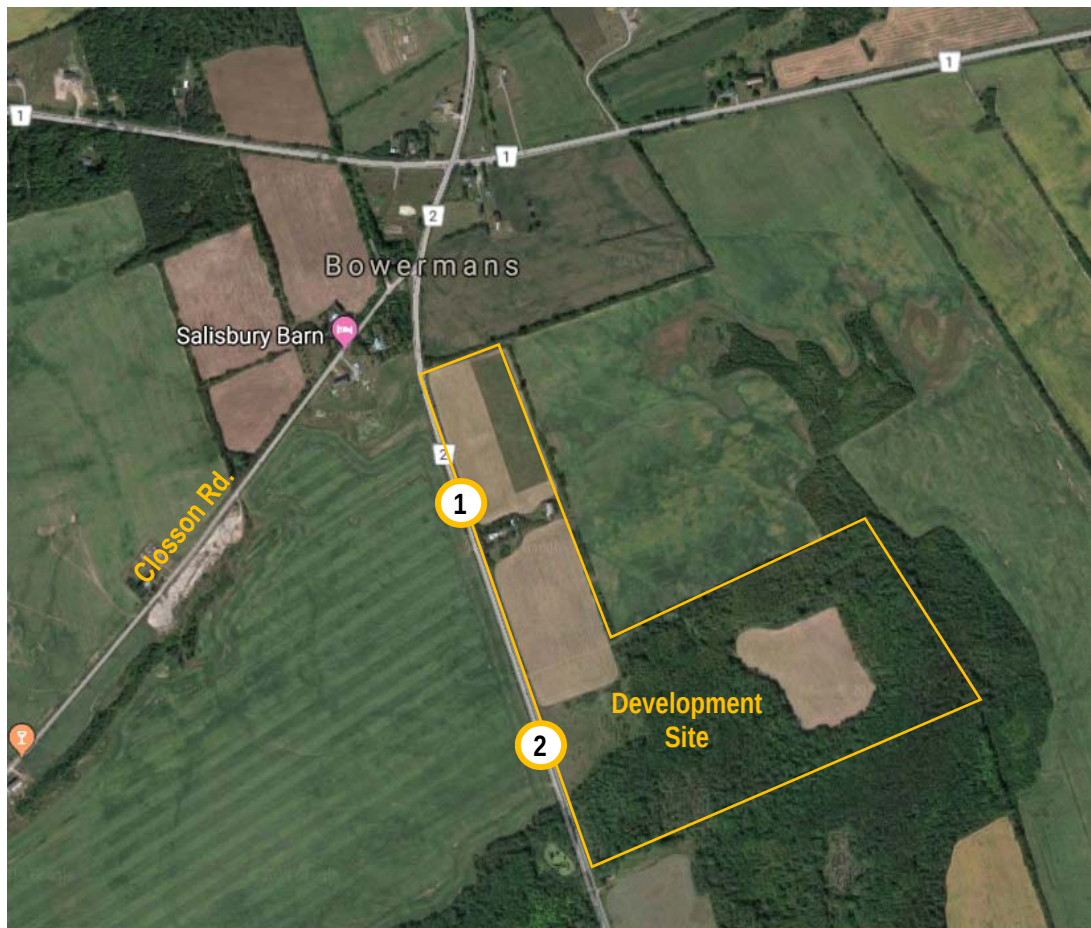


Figure 2: Proposed Development Entrance Locations



Figure 3: County Road 2 at Development Site Looking South (Google Streetview - June 2015)

3 STUDY AREA

This TIS will assess the impact of the subject development on the proposed new entrances onto County Road 2 (see Figure 2).

The impact on adjacent County Road 2 intersections (e.g. Closson Road, Wilson Road, County Road 1) will only be considered if the impact at the development entrance is significant enough to suggest that this is warranted.

4 DEVELOPMENT LAND USE, SITE PLAN & SIZE

The proposed site plan for the development is provided in Appendix A.

We understand the proposed development will contain the following:

- Wedding/event venue with approximately 250-person capacity in the existing barn
- 15 rental cabins intended to provide accommodations for guests of the event venue

- Separate parking areas and entrances for the event venue (Entrance 1) and cabins (Entrance 2).
- The cabin parking lot will contain approximately 20 parking spaces for the office and tuck shop area. Cabins will be accessed by an internal laneway with individual parking spaces provided for each cabin.

5 STUDY HORIZONS

The traffic impacts of the proposed development will be assessed assuming full build out at two points in time: the current year (2019), and a 10-year projection (2029) to ensure that any proposed measures remain suitable over time, allowing for projected increases in background traffic.

6 OTHER DEVELOPMENT & PLANNED ROAD IMPROVEMENTS

There are no other developments in the immediate area specifically known to be imminent that will affect the recommendations made herein.

7 TRAFFIC ANALYSIS

7.1 REVIEW OF EXISTING TRAFFIC COUNT DATA

A review of traffic counts provided by Prince Edward County for County Road 2 south of Closson Road yields the following information.

- 1) Traffic count data was collected over 24 hours beginning at noon on Monday, July 24th, 2017. A copy is included in Appendix B.
- 2) The total traffic volume recorded during the count was 2325 vehicles.
- 3) Peak hour traffic volumes were as follows:
 - a) AM Peak - 156 vehicles (11am - noon)
 - b) PM Peak - 233 vehicles (4:15pm - 5:15 pm)
- 4) The average directional traffic distribution during the PM hours was 50% northbound and 50% southbound.

7.2 BACKGROUND TRAFFIC FORECASTS

In the absence of historical background traffic data, a 2% year over year increase in background traffic is assumed. This factor is used to estimate the level of background traffic that will be present throughout the 10-year study horizon. It is also used to project the 2017 traffic count data into the current year. New traffic from the proposed development does not have the growth factor applied since full build-out and utilization of the facility is assumed from the outset.

Since the traffic count was conducted at the end of July during the peak summer tourist season, no adjustments for seasonal variation have been applied.

Although the event venue is likely to generate weekend traffic, no adjustments for weekday versus weekend traffic were felt to be necessary. It is expected that any general increases in tourist traffic on weekends will be offset by decreases in commuter traffic.

7.3 TRIP GENERATION AND DISTRIBUTION

Trip generation refers to the total number of new vehicle trips that will be entering and/or leaving a property as a direct result of new development. The Institute of Transportation Engineers (ITE) Trip Generation Manual (10th ed) provides models to estimate trip generation for various common land uses. The ITE document provides data for various types of hotel and motel accommodations and recreational facilities but does not contain suitable data for the event venue and rental cabin land uses. Therefore, trip generation for the proposed development is estimated based on the expected capacity and usage of the site.

Trip generation assumptions including the directional distribution of new trips are summarized below:

- 1) The wedding/event venue is assumed to generate 188 trips in total during the peak hour when guests are arriving at the site. This is a conservative estimate based on 75% of the 250-person capacity of the venue since it is believed that the majority of guests will arrive in pairs over several hours.
- 2) It is assumed that 80% of the traffic generated by the wedding venue will enter the property at the proposed new entrance (Entrance 1) during the peak hour, with the remaining 20% leaving. This results in 150 trips entering and 38 trips leaving during the peak hour.
- 3) The guest cabins are assumed to generate a total of 30 trips during the peak hour at the proposed entrance to the cabin parking lot (Entrance 2). Based on approximately 15 cabins, this represents one trip per cabin both entering and leaving during the peak hour, a worst-case scenario that likely overstates the actual traffic that will be generated by this use.
- 4) Since the rental cabins are intended to provide accommodations for guests of the wedding/event venue, the peak hour for traffic generated by the cabins is not expected to

coincide with the peak hour of the event venue. Therefore, these two proposed entrances are considered separately with no influence on each other during the respective peak hours.

- 5) In the event that an internal laneway is constructed between the cabins and wedding venue, any internal trips between them have been ignored as these will only tend to reduce the number of trips arriving via the County Road 2 entrances.
- 6) The direction of new trips entering and leaving the proposed development is assumed to be split evenly between northbound and southbound directions on County Road 2 consistent with the background traffic.
- 7) The peak hour for traffic entering the event venue is assumed to coincide with the peak hour of the background traffic on County Road 2. Although this is not likely, it presents a worst-case scenario for analysis of the traffic impact of the proposed development and allows for possible alternative venue uses with different operation times.

7.4 BACKGROUND TRAFFIC DISTRIBUTION

The background through traffic distribution at the two proposed development entrances on County Road 2 is illustrated below for the PM peak hour. The following abbreviations are used to describe the possible traffic movements at the entrance:

Legend		
NR - Northbound right turn	SL - Southbound left turn	WR - Westbound right turn
NT - Northbound through	ST - Southbound through	WL - Westbound left turn

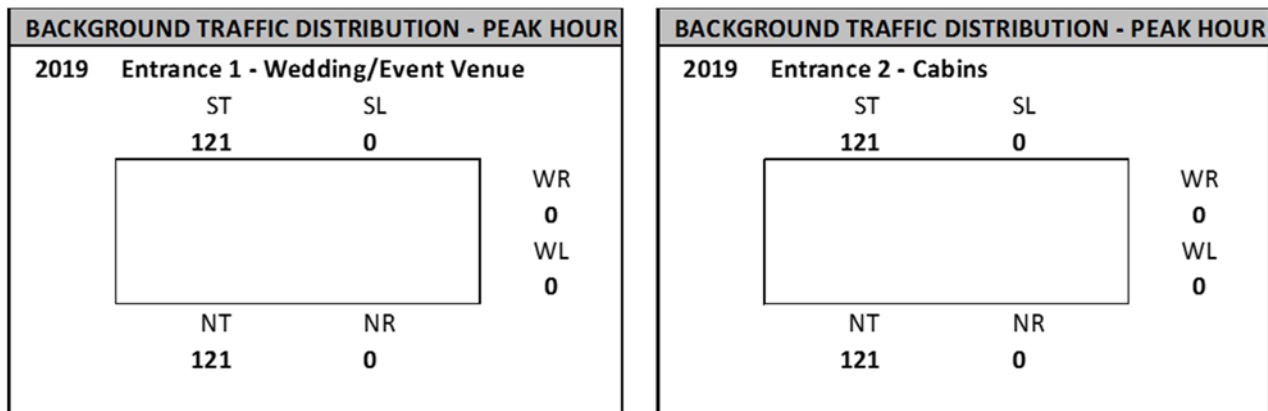


Figure 4: Background Traffic at Proposed Development Entrances

7.5 INTERSECTION TRAFFIC DISTRIBUTION - CURRENT YEAR AND 2029 PROJECTION

The traffic distribution at the proposed development entrances onto County Road 2 including projected background traffic and new trip generation resulting from full build-out of the proposed development is shown below. Calculations are shown in Appendix C.

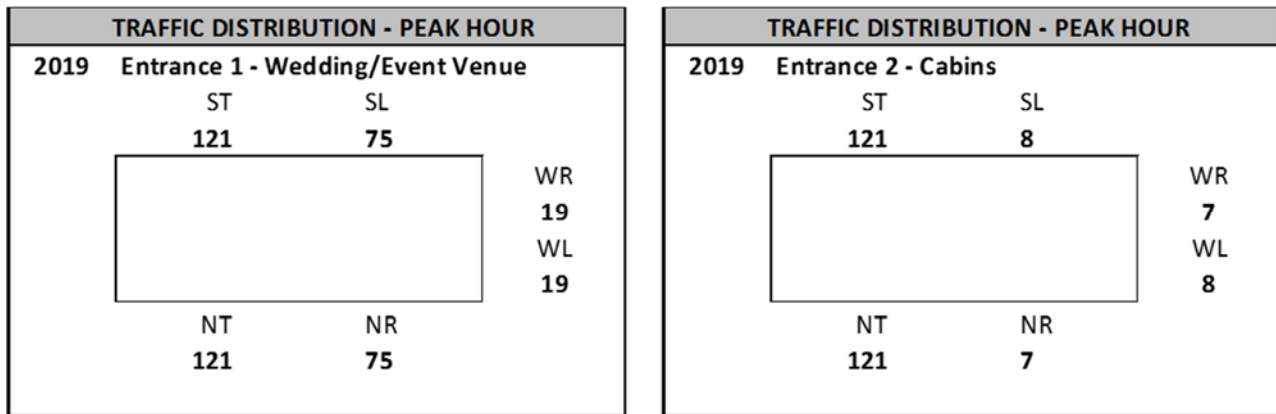


Figure 5: Peak Hour Traffic Distribution at Proposed Development Entrances - Current Year

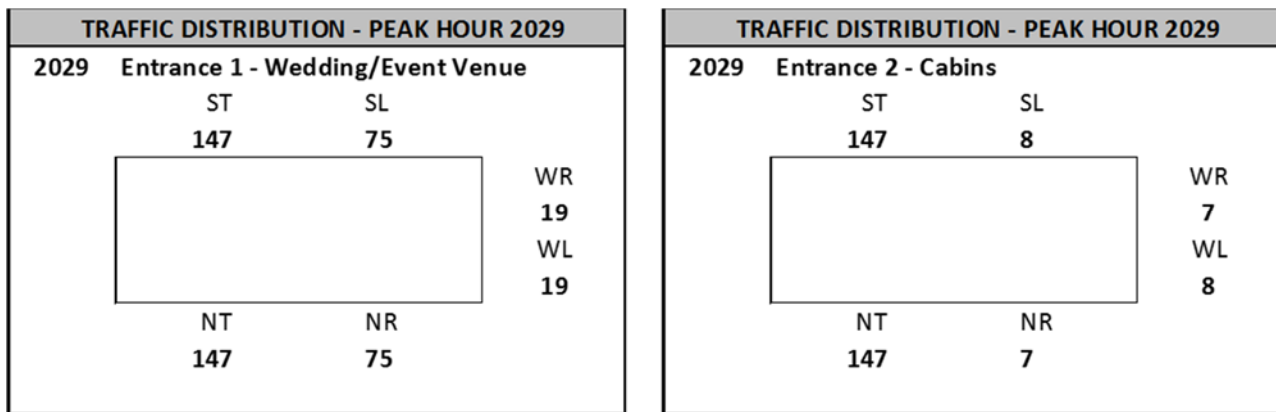


Figure 6: Peak Hour Traffic Distribution at Proposed Development Entrances - 10-year Projection

8 LEVEL OF SERVICE

Un-signalized intersection capacity analysis techniques based on the *Highway Capacity Manual* (using HCS 2010 Un-signalized Intersections software) were utilized to determine the level of service (LOS) at the subject intersections. 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" (delay greater than 50 seconds) is considered to be 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.

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

Table 1: Definition of Level of Service for Un-signalized Intersections

8.1 LEVEL OF SERVICE - RESULTS

The levels of service for the County Road 2 development entrances are summarized below. Left turn movements are considered critical since they are typically responsible for the greatest number of and most significant conflicts with opposing traffic. Detailed HCS output files are attached in Appendix D for reference.

Development Entrance Approaches	Entrance 1 Event Venue		Entrance 2 Cabins	
	2019	2029	2019	2029
Southbound Left Turn				
Vehicle/Capacity Ratio	0.06	0.06	0.01	0.01
95% Queue Length (vehicles)	0.2	0.2	0.0	0.0
Delay (seconds/vehicle)	7.8	7.9	7.5	7.6
Level of Service	A	A	A	A
Westbound approach				
Vehicle/Capacity Ratio	0.06	0.07	0.02	0.02
95% Queue Length (vehicles)	0.2	0.2	0.1	0.1
Delay (seconds/vehicle)	10.9	11.3	9.7	10.0
Level of Service	B	B	A	A

Table 2: LOS for Proposed Development Entrances on County Road 2

The levels of service for southbound left turns from the major road (County Road 2) at both proposed entrances are in the "A" range with delays less than 8 seconds and minimal queuing.

The westbound stop-controlled approaches from the proposed development entrances have slightly higher delays as expected. Levels of service for the cabins entrance (Entrance 2) remain in the "A" range with delays of approximately 10 seconds, while the event venue entrance (Entrance 1) which has higher expected traffic volumes has levels of service in the "B" range and delays of approximately 11 seconds.

Overall, these results suggest that the proposed new entrances at County Road 2 will operate under capacity, without excessive delay, throughout the 10-year study horizon.

9 TURNING LANE ANALYSIS

9.1 LEFT TURN LANES

When the number of left-turning vehicles at an intersection approach is such that it creates a hazard and reduces capacity, consideration should be given to the provision of a separate left turn lane, including deceleration lane and left turn storage lane.

Left turn lanes added to the left of through travel lanes provide a refuge for left turning traffic waiting to make the turn. Such lanes limit the interference with following through traffic by allowing the left turning traffic to move into the dedicated lane, slow down, and wait for a suitable gap in oncoming traffic to make the turn.

Warrants are based on the MTO Design Supplement to the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads.

Design speed can be assumed to be equal to the posted speed limit, 10 km/h or 20 km/h over the posted legal speed limit depending on the conditions. Based on the 80 km/h posted speed limit on County Road 2, a design speed of 90 km/h has been used to assess the left turn warrants.

The results of the left turn warrant analysis for County Road 2 (CR 2) at the proposed development entrances are presented below.

CR 2 Proposed Development Entrances	Entrance 1 Event Venue		Entrance 2 Cabins	
	2019	2029	2019	2029
Southbound Left Turn				
NT	121	147	121	147
NR	75	75	7	7
SL	75	75	8	8
ST	121	147	121	147
VA (Advancing volume =SL+ST)	196	222	129	155
VA% (% left turns in Advancing volume =SL/VA)	38%	34%	6%	5%
V0 (Opposing volume = NT + NR)	196	222	128	154
Left Turn Warrant (Y/N)	N	N	N	N

Table 3: Southbound Left Turn Lane Warrants at CR 2 Development Entrances (90 km/h design speed)

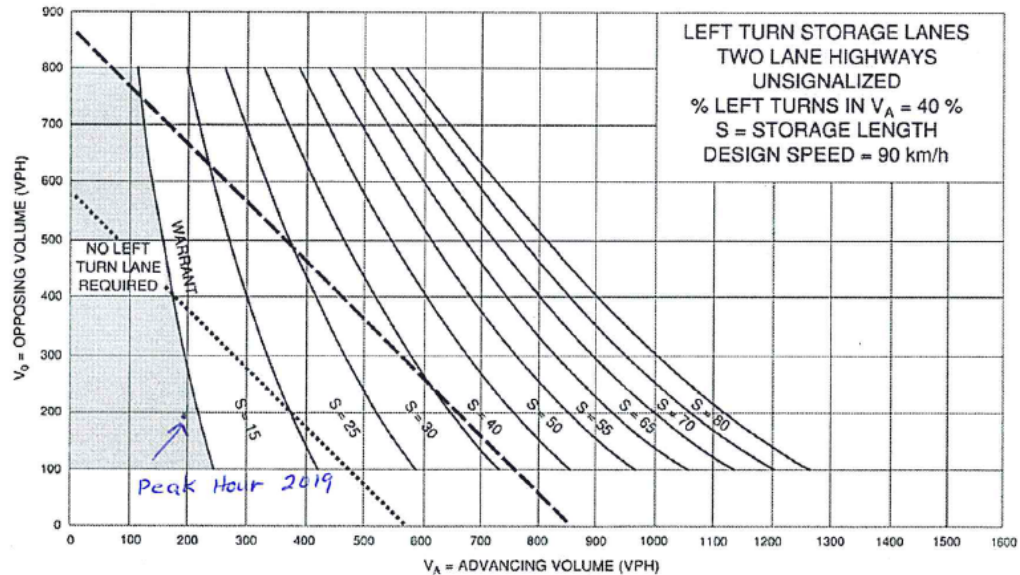


Figure 7: Southbound Left Turn Warrant Illustration for CR 2 at Event Venue Entrance - Peak Hour 2019 (based on TAC Geometric Design Guide for Canadian Roads - MTO Supplement Exhibit 9A-21)

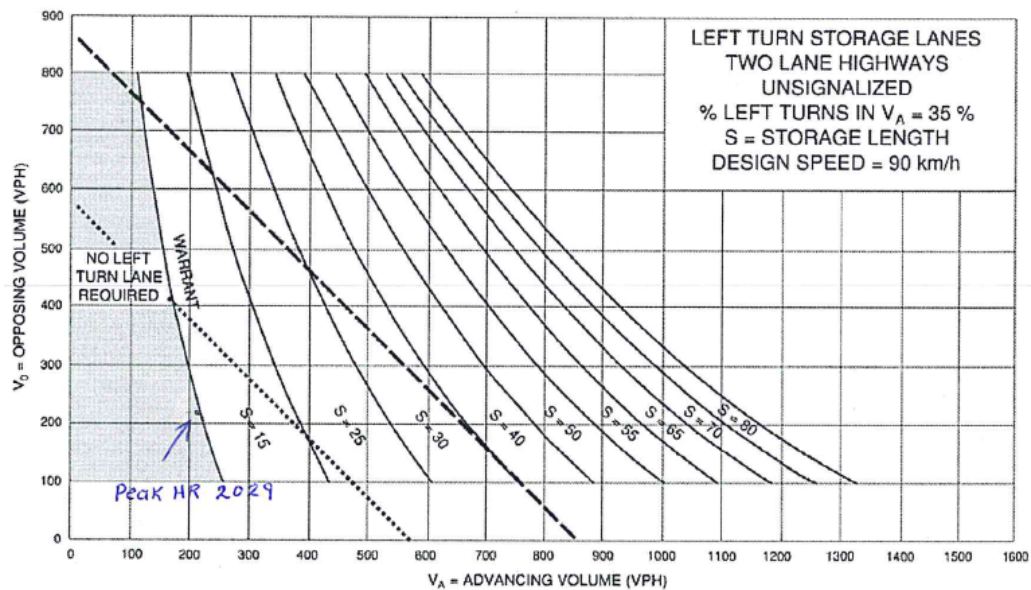


Figure 8: Southbound Left Turn Warrant Illustration for CR 2 at Event Venue Entrance - Peak Hour 2029 (based on TAC Geometric Design Guide for Canadian Roads - MTO Supplement Exhibit 9A-21)

Based on the TAC/MTO geometric design guidelines, a left turn lane on County Road 2 is not required to accommodate the peak hour traffic generated by the proposed development throughout the study horizon.

9.2 RIGHT TURN DECELERATION LANE AND/OR TAPER

The TAC Geometric Design Guide (9.14) suggests the use of a right-turn auxiliary lane on urban and rural roads when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard. Right turn tapers without auxiliary lanes may be added to intersection approach legs to facilitate the right-turn movement and to reduce interference with through traffic.

A right-turn channelization volume warrant of 60 vehicles per hour is often used as an indicator that a more detailed capacity analysis of the intersection and geometric options for accommodating right turning traffic is required (9.15.5).

Since northbound right turning traffic at the event entrance (75 vehicles during the peak hour) exceeds the 60 vehicles per hour threshold, a right turn taper may be considered at this entrance if the municipality has required a similar treatment at other sites.

10 LINE OF SIGHT / VISIBILITY

We have not conducted field assessments to determine available sight lines at the proposed development entrances onto County Road 2. However, sightlines to the north of the proposed event venue entrance (Entrance 1) appear to be affected by a horizontal curve in the roadway at the north end of the development property approaching Closson Road. Based on aerial imagery and the approximate location of the proposed entrance, the available sight distance to the north at Entrance 1 appears to be sufficient to meet the MTO requirement of 290 metres. This will need to be confirmed once the location of the entrance is finalized. Sight distances to the south at Entrance 1, as well as those in both directions at Entrance 2 appear to be well in excess of 290 metres.

The following sight distance references are provided for consideration.

MTO Highway Access Management Guideline

Sight distances below are for commercial accesses onto a 2-lane highway, assuming 3% grade or less, and 90 km/h design speed. The entering sight distance is from the point of view of a motorist waiting to enter or cross the highway, while the stopping sight distance applies to motorists travelling along the highway. Note that these sight distances are calculated assuming travel times for multi-unit trucks rather than passenger cars.

- Minimum Stopping Sight Distance (Table 9) - 160 m
- Entering Sight Distance (Table 7) - 290 m

11 CONCLUSIONS

Based on the traffic impact considerations detailed herein, we draw the following conclusions regarding the impact of the proposed Brighthouse Farm event venue and rental cabins development at 1244 County Road 2 on the existing municipal road system immediately adjacent to the site.

- 1) The proposed development is expected to operate at acceptable levels of service throughout the 10-year study horizon.
- 2) Left turn lanes are not anticipated to be required on County Road 2 at either of the proposed new entrances to accommodate the additional traffic generated by the proposed development.
- 3) A right turn taper may be considered on County Road 2 at the proposed event venue entrance (Entrance 1) to reduce interference with through traffic during peak hours, if typically required by the County.

Respectfully submitted,

Written by,



Matthew McIntosh, P. Eng.

A handwritten signature in blue ink, appearing to read "S. O'Rourke".

Shannon O'Rourke, BSc

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

APPENDIX A

Preliminary Site Plan

Appendix 3 – Preliminary Concept for Discussion



APPENDIX B

Traffic Count Data

MetroCount Traffic Executive Vehicle Counts

VehicleCount-45 -- English (ENC)

Datasets:

Site: [County Road 2] 55m South of County Road 1 and just south of Colosson Road
Attribute:
Direction: 5 - South bound A>B, North bound B>A. Lane: 0
Survey Duration: 9:41 July-24-17 => 11:27 July-26-17,
Zone:
File: TC292_County Rd 2.EC0 (Plus)
Identifier: ED53T7YJ MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 12:00 July-24-17 => 12:00 July-25-17 (1)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 10 - 160 km/h.
Direction: North, East, South, West (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 2325 / 4642 (50.09%)

* July-24-17 - Total=1477 (Incomplete) , 15 minute drops

0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
-	-	-	-	-	-	-	-	-	-	-	-	171	160	177	181	216	190	126	104	65	38	32	17
-	-	-	-	-	-	-	-	-	-	-	-	41	37	54	53	47	64	39	25	16	9	6	4
-	-	-	-	-	-	-	-	-	-	-	-	56	39	33	50	62	44	28	27	21	12	12	10
-	-	-	-	-	-	-	-	-	-	-	-	36	32	32	47	51	47	26	22	13	6	6	3
-	-	-	-	-	-	-	-	-	-	-	-	38	52	58	31	56	35	33	30	15	11	8	0

PM Peak 1615 - 1715 (233), PM PHF=0.91

* July-25-17 - Total=848 (Incomplete) , 15 minute drops

[illegible]

MetroCount Traffic Executive Daily Classes by Direction

DayClassSplit-49 -- English (ENC)

Datasets:

Site: [County Road 2] 55m South of County Road 1 and just south of Colosson Road
Attribute:
Direction: 5 - South bound A>B, North bound B>A. Lane: 0
Survey Duration: 9:41 July-24-17 => 11:27 July-26-17,
Zone:
File: TC292_County Rd 2.EC0 (Plus)
Identifier: ED53T7YJ MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm: Factory default axle (v5.02)
Data type: Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time: 12:00 July-24-17 => 12:00 July-25-17 (1)
Included classes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
Speed range: 10 - 160 km/h.
Direction: North, East, South, West (bound), P = North, Lane = 0-16
Separation: Headway > 0 sec, Span 0 - 100 metre
Name: Default Profile
Scheme: Vehicle classification (Scheme F3)
Units: Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile: Vehicles = 2325 / 4642 (50.09%)

Daily Classes by Direction

DayClassSplit-49

Site: County Road 2.0.1SN
Description: 55m South of County Road 1 and just south of Colosson Road
Filter time: 12:00 July-24-17 => 12:00 July-25-17
Scheme: Vehicle classification (Scheme F3)
Filter: Cls(1-13) Dir(NESW) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

July-24-17

	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Mon*	7	1156	250	14	23	19	1	2	5	0	0	0	0	1477
(%)	0.5	78.3	16.9	0.9	1.6	1.3	0.1	0.1	0.3	0.0	0.0	0.0	0.0	
AB	2	574	119	6	16	12	1	1	3	0	0	0	0	734
AB%	28.6	49.7	47.6	42.9	69.6	63.2	100.0	50.0	60.0	0.0	0.0	0.0	0.0	49.7
BA	5.0	582.0	131.0	8.0	7.0	7.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	743.0
BA%	71.4	50.3	52.4	57.1	30.4	36.8	0.0	50.0	40.0	0.0	0.0	0.0	0.0	50.3
Tue*	4	610	175	13	24	14	0	1	5	2	0	0	0	848
(%)	0.5	71.9	20.6	1.5	2.8	1.7	0.0	0.1	0.6	0.2	0.0	0.0	0.0	
AB	2	308	110	9	20	10	0	1	3	0	0	0	0	463
AB%	50.0	50.5	62.9	69.2	83.3	71.4	0.0	100.0	60.0	0.0	0.0	0.0	0.0	54.6
BA	2.0	302.0	65.0	4.0	4.0	4.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	385.0
BA%	50.0	49.5	37.1	30.8	16.7	28.6	0.0	0.0	40.0	100.0	0.0	0.0	0.0	45.4
Wed*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AB%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thu*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AB%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fri*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AB%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AB%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sun*	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AB	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AB%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BA%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Average daily volume

Entire week No complete days.

Weekdays No complete days.

Weekend No complete days.

* - Incomplete

APPENDIX C

Trip Generation Calculations

Peak Hour Trip Generation

Brighthouse Farm

Project 1836383

Wedding/Event Venue Entrance (1)

Assumptions:

Yearly increase in background traffic 2%

Trip Generation

		Entering		Leaving		
		%	trips	%	trips	
Wedding/Event Venue (250-person capacity)	188	80%	150	20%	38	(T= 250 x 0.75)
15 Rental Cabins	30	50%	15	50%	15	(T = 15 x 2)

New Trip Distribution Calculations

Northbound/Southbound Distribution 50% N, 50% S (based on background traffic)

Total Trips Entering (SL+NR) 150

Total Trips Exiting (WR +WL) 38

TOTAL at Entrance 1 188

PEAK HOUR TOTALS

	DEVELOPMENT		COUNTY ROAD 2				TOTALS
	WL	WR	NT	NR	SL	ST	
Traffic Count (July 2017)			117			117	233
Projected Background 2019			121			121	242
Projected Background 2029			147			147	294
Trip Generation	19	19		75	75		188
PEAK HOUR 2019	19	19	121	75	75	121	430
PEAK HOUR 2029	19	19	147	75	75	147	482

Peak Hour Trip Generation

Brighthouse Farm

Project 1836383

Cabins Entrance (2)

Assumptions:

Yearly increase in background traffic 2%

Trip Generation

		Entering		Leaving		
		%	trips	%	trips	
Wedding/Event Venue (250-person capacity)	188	80%	150	20%	38	(T= 250 x 0.75)
15 Rental Cabins	30	50%	15	50%	15	(T = 15 x 2)

New Trip Distribution Calculations

Northbound/Southbound Distribution 50% N, 50% S (based on background traffic)

Total Trips Entering (SL+NR) 15

Total Trips Exiting (WR +WL) 15

TOTAL at Entrance 2 30

PEAK HOUR TOTALS

	DEVELOPMENT		COUNTY ROAD 2				TOTALS
	WL	WR	NT	NR	SL	ST	
Traffic Count (July 2017)			117			117	233
Projected Background 2019			121			121	242
Projected Background 2029			147			147	294
Trip Generation	8	7		7	8		30
PEAK HOUR 2019	8	7	121	7	8	121	272
PEAK HOUR 2029	8	7	147	7	8	147	324

APPENDIX D

HCS 2010 Output

HCS 2010 Two-Way Stop-Control Report

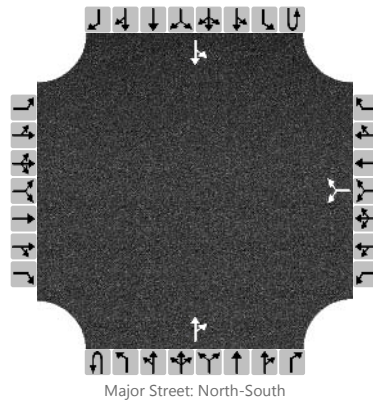
General Information

Analyst	Shannon O'Rourke
Agency/Co.	Greer Galloway
Date Performed	6/19/2019
Analysis Year	2019
Time Analyzed	Saturday Peak Hour
Intersection Orientation	North-South
Project Description	1836383 Brighthouse Farm

Site Information

Intersection	Entrance 1 - Event Venue
Jurisdiction	Prince Edward County
East/West Street	Development Entrance 1
North/South Street	County Road 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

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	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						19		19			121	75		75	121	
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)						42								82		
Capacity, c (veh/h)						648								1349		
v/c Ratio						0.06								0.06		
95% Queue Length, Q ₉₅ (veh)						0.2								0.2		
Control Delay (s/veh)						10.9								7.8		
Level of Service, LOS						B								A		
Approach Delay (s/veh)					10.9								3.3			
Approach LOS					B											

HCS 2010 Two-Way Stop-Control Report

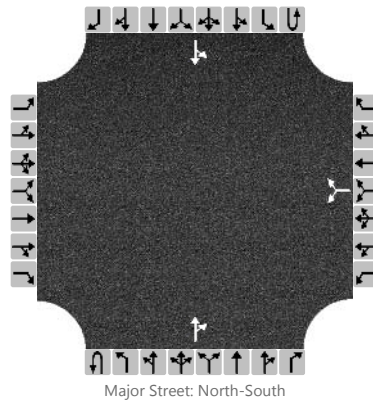
General Information

Analyst	Shannon O'Rourke
Agency/Co.	Greer Galloway
Date Performed	6/19/2019
Analysis Year	2019
Time Analyzed	Saturday Peak Hour
Intersection Orientation	North-South
Project Description	1836383 Brighthouse Farm

Site Information

Intersection	Entrance 2 - Cabins
Jurisdiction	Prince Edward County
East/West Street	Development Entrance 2
North/South Street	County Road 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

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	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						8		7			121	7		8	121	
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)						17								9		
Capacity, c (veh/h)						783								1435		
v/c Ratio						0.02								0.01		
95% Queue Length, Q ₉₅ (veh)						0.1								0.0		
Control Delay (s/veh)						9.7								7.5		
Level of Service, LOS						A								A		
Approach Delay (s/veh)					9.7								0.5			
Approach LOS					A											

HCS 2010 Two-Way Stop-Control Report

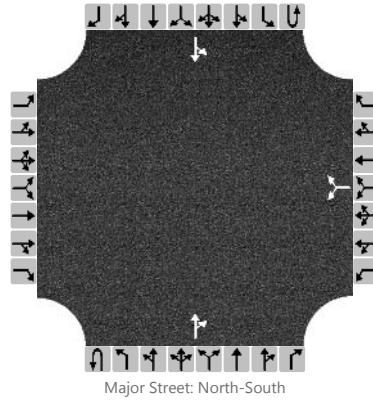
General Information

Analyst	Shannon O'Rourke
Agency/Co.	Greer Galloway
Date Performed	6/19/2019
Analysis Year	2029
Time Analyzed	Saturday Peak Hour 2029
Intersection Orientation	North-South
Project Description	1836383 Brighthouse Farm

Site Information

Intersection	Entrance 1 - Event Venue
Jurisdiction	Prince Edward County
East/West Street	Development Entrance 1
North/South Street	County Road 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

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	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						19		19			147	75		75	147	
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)						42								82		
Capacity, c (veh/h)						609								1317		
v/c Ratio						0.07								0.06		
95% Queue Length, Q ₉₅ (veh)						0.2								0.2		
Control Delay (s/veh)						11.3								7.9		
Level of Service, LOS						B								A		
Approach Delay (s/veh)					11.3								3.0			
Approach LOS					B											

HCS 2010 Two-Way Stop-Control Report

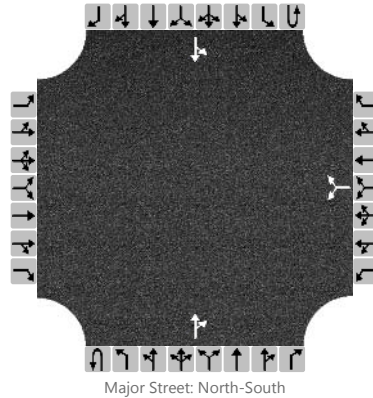
General Information

Analyst	Shannon O'Rourke
Agency/Co.	Greer Galloway
Date Performed	6/19/2019
Analysis Year	2029
Time Analyzed	Saturday Peak Hour 2029
Intersection Orientation	North-South
Project Description	1836383 Brighthouse Farm

Site Information

Intersection	Entrance 2 - Cabins
Jurisdiction	Prince Edward County
East/West Street	Development Entrance 2
North/South Street	County Road 2
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

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	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						8		7			147	7		8	147	
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)						17								9		
Capacity, c (veh/h)						739								1402		
v/c Ratio						0.02								0.01		
95% Queue Length, Q ₉₅ (veh)						0.1								0.0		
Control Delay (s/veh)						10.0								7.6		
Level of Service, LOS						A								A		
Approach Delay (s/veh)					10.0								0.5			
Approach LOS					A											