REGISTRATION

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

UNDERTAKING:

Microbrewery

LOCATION:

Highway 230, Town of Port Rexton, Newfoundland

SUBMITTED BY:

Sonja Mills, on behalf of

Port Rexton Brewing Company Ltd.

SUBMISSION DATE:

December 15, 2018

NAME OF UNDERTAKING:

Port Rexton Brewery – Expansion Project

PROPONENT:

(i) Name of Corporate Body:

Port Rexton Brewing Company Ltd.

(ii) Address:

P.O. Box 130
6 Ship Cove Road
Port Rexton, NL, A0C 2H0

(iii) Chief Executive Officer:

Name:	Sonja Mills
Official Title:	Director
Address:	P.O. Box 130 6 Ship Cove Road Port Rexton, NL, A0C 2H0
Telephone No.:	(709) 464-7543

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

Name:	Alicia MacDonald
Official Title:	Director
Address:	P.O. Box 130 6 Ship Cove Road Port Rexton, NL, A0C 2H0
Telephone No.:	(709) 464-7542

THE UNDERTAKING:

(i) Nature of the Undertaking:

Sonja Mills and Alicia MacDonald, the owners of Port Rexton Brewing Company Ltd., are presently seeking approval to develop land located along Highway 230, within the Town of Port Rexton (location as shown on the attached map) to build a 5,000 square foot warehouse-style building to operate a 15-barrel capacity microbrewery. We do not plan to have public access at our facility as we will continue to use our existing taproom located at 6 Ship Cove Road in Port Rexton for our public access/hospitality service. We will continue to produce our beer at this new facility with all-natural ingredients (water, malted barley, hops and yeast) and no added preservatives or pasteurization.

A microbrewery is a small brewery, defined in Newfoundland and Labrador as a brewery producing less than 15,000 hectolitres per year. In our case, our proposed expansion brewery will begin operations producing approximately 1,800 hectolitres per year, with a planned expansion of our capacity of 15-20% each year.

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

Craft beer and the microbrewery industry have also exploded across the country with many microbreweries opening in rural locations and experiencing unprecedented successes. For example, Nova Scotia currently has roughly 55 microbreweries to supply a population base of 950,000 residents (being 1 microbrewery for every 17,000 residents), with many of these succeeding in rural locations. Newfoundland, however, has only 12 located in the province to supply roughly 530,000 residents (resulting in still only 1 microbrewery for every 44,000 residents).

The Bonavista Peninsula is a significant tourist destination area within the province, with out-of-province visitors exceeding 60,000 per tourist season. A recent government study has shown that along with the beauty of the natural geography and friendliness of the local people, visitor/user experiences and locally-made products are two of the top reasons drawing visitors to the area and providing visitor satisfaction.

Since opening, we have experienced unprecedented demand for our product. We have over quadrupled our production capacity, maxing out the capability of our current brewing equipment and building. However, we are still very small in the brewing world, only able to produce a maximum of 1,200 hectolitres per year at a very labour-intensive and inefficient level. Currently, we only have enough product to supply 7-8 bars and restaurants, our retail shop for only 3 days/week and 8 NLC corporate stores in the St. John's area. However, this leaves us still unable to meet the demand for our product as there remains a long waitlist of over 30 bars and restaurants for our product as well as customers in other parts of the province (e.g. Carbonear, Bay Roberts, Burin Peninsula, Gander, Grand Falls, Corner Brook, Labrador City, etc.) who cannot access our beer due to our inability to have enough supply to distribute to their area.

Therefore, in order for us to increase our capacity any further as well as to gain better efficiencies and economies of scale to offer competitive pricing for our products, we need to expand our operations to a new brewery with a building built to spec for our specific needs in a location with better access for deliveries and to 3-phase power (currently we only have access to single-phase power).

Further, and of importance to this area as well as our core values, our project will help boost the rural economic development for the Town of Port Rexton as well as our region.

DESCRIPTION OF THE UNDERTAKING:

(i) Geographic Location:

The site is located within the Town of Port Rexton, along Highway 230 per the attached map. The entire property (land and building) that the microbrewery will be located on is approximately 2.8 acres and is

surrounded by either vacant, undeveloped and unused, land or Highway 230. We were granted Crown Land approval to purchase the land on October 22, 2018, having therefore already been approved by the various departments such as Service NL, the Dept. of Transportation & Works, the Dept. of Environment & Conservation, Newfoundland Power, the Town of Port Rexton, Crown Lands themselves, etc.

As mentioned, attached at the end of this document are several maps showing the vicinity of Port Rexton and location of our project as well as a proposed site plan showing the proposed location of our road access, building, drilled well and septic systems.

(ii) Physical Features:

The site for the brewery project will be a portion of approximately 2.8 acres of Crown land that abuts Highway 230 as well as a transmission line and is otherwise surrounded only by vacant, unused land. The subject property is currently uncleared and unused, with only the existence of an old culvert connecting the land to Highway 230. There is also a Newfoundland Power distribution line that runs along the north-side of the property alongside Highway 230.

The property will contain two septic fields, one for human waste only and the other for brewery waste only. The human waste septic field will be designed by an approved designer as it will only handle the flow for 2-3 employees per day while the brewery waste septic system will be engineered by a firm specializing in commercial and industrial septic systems for special uses, such as a microbrewery. These septic systems will also be located the appropriate separation distances from the building, property boundaries, embankments, our drilled well and any surface water. There will also be at least one drilled well on the property for our brewing needs.

There has been no prior use of the land and no kerosene or oil tanks on or under the property. The building will be heated by electricity only via our HVAC system (heat pump).

The land is relatively flat with a gradual slope towards the east. It is mostly filled-in with trees, with a small un-treed portion on the east end.

The only wildlife in the area would be that normally seen within the town such as birds, rodents and perhaps a once-a-year moose that makes its way through town. The nearest body of water is fresh water and it is located approximately 360 meters away. The nearest developed property with a possible well is located over 125 meters away.

(iii) Construction:

Construction is expected to take from Spring 2019 to Fall 2019 and will consist of clearing the land and preparing it for a drilled well, a regular septic system (less than 4,546L/day for human waste), a specially-engineered septic system (for brewery waste) and our brewery building, which will be between 5,000 square feet.

We will be engaging an architect and any necessary engineers for the design and planning phase of our project. They will ensure that everything will be designed and built to code including ensuring that our

building will be designed with accessibility and fire safety in mind. Once we are ready to begin construction, we will require confirmation from all sub-contractors that they are following provincial occupational health, safety and environmental standards and guidelines throughout the construction work. Construction work will consist of several sub-contractors: excavation contractors, well-drillers, electricians, plumbers, HVAC installers and a general construction crew.

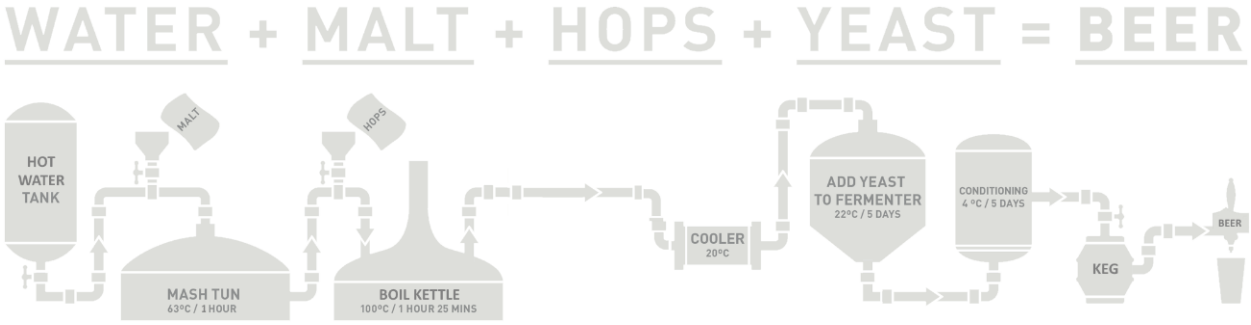
(iv) Operations:

Microbrewery Operations:

The operation of the microbrewery will consist of: (a) the brewing process, which is carried out once or twice a week with stages taking place over a 2-3 week period, (b) canning/bottling, (c) crushing grain and (d) cleaning.

(a) The Brewing Process

A schematic of the brewing process is as follows:



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

- Heating, via low-pressure steam jackets, approximately 1,755 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 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 flavours and aromas.
- 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 a combination of cold water and glycol. 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. 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 and contains a pressure-relief valve. 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 beer) is cooled in the same tank over a 12-24 hour period to reach a temperature of 2-3 degrees Celsius. The beer is then transferred via pump and hose to a carbonating/conditioning tank that is also glycol-jacketed.
- The temperature of the carbonating/conditioning tank is held at 1-2 C during which is carbonated via the addition of CO2. The carbonated beer is then transferred into kegs.
- During the brewing process, we will be operating two 2.5 HP mobile variable frequency drive pumps that will perform all of the above transfers of liquid via hose.

(b) Canning & Bottling:

Canning and bottling is carried out over a few hours and consists of transferring beer from either the brite tank or kegs into either a canning line or a small bottling machine that is also connected to a source of CO2 to purge the cans/bottles of any air before filling. The footprint of these machines is quite small and the canning line operates via electricity.

(c) Crushing Grain:

We will be crushing small amounts of grains prior to brewing and we will be doing so in a small room/area with emergency stops on our equipment and proper ventilation.

(d) Cleaning:

The tanks and equipment are cleaned and sanitized after every use utilizing a clean-in-place (CIP) system with alkaline 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.

<u>Water Demand/Usage</u>

During our operations, our water demand will fluctuate daily. Despite a small baseline demand for washroom use of our 2-3 employees who will occupy the building at a time, the only times water will be required will be when brewing and when cleaning. In total, we expect our water demand to total 2,200 litres for the brewing process and additional 450 litres for the cleaning process.

We will also potentially be using above-ground water storage to collect our brewing water slowly over time so as not to create a large demand and draw on our well at any one point in time.

<u>Period of Operations</u>

The expansion brewery (this project) will operate all year-round without general public access. Our existing brewery and taproom will continue as well, largely on a seasonal basis.

Potential Sources of Pollutants

Airborne emissions:

There are only two very small opportunities for airborne emissions during our operations: 1) vented steam during the brewing and 2) vented grain dust during the milling process. We confirm that both will result in very little to no actual air emissions and all are 100% natural and will contain no chemicals or toxic substances.

The vented steam occurs during the brewing process. Water that has steeped in malted barley/wheat is drawn off and put into a boil kettle. It is boiled for approximately 1 hour and hops (a natural plant grown in the North-west of the U.S. and throughout Europe) are added at various stages of the boil to give the beer a more distinct flavour. At this point, the liquid only contains starches from the grains and flavours drawn off of the hops, which are all-natural and contain no chemicals or toxic substances. The team from this boil emits only a slight odour, as mentioned consisting only of barley and hops. We will be venting such steam outside of our building and due to the very small production capacity of our brewing equipment, the smell would be very minor (if at all) and only detected if you were standing very close (almost next to) the exterior vent on our roof as our brewery system is simply too small to create any significant air emission or obnoxious smell. We confirm that there are no chemicals or toxic substances that will be emitted.

There will also be a very small amount of airborne grain dust when we mill the grains. To deal with this we will be milling the grain in a small fully-enclosed room with an exterior wall with direct ventilation to the outside to vent out the dust. We will also use explosion-proof fixtures and motor for the mill as well. 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.

Solid Waste & Liquid effluents:

Fortunately, all waste produced during the brewing process is organic 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 1,750 litres of beer and subsequent cleaning of the equipment, consist of:

- **Water (varies)** – though the majority of water used makes up the beer product, an 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. 600-700 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 a subsequent brew, as ingredients for baking or animal feed for a local farmer that we have an arrangement with. We can also compost the grains if we cannot reuse them.
- **Spent hops/Kettle Trub (approx. 30 – 45 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. We also plan to grow our own hop plants and will incorporate some of our spent hops in our own garden as well.
- **Yeast/Fermentation Trub (approx. 45 – 60 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, environmentally 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 beerstone 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.

All "slurry" and liquid effluents will be disposed of to our septic system. If this presents a problem or concern, we will alternatively drain these to a grey water holding tank for alternate proper and safe disposal.

For cleaning of the tasting room, bathrooms, etc. we also intend to use biodegradable, environmentally friendly cleaning products.

(v) Occupations:

The new expansion brewery will operate on a year-round basis with 2-3 full-time, year-round employees specifically working at that location in brewery and cellaring operations. These employees are currently part of our business, which has a total of 8 full-time, year-round employees (including owner-employees), 4 part-time employees at our St. John's Retail Shop and 4-5 seasonal part-time employees at our taproom during the summer months.

All the previously mentioned construction work will be completed by contracts with local suppliers. Once the business is operating, if any maintenance or repair-work is required for the equipment, this will also be contracted out to local businesses.

Our business is owned 100% by two women and our management team of 6 full-time managers is made up of 4 women and 2 men. Should we engage in any hiring down the road, we will ensure there will be

no gender or age discrimination in that process and Port Rexton Brewery is committed to diversity in the workforce.

APPROVAL OF THE UNDERTAKING:

The following is a list of permits, licences and approvals required for this microbrewery:

Municipal

- **Municipal Approval** – Town of Port Rexton

Provincial

- **Food Establishment Licence** (includes well & septic approval) - Department of Health
- **Septic System Approval** – Service NL
- **Non-Domestic Well Permit** – Department of Environment and Conservation, Water Resources Management Division
- **Environmental Assessment Approval & Registration** – Department of Environment and Conservation
- **Building Accessibility & Fire and Life Safety Approval** – Service NL
- **Manufacturer's Licence (Brewery)** – Newfoundland Liquor Corporation

Federal

- **Excise Duty Licence** - Canada Revenue Agency

SCHEDULE:

Should all funding and permits, applications and licences be approved, construction will commence in the Spring of 2019 with a tentative date to begin operations at the new brewery in December of 2019.

FUNDING:

Our capital project is expected to cost approximately $1,200,000. As part of our project, we are receiving repayable government funding from the following sources:

Atlantic Canadian Opportunities Agency
John Cabot Building, 11th Floor
10 Barter's Hill
P.O. Box 1060 STN C
St. John's, NL
A1C 5M5 (courier address: A1C 6M1)

Department of Tourism, Culture, Industry and Innovation
221B Memorial Drive
Clarenville, NL
A5A 1R3

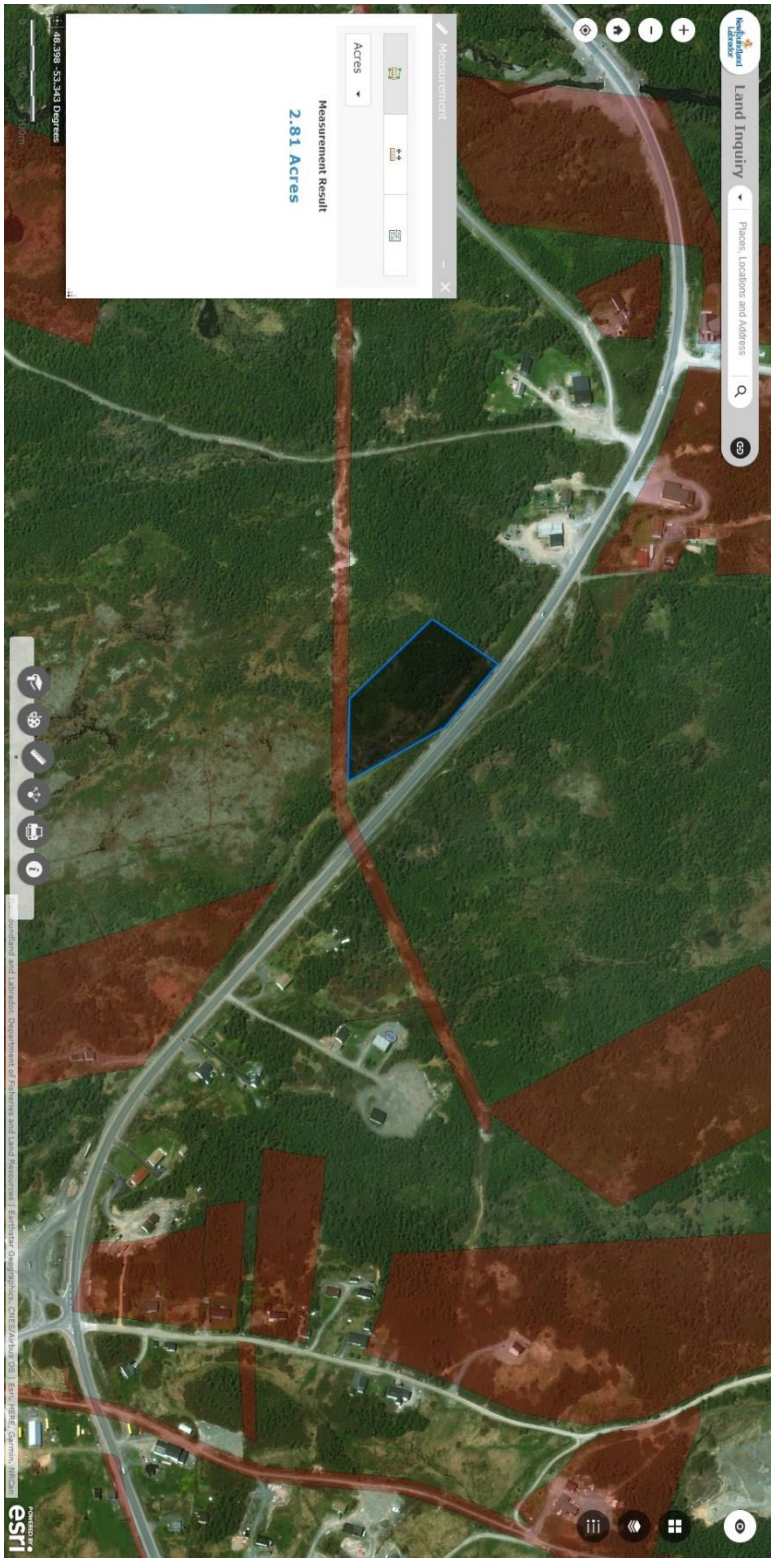
PROJECT-RELATED DOCUMENTS ATTACHED

- Various maps and proposed site plan.

December 15, 2018
DATE

SIGNATURE OF CHIEF EXECUTIVE OFFICER


Cap Cove
Northwest Arm
Bailey's Pond
Trinity
Project Location
White Cove
Big Pond
Dog Cove
Devils Cove
Port Rexton
Robinhood Bay
Skipper Hill Ponds
Herring Cove
Fox Bay
Champney's Cove


Land Inquiry
Places, Locations and Address
Measurement
Acres
Measurement Result
2.81 Acres
48.398 -53.343 Degrees
esri


Drilled Well
76m
40m
Septic (Res.)
Brewery Septic (engineered)
112m
Parking
Building 60' x 80'
83m
Future Building Expansion 60' x 80'
104m
90m