Registration

Pursuant to Section 49 of the Environmental Protection Act, SNL 2002, Chapter E-14.2

Undertaking

Microbrewery

Location

1 Noonans Lane, Bay de Verde, NL

Submitted by

Kim Sutton and Reg Gervais, on behalf of
the Bay de Verde Brewing Company

Submission Date

July 26, 2021
Revised August 13, 2021
To correct company designation
from Bay de Verde Brewing Company Ltd
to Bay de Verde Brewing Company.

Name of Undertaking:

Bay de Verde Brewing Company

Proponent:

(i) Name of Corporate Body:

Bay de Verde Brewing Company

(ii) Address:

1 Noonans Lane
Bay de Verde, NL
A0A 1E0

(iii) Chief Executive Officer:

Name:	Kim Sutton
Official Title:	President
Address:	26 Tavernors Road Bay de Verde, NL A0A 1E0
Phone No.:	(709) 693-2030

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

Name:	Reg Gervais
Official Title:	Director
Address:	26 Tavernors Road Bay de Verde, NL A0A 1E0
Phone No.:	(709) 383-1712

The Undertaking:

(i) Nature of the Undertaking:

Kim Sutton and Reg Gervais, the owners of Bay de Verde Brewing Company, are seeking approval to redevelop property at 1 Noonans Lane, Bay de Verde, 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 brew master 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. There are 19 Microbreweries located across Newfoundland and Labrador serving approximately 530,000 residents. A ratio of 1 Brewery to 27,894 residents and is underserved in many rural areas. Nova Scotia currently has roughly 55 microbreweries or 1 for every 17,000 residents. Microbreweries have proven successful across Newfoundland, in fact microbreweries located in Bay Roberts, Dildo and Port Rexton have recently completed major expansions to keep up with demand.

Furthermore, as an up-and-coming tourist destination, the town of Bay de Verde and the surrounding area, on Baccalieu Costal Drive is the ideal location for a microbrewery start up. The town currently has several tourist attractions such as the annual Quilt Festival and Festival on the Wharf and expanding network of hiking and ATV trails, and a first-class Museum and Heritage Center which offer unique experiences to visitors. Bay de Verde Brewing Company 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. To offer such an addition to the local tourism experience, it is necessary for us to purchase the necessary equipment, and to carry out renovations and additions 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 de Verde at 1 Noonans Lane. 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 extension to accommodate seating area are in place.

Bay de Verde Brewing Co. will use the town of Bay De Verde's existing water and sewage systems.

(ii) Physical Features

The site is an existing building in Bay de Verde, which abuts Noonans Lane to the north, property of the Harbour Authority on the West, Barters Lane to the east and by property containing a fishing equipment storage shed on the south side. The building was originally a residential property.
The brewery and seating area will take up most of the 1593 sq. ft main level, apart for some rooms designated for storage, washrooms, and refrigeration.

(iii) Construction

The existing saltbox building is of balloon frame construction and has limited interior load-bearing walls. The owners of Bay de Verde Brewing Co. seek to make the following changes to the building, to accommodate a brewery

- Removal of all interior walls and remove the second floor.
- Pour a concrete slab to serve as the floor
- Reinforce the exterior walls with decorative beams to enhance the appearance of the brewing area
- Install new windows and siding to the exterior to preserve the original look of the building.
- Re-routing of plumbing to facilitate installation of proper drainage in the brewery area.
- Construction of an addition to serve as the Taproom and seating area and construction of another addition to serve as a storage area and provide overhead door access to the brewery.
- Installation of fixtures and finish work, such as any required for the taproom and seating area (sinks, dish washer, draft beverage system, and lighting)
- 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.)

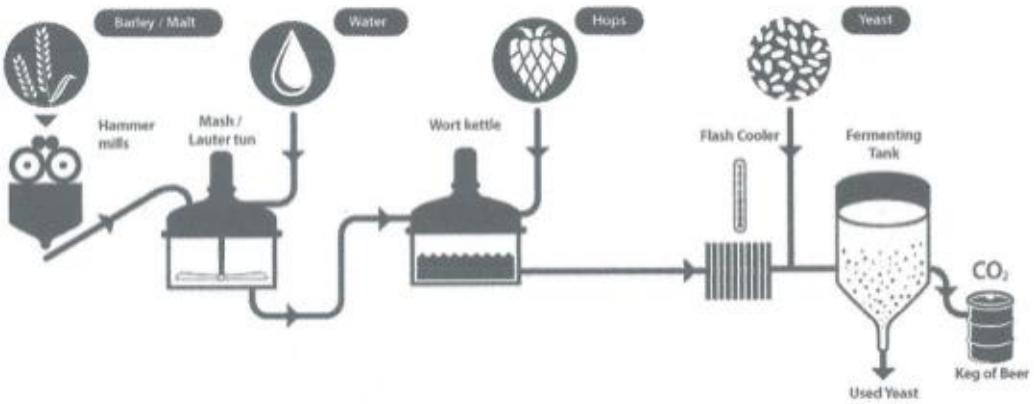
Potential pollutants during the construction phase of the project will be few. Any equipment fueled by petroleum or petroleum products used during the renovation period, it will be fueled offsite, and will not need to be re-fueled at the brewery location due to the short duration of work.

(iv) Operations

Microbrewery Operations

a) The Brewing Process

A schematic of the brewing process is provided below.



The brewing process typically runs over an 8-hour period and the steps shown 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 several 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 the above transfers of liquid via food-grade hose.

b) Caning

Caning is carried out over a couple of hours and consists of transferring beer from kegs into the caning machine that is also connected to a source of CO2. The machine operates via electricity.

c) Milling Grain

Bay de Verde Brewing Co. will be milling grain prior to brewing, and we will be doing so in a small, enclosed room (located in the new addition storage area) 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

Bay de Verde 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 Bay de Verde 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.
Bay de Verde Brewing Co. is currently working on the assumption of a 30-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 x 2 x 25 litres = 30 * 2 * 25L = 1500 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 2452 litres. As mentioned, this quantity of daily demand will occur only 5 to 6 times per month, during brew days. On all other days in which the taproom is open, water usage will average 15000 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. Bay de Verde 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 airborne emissions from the brewery.
These are:
Steam, which will be ventilated outdoors via a dedicated duct from the boil kettle.
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 nontoxic 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. There will be no airborne chemicals or toxic substances emitted.

Grain dust from the grain crushing process. Grain crushing occurs the same day as a brew day (4 to 5 times per month). The amount of grain dust that escapes the brewery is 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. The emission of grain dust will be 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. Any grain dust emitted is completely biodegradable.

(b) Solid Waste and Liquid Effluents

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 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. 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 reused 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 must 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, 20 ml of caustic is used and diluted with 40 L 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, 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, Bay de Verde Brewing Co. would ensure no age or gender discrimination during the hiring process. Bay de Verde Brewing Co. is committed to diversity in the workforce.

Approval of the Undertaking:

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

Municipal

- Municipal approval – Town of Bay de Verde

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. Approval has been given by the Town of Bay de Verde by a motion unanimously passed at the Council meeting of July 5, 2021, 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:

The estimated overall cost of the undertaking is 315,000 dollars. A portion of the financing for this project will be personal capital contributed by the owners and the balance by debt financing.

Debt financing has been requested from:

Business Development Bank of Canada (BDC)
215 Water Street
St. John's, NL A1C 5K4

TD Canada Trust
30 Kelsey Drive
St. John's, NL A1B 5C7

(vi)Project-Related Documents Attached:

Topographic maps, aerial photos and site survey

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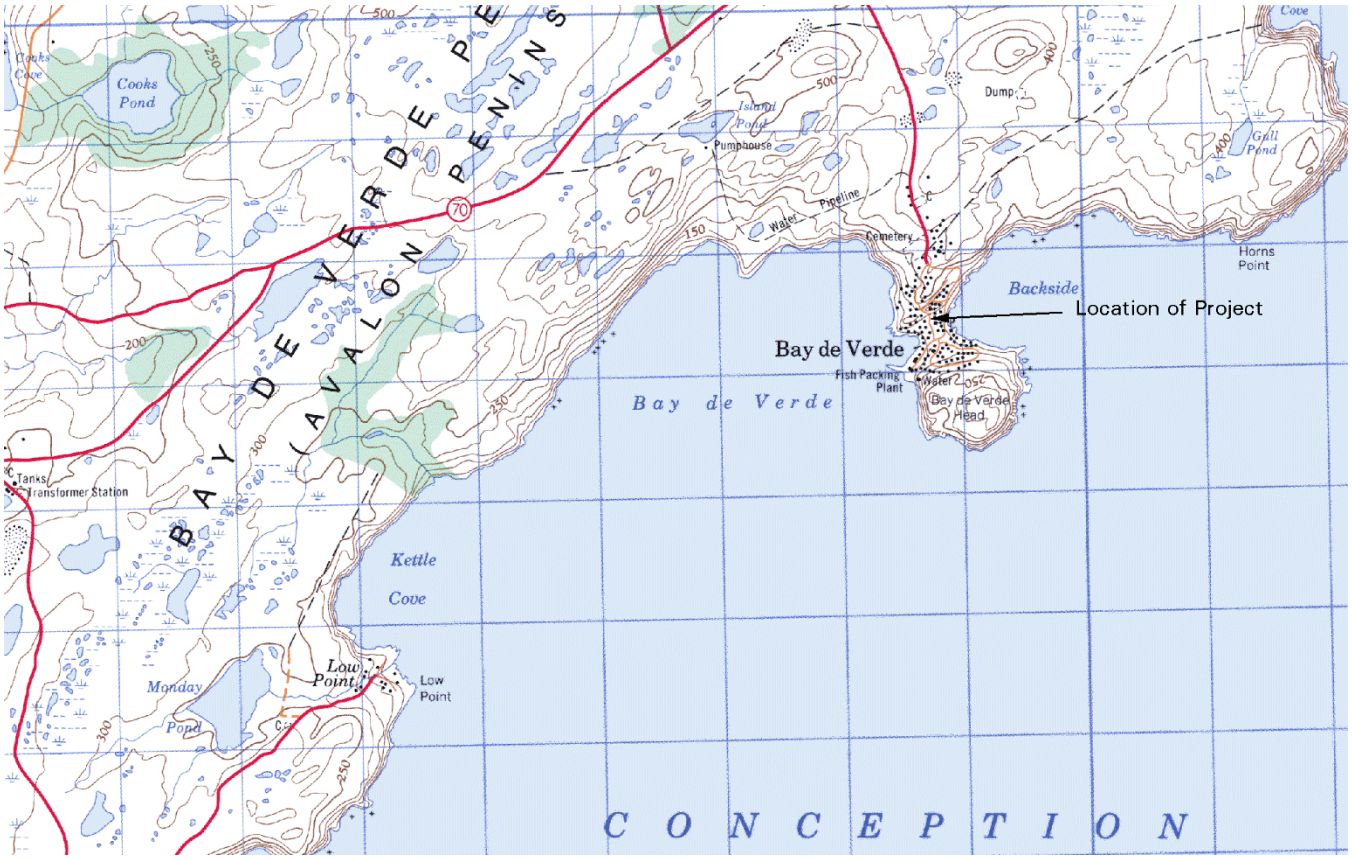
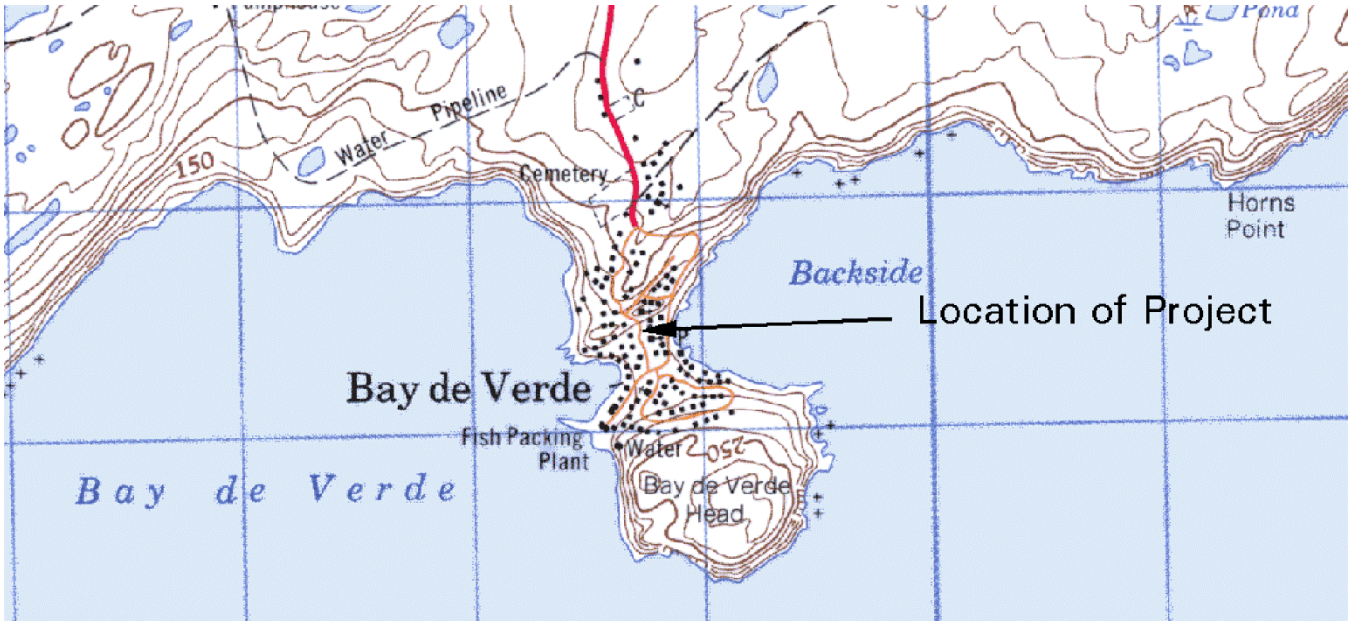
Date Signature of Chief Executive Officer

Aerial Photo of Project location

Map 1


BAY DE VERDE PENINSULA
Cooks Pond
Cooks Cove
Island Pond
Pumphouse
Dump
Grill Pond
Cove
Water
Pipeline
Cemetery
Horns Point
Backside
Location of Project
Bay de Verde
Fish Packing Plant
Water
Bay de Verde Head
Bay de Verde
Tanks
Transformer Station
Kettle Cove
Monday Pond
Low Point
Low Point
CONCEPTION

Map 2


Pipeline
Water
150
Cemetery
Horns Point
Backside
Location of Project
Bay de Verde
Fish Packing Plant
Water
Bay de Verde Head
Bay de Verde

Property Survey