

November 16, 2023

Project No. 232078

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APPENDIX B: Atlantic Splash Adventure Proposed Campground – Traffic Impact Statement

1 Introduction

Harbourside Transportation Consultants has completed a traffic impact statement, as per Halifax Regional Municipality (HRM) requirements, in support of the development application for the proposed campground on the Atlantic Splash Adventure site located at 1200 Lucasville Road in Hammonds Plains, Nova Scotia.

2 Site Context

The subject site is located on Lucasville Road northeast of Hammonds Plains Road. The site context is shown in Figure 1.



Figure 1: Site Context



3 Existing Transportation Network

Lucasville Road is a major collector roadway that runs northeast-southwest from Sackville Drive to Hammonds Plains Road. Lucasville Road has a two-lane cross-section with one travel lane in each direction. Lucasville Road has a posted speed limit of 50 km/h. There is no transit service on Lucasville Road and there is no existing walking or cycling facilities. The Lucasville Road cross section near the subject site is shown in Figure 2.



Figure 2: Lucasville Road

4 Proposed Development

The proposed development plan consists of adding a campground adjacent to the existing Atlantic Splash Adventure Park. The proposed campground will consist of 44 A-frame tent structures or small cabins. The campground will also include an open play space, as well as guest parking. The proposed site plan is shown in Figure 3.

Vehicle access to the campground is proposed through a new entrance on Lucasville Road approximately 180 metres northeast of the existing Atlantic Splash Adventure driveway. The site plan includes a multi-use trail connection into the park as well as multi-use pathways throughout the campground.

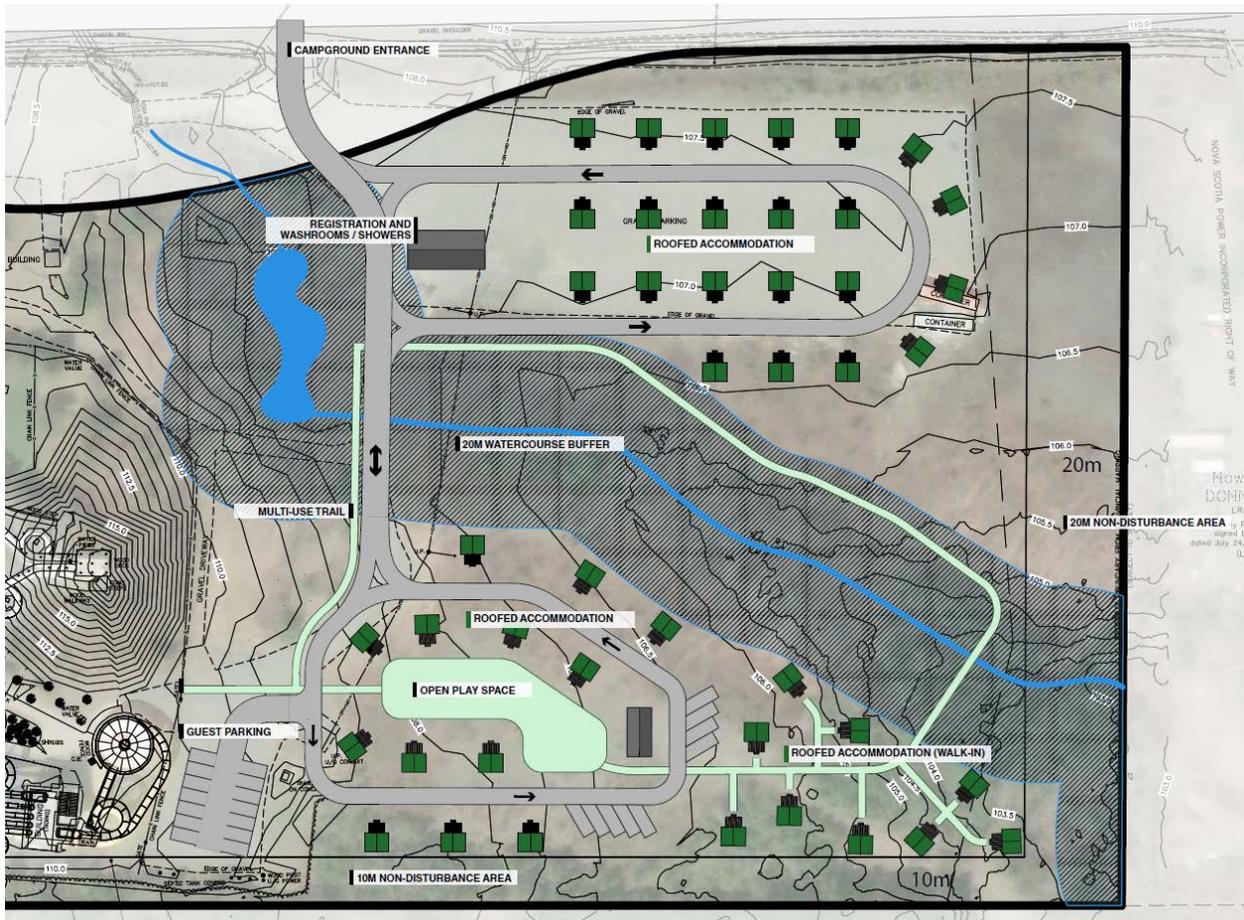


Figure 3: Draft Site Plan

5 Access Site Distance Review

A sight distance review was completed at the proposed access location to confirm that the sight lines meet the minimum stopping and decision sight distance requirements of the Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads¹.

Decision sight distance requirements were calculated for a passenger car and a single-unit truck in order to account for the recreational vehicles coming in and out of the proposed campground. The TAC decision sight distance values are calculated based on the design speed of the roadway and time gaps in major road traffic values that provide sufficient time for the minor road vehicle to accelerate from a stop and complete a left or right turn without unduly interfering with major-road traffic operations. The sight distance calculation for each vehicle type takes into account the

¹ Geometric Design Guide for Canadian Roads, Transportation Association of Canada, June 2017.



slower acceleration speeds of larger vehicles by requiring a longer time gap, and consequently longer sight distance.

The stopping and intersection sight distance requirements for a two-lane undivided roadway and a design speed of 60 km/h (posted speed limit + 10 km/h) are summarized in Table 1. Appendix A contains the sight distance calculations for a single-unit truck.

Table 1: TAC Sight Distance Requirements

Sight Distance Requirements	Passenger Car	Single-Unit Truck
Minimum stopping distance	85 metres	
Minimum intersection sight distance – left turn from stop	130 metres	160 metres
Minimum intersection sight distance – right turn from stop	110 metres	145 metres

The sight line northeast of the proposed access (looking to the right) is shown in Figure 4. There is over 200 metres of sight distance to the right of the access. The sight line southwest of the proposed access (looking to the left) is shown in Figure 5. There is over 180 metres of intersection sight distance left of the access. The minimum stopping and intersection sight distance requirements are met in both directions at the proposed access.

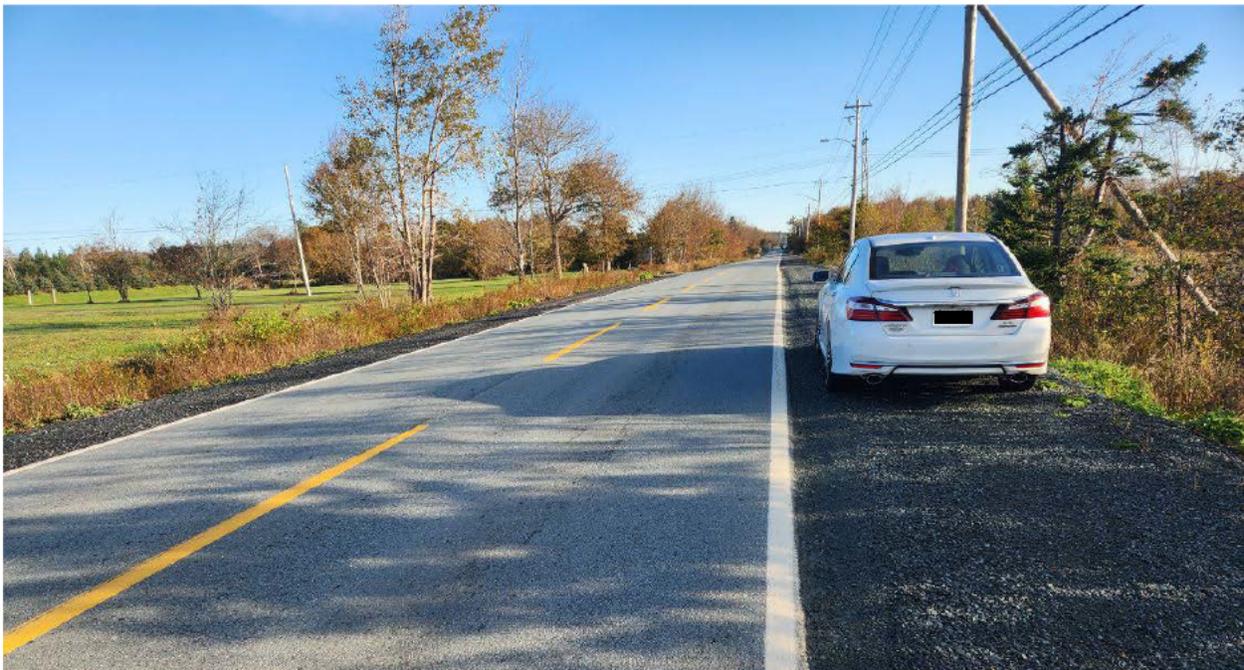


Figure 4: Sight Line Northeast of Access (Looking to the Right)



Figure 5: Sight Line Southwest of Access (Looking to the Left)

6 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual² was used to estimate the vehicle trip generation for the proposed site land uses. Land use code 416 Campground/Recreational Vehicle Park was used for the proposed development.

Trip generation estimates were developed for the following time periods: weekday peak hours of adjacent street traffic, and weekday peak hour of generator were shown to fully see the range of trips this development may generate. Table 2 summarizes the trip generation rates for the land use codes.

Table 2: Trip Generation Rates

Land Use	Type of Peak Hour	AM Peak Hour			PM Peak Hour		
		Rate	Entering	Exiting	Rate	Entering	Exiting
416 Campground/ Recreational Vehicle Park	Peak Hour of Adjacent Street Traffic	0.21	36%	64%	0.27	65%	35%
	Peak Hour of Generator	0.25	36%	64%	0.41	62%	38%

Note: Rates are in vehicles per hour vph/occupied campsites.

² Trip Generation Manual, 11th Edition, Institute of Transportation Engineers, September 2021.



The weekday morning (AM) and afternoon (PM) peak hour trip generation estimates for the site's land uses are summarized in Table 3. On a typical weekday, the site is estimated to generate 9 vehicle trips in the AM peak hour and 12 vehicle trips in the PM peak hour on Lucasville Road.

During the peak hour of the generator, the highest volume of vehicle trips entering and exiting the site is estimated to be 11 vehicle trips in the AM and 18 vehicle trips per hour in the PM. It is anticipated that the peak hours of the generator will coincide with check-in and check-out times.

Table 3: Existing Trip Generation Estimates

Land Use	Qty	Type of Peak Hour	AM Peak Hour			PM Peak Hour		
			Total	Entering	Exiting	Total	Entering	Exiting
416 Campground/ Recreational Vehicle Park	44	Peak Hour of Adjacent Street Traffic	9	3	6	12	8	4
		Peak Hour of Generator	11	4	7	18	11	7

7 Conclusions and Recommendations

The trip generation estimates indicate that the development will add less than 20 trips per hour on Lucasville Road. It is anticipated that the new vehicle trips associated with the development can be accommodated on Lucasville Road with a negligible impact on traffic operations. It should be noted that this consists of a high-level qualitative assessment, therefore no analytical capacity calculations have been completed to support the assessment.

If you have any questions or additional discussion, please feel free to contact the undersigned.

Regards,



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Appendix A: Intersection Sight Distance Calculations



$$ISD = 0.278 * V_{major} * t_g$$

Where:

ISD = intersection sight distance along major road (m)

V_{major} = design speed of major road (km/h)

t_g = time gap for minor road vehicle to enter major road

Table A-1: Time Gap Values

Design Vehicle	Time Gap (s) Left Turn from Stop	Time Gap (s) Right Turn from Stop
Passenger Car	7.5	6.5
Single-Unit Truck	9.5	8.5

Single-Unit Truck – Left Turn from Stop

$$ISD = 0.278 * V_{major} * t_g$$

$$ISD = 0.278 * 60 \text{ km/h} * 9.5\text{s}$$

$$ISD = 158.46\text{m}$$

Single-Unit Truck – Right Turn from Stop

$$ISD = 0.278 * V_{major} * t_g$$

$$ISD = 0.278 * 60 \text{ km/h} * 8.5\text{s}$$

$$ISD = 141.78\text{m}$$