

Big Lake Eco-Tourism Retreat Traffic Impact Statement

June 2023

Prepared for
KWR Approvals Inc





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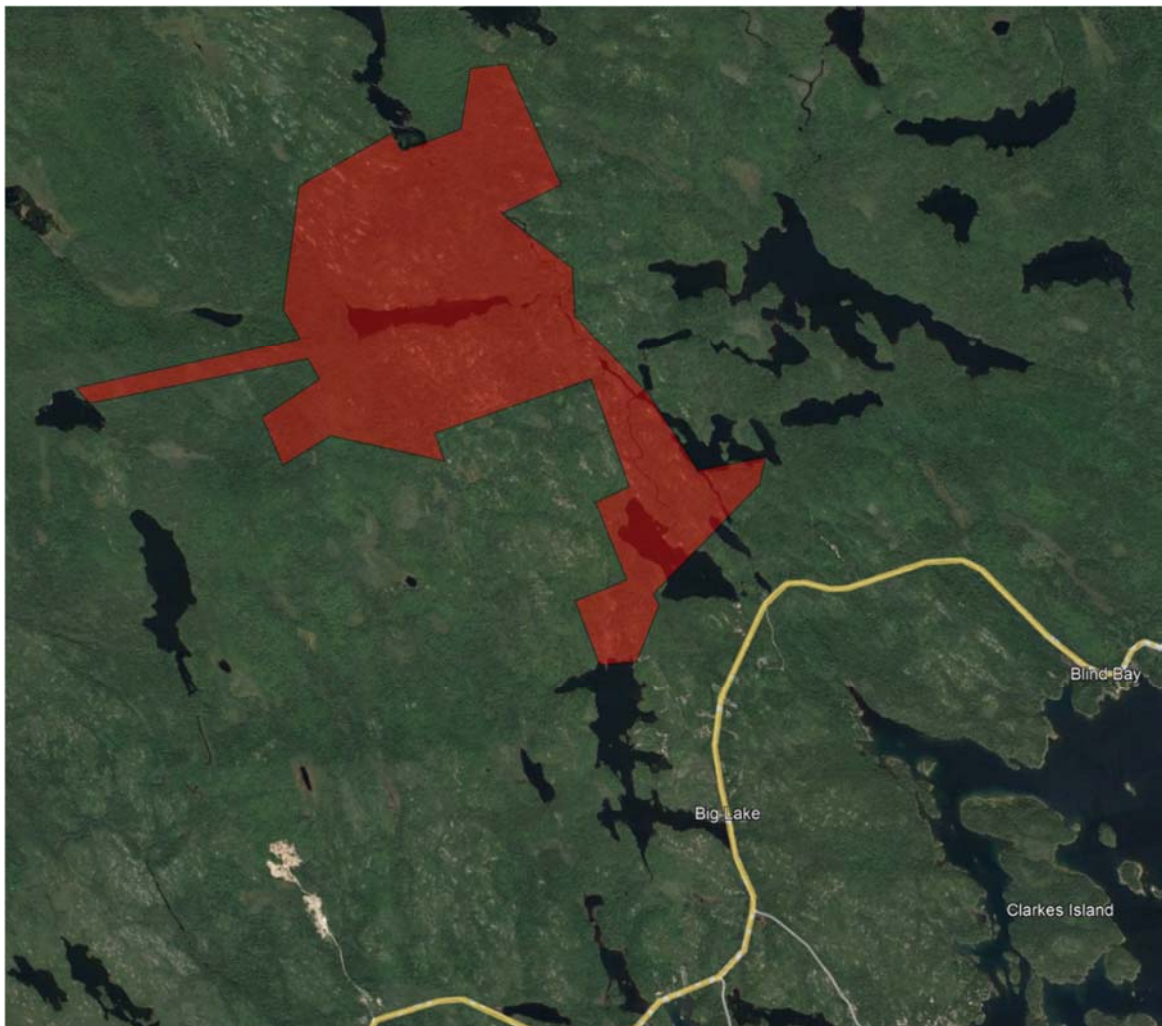
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1 Introduction

1.1 Background

KWR Approvals Inc (KRWA), on behalf of the owner Bellevue Management Inc, is working on a proposal to develop their approximately 729-acre land assembly in the communities of Big Lake, Glen Margaret, Hackett's Cove and Blind Cove with an Eco-Tourism Retreat that would incorporate an integrated trail system with Tiny Homes on Wheels (THOWs). Exhibit 1.1 shows the site in red in the context of the surrounding area.

Exhibit 1.1 – Proposed Eco-Tourism Retreat in Big Lake, Nova Scotia

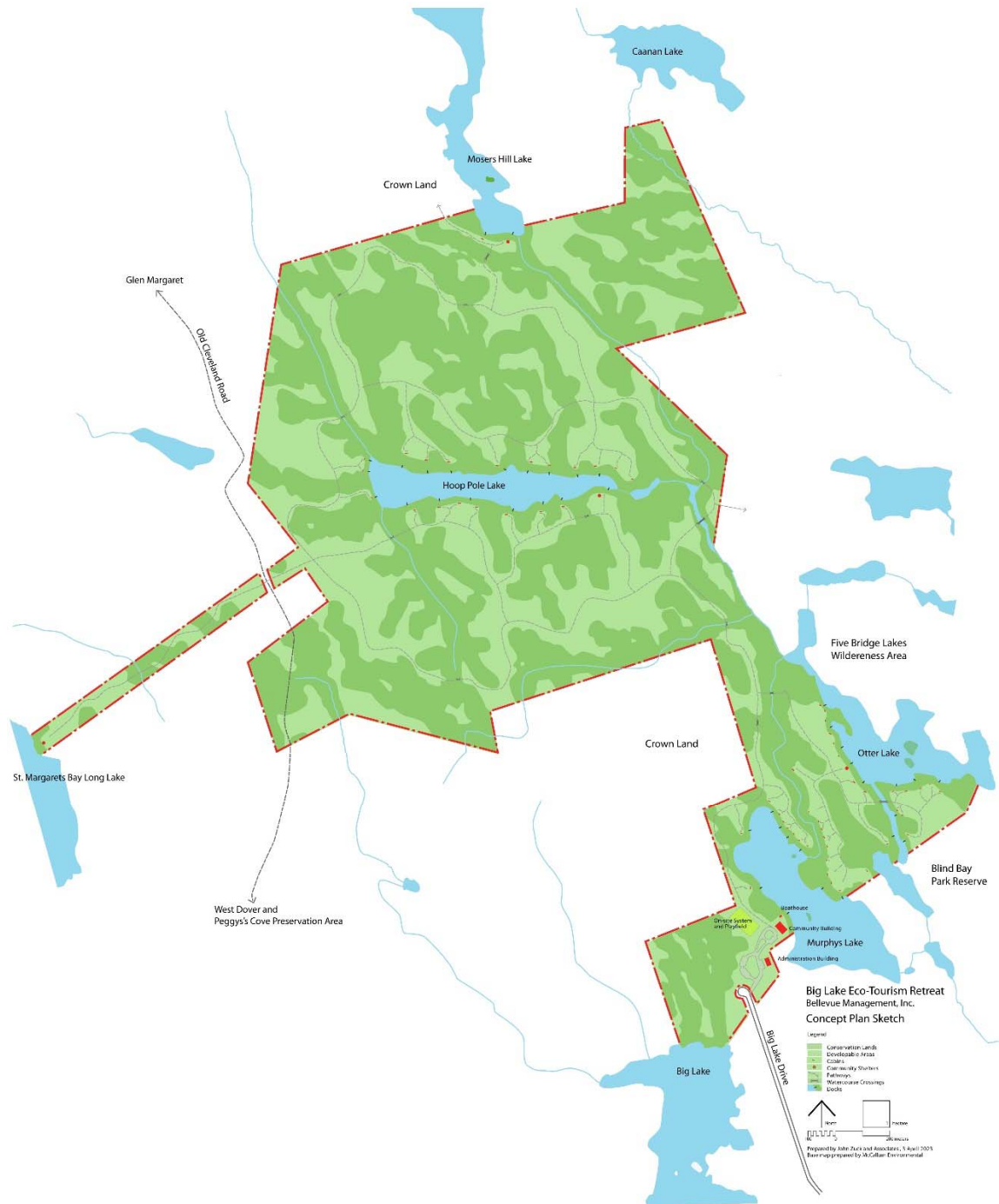


Source: Google Earth

Bellevue Management Inc. has proposed to develop their property in phases with up to 100 THOW's along with staff housing and an administration building. Initial plans would also include a long-term parking area with up to 30 parking spaces.

Access to the property will be from a connection to the northern end of Big Lake Drive which is a private road that connects directly to Prospect Road (Nova Scotia Highway 333). Refer to Exhibit 1.2 for a proposed site plan for the development.

Exhibit 1.2 – Proposed Eco-Tourism Retreat in Big Lake, Nova Scotia



JRL consulting inc. was retained by KRWA to prepare a Traffic Impact Statement (TIS) to assess the potential traffic impacts of the proposed Eco-Tourism Resort in Big Lake, Nova Scotia.

The purpose of a Traffic Impact Statement is to provide a high level overview of a proposed development including estimates of site-generated traffic along with an initial review of existing traffic counts in the general area of the proposed development. We are pleased to submit this report which summarizes our findings.

2 Existing Traffic Conditions

2.1 Description

The principal routes affected by this development are Prospect Road (Highway 333) and Big Lake Drive. Exhibit 2.1 summarizes HRM’s Characteristics of Street Classes from HRM’s Municipal Service Systems Design Guidelines and we have also included Transportation Association of Canada’s (TAC) Characteristics of Urban Roads in Exhibit 2.2

Exhibit 2.1 – HRM’s Characteristics of Street Classes

Characteristic	Arterial Street	Major Collector	Minor Collector	Local Industrial	Local Street
1. Traffic Service Function	First Consideration	Traffic movement primary consideration, land access secondary consideration, some parking	Traffic movement of equal importance with land access, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted	Traffic movement secondary consideration with land access primary consideration, parking permitted
2. Land Access Function	Limited Access with no parking				
3. Range of design traffic average daily volume	More than 20,000	12,000 to 20,000 or more	Up to 12,000	Less than 3,000	Less than 3,000
4. Characteristics of traffic flow	Uninterrupted flow except at signals; w/ pedestrian overpass	Uninterrupted flow except at signals and crosswalks	Interrupted flow	Interrupted flow	Interrupted flow
5. Average running speed in off-peak conditions	50-70 km/hr	40-60 km/hr	30-50 km/hr	15-30 km/hr	15-30 km/hr
6. Vehicle types	All types	All types but trucks may be limited	All types with truck limitation	All types	Passenger and service vehicles, transit buses; large vehicles restricted
7. Connects to	Expressways, arterials, major collectors, minor collectors	Expressways, arterials, major collectors, minor collectors, some locals	Arterials, major collectors, minor collectors, locals	Some major collectors, minor collectors, locals	Some major collectors, minor collectors, locals

Prospect Road is a major route (Nova Scotia Highway 333) that extends from Halifax at Route 3 to St Margarets Bay and provides access to dozens of communities including Peggy’s Cove. It’s a two lane facility throughout with some auxiliary turning lanes and it provides access to residential and commercial properties. The posted speed limit varies and is listed at 80km/hr in the study area near the proposed development. Prospect Road is constructed with a gravel shoulder and ditches and there are no pedestrian sidewalks or walkways. It is controlled and maintained by Nova Scotia Public Works.

Big Lake Drive is a narrow private, graveled road that currently provides access to 7 properties.

Exhibit 2.2 – Transportation Association of Canada Characteristics of Urban Roads

	Public Lanes		Locals		Collectors		Arterials		Expressways	Freeways
	Residential	Commercial	Residential	Indust./Comm.	Residential	Indust./Comm.	Minor	Major		
traffic service function	traffic movement not a consideration		traffic movement secondary consideration		traffic movement and land access of equal importance		traffic movement major consideration	traffic movement primary consideration	traffic movement primary consideration	optimum mobility
land service / access	land access only function		land access primary function		traffic movement and land access of equal importance		some access control	rigid access control	no access	no access
traffic volume (veh/day) (typical)	<500	<1000	<1000	<3000	<8000	1000 – 12 000	5000 – 20 000	10 000 – 30 000	>10 000	>20 000
flow characteristics	interrupted flow		interrupted flow		interrupted flow		uninterrupted flow except at signals and crosswalks		uninterrupted flow except at signals	free-flow (grade separated)
design speed (km/h)	30 - 40		30 - 50		50 - 80		50 - 70	60 - 100	80 - 110	80 - 120
average running speeds (km/h) (off-peak)	20- 30		20 - 40		30 - 70		40 - 60	50 - 90	60 - 90	70 - 110
vehicle type	passenger and service vehicles	all types vehicles	passenger and service vehicles	all types vehicles	passenger and service vehicles	all types vehicles	all types	all types up to 20% trucks	all types up to 20% trucks	all types up to 20% trucks
desirable connections	public lanes, locals		public lanes, locals, collectors		locals, collectors, arterials		collectors, arterials, expressways, freeways		arterials, expressways, freeways	arterials, expressways, freeways
transit service	not permitted		generally avoided		permitted		express and local buses permitted		express buses only	express buses only
accommodation of cyclists	no restrictions or special facilities		no restrictions or special facilities		no restrictions or special facilities		lane widening or separate facilities desirable		prohibited	prohibited
accommodation of pedestrians	pedestrians permitted, no special facilities		sidewalks normally on one or both sides	sidewalks provided where required	sidewalks provided both sides	sidewalks provided where required	sidewalks may be provided, separation for traffic lanes preferred		pedestrians prohibited	pedestrians prohibited
parking (typically)	some restrictions		no restrictions or restrictions one side only		few restrictions other than peak hour		peak hour restrictions	prohibited or peak hour restrictions	prohibited	prohibited
min. intersection spacing ¹ (m)	as needed		60		60		200	400	800	1600 (between interchanges)
right-of-way width (m) (typically)	6 - 10		15 - 22		20 - 24		20 ² - 45 ³		>45 ³	>60 ³

Refer to Exhibit 2.3 for photos of the Study Area around the proposed development in Big Lake, Nova Scotia

Exhibit 2.3 – Study Area Photos



Big Lake Drive in Big Lake, Nova Scotia



Prospect Road at Big Lake Drive looking south



Prospect Road at Big Lake Drive looking north



Big Lake Drive at Prospect Road looking west



Big Lake Drive (Private Road)

2.2 Existing Traffic Volumes

We reached out to Nova Scotia Public Works for recent counts in the area and they completed 24-hour counts in June 2022 on Prospect Road approximately 1.3 km east of Big Lake Drive

Average Annual Daily Traffic (AADT) at this location was 1,613 vehicles which is two-way traffic. These counts didn't specify directional traffic volumes. We did calculate the average two-way AM peak hour volumes at 67 vehicles and the two-way PM peak hour volumes at 138 vehicles so existing traffic at this location is relatively light.

2.3 Trip Distribution

NSPW traffic counts in 2022 didn't provide an indication of trip distribution in the area as they were two-way volumes but we did review their counts completed at the same location in 2021. In the AM peak hour 72% of vehicles are heading eastbound towards Halifax with the balance of 28% travelling westbound towards Peggy's Cove. In the PM peak hour traffic is split 50/50 eastbound and westbound.

Traffic generated by the proposed Eco-Tourism Retreat will likely attract most of its traffic from the east on Prospect Road as that is a shorter distance to the Halifax Peninsula and heavily populated areas of HRM.

2.4 Transit and Pedestrians

There are no transit services in the area near the proposed development, however, the St. Margaret's Bay Community Transportation Society, operating as BayRides program is a community-based transportation service that offers accessible, reliable, affordable door-to-door transportation in the St Margarets Bay area although this service's eastern boundary is in West Dover so it doesn't actually cover the area of the proposed development on Big Lake Drive.

2.5 Stopping Site Distance

As per the Transportation of Canada Geometric Design Guide for Canadian Roads, adequate stopping site distance *"is essential for safe operation that the vehicle operator be able to see far enough ahead to stop if necessary. Conditions that would force a vehicle operator to stop are for example, an object on the roadway, a culvert washout or other fault in the roadway. Adequate stopping site distance is required throughout the length of the roadway. Minimum stopping site distance is the sum of two distances namely:*

- *Brake reaction distance*

The distance travelled during the brake reaction time, that is the time that elapses from the instant an object, for which the driver decides to stop, comes into view to the instant the driver takes remedial action (contacts brake pedal).

- *Braking distance*

The distance travelled from the time that braking begins to the time the vehicle comes to a stop."

The posted speed on Prospect Road at Big Lake Drive is 80 km/hr and this speed requires a stopping site distance of 140 m.

Visibility is good to the north and south of Big Lake Drive (see Section 2.3) and we didn't observe any issues with Stopping Site Distance during our site visit.

We did note that the existing vegetation appears to encroach into the right-of-way of Prospect Road on the western side so this should be trimmed to ensure good visibility to the north and south for traffic exiting Big Lake Drive.

3 Site Generated Traffic

3.1 Trip Generation

The proposed Eco-Tourism Retreat will be built in phases with the 1st phase consisting of 20 Tiny Homes on Wheels (THOWs), the 2nd phase of up to 60 THOWs and a possible full build out of 100 THOWs if the demand supports.

We expect the development will operate in a similar way to a commercial campground with some guests staying for a week or more and others staying for a weekend. We don't expect the peak hour(s) of site generated traffic to align to the AM and PM peak hours of the surrounding transportation network due to check in and check out times of a resort type development like this

We completed trip generation estimates using equations provided in Institute for Transportation Engineer's Trip Generation Manual 11th Edition for the existing and proposed land uses with the following Land Use Codes.

- ITE Land Use 146 Campground/Recreational Vehicle Park

"A campground/recreational vehicle park is a recreational site that accommodates campers, trailers, tents, and recreational vehicles on a transient basis. They are found in a variety of locations and provide a variety of facilities, often including restrooms with showers and recreational facilities, such as a swimming pool, convenience store, and laundromat." The unit of measurement for average vehicle trip ends is occupied campsites.

Exhibit 3.1 – Estimated Future Site Generated Traffic Volumes

LAND USE	QUANTITY	AM PEAK			PM PEAK		
		TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT
Campground ITE Land Use 416	100	21	26%	74%	27	63%	37%
			8	13		18	9
TOTAL		21	8	13	27	18	9

We estimate that the proposed development will generate additional net new traffic volumes of **21** vehicles in the AM peak hour and **27** vehicles in the PM peak hour.

4 Conclusions and Recommendations

- This Traffic Impact Statement has provided a high level overview of the proposed development of an Eco-Tourism Retreat that would incorporate an integrated trail system with up to 100 Tiny Homes on Wheels (THOWs) that will accommodate guests for varied lengths of stay similar to a campground.
- It includes an estimate of new site generated trips and an analysis of existing traffic volumes in the surrounding area.
- Based on ITE Trip Generation Rates, we estimate that the proposed development will generate **21** new vehicle trips in the AM Peak Hour and **27** new vehicles in the PM Peak Hour.
- Site generated traffic will most likely follow existing trip distribution patterns along Prospect Road in the AM and PM peak hours, however, we do expect that most of the traffic generated by the proposed development to originate from the east from the more heavily populated area of Halifax Regional Municipality.
- We recommend that Big Lake Drive be upgraded to Transportation Association of Canada and HRM Guidelines to permit two-way traffic through its length to the proposed entrance to the Eco-Tourism Retreat.
- Vegetation should be removed in the right of way on the west side of Prospect Road near Big Lake Drive to ensure maximum visibility for vehicles exiting.
- The traffic that will be generated by this proposed development is relatively minor and so is traffic on Prospect Road so we don't expect any significant impacts on the surrounding transportation network in Big Lake.