

**Registration**

Pursuant to s. 49 of the Environmental Protection Act, SNL 2002, c.E-14.2

**Undertaking**

Microbrewery

**Location**

1 Conception Bay Highway, Bay Roberts, Newfoundland and Labrador

**Submitted by**

Mark Burry and Julian Kean, on behalf of  
Baccalieu Trail Brewing Company, Ltd.

**Submission Date**

August 31<sup>st</sup>, 2017

**Name of Undertaking:**

Baccalieu Trail Brewing Company

**Proponent:**

**(i.) Name of Corporate Body**

Baccalieu Trail Brewing Company Ltd.

**(ii.) Address**

1 Conception Bay Highway  
Bay Roberts, NL  
A0A 1G0

**(iii.) Chief Executive Officer**

Name: Julian Kean  
Official Title: President  
Address:  
12 Gosling Street  
St. John's NL  
A1B 3E6  
Phone No.: (709) 725-0801

**(iv.) Principal Contact Person for purposes of environmental assessment:**

Name: Mark Burry  
Official Title: Director  
Address:  
124 Seaborn Street  
St. John's NL  
A1B 5E5  
Phone No.: (709) 699-0595

**The Undertaking:**

(i.) Nature of the Undertaking

Julian Kean and Mark Burry, the owners of Baccalieu Trail Brewing Company Ltd. (hereafter referred to as Baccalieu Trail Brewing Co., or The Brewery) are seeking approval to re-develop the main level of the building located at 1 Conception Bay Highway (approx. 2400 sq. ft establishment) in Bay Roberts, NL. The owners would seek to operate a small, 5-barrel capacity microbrewery, along with a tasting area (taproom), and space for retail sales. The beer we will produce will be made with all-natural ingredients (water, malted barley, hops and yeast) with no added preservatives or pasteurization. The brewery will produce approximately 1,300 barrels (1525 hectolitres) of beer per year.

In addition to producing beer, visitors to the establishment will be able to speak with the brewmaster to learn about the brewing process, to sample beer, and to purchase merchandise.

(ii.) Purpose/Rationale/Need for the Undertaking

Newfoundland and Labrador is experiencing rapid growth in demand for craft beer. Furthermore, as a prominent tourist destination in the Canada, the province has yet to see the surge in craft breweries in operation that its neighboring provinces have experienced. At the time of this writing, only 6 craft breweries are currently open for business in the province. On a breweries per capita basis, NL ranks ninth of all Canadian provinces, with its nearby neighbor, Nova Scotia ranking highest at over 3 breweries per 100,000 population.

Furthermore, as a prominent tourist destination, the town of Bay Roberts, on the Baccalieu Trail is the ideal location for a microbrewery start up. The town currently has several tourist attractions such as restaurants, hiking trails, and galleries, which offer unique experiences to visitors. Bay Roberts is also a service hub for several surrounding communities along the Baccalieu Trail. Baccalieu Trail Brewing Co. believes a microbrewery would make a valued addition to the local economy by drawing more visitors to the area, and bolstering local business and tourism even further.

In order to offer such an addition to the local tourism experience, it is necessary for us to purchase the necessary equipment and property, and to carry out renovations on the existing portions of the building that will serve as the brewery, tasting room and seating area for patrons.

**Description of the Undertaking:**

(i.) Geographic Location

The site (building) is located in the town of Bay Roberts, at 1 Conception Bay Highway. The property is zoned as a commercial building, and resides alongside several successful businesses in the same area.

The owners of Baccalieu Trail Brewing Co. have applied for approval from the Town of Bay Roberts for this undertaking, and are waiting for approval from the town to occur at their next council meeting.

Attached to the end of this document is a topographic map and aerial photos of the proposed brewery location. A survey of the property is also attached, as well as the proposed floor plan of the building once the brewery and small extension to accommodate seating area are in place.

Baccalieu Trail Brewing Co. will use the town of Bay Roberts' existing water and sewage systems.

(ii.) Physical Features

The site is an existing building in Bay Roberts, which abuts the main road to the west, waters of Conception Bay to the north and east, and by a commercial property on the south side. The land runs to the water on the north and east sides of the building. The brewery and seating area will take up the majority of the 2400 sq. ft main level, apart for some rooms designated for storage, washrooms, a kitchen and refrigeration.

The building has been previously used for commercial businesses which provided tanning salon services to customers. It has never had any oil tanks or kerosene tanks that would affect the ground or underground. Only electric heat has been used.

(iii.) Construction

The existing commercial building is of truss and frame construction and has limited interior load-bearing walls. The owners of Baccalieu Trail Brewing Co. seek to make the following changes to the building, in order to accommodate a brewery and taproom:

- Plumbing re-routing to facilitate installation proper drainage in the brewery area
- Any work required to obtain all necessary permits and approvals (e.g., Building Accessibility and Life & Fire Safety, Food Establishment License, Newfoundland and Labrador Liquor Corporation License, etc.)
- Installation of fixtures and finish work, such as any required for the taproom and seating area (sinks, dish washer, draft beverage system, and lighting)
- Installation of a residential heat pump for heating and cooling of the building

The interior of the building will be designed to be reminiscent of outport Newfoundland culture.

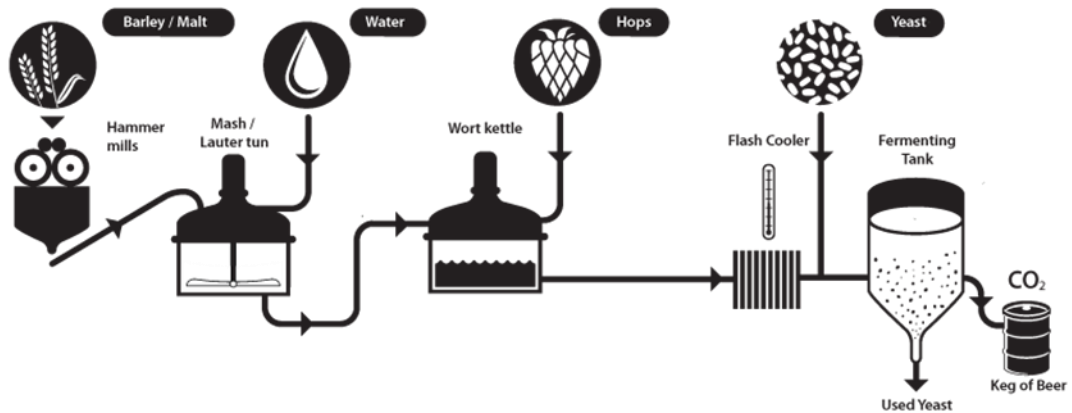
Potential pollutants during the construction phase of the project will be few. It is anticipated that equipment fueled by petroleum or petroleum products will not be used during the building renovations. If such equipment or machinery is deemed to be necessary during the renovation period, it will be fueled offsite, and will not need to be re-fueled at the brewery location due to the short duration of work.

(iv.) Operations

Microbrewery Operations

a. The Brewing Process

A schematic of the brewing process is provided below:



## **Barley/Malt + Water + Hops + Yeast = Beer**

The brewing process typically runs over an 8-hour period and the steps shown above can be described as follows:

- Heating, via electrical elements, approximately 477 L of water in a large stainless steel tank to a temperature of 75 C.
- The heated water is transferred via pump and hose to a second stainless steel insulated tank where malted barley/grain is added. The grains are “steeped” in the hot water (63 C) for approximately 1 hour. Additional water (approximately another 100 to 150 L, depending on the recipe) is added to sprinkle over the grains to draw off more starches where possible.
- The liquid (now called “wort”) is then drawn off the tank via pump and hose and transferred into a third stainless steel tank fitted with electrical elements. The wort is heated to 100 C and boils for approximately 1 hour. During the boil, hops (the female flower of the hop plant, *humulus lupulus*) are added giving the beer its bitterness along with further flavor and aroma.
- The wort is then drawn off the tank via pump and hose and passes through a plate chiller (heat exchanger, marked as “cooler” on the above schematic) that runs on cold water. In the plate chiller, the wort passes alongside cold running water to cool it down to room temperature.
- The wort then leaves the plate chiller and enters a fermentation tank that contains a glycol jacket. Dry brewer’s ale yeast is added to the wort in this tank. The temperature of the tank is controlled to hold the wort at a consistent 18 degrees Celsius for 5-7 days. Glycol circulates throughout the outside of the tank (via the “jacket”) to keep the temperature consistent. The glycol is kept cool via the operation of a small glycol chiller.
- After fermentation is complete, the liquid (now alcohol beer) is cooled in the same tank over a 12 to 24 hour period to reach a temperature of 4 degrees Celsius. Sediment (spent yeast and protein from malt) is removed via a ball valve and gravity feed from the fermentation tank’s conical bottom.
- The beer is then carbonated and held at 4 C in the same fermentation tank for a number of days to allow it to condition. The carbonated, conditioned beer is then transferred to kegs.

- During the brewing process, we will be operating two to three 1.5 HP mobile variable frequency drive pumps that will perform all of the above transfers of liquid via food-grade hose.

b. Bottling

Bottling is carried out over a couple of hours and consists of transferring beer from kegs into a small bottling machine that is also connected to a source of CO<sub>2</sub>. The bottling machine has ports for filling 2 bottles at a time (it is not a conveyor belt operation). The footprint is very small a foot or two in width and length. The machine operates via electricity.

c. Milling Grain

Baccalieu Trail Brewing Co. will be milling grain prior to brewing, and we will be doing so in a small enclosed room (on the upper level of the building) with explosion-proof fixtures, emergency stops and proper ventilation.

d. Cleaning

The tanks and equipment are cleaned and sanitized after every use utilizing a clean-in-place (CIP) system with non-caustic (alkaline) biodegradable cleaner and sanitizer. Less frequently on an as-needed basis, diluted caustic cleaners are used to remove scale and stone from inside the tanks. The cleaners will be discussed further below.

### Other Operations

Baccalieu Trail Brewing Co. will also operate a taproom, which will be a licensed area for food and alcoholic beverage service. The company will also operate a walk-in cooler on the premises for keg storage and hop storage. The taproom / lounge area will also serve the dual purpose of a merchandise retail area, as well as an area to offer packaged beer for off-site consumption.

### Water Demand/Usage

During daily operations, water usage will vary. Most days, water usage baseline demand will be that of regular washroom use for patrons and staff. The most water-usage intensive days will be days during which Baccalieu Trail Brewing Co. is brewing beer – also referred to as a “brew day”. Brew days will occur about 5 to 6 times per month. During these days, water will be used as both an ingredient to the beer being produced, as well as for cleaning after brewing is complete. Approximate water demand for the brewing process is 952 litres (248 US gallons). During the cleaning process following the completion of a brew day, approximately 150 litres (39 US gallons) is used.

Baccalieu Trail Brewing Co. is currently working on the assumption of a 60-person occupancy, and based on information from Fire & Life Safety and Service NL, approximate water usage for a taproom/lounge of this size is calculated as:

Max. Occupancy \* 2 \* 25 litres = 60 \* 2 \* 25L = 3000 L per day for regular washroom use.

Maximum water demand possible in one day – during which brewing occurred and the taproom was open – would be 4100 litres (1070 US gallons). As mentioned, this quantity

of daily demand will occur only 4 to 5 times per month, during brew days. On all other days in which the taproom is open, water usage will average 3000 L per day.

As a part of the brewing process, some water is used for cooling via a heat exchanger where it does not come into direct contact with the hot beer. Baccalieu Trail Brewing Co. plans to store this water in a hot-water tank for re-use the following brew day, versus disposing it to the drain system.

### Period of Operations

Brewing would occur year-round, to supply the local restaurant and pub market with kegged (packaged) beer; however, the brewery and taproom/lounge will be open to the public only during the tourist season (May – October).

### Potential Sources of Pollutants

#### a. Airborne Emissions

Two small sources exist for airbourne emissions from the brewery. These are (i.) steam during the brewing process, which will be ventilated outdoors via a dedicated duct from the boil kettle; and (ii.) grain dust from the grain crushing process. Grain crushing occurs the same day as a brew day (4 to 5 times per month). We confirm that both will result in little to no actual air emissions, are 100 per cent natural and will contain zero chemicals or toxic substances.

Steam occurs during the boiling phase of the brewing process. Water (from the municipal supply) that has steeped in crushed barley/grains is boiled for approximately 60 minutes, during which time hops (a plant grown in Canada, the US, and Europe, and indigenous in many areas of Newfoundland) are added to the boil to impart bitterness and flavor. Note that of the 952 litres of water required for the brewing process, approximately 120 litres will boil off, and 240 litres will be absorbed by the crushed grain. The liquid which is boiled contains only starches and sugars from the grains in which it was steeped, as well as hops. As such, any steam released during the boiling process would be non-toxic and only emit a slight odor, similar to bread dough. The odor would be detected only if a person were standing immediately next to the exterior ventilation on the building. We confirm there are no airborne chemicals or toxic substances to be emitted.

The amount of grain dust that escapes the brewery is very near zero, and all personnel involved in the crushing operation will wear appropriate dust-mask equipment. Dust will be vacuumed from the floor following grain crushing, which lasts only a few minutes. Grain crushing will occur in a small enclosed area on the main level of the building with direct exterior ventilation, and crushed grains will be manually transported (via buckets) into the brewing system, where water will be added and allowed to steep, as mentioned above. The mill (barley/grain crusher) will be explosion proof, as will any electrical fixtures within the grain crushing room. We confirm that the emission of grain dust will be very small in nature, all-natural (non-toxic and no chemicals of any nature) and will dissipate in the air within a meter or two from the exterior vent.

#### b. Solid Waste and Liquid Effluents

Fortunately, all waste produced during the brewing process is organic or biodegradable material, which therefore has the potential to be recycled, reused or composted. It is our goal to operate as environmentally-friendly as possible and with the very small scale of our operations, we believe a fully sustainable operation is attainable.

The wastes produced during the brewing process of a single batch of 595 litres of beer and subsequent cleaning of the equipment, consist of:

- *Water (varies, around 150 litres)* – though the majority of water used makes up the beer product, a considerable amount of water will also be used to cool the beer through our plate chiller and used in cleaning the equipment. We intend to recapture the water used in the plate chiller for our cleaning process to dilute and rinse our cleaners. Upon completion of the cleaning process, it will become an effluent discharge.
- *Waste beer (variable)* – this will be a minimal liquid effluent that will result from any accidental spillage.
- *Spent grains (approx. 250-300 lb)* – this is the “steeped” grains leftover once the liquid has been drawn off from the tank. Since this is a food-grade by-product, it will be reused for brew, as ingredients for baking or animal feed for a local farmer that we have an arrangement with in the Goulds. We can also compost the grains if we cannot reuse them.
- *Spent hops/Kettle Trub (approx. 10 – 15 litres)* – this is the precipitate left in the boil kettle upon completion of the boil and removal of the liquid. It has a “slurry” consistency since this is a food-grade by-product, we intend to either re-use it as a soil improver or compost it.
- *Yeast/Fermentation Trub (approx. 15 – 20 litres)* – this is the biomass left at the bottom of the fermentation tank upon removal of the liquid (beer). It is composed of mainly heavy fats, proteins and inactive yeast. A portion (5-7 litres) will be re-used for yeast propagation for a future batch and once its lifespan has expired, we will use it for compost.
- *Cleaning products (small amounts)* – fortunately there are environmentally-friendly products available for the cleaning needs of the brewery. The cleaning product most used, particularly for every cleaning session after every brew, will be PBW (powdered brewery wash). This is a low alkaline, non-caustic, biodegradable and user-friendly clean-in-place cleaner. Not every cleaning session, but there may be some instances where we have to use a peroxide-based acid cleaner to dissolve scale and beer stone from inside the tanks. This would be highly diluted (2000:1 ratio of water to cleaner) and will not be used during every cleaning session. When required with our system, 20mL of caustic is used and diluted with 40L of water.

(v.) Occupations

As discussed, the brewery and taproom will be open to the public on a seasonal basis to cater to the tourist market (from May to October). As the brewery and taproom are so small in size, they will be operated solely by the owners during year 1. Should business results allow, the company may hire 1 to 2 additional staff in years 2 and beyond as brewing assistants, and barkeeps. If hiring were to occur, Baccalieu Trail Brewing Co. would ensure no age or gender discrimination during the hiring process. Baccalieu Trail Brewing Co. is committed to diversity in the workforce.



**Approval of the Undertaking:**

Municipal

- Municipal approval – Town of Bay Roberts

Provincial

- Environmental Assessment and Approval & Registration – Department of Environment and Conservation
- Building Accessibility & Fire and life Safety Approval – Service NL
- Manufacturer's Licence – NLC
- Lounge Licence – NLC
- Brewers Agent Licence – NLC

Federal

- Excise Duty Licence
- Labelling Requirements – Canadian Food Inspection Agency

**Schedule:**

The construction date depends on final approval of this application. The offer to purchase the commercial property at 1 Conception Bay Highway, Bay Roberts is conditional on the approval of this application, as well as receiving the abovementioned Municipal Approval. Construction can otherwise begin prior to the remaining licenses and approvals as such will not be granted until the final inspections of completed work.

**Funding:**

A portion of the financing for this project will be personal capital contributed by the owners. The remaining will be in the form of a mortgage for the commercial property, as well as debt financing from Federal and private institutions.

Debt financing has been requested from:

- Federal:  
Atlantic Canada Opportunities Agency (ACOA)  
John Cabot Building, 11<sup>th</sup> Floor  
10 Barter's Hill  
P.O. Box 1060 STN C  
St. John's, NL A1C 5M5

- Private:  
Business Development Bank of Canada (BDC)  
215 Water Street  
St. John's, NL A1C 5K4  
  
Bank of Nova Scotia (Scotiabank)  
48 Kenmount Rd  
St. John's, NL A1B 1W3

**Project-Related Documents Attached:**

- Floor plan, topographic maps, aerial photos and site survey

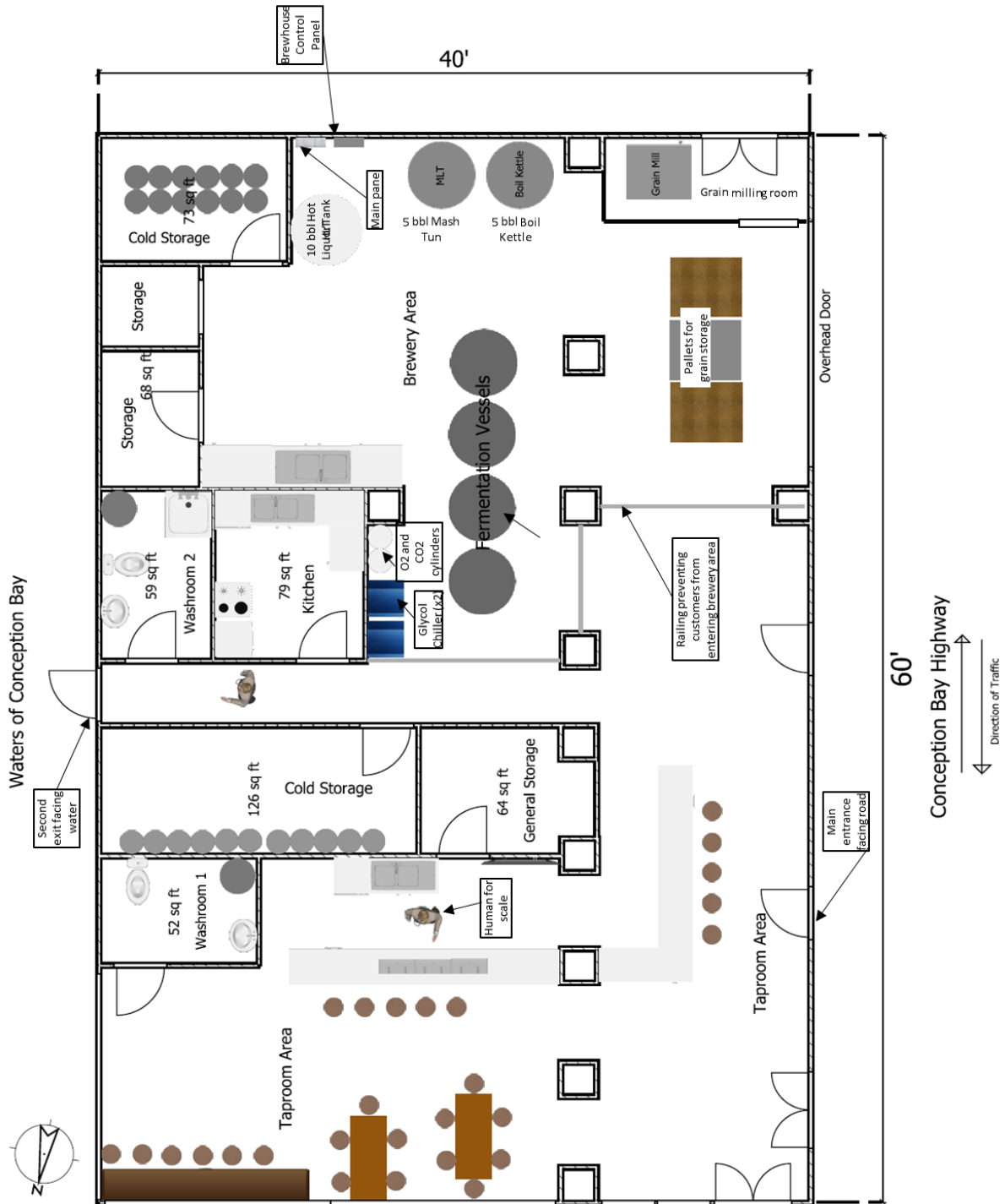
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Date

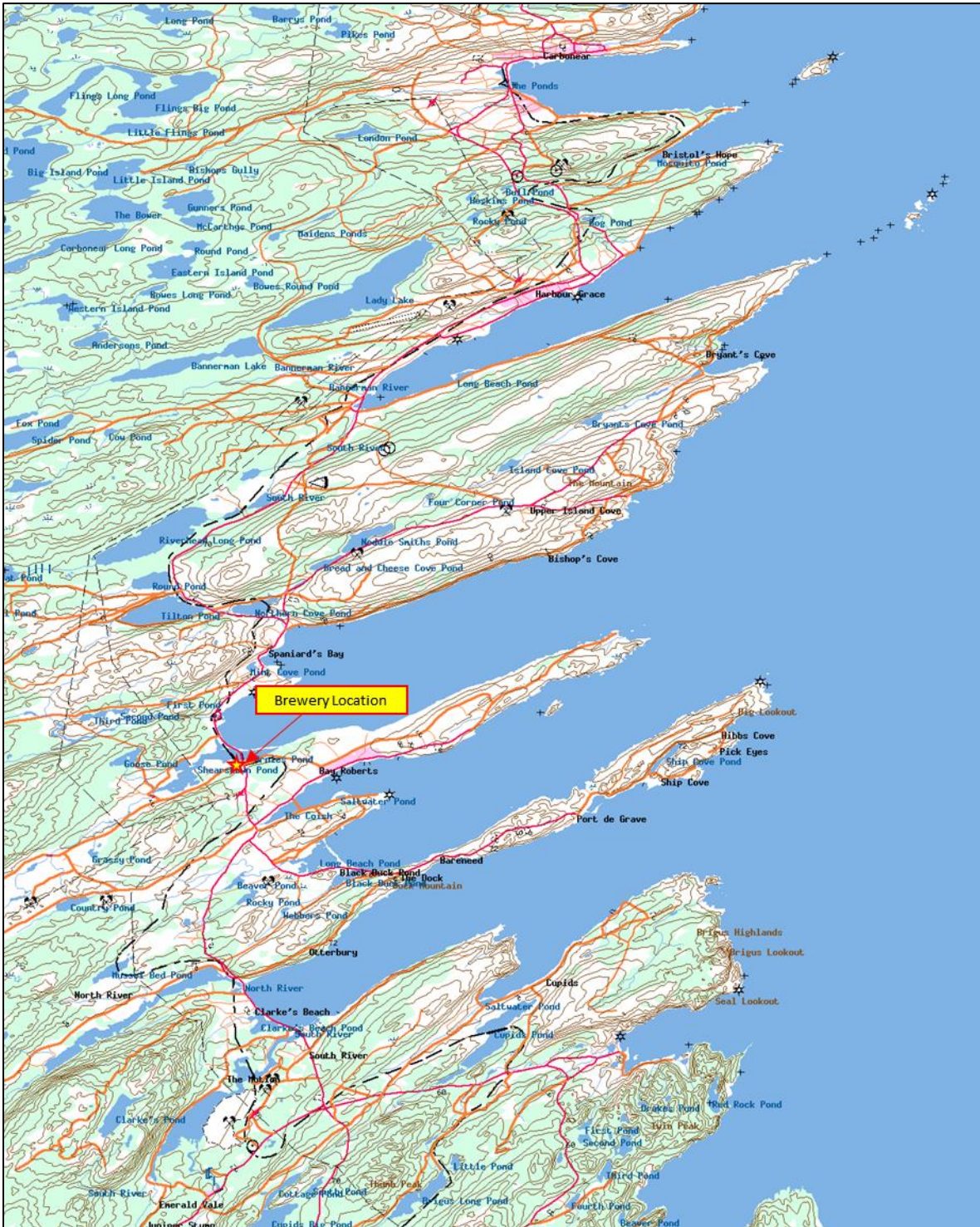
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Signature of Chief Executive Officer

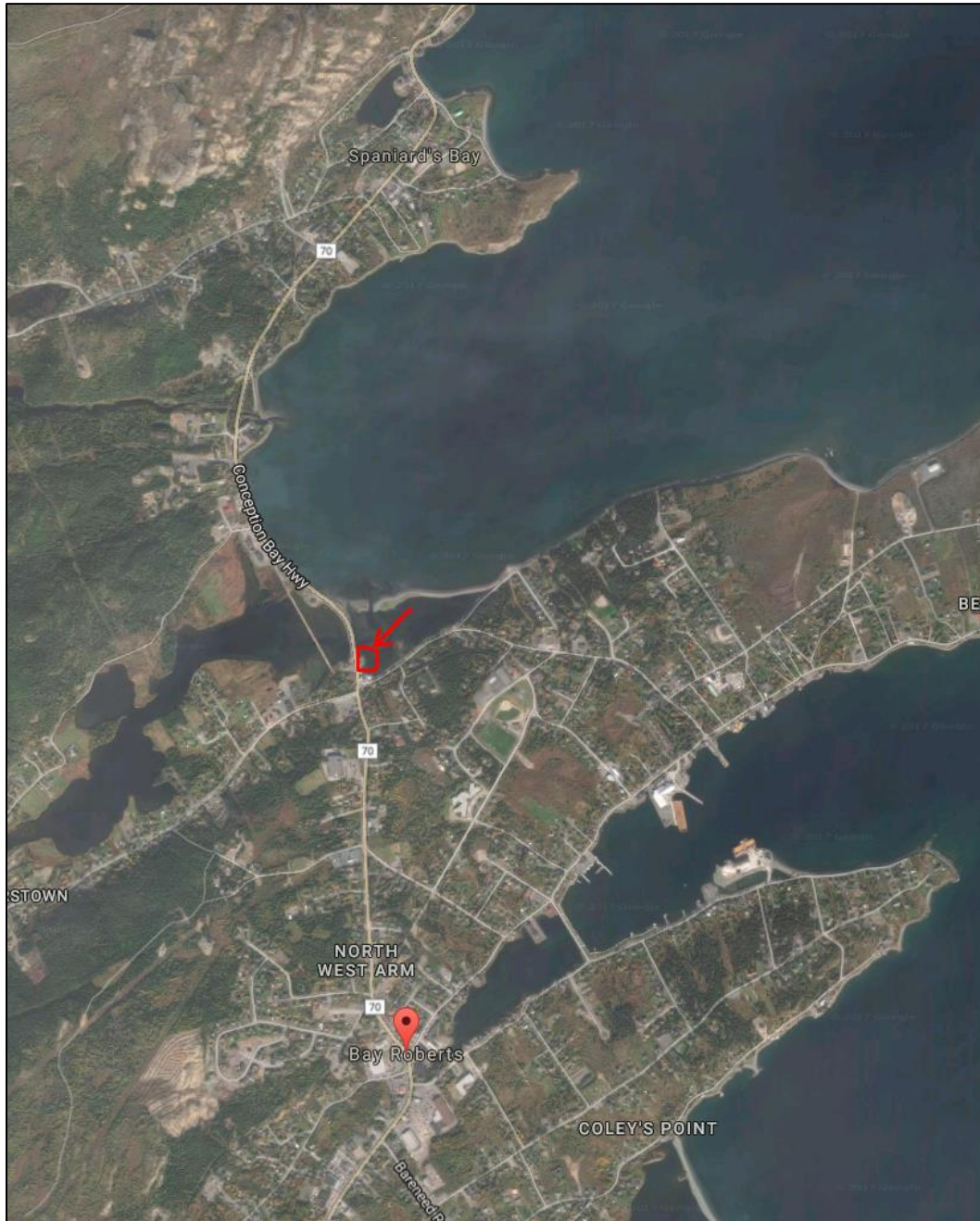
**Floor Plan – Main Level**

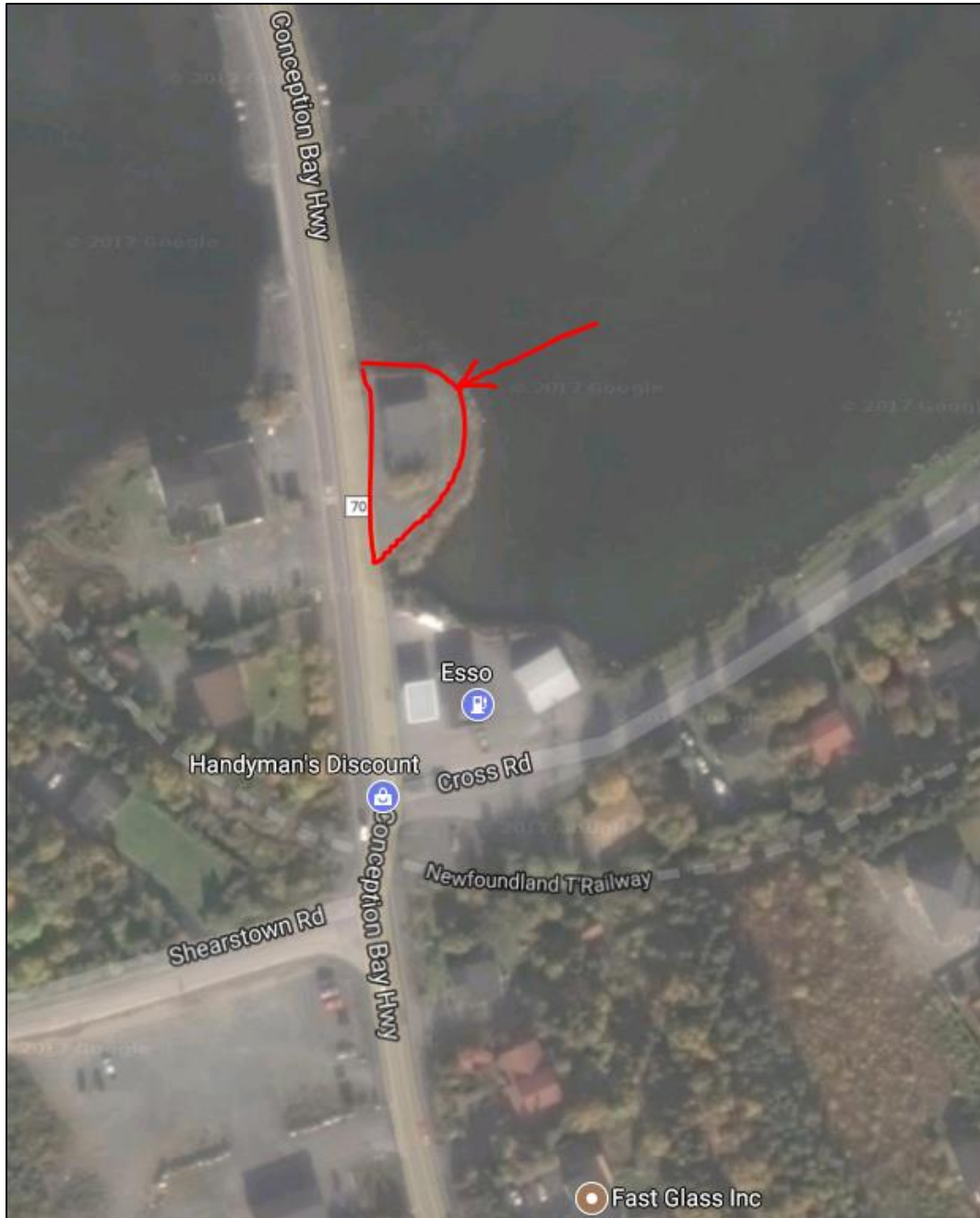


**Topographic Regional Map**



**Aerial Photos of Site**





**Site Survey**

