May 2011

UBC Alma Mater Society
AMS Brewpub Project
Business Plan
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1.0 Executive Summary

1.1 Introduction

The Alma Mater Society of UBC Vancouver (AMS) has engaged First Key to conduct this study to determine the feasibility for a proposed brewpub for the new Student Union Building at the UBC Vancouver Campus. The new Student Union Building (SUB) will be an integrated part of the University Boulevard program, and also the heart of student life on campus for more than 45,000 students. It is to be completed by September 2014.

To conduct this study First Key assembled a highly qualified team of consultants with the appropriate cross-section of expertise and experience in market research and analysis, brewpub design and operation and financial analysis. The principal consultants and contributing authors for this report are: Mario Ylanan, Commercial Strategy, Mark Benzaquen, Technical Strategy, and Paul Woodhouse, Financial Analysis.

1.2 Sales and Marketing Strategy

Having analyzed the historical draft and bottled beer sales data from the Pit Pub and the Gallery Lounge provided by the AMS, we forecast that with a brewpub within the new Student Union Building, draft beer sales, which includes sales both on-site and off-site of beer manufactured at the brewpub, as well as beer purchased from other brewers, the AMS will sell 3,605 hectolitres for the five year period following the estimated opening date of September 1, 2014.

<table>
<thead>
<tr>
<th>Sales Volume</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hectolitres On-Site - Brewed Draft</td>
<td>365</td>
<td>396</td>
<td>388</td>
<td>331</td>
<td>279</td>
<td>1,759</td>
</tr>
<tr>
<td>Hectolitres Off-Site - Kegs</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>92</td>
<td>92</td>
<td>462</td>
</tr>
<tr>
<td>Hectolitres - Purchased Brands</td>
<td>281</td>
<td>300</td>
<td>295</td>
<td>270</td>
<td>237</td>
<td>1,383</td>
</tr>
<tr>
<td><strong>Total Hectolitres</strong></td>
<td><strong>739</strong></td>
<td><strong>789</strong></td>
<td><strong>776</strong></td>
<td><strong>693</strong></td>
<td><strong>608</strong></td>
<td><strong>3,605</strong></td>
</tr>
</tbody>
</table>

This growth (from the average 385 hectolitres annually we forecast between January 2011 and August 2014) is premised on the new Pit Brew Pub and the new Sundial Lounge (i) significantly increasing their patronage, similar to what was experienced after the renovation of the Pit Pub in the summer of 2006, (ii) providing sustainably produced, competitively priced, high quality craft beers brewed on-site, and (iii) successful development and nurturing of an on campus beer culture at UBC Vancouver.

1.3 Capital Requirements

Based on our detailed analysis of Equipment Requirements and other Pre-opening Costs (see section 6.5), the total Capital Requirement for this project is estimated to be $512,000, as follows:
Summary of Total Capital Requirements

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Costs</td>
<td>346,279</td>
</tr>
<tr>
<td>Construction, installation</td>
<td>59,000</td>
</tr>
<tr>
<td>Capitalized</td>
<td>405,279</td>
</tr>
<tr>
<td>Consulting and training costs</td>
<td>103,016</td>
</tr>
<tr>
<td>Other Costs</td>
<td>4,040</td>
</tr>
<tr>
<td>Expensed</td>
<td>107,056</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>512,335</strong></td>
</tr>
</tbody>
</table>

We estimate that AMS will be able to finance a portion of the equipment costs through a bank loan of up to $200,000. Based on this assumption, AMS would need to allocate approximately $312,000 of its own capital to fund the project.

1.4 Financial Projections and Investment Analysis

We prepared Financial Projections for a five year period following the opening date (estimated to be September 1, 2014). The assumptions used in our financial model are based on a detailed Marketing Plan and Technical Brewery Analysis prepared by First Key.

Table 01: Income from New Brewpub Investment (Draft Beer Segment)

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Revenue from Draft Beer Sales</td>
<td>629,173</td>
<td>697,432</td>
<td>697,915</td>
<td>629,869</td>
<td>554,732</td>
<td>3,209,121</td>
</tr>
<tr>
<td>Total Cost of sales</td>
<td>(249,260)</td>
<td>(264,224)</td>
<td>(265,830)</td>
<td>(255,479)</td>
<td>(240,391)</td>
<td>(1,275,184)</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>379,913</td>
<td>433,208</td>
<td>432,085</td>
<td>374,390</td>
<td>314,341</td>
<td>1,933,937</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>(63,594)</td>
<td>(64,865)</td>
<td>(66,163)</td>
<td>(67,486)</td>
<td>(68,836)</td>
<td>(330,944)</td>
</tr>
<tr>
<td>EBITDA</td>
<td>316,319</td>
<td>368,343</td>
<td>365,922</td>
<td>306,904</td>
<td>245,505</td>
<td>1,602,993</td>
</tr>
<tr>
<td>Interest</td>
<td>(9,119)</td>
<td>(7,092)</td>
<td>(5,066)</td>
<td>(3,040)</td>
<td>(1,013)</td>
<td>(25,330)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>(20,264)</td>
<td>(20,264)</td>
<td>(20,264)</td>
<td>(20,264)</td>
<td>(20,264)</td>
<td>(101,320)</td>
</tr>
<tr>
<td>Net Income Before Taxes</td>
<td>286,936</td>
<td>340,986</td>
<td>340,592</td>
<td>283,601</td>
<td>224,228</td>
<td>1,476,344</td>
</tr>
</tbody>
</table>

We compared these results to those expected with no investment in brewing facilities and noted that income was significantly lower without the brewery. The main source of profit improvement is expected to come from higher revenues related to sales volume improvements (both on-site and offsite), a reduction in the cost of beer products sold (associated with in-house production), offset by higher promotional and other expenses. The net improvement in pretax income over a five year period is estimated to be $460,000. The present value of projected incremental cash flow attributable to the Brewpub investment, discounted using a 13% rate of return, was approximately $843,000 million. When compared to the initial Capital Investment required to fund project of approximately $512,000 (including capital expenditures for equipment as well as estimated pre-opening expenses) the result is a positive net present value of approximately $330,000.
2.0 Brewpubs and the Brewing Process

2.1 Definitions

A microbrewery is a small-scale brewery that produces and packages its beer in kegs, bottles or cans for off-premises sales and consumption. All brewpubs are microbreweries in that they are small-scale breweries, but not all microbreweries are brewpubs – only if they have a tavern or pub on the premises do they qualify as a brewpub. A “small-scale” brewery in Canada is one that typically produces between 3,000 and 50,000 hectoliters of beer per year.

A brewpub is a microbrewery that operates in conjunction with a retail pub / restaurant, which derives a substantial portion of its revenues from retail sales of beer directly to end use customers for on-premises consumption. A brewpub may or may not also have wider off-premises wholesale distribution of its products, but almost always sells most of its products directly to retail consumers.

A brewpub’s primary distinguishing feature is that it is also a brewery. The on-site brewery and fresh micro brewed beer is what sets a brewpub apart from all other taverns and restaurants, and is what marketers refer to as a “sustainable competitive advantage”.

2.2 History and Development of Brewpubs

Brewpubs are not a new concept in the hospitality industry. For centuries before there were commercial breweries, many taverns and inns in Europe and Asia brewed their own beer to serve their patrons. In ancient Egypt, inns commonly operated combination breweries / bakeries. In medieval England, it was expected that each inn would brew its own beer, and the brewing was generally done by the innkeeper’s wife or by other women in his employ. In Europe, especially in England, Germany and Bohemia, a number of these breweries dating back to the Middle Ages are still in operation today. Others, such as the renowned Hofbrau Haus in Munich, have evolved into regular commercial breweries.

Brewpubs existed widely throughout the United States before the advent of Prohibition in 1920. With thousands of breweries in operation across the country supplying each region with its own distinctive style, almost every town had a beer of its own. Unfortunately for American beer drinkers, the only breweries to survive Prohibition were the large commercial breweries that could convert their existing operations to the production of non-alcoholic malt products. When they resumed brewery operations in 1933, they went in search of a single beer style that was cheap to produce, easy to drink, and appealed to the widest possible tastes. The variety, character, and perhaps even the quality was gone from the American beer market.

This all began to change in 1979 when a law was passed that legalized the home brewing of beer. Then in 1983, California passed a law permitting breweries to brew and sell beer directly to the customer (without going through a distributor). These laws paved the way for a renaissance in brewpubs. Since then, home brewers, microbreweries and brewpubs have been reintroducing a wide variety of styles and flavors available through the small scale production of high quality, hand-crafted beers, brewed naturally, and served fresh.
The first modern brewpub in North America opened in 1983 in the small town of Horseshoe Bay, British Columbia. Its immediate success attracted wide attention on both sides of the Canada-USA border and set off a trend among brewers across the country. The first brewpub in the USA began operations the following year. Over the next few years, new brewpubs opened at the rate of 20 or so each year. In 1995, that number jumped to 152, and by 2010 there are a reported 994 brewpubs in the United States. In Canada, the Brewpub industry began growing in the mid 1990’s and is very popular among consumers. The following table provides a list of selected Brewpubs in BC.

**Selected Brewpubs in BC**

<table>
<thead>
<tr>
<th>Brewpub</th>
<th>City</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Springs Brewing Company</td>
<td>Mission</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Taylor's Crossing</td>
<td>North Vancouver</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Sailor Hagar's</td>
<td>North Vancouver</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Big River Brewpub</td>
<td>Richmond</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Central City Brewing</td>
<td>Surrey</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Big Ridge Brewing Company</td>
<td>Surrey</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Yaletown Brewing Company</td>
<td>Vancouver</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Dix BBQ and Brewery</td>
<td>Vancouver</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Steamworks Brewing</td>
<td>Vancouver</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Dockside Brewing Company</td>
<td>Vancouver</td>
<td>Lower Mainland</td>
</tr>
<tr>
<td>Mill Creek Brewery (Freddy's Brewpub)</td>
<td>Kelowna</td>
<td>Southern Interior</td>
</tr>
<tr>
<td>Ridge Brewing Company</td>
<td>Ossoyoos</td>
<td>Southern Interior</td>
</tr>
<tr>
<td>Barley Mill Brewpub</td>
<td>Penticton</td>
<td>Southern Interior</td>
</tr>
<tr>
<td>Barley Station Brewpub</td>
<td>Salmon Arm</td>
<td>Southern Interior</td>
</tr>
<tr>
<td>Craig Street Brew Pub</td>
<td>Duncan</td>
<td>Vancouver Island</td>
</tr>
<tr>
<td>Longwood Brewpub</td>
<td>Nanaimo</td>
<td>Vancouver Island</td>
</tr>
<tr>
<td>Canoe Brewpub, Marina, and Restaurant</td>
<td>Victoria</td>
<td>Vancouver Island</td>
</tr>
<tr>
<td>Spinnakers Gastro Brewpub &amp; Guesthouse</td>
<td>Victoria</td>
<td>Vancouver Island</td>
</tr>
<tr>
<td>Swans Buckerfields Brewery</td>
<td>Victoria</td>
<td>Vancouver Island</td>
</tr>
<tr>
<td>Hugo's Grill and Brewhouse</td>
<td>Victoria</td>
<td>Vancouver Island</td>
</tr>
<tr>
<td>Howe Sound Inn and Brewing Co.</td>
<td>Squamish</td>
<td>West Coast</td>
</tr>
</tbody>
</table>

The future holds a great deal of potential for well-managed brewpubs. As any tavern owner knows, the most profitable item to sell in a pub is draft beer - this is the primary sale item for a brewpub and the reason for its existence.
2.3 Ingredients in Beer

The four basic ingredients of beer are:

- **Malt.** Grain that has been allowed to start sprouting, which converts the starch in the kernel into fermentable sugars. The grain is then quickly dried to stop root growth. Roasting the dried malt in a manner similar to roasting coffee creates different colored malts. Barley and (to a lesser extent) wheat malt are the only two malted grain types used in modern beer.

- **Water.** The purity and trace minerals in brewing water influence the final taste of the beer.

- **Hops.** Dried pine cone-shaped flowers from the hop vine. Bitter oils in the hop blossom contribute the “bite” and balance the taste of the beer against the sweetness of the malt sugars.

- **Yeast.** A single-celled plant that feeds on the malt sugars during fermentation and converts them into alcohol and carbon dioxide.

In some European countries like Germany and Norway, brewers are mandated by law to use only these ingredients. The Bavarian Beer Purity Law of 1516 is the oldest pure food law in the world still in force today.

In most countries, including the United States, brewers often cut corners to speed up production and reduce costs. Cheaper un-malted grains, such as corn and rice, and straight sugars such as dextrose and sucrose (“adjuncts”) are substituted for a percentage of the malted barley. Hop blossoms are replaced with processed hop extracts. An assortment of additives and preservatives are used to give the beer product a longer shelf life or other desired characteristics.

Small-scale microbrewers, such as brewpubs, generally reject these shortcuts and refuse to compromise the quality of their product. Most microbreweries in the USA and Canada brew only “all-malt” beers that are free of additives. The cost differential between an all-malt beer and an “adjunct” beer is minor and is not a significant consideration at the production level of a brewpub. The proposed Brewpub will follow the strict quality standards of the Bavarian Beer Purity Law.
3.0 Market Assessment

3.1 British Columbia Market Trends

Important trends and key statistics indicated regarding the BC Beer market are:

- **British Columbia has approximately 55 active breweries**: The liquor distribution Branch (LDB) provides the following classification scheme:

<table>
<thead>
<tr>
<th>Category</th>
<th>Establishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Commercial Breweries&quot;</td>
<td>5</td>
</tr>
<tr>
<td>(production of &gt;75,000 HL)</td>
<td></td>
</tr>
<tr>
<td>&quot;Cottage Breweries&quot;</td>
<td>19</td>
</tr>
<tr>
<td>(production of &lt;75,000 HL)</td>
<td></td>
</tr>
<tr>
<td>&quot;Brew-pubs&quot; (on premise production)</td>
<td>31</td>
</tr>
<tr>
<td><strong>Total establishments</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

- **Micro-Breweries (Annual production up to 150,000 HL) Exhibit the Highest Growth**: For the period 2006 to 2010, the microbrewery segment grew at an average annual rate of 14.9% (Source: BC Liquor Distribution Branch Quarterly Market Review December 2010.)

- **Declining Domestic Beer Volume offset by Growing Imports**: Since 2006 the domestic beer market has declined by 0.9% annually while imports grew 6.9%. Imported beer reached 510,556 hectolitres in 2010.

- **Imported beer sales continue to grow in British Columbia**: From 2006 to 2010 import beer has grown at an average annual rate of 7%

- **British Columbians are draft beer drinkers**: On total beer sales, British Columbians drink more draft beer than any other province. (Source: Brewers Association of Canada)

<table>
<thead>
<tr>
<th>Province</th>
<th>% of draft beer vs. total beer sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>13%</td>
</tr>
<tr>
<td>Alberta</td>
<td>9.9%</td>
</tr>
<tr>
<td>Quebec</td>
<td>5.6%</td>
</tr>
<tr>
<td>Ontario</td>
<td>8%</td>
</tr>
</tbody>
</table>

- **Packaged beer in British Columbia still outsells draft**: From 2006 to 2010 it is evident that packaged beer still outsells draft beer roughly 5 to 1 in British Columbia. (Source: Brewers Association of Canada)
Competition with the beer industry is based on product quality, taste, consistency, freshness, distribution, price, the ability to differentiate products, promotional methods, and product support.

Overall, the British Columbia beer market has been stagnant, however, there is growth coming from breweries with annual production up to 150,000HL. In a market dominated by the big players, breweries under 150,000HL consistently are growing in both draft (7.65%) and Packaged (40.12%).

As illustrated in the table below Breweries with Annual Production over 150,000HL have seen a -7.73% change from previous year. Breweries with Annual Production under 150,000HL have seen a 25.85% change from previous year.

<table>
<thead>
<tr>
<th>Table 02 Domestic Beer Market –</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breweries with Annual Production Over 150,000HL</td>
<td>DRAFT</td>
<td>37,135,339</td>
<td>36,893,887</td>
<td>35,301,470</td>
<td>33,225,906</td>
</tr>
<tr>
<td></td>
<td>PACKAGED</td>
<td>185,914,907</td>
<td>184,378,706</td>
<td>185,244,122</td>
<td>182,884,605</td>
</tr>
<tr>
<td>TOTAL</td>
<td>223,050,246</td>
<td>221,272,594</td>
<td>220,545,591</td>
<td>216,110,510</td>
<td>199,412,831</td>
</tr>
<tr>
<td>Breweries with Annual Production up to 150,000HL</td>
<td>DRAFT</td>
<td>6,991,627</td>
<td>7,120,329</td>
<td>7,119,179</td>
<td>7,398,789</td>
</tr>
<tr>
<td></td>
<td>PACKAGED</td>
<td>9,798,352</td>
<td>11,773,287</td>
<td>13,052,067</td>
<td>15,881,218</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16,789,979</td>
<td>18,893,617</td>
<td>20,171,246</td>
<td>23,280,006</td>
<td>29,298,299</td>
</tr>
<tr>
<td>DOMESTIC DRAFT - TOTAL</td>
<td>44,126,966</td>
<td>44,014,217</td>
<td>42,420,649</td>
<td>40,624,694</td>
<td>40,631,911</td>
</tr>
<tr>
<td>DOMESTIC PACKAGED - TOTAL</td>
<td>195,713,260</td>
<td>196,151,993</td>
<td>198,296,188</td>
<td>198,793,851</td>
<td>188,192,500</td>
</tr>
<tr>
<td>DOMESTIC BEER - TOTAL</td>
<td>239,840,226</td>
<td>240,166,210</td>
<td>240,716,837</td>
<td>239,418,545</td>
<td>228,824,410</td>
</tr>
</tbody>
</table>

These numbers illustrates the changing consumer demands for better quality beer, more complex taste features, as well as maybe an idea of being locally produced. In fact, even the big brewers are realizing Canadians are demanding better quality beers and have started to meet these demands. This can be seen with Molson’s purchase of Creemore Springs in 2005 and again in their purchase of Granville Island Brewing in late 2009.

Growth opportunities appear to be in the value priced and premium beer sectors.
3.2 Location Analysis

The University of British Columbia’s main campus is a 402-hectare (993-acre) campus in the Greater Vancouver area located in the University Endowment Lands on Point Grey, a peninsula about 10 km (20 minutes) from the heart of downtown Vancouver.

The UBC campus has 18 faculties, 14 schools and 3 colleges. There are 37,944 undergraduate students and 9,152 graduate students totaling 47,096 students. It is said that daytime population on the main campus is around 65,000.

The campus' street plan is mostly in a grid of malls (for driving and pedestrian-only). Lower Mall and West Mall are in the southwestern part of the peninsula, with Main, East, and Wesbrook Malls northeast of them.

According to a 2009 UBC Student Housing Study, UBC currently provides approximately 8680 beds on the Point Grey campus for an on-campus student population of about 11,000 people. The University is forecasting the need for 6,400 new beds on campus within the next 20 years, and has expanded housing recently with the opening of the Marine Drive towers and the MBA house residence on South Campus. Nearly everything on campus is within walking distance.

The heart of student activity at UBC Vancouver is the centrally located Student Union Building, which houses offices of many clubs, half a dozen restaurants and cafés, a pub ("The Gallery"), a nightclub ("The Pit"). The Gallery is inside the SUB building and is a sit down lounge that has 8

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2 Wikipedia Online "UBC Student Housing Demand Study". UBC Planning. 2009-12. Retrieved 2010-01-26
taps for draft beer. The Gallery sells mostly Molson products but also sells Sleeman’s products and Bowen Island.

The Pit is the on campus bar with its most popular night being Wednesday and Tuesday. On Wednesday nights, students show up in numbers dressed for dancing. Tuesday night is more of a sit down night with cheap beer specials.

The new location of the SUB building is very close to the current location and is a center point in the campus. (Please see the map below). The new SUB building will be the nucleus of the campus.

### 3.3 Competitor Analysis

#### 3.3.1 Introduction

After initial meetings with AMS/First Key, both parties identified four competitors to the Pit Pub on the UBC campus as well as the BC Liquor store. The competitors are:

- Mahony & Sons Public House UBC
- Koerners Pub
- The Point Grill
- White Spot
- Others – BC Liquor Store

The location of these competitors is illustrated in the following map.
We have developed a profile for each competitor based on:

- Visiting their on campus facilities and speaking with several managers,
- Reviewing information from the competitors’ websites.
- Reviewing third-party reviews from www.yelp.ca which is a reputable online reviewing source.

### 3.3.2 Mahony and Sons Public House

This establishment has an authentic Irish Public House feel with the inclusion of solid wood chairs and tables, inlaid stone, tile and metal Celtic artwork. The ceiling of the pub is unique incorporating striking Celtic artwork painted by Irish artists. The traditional warm Irish feel is reinforced by four double sided fireplaces that face into the pub and out onto the large patios.

- **Web site:** http://www.mahonyandsons.com/contact.php
- **Location:** 5990 University Blvd (UBC)
- **Products and prices:** Prices are listed by brand and serving size, as follows:

<table>
<thead>
<tr>
<th>Mahoney &amp; Sons</th>
<th>Pints</th>
<th>Bottle</th>
<th>Jug</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinness</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kilkenny</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smithwicks</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harp</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stella Artois</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander Keith’s</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kokanee</td>
<td>5.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budweiser</td>
<td>5.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heineken</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Richards Red</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granville Island Pale Ale</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granville Island India Pale Ale</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granville Island Honey Lager</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Granville Island Seasonal</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hatchet Lager</td>
<td>12.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kokanee</td>
<td>5.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budweiser</td>
<td>5.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miller Chill</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corona</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander Keith’s</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alexander Keith’s White</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stella Artois</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heineken</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Becks</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bud Light</td>
<td>5.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bud Light Lime</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grolsch Swingtop</td>
<td>7.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peroni</td>
<td>6.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stella Light</td>
<td>6.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Yelp Reviews:** Key points included-
  - Expensive beer
  - Average food, but big patio for summer
3.3.3 Koerners Pub

Located in the Thea Koerner Graduate Student Center, Koerner's Pub is a 150 seat licensed establishment run by the Graduate Student Society of UBC Vancouver. Koerner's caters to a casual crowd, serving lunch and dinner alongside a wide drink selection at the bar. Big screen TVs and free billiards, shuffle board, darts, and foosball provide entertainment indoors, while the large licensed patio is ideal for relaxing outdoors with a pint when the weather's nice. Koerner's Pub also offers a catering service for small to medium sized events occurring in the Graduate Student Center.

The Graduate Society is a non-profit organization, and all proceeds from Koerner's Pub go directly towards furthering the Societies mission to better the lives and education of UBC graduate students.

- **Location:** 6371 Crescent Road

- **Operating Hours:**
  - Pub is Open 12pm - 1am every weekday, and from 8pm - 1am on Saturday
  - The kitchen is open 12-8pm on Monday and 12-9pm on Tuesday-Friday
  - The kitchen is closed on Saturday

- **Products and prices:** Prices are listed by brand and serving size, as follows:

<table>
<thead>
<tr>
<th>Koerner's Pub</th>
<th>Glass</th>
<th>Sleeve</th>
<th>Jug</th>
<th>Bottle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Okanagan Spring Pale Ale</td>
<td>3.75</td>
<td>5.50</td>
<td>18.25</td>
<td></td>
</tr>
<tr>
<td>Bavarian 1516 Lager</td>
<td>3.75</td>
<td>5.50</td>
<td>18.25</td>
<td></td>
</tr>
<tr>
<td>Sleemans Honey Brown</td>
<td>3.75</td>
<td>5.50</td>
<td>18.25</td>
<td></td>
</tr>
<tr>
<td>Guinness</td>
<td>4.75</td>
<td>6.50</td>
<td>22.25</td>
<td></td>
</tr>
<tr>
<td>Strongbow Cider</td>
<td>4.25</td>
<td>5.75</td>
<td>21.25</td>
<td></td>
</tr>
<tr>
<td>Russell Rocky Mountain Lager</td>
<td>3.25</td>
<td>4.50</td>
<td>16.25</td>
<td></td>
</tr>
<tr>
<td>Russell Cream Ale</td>
<td>3.75</td>
<td>5.50</td>
<td>18.25</td>
<td></td>
</tr>
<tr>
<td>Rickard's Red</td>
<td>3.50</td>
<td>5.25</td>
<td>17.25</td>
<td></td>
</tr>
<tr>
<td>Dead Frog Nut Brown</td>
<td>3.75</td>
<td>5.50</td>
<td>18.25</td>
<td></td>
</tr>
<tr>
<td>Molson Canadian</td>
<td>3.50</td>
<td>5.25</td>
<td>17.25</td>
<td></td>
</tr>
<tr>
<td>Big Rock Grasshopper</td>
<td>3.75</td>
<td>5.50</td>
<td>18.25</td>
<td></td>
</tr>
<tr>
<td>Kokanee</td>
<td></td>
<td></td>
<td></td>
<td>5.25</td>
</tr>
<tr>
<td>Coors Light</td>
<td></td>
<td></td>
<td></td>
<td>5.25</td>
</tr>
<tr>
<td>Budweiser</td>
<td></td>
<td></td>
<td></td>
<td>5.25</td>
</tr>
<tr>
<td>Bud Lite</td>
<td></td>
<td></td>
<td></td>
<td>5.25</td>
</tr>
<tr>
<td>Dos Equis Amber</td>
<td></td>
<td></td>
<td></td>
<td>6.25</td>
</tr>
<tr>
<td>Heineken</td>
<td></td>
<td></td>
<td></td>
<td>6.25</td>
</tr>
<tr>
<td>Corona</td>
<td></td>
<td></td>
<td></td>
<td>6.25</td>
</tr>
<tr>
<td>Stella</td>
<td></td>
<td></td>
<td></td>
<td>5.50</td>
</tr>
</tbody>
</table>

- The top 3 draft beers are
  - Russell Cream Ale
  - Bavarian 1516 Lager
  - Dead Frog Nut Brown
In speaking with a manager at the pub, we found that:
- Pints are sold more than Pitchers,
- Lagers are sold more than darks.

Yelp Review
- Good patio in the summer
- Known for cheap beer on campus
- No dance floor like the PIT PUB
- Full kitchen
- In the basement of Koerner Graduate Student Center
- No signage (Hard to find if not a UBC student)

3.3.4 The Point Grill

The Point Grill, UBC's newest upscale casual dining restaurant with exceptional cuisine, beautiful and stylish decor, and cheerful service in a relaxed lounge style environment. The restaurant is equipped with High Definition TV's and full bar service featuring draft beer, bottled beer with both local and imported beer, coolers, wine and mixed drinks and cocktails.

Ultimately The Point will have space for just over 100 seats inside, with a 50-seat outdoor patio. It is also set up with a small grab-and-go counter near the front where basic grocery staples (milk etc.) will also be available to service the Marine Drive crowd.

Location: Building 4 - 2205 Lower Mall (Marine Drive Residence)

Operating Hours: open Monday through Sunday (which features a brunch service.)

Products and prices: They have 4 beers on tap and the best sellers are:
- Sleeman's Honey Brown Ale
- 1516 Bavarian-Lager
- Granville Island IPA
- Granville Island Winter Ale

In speaking with a manager we learned they are switching some of their beers to bring in more local beers. They said they were planning on selling Red Truck and Dead Frog.

Yelp Reviews
- Reasonable prices
- Fancier food
3.3.5 White Spot

The restaurant is located right next to the David Lam Library at UBC, and offers a “To Go” menu, targeting students that don’t have time for a sit down meal. Students can use their UBC meal card at this White Spot including for the purchase of beer. Staff is employed by UBC Food Services.

- **Location:** 2015 Main Mall, Vancouver, B.C. V6T 1Z2

- **Yelp reviews**
  - Convenient “To go” menu whereby students get lunch to go
  - During busy hours, service can be very lacking and sometimes non-existent
  - Food tends to be worse than an average White Spot restaurant

3.4 On Line Survey Analysis

An on line survey was commissioned to ascertain the interest of the student body in a conversion of the Pit Pub to a brewpub, the types of beer they consumed and their beer consumption patterns. There were a total of 949 respondents who completed the survey.

The respondents were primarily undergrads, between 19 and 22 years old. About 1/3 were from the Arts faculty. The gender split was 59% males, 41% females. Slightly more than half of the respondents drink beer once a week or more often. This reassures us that the data obtained from the survey reflects the attitudes of our primary market.

69% of the respondents are strongly/somewhat in favour of the conversion of the Pit Pub to a brewpub. The concerns of those against the conversion centered primarily on the perceived loss of the casual, low-key atmosphere of the Pit Pub and the Wednesday Pit Nights. Other concerns were around the quality of the beer that would be produced there (perceived as lower than from larger breweries) and thought that the conversion was an inappropriate use of AMS financial resources.

And there is much more support for the brewpub to be operated in a sustainable manner than for the use of certified organic ingredients in producing the beer. While lagers and ales had the highest interest, there is support for the other beer types. Lagers and ales are by far the most commonly consumed types of beer, with about equal shares for domestic, imported and microbrewery products.

About 3 out of 4 of the respondents consume “only draft” or “mostly draft” which will provide a solid base of consumers for the brewpub product. In responding to the question, “How much do you usually buy at one time?” 8 out of 10 people who bought kegs did so from a microbrewery which indicates that the likelihood of the new brewpub being able to sell draft beer in kegs off-site is high.
About 2/3rds of the respondents indicated a willingness to pay a premium for the brewpub products. And beer specials were clearly the most preferred promotion type.

These results clearly point to the Pit Brew Pub being positively received by the student body as long as it maintains the casual, low-key atmosphere of the current Pit Pub. Just as importantly, it still needs to be “the place to be on Wednesday nights”. This will ensure that the Pit Brew Pub will maintain the position as the number one bar on campus.

A full copy of the Survey Report is included as an attachment to this report for reference.
4.0 **Description of Proposed New Products**

The following table provides a description of the proposed new draft beer products that will be brewed on site. These beer styles were selected based on local beer consumption trends, which show consumers are demanding better quality beers that are flavorful, yet smooth and balanced, as well as maybe an idea of being locally produced. With this in mind, the beers featured below were designed to be smooth and full of flavor, featuring a balance between malt and hop characteristics (ingredients), and a clean finish - a combination that makes them very drinkable. These beer styles were also chosen because most, if not all, of the ingredients required to make these types of beers (i.e. type of malt or hops, etc.) can be sourced locally.

In addition, the variety of beer styles below can compliment a wide range of different bar fare, including many of the foods offered at the Pit (burgers, French fries, and chicken fingers), and other food venues across campus.

<table>
<thead>
<tr>
<th>Beer Styles</th>
<th>Beer Specifications</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AMS Lager</strong></td>
<td>OG = 12 P, FG = 2.5 P, % Alc = 5.0% abv, Bitterness = 15 IBU, Colour = 4 SRM</td>
<td><strong>Mouth feel:</strong> Light body with clean finish and no aftertaste.</td>
</tr>
<tr>
<td>(North American Lager)</td>
<td></td>
<td><strong>Aroma:</strong> Low malty aromas. Light hop aromas; slight flowery hop presence.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Appearance:</strong> Clear (transparent); pale gold colour; with a fine white head that does not persist.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Flavour:</strong> Crisp and clean flavor with some low levels of sweetness. Mild hop bitterns. Carbonation provides a slight dry finish.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E.g. Stella Artoire, Coors Gold, Heinekin</td>
</tr>
<tr>
<td><strong>AMS Ale:</strong></td>
<td>OG = 13.5 P, FG = 3 P, % Alc = 5.5% v/v, Bitterness = 20 IBU, Colour = 14 SRM</td>
<td><strong>Mouth feel:</strong> Low-Medium body, wild mild carbonation.</td>
</tr>
<tr>
<td>(North American Ale)</td>
<td></td>
<td><strong>Aroma:</strong> Light malty aroma. Moderate hoppy aroma with fruity-citrus notes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Appearance:</strong> Clear (transparent); deep golden color.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Flavour:</strong> Soft, light malty palate, some hop flavor present. Low hop bitterness makes the beer sweet in character and provides a smooth finish.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E.g. Molson Golden. Amsterdam Blond, Chilliwack Blonde Ale. (Old Yale Brewing Co.)</td>
</tr>
</tbody>
</table>
| AMS Special Lager  
(Bohemian Pilsner) | 
|---|---|---|
| OG = 12.5 P, FG = 2 P, % Alc = 5 % v/v, Bitterness = 28 IBU, Colour = 7 SRM | **Mouth feel**: Light to medium body, with a clean, crisp finish.  
**Appearance**: Clear with a light straw, yellow colour, and dense white foam head.  
**Aroma**: The hops used impart subtle floral aromas.  
**Flavour**: Slight malty sweet character, with moderate hop bitterness, and lively flavour.  
E.G. Pilsner Urquell, Molson Bohemian, Old Style Pilsner |  
| AMS Special Ale  
(North American Wheat Ale) | 
|---|---|---|
| OG = 12 P, FG = 2 P, % Alc = 4.8% v/v, Bitterness = 20 IBU, Colour = 6 SRM | **Mouth feel**: Light to medium body. Smooth rounded mouth feel and finish.  
**Appearance**: Clear with a golden to light golden-amber in color, with a creamy white foam head. Sometimes served unfiltered/cloudy.  
**Aroma**: A slight spicy aroma, with subtle hints of banana and/or fruit.  
**Flavour**: Low bitterness; drinkable with a soft sweet finish. Sometimes fruit is added to enhance the fruity character.  
E.g. Sam Adam's Cherry Wheat, Pyramid Wheat Ale |  
| Seasonal Option #1:  
Californian Pale Ale | 
|---|---|---|
| OG = 12.5 P, FG = 3 P, % Alc = 5.2% v/v, Bitterness = 30 IBU, Colour 14 SRM | **Mouth feel**: Medium-bodied beer, moderately carbonated.  
**Appearance**: Clear (transparent), rich amber-copper color  
**Aroma**: Fragrant hop aroma with citrus fruit notes, balanced with sweet caramel scents.  
**Flavour**: Moderately bitter with a clean finish. Caramel flavors evenly balance out the bitterness to create a very drinkable full-flavored beer.  
E.g. Sierra Nevada Pale Ale, Rogue Red Ale, Samuel Adams Boston Amber |  
| Seasonal Option #2:  
North American Harvest Wet-Hopped Ale | 
|---|---|---|
| OG =13.5 P, FG = 3.0 P, % Alc = 5.5% v/v, Bitterness = 22 BU, Colour = 5 SRM | **Mouth feel**: A light-bodied; well carbonated, creamy smooth finish  
**Appearance**: Golden-yellow in color (can be served unfiltered or filtered). An abundant thick white foam head that lasts.  
**Aroma**: Light maltiness, with a delicate hop bouquet made-up of floral and pear/pineapple scents.  
**Flavour**: Low hop bitterness Sweet malty backbone with a sweet creamy smooth finish.  
**Flavor**: A smooth, slight malty palate; hints of grassy hop flavor present. Usually balanced with moderate bitterness. Generally this beer is well-balanced with a smooth finish  
E.g. Muskowka Brewery - Harvest Ale |
5.0 Marketing Strategy and Sales Projections

5.1 Marketing Strategy

5.1.1 Current Target Market
The Pit Pub’s primary target market is legal drinking age undergraduate students. It is known for its student-friendly pricing and is the number one bar on campus and the only one with a dance floor. The Gallery Lounge attracts more of a mixed clientele – undergraduate students, as well as UBC faculty and staff.

5.1.2 New Target Market
With the addition of an on-site, craft brewing operation within the premises of The Pit Pub in the new Student Union Building, while maintaining the current casual, low-key atmosphere, there is an opportunity for the new Pit Brewpub to go beyond the current primary target market of legal drinking age undergraduates and now also add as a secondary target market graduate students, faculty and staff.

It is envisioned that the current concept of The Gallery Lounge will be upgraded and combined with The Pendulum’s sit-down restaurant with its reputation for freshly made food using quality ingredients under a new name, Sundial Lounge, to be more of a casual food-primary establishment. It will still continue to have undergraduate students and as well as UBC faculty and staff as the primary target market but will also now add graduate students and campus residents who may not be connected to UBC as a secondary target market.

5.1.3 Product Positioning
The results of the online survey indicated that while lagers and ales were most frequently mentioned as the types of beer the brew pub should produce, there was strong interest in the other types as well.

The range of beers and beer styles that will be produced on a regular basis by the on-site, craft brewery will be characterized as being approachable, very drinkable, but unmistakably craft brewed lagers and ales. The intention is to be able to wean many of the undergraduate students away from the mainstream Canadian lagers and ales yet provide those who already prefer craft brewed lagers and ales a range of beers they will enjoy.
In addition, seasonal beers will be produced that offer students, faculty and staff with more mature craft beer palates the opportunity to have these exciting beer styles available direct to tap at only one place on campus, the Pit Brew Pub.

The respondents to the online survey indicated that there is some interest in having the brew pub produce beer using certified organic ingredients.

However, it is not as overwhelmingly important as having the brew pub operate in a sustainable manner. The vast majority of respondents (80%) to the online questionnaire say that it is very/somewhat important to them that the brew pub operate in a sustainable manner.

Sustainability will therefore need to be communicated clearly in material describing the brewery operations and the beer it produces. Creative naming of the various beers produced should be used to signal sustainability and on-campus production.

5.2 Sales and Promotions Strategy

5.2.1 Sales Strategy

On-Site Sales

The beers produced by the on-site brewery will be sold direct to tap in the Pit Brew Pub.

Off-Site Keg Sales

All of the beers produced by the on-site brewery are planned to be kegged and sold to legal drinking age consumers and Special Occasion License holders as well as other licensed establishments on campus. The necessary manufacturer and wholesaler licenses and listings with the Liquor Distribution Branch that will allow such off-site sales will have been obtained by the Alma Mater Society.
5.2.2 Current Promotion Strategy

Current promotions in The Pit Pub are as follows:

- Monday Night football
- Select beers on special Mondays through Saturdays
- Pitcher of Molson Canadian and a plate of nachos at $15 on Monday, Tuesday and Thursday after 5 p.m.
- Legendary “Pit Night” on Wednesdays
- CITR on Thursdays
- Rebirth Fridays
- Bands and fundraisers on the weekends
- Two big screen TVs for our loyal sports enthusiasts and lots of prize giveaways
- At The Gallery Lounge there is Open Mic on Mondays, Karaoke on Tuesdays, Gallery Night on Wednesdays, live bands on Thursdays, and a DJ on Fridays.

5.2.3 New Promotion Strategy

For the new Pit Brew Pub, it is envisioned that the promotional activities will not be much different from that which is offered today; the major difference being only in the selection of beers that are promoted. The promotions will focus on the beers that are produced by the on-site brewery, but not to the exclusion of mainstream beers from Canadian brewers. The Pit Brew Pub must maintain its position as the number one bar on campus and the only one with a dance floor. It still needs to be “the place to be on Wednesday nights” and must maintain its casual, low-key atmosphere. However, it will now be equipped with the vehicle for developing a beer culture on campus – the on-site brewery.

It is this development of a campus beer culture, where the atmosphere is alive, vibrant, and excited for beer, that we believe will be needed to sustain sales volumes once the initial excitement of a new brew pub on campus wears off. There has to be developed an appreciation for beer on campus, both as art and a social tool. We see craft beer as a communal and healthy way that people on campus interact with their social environment. We see the development of a beer culture also as a way to have students reluctant to come for a beer at an AMS food and beverage business feel more welcome and amongst friends.

But drinking a beer at UBC Vancouver with friends will not be about how much you can consume or about abusing an artisan product; it will be about sharing a passion with friends, tasting new beers, laughing, loosening up, and enjoying others. And it will be centered at the Pit Brew Pub, in the “Heart of Campus”.
Promotion activities designed to create and foment this beer culture will need to be incorporated into the regular promotion activities of beer specials, sporting events, music and dancing. We envision regular activities that educate students, faculty and staff about the brewing process and beer styles, the historical roots of beer culture in other countries, beer and food pairing, etc. undertaken by the brew master and members of the UBC Brewing Club at the Pit Brew Pub. We also see brew master dinners in the Sundial Lounge.

We have estimated promotional costs associated with the new Brewpub to be as follows:

<table>
<thead>
<tr>
<th>Marketing Costs under Scenario 2</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Pit Daily Selected AMS Brand Discounts</td>
<td>43,512</td>
<td>44,382</td>
<td>45,270</td>
<td>46,175</td>
<td>47,099</td>
<td>226,438</td>
</tr>
<tr>
<td>The Pit AMS Brands Weekly Wearables Raffle - Items and Collateral Materials</td>
<td>2,800</td>
<td>2,856</td>
<td>2,913</td>
<td>2,971</td>
<td>3,031</td>
<td>14,571</td>
</tr>
<tr>
<td>The Pit Experience Beer Project (Brewing Club Led) AMS Brands Specials - Collateral Materials</td>
<td>600</td>
<td>612</td>
<td>624</td>
<td>637</td>
<td>649</td>
<td>3,122</td>
</tr>
<tr>
<td>The Pit “Meet the Brew Master” Evening AMS Brands Specials - Collateral Materials</td>
<td>900</td>
<td>918</td>
<td>936</td>
<td>955</td>
<td>974</td>
<td>4,684</td>
</tr>
<tr>
<td>The Pit AMS Brands Advertising</td>
<td>1,100</td>
<td>1,122</td>
<td>1,144</td>
<td>1,167</td>
<td>1,191</td>
<td>5,724</td>
</tr>
<tr>
<td>Gallery Lounge/Sundial Daily Featured AMS Brands Discounts</td>
<td>7,083</td>
<td>7,225</td>
<td>7,370</td>
<td>7,517</td>
<td>7,667</td>
<td>36,862</td>
</tr>
<tr>
<td>Gallery Lounge/Sundial Food and AMS Brands Pairing Discounts</td>
<td>2,447</td>
<td>2,496</td>
<td>2,546</td>
<td>2,597</td>
<td>2,649</td>
<td>12,735</td>
</tr>
<tr>
<td>Gallery Lounge/Sundial AMS Brands &quot;Flight&quot; Discounts</td>
<td>1,306</td>
<td>1,332</td>
<td>1,358</td>
<td>1,386</td>
<td>1,413</td>
<td>6,794</td>
</tr>
<tr>
<td>Gallery Lounge/Sundial AMS Brands Advertising</td>
<td>1,520</td>
<td>1,550</td>
<td>1,581</td>
<td>1,613</td>
<td>1,645</td>
<td>7,910</td>
</tr>
<tr>
<td>Keg AMS Brands Discounts to Societies and Other Outlets on or near Campus</td>
<td>1,726</td>
<td>1,760</td>
<td>1,795</td>
<td>1,831</td>
<td>1,868</td>
<td>8,980</td>
</tr>
<tr>
<td>Keg AMS Brands Discounts Advertising to Societies and Other Student/Faculty Organizations</td>
<td>600</td>
<td>612</td>
<td>624</td>
<td>637</td>
<td>649</td>
<td>3,122</td>
</tr>
<tr>
<td><strong>Total Marketing Costs</strong></td>
<td><strong>63,594</strong></td>
<td><strong>64,865</strong></td>
<td><strong>66,163</strong></td>
<td><strong>67,486</strong></td>
<td><strong>68,836</strong></td>
<td><strong>330,944</strong></td>
</tr>
</tbody>
</table>

### 5.3 Pricing Strategy

Since close to 75% of respondents to the online survey indicated that they were willing to pay nothing more/10% more for a sleeve of beer produced by the brew pub, the retail pricing for the AMS Regular and Special lagers and ales in sleeves and pitchers will match the pricing of comparable domestic beer brands.

The AMS Regular lager and ale will match mainstream major brands such as Molson Canadian. The AMS Special lager and ale will be at a price point similar to that of Rickard’s Red and White which is above that of the major Molson brand. It will be the retail pricing of the AMS Seasonals which will match the mainstream craft beer brands such as Okanagan Spring 1516 and Pale Ale.
We used the following price assumptions to estimate projected revenue in our financial model.

**Table 03: Projected Price for On-Site Draft to Tap Products**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Per 56oz Jug</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMS Lager</td>
<td>$14.50</td>
<td>$15.23</td>
<td>$15.53</td>
<td>$15.84</td>
<td>$16.16</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>$14.50</td>
<td>$15.23</td>
<td>$15.53</td>
<td>$15.84</td>
<td>$16.16</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>$16.25</td>
<td>$17.06</td>
<td>$17.40</td>
<td>$17.75</td>
<td>$18.11</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>$16.25</td>
<td>$17.06</td>
<td>$17.40</td>
<td>$17.75</td>
<td>$18.11</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>$17.25</td>
<td>$18.11</td>
<td>$18.47</td>
<td>$18.84</td>
<td>$19.22</td>
</tr>
<tr>
<td><strong>Weighted Average price per jug</strong></td>
<td>$15.25</td>
<td>$15.90</td>
<td>$16.22</td>
<td>$16.53</td>
<td>$16.82</td>
</tr>
</tbody>
</table>

**Table 04: Projected Price for Off-Site Keg Products**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price Per 50 Litre Keg</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMS Lager</td>
<td>$148.15</td>
<td>$155.56</td>
<td>$158.67</td>
<td>$161.84</td>
<td>$165.08</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>$148.15</td>
<td>$155.56</td>
<td>$158.67</td>
<td>$161.84</td>
<td>$165.08</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>$166.60</td>
<td>$174.93</td>
<td>$178.43</td>
<td>$182.00</td>
<td>$185.64</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>$166.60</td>
<td>$174.93</td>
<td>$178.43</td>
<td>$182.00</td>
<td>$185.64</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>$167.86</td>
<td>$176.25</td>
<td>$179.78</td>
<td>$183.37</td>
<td>$187.04</td>
</tr>
<tr>
<td><strong>Average price per keg</strong></td>
<td>$155.12</td>
<td>$161.91</td>
<td>$165.15</td>
<td>$168.23</td>
<td>$171.26</td>
</tr>
</tbody>
</table>

### 5.4 Projected Draft Beer Sales Volumes

AMS Food & Beverage Operations provided First Key Consulting with a combination of historical data on beer transfers from The Pit Pub to The Gallery Lounge going back to 1997 and draft and bottled beer revenue data from 2006 to 2010 for The Pit Pub and The Gallery Lounge. Due to the many gaps in the transfer data in the earlier years and a lack of sales data for The Pit Pub, we used the draft beer revenue data for The Pit Pub and The Gallery Lounge and the keg transfers to The Gallery Lounge from 2006 to 2010 as the historical basis for our projections.

The chart below shows dramatic growth from September 2006 to September 2008. The increase in sales volume has been attributed to an increase in the number of patrons to The Pit Pub as a result of a renovation undertaken there during the summer of 2006.
From October 2008 to December 2010, there has been a steady decline in volume. The management of AMS Food & Beverage Operations has attributed this decline to a shift in recent years in the demographics of the student population and to a drop in the interest in patronizing The Pit Pub because it is no longer “new”.

With this change in student demographics, there is an increase in the number of students that do not come to The Pit Pub or The Gallery Lounge as often, or at all, to have a beer compared to earlier years. It is anticipated that this trend will continue with the growth of international undergraduate student enrollment while there is no anticipated growth in the undergraduate enrollment from within Canada.

We therefore project that The Pit Pub and The Gallery Lounge will continue to face volume challenges going forward. Based on the declining sales from October 2008 to December 2010 and the continuing change in the demographics of the student population as described above, we anticipate that draft beer volumes will drop to roughly the same volume in April 2014, before the new Student Union Building will be opened, as was sold in May 2006.
With the opening of the Pit Brew Pub and the upgraded and newly named Sundial Lounge in the new Student Union Building in September 2014, there will be the surge in the number of patrons as was experienced after The Pit Pub renovation in the summer of 2006. However, due to the changed demographics of the student population, we do not anticipate the same volume levels of 2008-2009 school years to be achieved.

Having an on campus craft microbrewery within the Pit Brew Pub anchoring the successful development of a beer culture being nurtured on campus, it is anticipated that the volumes will be relatively flat throughout the forecast period and will not experience the same severe up-and-down volumes as in 2006 to 2010.
It is important that we point out that we anticipate declining volume from the fourth year of the forecast period. This is due to the experience in the 2008 to 2010 period when patronage of The Pit Pub began to fall off after the 2006 renovation was no longer “new”. Without continuously keeping things fresh at the Pit Brew Pub and the Sundial Lounge – new promotions, new beers, new menu items, new activities, new décor, etc., it too will eventually feel “old”; even with the beginnings of a beer culture on campus.

As you would have noted from the chart above, we are planning that both the Pit Brew Pub and the Sundial Lounge will continue to serve purchased domestic draft beer. We forecast that these domestic draft beers will be able to keep around 38% - 39% of total draft beer sales. Since the on campus consumer for draft beer is price sensitive, Molson Canadian will be the bulk of that volume share. This also points to being able to manage the sales mix between purchased domestic draft beer and the AMS Brands with pricing.

Within the product mix of AMS Brands, we forecast that the Regular ale and lager will account for 60% to 70% of total volume, the Special ale and lager 20% to 28% and the seasonal beers 8% to 10%.
Of the volume projected for AMS Brands sold, 60% to 85% will come from the Pit Brew Pub and the Sundial Lounge. The balance is sold Off-Site in kegs to legal drink age consumers, SOL holders and other licensed premises on campus.
In this chart below, we have not forecasted any draft beer sales at the Sundial Lounge during the summer months since historically the Gallery Lounge is not open during this period. There is a plan however to have the Sundial Lounge open during the summer months to cater to conference attendees. If this plan is implemented, this will contribute to an upside to the current forecast.

As UBC Vancouver is transitioning from a commuter campus to a sustainable campus community, another contributor to upside potential to the current sales volume forecast is the planned increase in the number of new student bed spaces that are to be added as part of the Student Housing & Hospitality Services Capital Plan. More than overall enrollment numbers, which is expected to remain fairly unchanged from current levels through to the forecast period, it is the number of students living on campus that will provide the market size increase. The plan calls for an increase of 2,500 bed spaces in the next five years.

From a total of just over 8,600 beds, the UBC Vancouver Campus Plan as adopted by the UBC Board of Governors could nearly double the number of beds for all students, subject to available funding, providing for a total of just over 16,600 beds by 2030. This would provide the capacity to house 50 per cent of full-time students on campus fulfilling UBC’s vision of being a vibrant, sustainable on-campus community.
Summary of Projected Sales Volume

We used the following sales volume assumptions to derive the Projected Revenues from New Draft Products in our Financial Plan.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS Lager</td>
<td>124</td>
<td>140</td>
<td>144</td>
<td>125</td>
<td>105</td>
<td>638</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>106</td>
<td>128</td>
<td>119</td>
<td>103</td>
<td>92</td>
<td>547</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>53</td>
<td>51</td>
<td>50</td>
<td>43</td>
<td>32</td>
<td>230</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>47</td>
<td>45</td>
<td>44</td>
<td>33</td>
<td>27</td>
<td>196</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>35</td>
<td>32</td>
<td>31</td>
<td>27</td>
<td>23</td>
<td>149</td>
</tr>
<tr>
<td>Total Hectolitres On-Site Draft to Tap</td>
<td>365</td>
<td>396</td>
<td>388</td>
<td>331</td>
<td>279</td>
<td>1,759</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS Lager</td>
<td>31.5</td>
<td>33.0</td>
<td>34.5</td>
<td>34.5</td>
<td>34.5</td>
<td>168.1</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>27.0</td>
<td>30.0</td>
<td>28.5</td>
<td>28.5</td>
<td>30.0</td>
<td>144.1</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>13.5</td>
<td>12.0</td>
<td>12.0</td>
<td>12.0</td>
<td>10.5</td>
<td>60.0</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>12.0</td>
<td>10.5</td>
<td>10.5</td>
<td>9.0</td>
<td>9.0</td>
<td>51.0</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>9.0</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
<td>39.0</td>
</tr>
<tr>
<td>Total Hectolitres Off-Site Kegs</td>
<td>93.0</td>
<td>93.0</td>
<td>93.0</td>
<td>91.5</td>
<td>91.5</td>
<td>462.2</td>
</tr>
</tbody>
</table>

Note: From May 2009 to May 2010, on campus Special Occasion License holders claimed to have purchased a total of 690 kegs. This indicates significant upside potential for Off-Site keg sales.

<table>
<thead>
<tr>
<th>Total Sales Volume in Hectolitres</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS Lager</td>
<td>155</td>
<td>173</td>
<td>178</td>
<td>159</td>
<td>140</td>
<td>806</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>133</td>
<td>158</td>
<td>147</td>
<td>132</td>
<td>122</td>
<td>691</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>67</td>
<td>63</td>
<td>62</td>
<td>55</td>
<td>43</td>
<td>290</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>59</td>
<td>55</td>
<td>54</td>
<td>42</td>
<td>36</td>
<td>247</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>44</td>
<td>39</td>
<td>39</td>
<td>35</td>
<td>30</td>
<td>188</td>
</tr>
<tr>
<td>Total HL</td>
<td>458</td>
<td>489</td>
<td>481</td>
<td>423</td>
<td>371</td>
<td>2,222</td>
</tr>
</tbody>
</table>
5.5 Projected Revenue

Based on the projected volumes and assumed pricing structure, we developed the following five year Gross Revenue Projections.

<table>
<thead>
<tr>
<th>Gross Revenue Per Brand On-Site - Draft to Tap</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS Lager</td>
<td>112,743</td>
<td>134,366</td>
<td>140,478</td>
<td>124,255</td>
<td>107,011</td>
<td>618,853</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>96,637</td>
<td>122,151</td>
<td>116,047</td>
<td>102,646</td>
<td>93,053</td>
<td>530,533</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>54,150</td>
<td>54,757</td>
<td>54,759</td>
<td>48,435</td>
<td>36,499</td>
<td>248,601</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>48,133</td>
<td>47,913</td>
<td>47,914</td>
<td>36,327</td>
<td>31,285</td>
<td>211,572</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>38,321</td>
<td>36,329</td>
<td>36,331</td>
<td>32,135</td>
<td>27,675</td>
<td>170,792</td>
</tr>
<tr>
<td>Gross Revenue - On-Site Draft to Tap</td>
<td>349,983</td>
<td>395,516</td>
<td>395,529</td>
<td>343,798</td>
<td>295,522</td>
<td>1,780,350</td>
</tr>
<tr>
<td>Average price per HL</td>
<td>$958</td>
<td>$1,000</td>
<td>$1,020</td>
<td>$1,039</td>
<td>$1,057</td>
<td>$1,012</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gross Revenue Per Brand Off-Site - Kegs</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS Lager</td>
<td>9,337</td>
<td>10,271</td>
<td>10,952</td>
<td>11,171</td>
<td>11,395</td>
<td>53,127</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>8,003</td>
<td>9,337</td>
<td>9,048</td>
<td>9,229</td>
<td>9,909</td>
<td>45,525</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>4,500</td>
<td>4,200</td>
<td>4,284</td>
<td>4,370</td>
<td>3,900</td>
<td>21,254</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>4,000</td>
<td>3,675</td>
<td>3,749</td>
<td>3,277</td>
<td>3,343</td>
<td>18,044</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>3,023</td>
<td>2,645</td>
<td>2,698</td>
<td>2,752</td>
<td>2,807</td>
<td>13,923</td>
</tr>
<tr>
<td>Total Revenue Off-Site Keg Sales</td>
<td>28,863</td>
<td>30,128</td>
<td>30,730</td>
<td>30,799</td>
<td>31,353</td>
<td>151,873</td>
</tr>
<tr>
<td>Average Revenue per HL</td>
<td>310.23</td>
<td>323.83</td>
<td>330.30</td>
<td>336.47</td>
<td>342.52</td>
<td>328.60</td>
</tr>
</tbody>
</table>

Based on the revenue projections shown above, total revenue by brand is projected to be as follows:

<table>
<thead>
<tr>
<th>Total Gross Total Revenue for inhouse Brands</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS Lager</td>
<td>122,080</td>
<td>144,637</td>
<td>151,431</td>
<td>135,427</td>
<td>118,405</td>
<td>671,980</td>
</tr>
<tr>
<td>AMS Ale</td>
<td>104,640</td>
<td>131,488</td>
<td>125,095</td>
<td>111,874</td>
<td>102,961</td>
<td>576,058</td>
</tr>
<tr>
<td>AMS Special Lager</td>
<td>58,650</td>
<td>58,957</td>
<td>59,043</td>
<td>52,805</td>
<td>40,399</td>
<td>269,854</td>
</tr>
<tr>
<td>AMS Special Ale</td>
<td>52,133</td>
<td>51,588</td>
<td>51,663</td>
<td>39,604</td>
<td>34,628</td>
<td>229,615</td>
</tr>
<tr>
<td>AMS Seasonals</td>
<td>41,344</td>
<td>38,974</td>
<td>39,028</td>
<td>34,887</td>
<td>30,482</td>
<td>184,715</td>
</tr>
<tr>
<td>Total Revenue On and Off Site</td>
<td>378,846</td>
<td>425,644</td>
<td>426,260</td>
<td>374,597</td>
<td>326,875</td>
<td>1,932,223</td>
</tr>
</tbody>
</table>

In addition to revenue from manufactured products, we assumed the following revenues would be earned from the sale of purchased draft products.

<table>
<thead>
<tr>
<th>Purchased Draft Product Revenues</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected Volume - HL</td>
<td>281</td>
<td>300</td>
<td>295</td>
<td>270</td>
<td>237</td>
</tr>
<tr>
<td>Average Price</td>
<td>$1,005</td>
<td>$1,020</td>
<td>$1,035</td>
<td>$1,055</td>
<td>$1,071</td>
</tr>
<tr>
<td>Revenue - Purchased Draft</td>
<td>282,405</td>
<td>306,000</td>
<td>305,325</td>
<td>284,850</td>
<td>253,827</td>
</tr>
</tbody>
</table>
Based on all of the above, total revenue is projected to be as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hectolitres On-Site - Brewed Draft</td>
<td>365</td>
<td>396</td>
<td>388</td>
<td>331</td>
<td>279</td>
<td>1,759</td>
</tr>
<tr>
<td>Hectolitres Off-Site - Kegs</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>92</td>
<td>92</td>
<td>462</td>
</tr>
<tr>
<td>Hectolitres - Purchased Brands</td>
<td>281</td>
<td>300</td>
<td>295</td>
<td>270</td>
<td>237</td>
<td>1,383</td>
</tr>
<tr>
<td><strong>Total Hectolitres</strong></td>
<td>739</td>
<td>789</td>
<td>776</td>
<td>693</td>
<td>608</td>
<td>3,605</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revenue</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Site Sales - Draft to Tap</td>
<td>349,983</td>
<td>395,516</td>
<td>395,529</td>
<td>343,798</td>
<td>295,522</td>
<td>1,780,350</td>
</tr>
<tr>
<td>Off-Site Sales - Kegs</td>
<td>28,863</td>
<td>30,128</td>
<td>30,730</td>
<td>30,799</td>
<td>31,353</td>
<td>151,873</td>
</tr>
<tr>
<td>On-Site Sales - Purchased Draft</td>
<td>282,405</td>
<td>306,000</td>
<td>305,325</td>
<td>284,850</td>
<td>253,827</td>
<td>1,432,407</td>
</tr>
<tr>
<td><strong>Gross Revenue</strong></td>
<td>661,251</td>
<td>731,644</td>
<td>731,585</td>
<td>659,447</td>
<td>580,702</td>
<td>3,364,630</td>
</tr>
<tr>
<td>Less BC Prov mark-up</td>
<td>(32,078)</td>
<td>(34,212)</td>
<td>(33,670)</td>
<td>(29,578)</td>
<td>(25,971)</td>
<td>(155,508)</td>
</tr>
<tr>
<td><strong>Net Revenue</strong></td>
<td>629,173</td>
<td>697,432</td>
<td>697,915</td>
<td>629,869</td>
<td>554,732</td>
<td>3,209,121</td>
</tr>
</tbody>
</table>
6.0 Technical Brewery Plan

6.1 Sizing of Brewery
Proper sizing for a brewpub brewery should always allow for future expansion. You have properly sized your brewery if you can get at least 5 years out of your initial brew house.

Most properly sized microbreweries brew 1 - 3 times per week in their first few of years of operation. Brewing less than once a week, the system may have been oversized to start with. Brewing more than 3 times a week, the system may have been initially undersized, particularly if future expansion is being considered.

A summary of the recommended brewery equipment and their size are shown below. This brewery size will accommodate the total forecasted beer sales volume and seasonal volume fluctuations, while still comfortably allowing for future expansion.

**Suggested AMS Brewpub Brewery Configuration:**

- 2-Row Malt Mill + Grist Hopper (350 kg capacity)
- 3 Vessel Brew House - 5 hL brewing capacity
- 1 Hot Liquor Tank – 15 hL capacity
- 4 Unitanks/Fermenters -10 hL capacity each
- 5 Vertical Serving Tanks - 10 hL capacity each
- 1 Plate & Frame Filter (20 plates; 40cm x 40cm plate size)
- 1 Portable CIP System –3 x 2.5 hL tank capacity
- Keg Machine – 2-head semi-automatic (accommodates: 20L, 50L, and/or 58.6L kegs)

The recommended brewery above was based on a detailed beer sales volume forecast analysis prepared by First Key (section 5). From this analysis the following conditions were determined:

- Anticipated 5-year annual beer sales volume between 400 hL and 650 hL
- 5 AMS brewpub beers to be on tap at any one time (4 regular beers + 1 seasonal)
- Beer styles produced by the proposed AMS brewpub brewery to be 45% Ales and 55% Lagers.

The suggested AMS brewpub brewery capacity outlined above also takes into account the following limitations that are inherent within the brewing process:

- 50 brewing weeks per year (Remaining 2 weeks used for maintenance or vacation purposes)
- Ales: 14 Days from brewing to “ready-to-serve”
- Lagers: 22 Days from brewing to “ready-to-serve”
- Brewing Cycles:
  - Ales: 25 cycles/fermenter/year (=50 brewing weeks / 2 week fermentation + maturation)
  - Lagers: 16 cycles/fermenter/year (=50 brewing weeks / 3 week fermentation + maturation)
6.2 Brewery Space Requirement

To accommodate a brewery system as described above and allow for future growth and expansion opportunities we recommend a brewery site with 850-1050 square feet of floor space with a vertical clearance of 11-12’ ft. Please note that these space requirements reflect first order estimates, and the exact dimensions require to house the brewery system have not been fully confirmed with suppliers at this stage.

The above brewery area will be sub-divided into the following sections:

- **Mill Room / Dry Good Storage (Floor Space: 200-240 sq ft.):**

  This area will house the malt scale, malt hopper, and mill. This area will also be used to store the needed dry goods, including bagged malt, brewing salts, and filter-aids.

- **Laboratory/Work Station (Floor Space: 60-80 sq ft.)**

  This area will be used by the brewer to perform daily administrative and quality testing processes. It will house needed office equipment and supplies, including filing cabinet, computer, and printer. It will also be used to store and use laboratory equipment and supplies and provide a space to perform the daily quality testing on raw material, in-process and final products.

- **Storage Room (Floor Space: 50-70 sq ft.)**

  This section will be used to store cleaning and laboratory chemicals and supplies, maintenance tools and supplies, and other sundry items.

- **Cold Room (Floor Space: 170-200 sq ft.)**

  The cold room will house 5 x 10hL single-walled serving tanks, as well as hops, yeast, kegged beer, and other perishable materials requiring refrigeration.

- **Brew house (Floor Space: 150-200 sq ft.)**

  This area will house 5hL brewing equipment, including the mash mixer, lauter tun, 15 hL hot and 15 hL cold (optional) liquor tank, Brew kettle/whirlpool, and wort cooler. In addition there will also be space dedicated to storing beer hoses, portable CIP station, and brew house platform and control panel.

- **Fermenter Tank Area (Floor Space: 160-180 sq ft.):**

  This area will be used to house 4x10hL Fermenters, as well as a glycol refrigeration system, activated carbon water filter and possibly a water demineralizer (optional), and nitrogen generator (optional). It will also have enough room to comfortably accommodate an additional 3 fermenters in future.

- **Filtration/Kegging Area (Floor Space: 60-80 sq ft.):**
This area will be used to house a 20-plate (40cmx40cm) plate and frame filter, sterile cartridge filter, a 2-head semi-automatic Kegging system, and empty kegs.

6.3 Brewery Environmental, Health and Safety

A complete review of British Columbia’s waste water and environmental standards, and occupational health and safety regulations\(^3\) was conducted. Based on these regulations a compliance audit of all the brewery equipment, materials and supplies was performed by First Key. Based on this audit it was confirmed that the proposed design and implementation, as well as of the proposed equipment, materials and supplies for the AMS brewpub brewery sufficiently meet British Columbia’s environmental standards and are in full compliance with British Columbian occupational health and safety regulations. The details of the compliance audit can be made available upon request.

6.4 Brewery Structural and Operating Requirements:

These following requirements are meant as guidelines for planning purposes only, and have not been fully confirmed with suppliers at this stage. A detailed breakdown of the exact structural and utility requirements prepared by First Key, and is available upon request.

6.4.1 Brewery Structural Requirements:

The following are the general building and structural requirements to accommodate the brewery equipment outlined above.

- Floors in the brew house and fermentation/serving tank areas must be able to support a load of 400-600 kg / m\(^2\)
- Finished brewery room height of 11-13 ft.
- 4-6” drain pipes with circular drain openings being a 4”-6” diameter, and/or siphon traps 6”–12” in width.
- Brewery ventilation set-up to maintain positive pressure in brewery, and ensure brewery air is completely refreshed a minimum of 4 times per hr.
- Washable floors (e.g. tiled or epoxy) with a downward slope of 1/8” to 1/4” per foot to center of floor drains
- Floor to ceiling washable walls (e.g. tiled or painted)
- Water-proof lighting, electrical outlets, and other electrical connections

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\(^3\) See (http://www2.worksafebc.com/Publications/OHSRegulation/Home.asp)
6.4.2 Brewery Utility Requirements:

The following are the general utility requirements required to power and support the operation of the brewery.

Water Supply:

- Water supplied to brewery must be potable water and meet all provincial and municipal drinking water quality standards.
- Water delivered to the brewery at 25 GPM with a pressure of 45 psi is recommended. This supply should have uniform water flow to brewery and should not be affected by water demand elsewhere in the building.

Electricity:

- A 200 Amp service is recommended in brewery for such equipment tank heating elements, boiler (optional) and glycol chiller unit.
- For brewery equipment an electricity supply of 208 VAC, 2 and 3 phase, 60 Hz, is required for pumps, controllers, etc.
- An electricity supply of 220 VAC, 3 Amp, 60Hz is also required for supporting utility equipment (boiler, chiller, etc.).
- An electricity supply of 120VAC, 60Hz is also required for lab equipment, floor scales, and other supporting equipment.

Heating:

- A heat supply is needed for heating brewing water, mashing, and wort boiling. The following are various heat supply options that can be easily adopted into the brewery design. For this report the scenario described in option #1 has been selected and used for the purposes of cost analysis.

  - **Option #1** – Building Steam Heat Supply
    
    There is a possibility that the new SUB heating needs may be initially provided with steam from UBC’s extensive steam supply network. If this is the case then the brewery system can be designed to tap into and utilize this steam supply. The brewery equipment would require about 350,000 BTU of steam at a pressure of ~15 psig.

  - **Option #2** – Building Hot Water Heat Supply
    
    There is also a possibility that UBC’s steam supply network may be converted into a hot water supply network, and that the new SUB may be heated with hot water and not steam. If this will be the case then the brewery system can be designed to be heated with hot water supplied at 105°C at a pressure of 6-10 psig.
Option #3 – Heated Independently of SUB Heating Supply

If required it is also possible for the brewery system to be heated on its own; independently of the SUB’s heating supply. To accommodate for this a low-pressure boiler system can be installed with the brewery, and used to supply 350,000 BTU of steam (at 15 psig) directly to the required brewery vessels. To produce the required steam the low pressure boiler system would require clean water supplied at 5-10 gpm at 13-20 psig, and either natural gas (supplied through min. ¾” pipe supplied at 0.2-0.4 psig) or electricity (100 kW of power, 3-phase, 240 VAC required) as the heat source.

Option #4 – Heated Directly With Natural Gas or Propane.

Brewery vessels could also be heated directly by natural gas. To do so each required vessel would be installed with a natural gas conversion burner that would ignite and modulate the natural gas to generate the required 350,000 BTU of heat. To provide the needed 350000 BTU heating capacity each of these burners would require natural gas to be supplied through a min. ¾” pipe supplied at 0.25 - 0.5 psig.

Refrigeration:

- Refrigeration is required to support the following brewery processes:
  - Wort cooling
  - Fermentation and maturation
  - Storage and serving of finished product(s)

- A study of the refrigeration load requirements for the proposed brewery system was performed by First Key. This study examined the maximum potential heat load generated from the above processes and determined that a glycol refrigeration system of 50 tons cooling capacity would be needed to effectively meet all of the brewery’s cooling requirements, while having enough additional cooling capacity to comfortably allow for future expansion opportunities. A 50 ton refrigeration system has been included as part of the brewery design and capital cost analysis. To operate a 50 ton glycol refrigeration system requires 220 VAC, 3 Amp electrical services.

Effluent and Emissions:

- Waste Water:
  - Drains are required in the brew house and fermentation areas, cold room, and kegging and filtration area. Curved-bottom trench drain in brew house (min. 6” wide) and drains within 3 ft of every fermenter is recommended for proper drainage.
Most waste water is produced during cleaning and sanitation operations. Included with the proposed AMS brewpub brewery system is an advanced cleaning system that is designed to conserve water and reduce the amount of water required to clean and sanitize a vessel by 30%. As well the brewery detergent selected for this brewpub brewery is specifically formulated to clean dirty vessels at a lower temperature (i.e. “cold” washing) than most conventional brewery detergents. This significantly reduces the amount of heat and energy required to wash a vessel.

For an additional capital cost of $40,000 the AMS brewpub brewery can be equipped with a micro cross-flow filtration system. This system will filter all of the brewery’s waste water using a series of micro-filters to remove up to 95% of its suspended solids, and produce clean waste water that can be used for subsequent cleaning and other general water purposes (e.g. boiler water, or toilet water).

**Solid Waste:**

- About 95% of brewery solid waste is composed of residual malt and hop materials (spent grains and spent hops) and unused yeast. The spent grains and hops will be collected and provided to the UBC farm where it can be either used as animal feed, or converted into compost and be used for the growth of crops and other vegetation. The unused yeast could be collected and provided to local bakeries, pizza parlors, and/or soup manufacturers where it can be used to make their products.

- Alternatively the collect unused yeast can be heat inactivated (this option can be included with an additional capital cost of $1500) and be included with the spent grain and spent hops being used as either fertilizer and/or livestock feed.

**Emissions:**

- Vapours produced and expelled during brewing operations contain significant thermal energy. These vapours will be recaptured as part of the brewery’s integrated steam energy recovery system and will be used to heat water for subsequent brewing and/or cleaning purposes.

- Fermentation of the beer results in production and emission of CO2 gas. On average about 4.2 kg\(^4\) of CO2 gas per hl of beer is released into the atmosphere during fermentation. Considering that the brewing capacity of the current proposed brewery is 1040 hl per year, the maximum amount of CO2 gas emission produced by this brewery will be about 4368 kg per year, or an average of 84 kg per week. Currently the smallest CO2 recapturing and storage system commercially available requires a minimum CO2 gas supply (99.8% pure)

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of 1 metric ton per week in order to operate effectively. Consequently this is not a viable option.

- Alternatively each fermenter can be equipped with a foam trap containing a dilute concentration of caustic solution (less than 2%). The caustic solution will react with some of CO2 gas passing through it and convert the CO2 into calcium carbonate (aka: limestone) and water. In so doing the amount of CO2 emitted into the environment can be reduced by up to 50%. The amount of calcium carbonate (limestone) is a natural salt found throughout the environment, and can be used in water conditioning processes. This option is recommended and has been adopted into the proposed brewery design.

6.4.3 Material and Supplies Requirements

First Key has prepared a detailed analysis of the Brewpub’s materials requirements, a copy of which is available upon request. This analysis included a detailed breakdown of the cost of each raw material item, which was used to calculate variable production costs (all of this data is included in the financial model accompanying this report.) A description of all the raw materials and supplies that will be used by the Brewpub to produce draft beer is provided below.

**Raw Materials**

All beers developed for the brewery will only be made from all-natural ingredients, with no artificial flavoring or preservatives added. A focus will also be placed on sourcing and using local ingredients, produced in an environmentally sustainable manner, whenever possible.

- **Malt:** It is intended that 95% of the malt that will be used to make the anticipated beers will be sourced from a local Canadian manufacturer of brewing malt (e.g. Canada Malting Group; located in Vancouver, B.C.). A focus will also be placed on purchasing only those malts made from Canadian-grown 2-Row Barley and Wheat whenever possible and feasible. After each brew the residual grain material left (spent grain) is an excellent source of nutrients and can be either collected and given to local farmers as feed for their livestock, or mixed in with the soil and used as fertilizer.

- **Hops:** Due to the limited hop growing capacity and environmental growth conditions at the UBC farm only about 5% of the required hops can be sourced from the UBC farm. Consequently 95% of the hops that will be used to make the anticipated beers will be sourced from hop producers located in either Yakima Washington (350 km away from Vancouver, B.C.) or the Okanagan Valley (300km away from Vancouver B.C.).

Similar to the malt, residual hop material collect after each brew (spent hops) is an excellent source of nutrients and can be mixed in with the spent grain and given to the UBC farm as feed for livestock, or mixed in with the soil and used as fertilizer.
Water: Vancouver municipal water supply meets the required safety and quality standards required for brewing water, and will be used as the primary water source for brewing beer.

As an option rain water recapturing (option not included in cost analysis) and waste water regeneration technology (at an additional capital cost of $40,000) can also be incorporated into the brewery design, and used to recover either rain and/or waste water that could then be re-used for cleaning purposes. The average brewpub brewery uses between 6 and 8 hl of water to make 1 hl of beer. By incorporating the recommended water conservation and regeneration technology previously mentioned, this amount of water usage would be reduced to approximately 3.5 hl of water for every 1 hl of beer made.

Yeast: The anticipated lager beers will be made using a domestic North American Lager yeast strain, while the anticipated ale beers will be made using a domestic North American Ale yeast strain. Both yeast strains are easily sourced from a local B.C. yeast suppliers.

Also yeasts are regenerative and can be collected after fermentation to be re-used in subsequent brews. Consequently a batch of yeast that is properly maintained could be easily re-used for 13-15 brews before fresh yeast would have to be purchased. In other words, based on proposed design of the brewery and the projected annual AMS brewpub beer sales volume, fresh yeast should only need to be purchased 3-4 yeast times per year.

In addition the extra yeast produced during fermentation can be provided to bakeries, pizza stores, and soup companies and used by them to make their products. Alternatively the extra yeast is an excellent source of protein, and can be deactivated by heat (option currently not included with equipment) and mixed the spent grain and spent hops and given to farmers as feed for their livestock, or mixed with the soil and used as fertilizer.

In-Process Supplies

The following supplies are used to support the brewing, filtration and beer packing processes. Similar to raw materials, a focus will also be placed on sourcing and using only locally-produced in-process materials whenever possible.

Process Gas

- Oxygen: Yeast requires oxygen at the start of fermentation to grow and efficiently ferment the wort into beer. Food-grade sterile oxygen is required for healthy yeast development.

- Carbon Dioxide: Based on the size of the brews the CO2 produced as a result of fermentation will not be enough to fully carbonate the resulting beer. As a result additional CO2 gas will need to be purchased.
Note: Both process gases can be acquired from a local manufacturer and vendor of food grade gases (e.g. Cool Gas, Richmond BC.).

- **Nitrogen Gas (Optional):**
  
  - Although this is not currently included, a nitrogen gas generator can be incorporated into the brewery design for an additional capital cost of $8500.00. A nitrogen generator makes pure clean nitrogen gas from the atmosphere. The generated nitrogen gas can be used instead of CO2 in certain circumstances (e.g. push beer from tank to tank, and purging oxygen from fermenters and serving tanks.). This would reduce the potential consumption of CO2 gas by 50-60% and this would translate into significant cost savings associated with the CO2 gas purchases and gas tank rentals.

- **Filter Aids:**
  
  - In the proposed brewery design a plate-and-frame filter is included. This filter will use cellulosic-based filter pads to clarify the beer. Cellulosic filter pads are made of natural plant fibers, and are biodegradable. Consequently, after these filter pads are used-up they can be composted, instead of being disposed into land-fills.

**Packaging Supplies:**

- Based on the sales volume forecast prepared by First Key (section 5) it is anticipated that about 8-10% of the AMS brewpub beer will be packaged into kegs and sold in other campus bars and special events. To accommodate this packaging requirement the proposed AMS brewpub brewery includes a private keg pool of 10 large (50L) kegs, and 5 small (20L) kegs. If more kegs are required they can be purchased for the following additional cost (50L keg = $175; 20L keg = $152)

- By design kegs also have very little, if any, packaging material waste. Also their robust stainless steel construction allows them to be cleaned and re-used many times over several years. Taken together with the low $ per hl of beer involved in kegging, kegs are often considered the most cost-effective and environmentally-friendly way to package beer.

### 6.4.4 Personnel Requirements:

The brewery will be set-up to be operated and managed by 1 full-time head brewer, and one part-time assistant brewer. The assistant brewer will provide support during the busy production months and to be a back-up whenever the head brewer is absent as a result of a vacation or illness. A summary of these positions is provided below.
Head Brewer ($45,000 to $55,000)

Key experience requirements will include, but not limited to:

- Must be a qualified Master Brewer
- Must have formal brewing education and at least 10 years of hands-on commercial brewing experience.
- An ability to effectively work and manage the entire brewery operations independently
- Readiness to take on the demands and challenges of responsibly producing beer and manage all aspects of the microbrewery operation
- A demonstrated ability to work in a fast-paced environment
- Ability to communicate effectively with staff and other employees.
- Physically able to occasionally lift and/or move up to 50 - 70 pounds repeatedly
- An ability to work a flexible schedule, including some weekends
- Good computer skills, knowledgeable in using various MS Office Software (Word/Excel)
- An ability to think quickly, identify issues and implement practical solutions
- An energetic and dynamic personality
- A passion for making great beer!

Key responsibilities will include, but not limited to:

- Manage all daily aspects of brewery operations, including procurement, production scheduling, inventory management, operational budgeting, manufacturing and packaging, safety and environmental compliance, and supervision of brewery staff.
- Be involved in the strategic hiring and training of any brewery staff.
- Perform periodic maintenance to ensure the safe and effective brewery environment and operation of its equipment
- Manage and maintain all brewery operating and quality procedures and records; making sure they are updated on a regular basis.
- Liaise with food and beverage staff. When needed, work with staff to educate them on beer-related topics.
- Troubleshoot and resolve equipment-related process and product quality issues within the brewery and/or bar.
- Be on call to deal with any brewery problems.
- Help organize and conduct various on-site and off-site beer events.
- Create new recipes for seasonal and specialty beers for special occasions or special times of the year and educate staff on these new beers.
- Maintain accurate brewery inventory, quality and production records, and ensure the brewery is in compliance with all federal and provincial, safety, environmental and tax regulations.
- Manage lab tests and other QA/QC functions, interpret resulting data, and make quality-based decisions needed to ensure consistency in the high quality of all final products.
Assistant Brewer ($30000 to $35,000)

- Key experience requirements will include, but not limited to:
  - 3 - 6 months commercial brewery experience.
  - A formal brewing education is preferred.
  - A proven ability to work as a team player
  - Strong multi-tasking skills
  - An ability to work a flexible schedule, including some weekends
  - Good computer skills, knowledgeable in using various MS Office Software (Word/Excel)
  - Ability to lift 50 – 75 pounds repeatedly
  - An energetic and dynamic personality
  - A passion for making great beer!

- Key responsibilities will include, but not limited to:
  - Daily operation of:
    - Brew house Processes: Milling, Mashing, Lautering, Boiling, Whirl pooling, Wort boiling, Graining out, Brew house CIP, etc.
    - Fermentation and cellar-related Processes: Fermenter CIP, Cell Counting, Checking Gravities/Monitoring fermentation, Capping/Dry hopping/Chilling, BBT CIP, Racking, filtering, etc.
    - Packaging and Distribution Processes: Carbonating, Kegging and Off-premise shipment of products (when needed)
  - Perform daily QA/QC tests and other quality-related functions prescribed by the head brewer: cell counts, gravity measurements, pH measurements, micro sampling and plating, and other process and sensory testing.
  - Receive, organize and store shipments of brewing materials (malt, hops, etc.), and other brewery supplies
  - Support the head brewer in various on-site and off-site beer events.
  - Maintain visual aesthetics of the brewery and its equipment.
  - Support the head brewer in the maintenance of brewery equipment and systems

### 6.5 Equipment and Capital Costs

#### 6.5.1 Equipment Costs

The following table summarizes the projected capital cost of the equipment proposed for the AMS Brewpub project. These costs reflect first order estimates and have not been fully confirmed with suppliers at this stage. A detailed cost breakdown prepared by First Key, including each piece of equipment is included in the financial model accompanying this report. The financial model also provides a breakdown of the costs for each month prior to opening (for budget planning purposes.)
Alternate Equipment Configurations Considered

These above cost estimates were used in our base case financial analysis to determine project feasibility. These estimates include many energy and water conservation features that make the current brewery configuration environmentally sustainable, including a brew kettle stack heat recovery system and wort cooling heat recovery system.

However, there are other technologies currently being used by large breweries and microbreweries that could be modified and added to a smaller brewpub brewery system to make it even more environmentally sustainable in design and operation by further reducing its water usage, greenhouse gas emissions, and effluent waste. These additional features are highlighted below, and could each be incorporated into the current brewery design separately or all together at an additional capital cost of $77,500 (see table below). These features are quiet new and have only been used in larger brewery settings (i.e. micro or larger breweries). Although they do save on effluent, water usage, etc. the exact amount of savings is unclear as they have not yet been proven at a brewpub level.

<table>
<thead>
<tr>
<th>Estimate Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility Equipment (see options below)</td>
</tr>
<tr>
<td>Grain Handling and Milling Equipment</td>
</tr>
<tr>
<td>Brew House Equipment</td>
</tr>
<tr>
<td>Auxiliary Equipment</td>
</tr>
<tr>
<td>Filtration Equipment</td>
</tr>
<tr>
<td>Fermentation / Cellar Equipment</td>
</tr>
<tr>
<td>Cleaning / Sanitation System</td>
</tr>
<tr>
<td>Packaging</td>
</tr>
<tr>
<td>Yeast Propogation/Collection/Storage System</td>
</tr>
<tr>
<td>Lab Equipment</td>
</tr>
<tr>
<td>Office Equipment</td>
</tr>
<tr>
<td>Chemical Storage+Safety Equipment</td>
</tr>
</tbody>
</table>

Total before taxes | 309,178 |
Plus taxes @12% | 37,101 |
TOTAL (+ Tax): | $346,279 |
A nitrogen generator makes clean nitrogen gas from the atmosphere. The generated nitrogen gas can be used instead of carbon dioxide (CO2) greenhouse gas in many different brewery applications. This would significantly lower its CO2 gas usage, thereby reducing its carbon footprint while saving on needed CO2 gas purchasing costs. This decision would add a net $8,500 to our current configuration.

A Norit X-Flow waste water filtration system uses advanced filtration technology to remove 90%+ of particulates from waste water to generate clean grey water that could be re-used for a variety of non-drinking water purposes (e.g. bathroom water, cleaning solution make-up, etc.). This decision would add a net $40,000 to our current configuration. However if it were to be incorporated as part of the entire new SUB, it would become more economical, and would be able to generate enough grey water to support a substantial amount of the overall non-drinking water needs of the new SUB.

Spent hop collection system would collect most of the hop waste produced by a brewery, and divert it away from sewer, significantly reducing effluent waste. The diverted hop waste would instead be mix with the spent grains, and used as fertilizer. This decision would add a net $1,500 to our current configuration.

A Membrane x-flow beer filter (costing $35,000) could be added to replace the plate & frame filter included in the equipment current configuration (costing $7,500). This filter system uses no filter aids, and has significantly less waste. This decision would add a net $27,500 to our current configuration.

Our capital cost estimates also assume that except for the refrigeration system, all other required utilities can be provided by UBC and the new SUB. If this is not the case, then the required utility equipment (e.g. steam boiler, HVAC system, etc.) can be incorporated into the overall brewery design at an additional capital cost of $48,000, as follows:

### Optional Utility Equipment Configuration

<table>
<thead>
<tr>
<th>Utility Equipment</th>
<th>Notes</th>
<th>Excluded</th>
<th>Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC System - Optional</td>
<td>1</td>
<td>$35,000</td>
<td></td>
</tr>
<tr>
<td>Active Carbon Filter</td>
<td></td>
<td></td>
<td>$3,500</td>
</tr>
<tr>
<td>Water Softner Tank - Optional</td>
<td>2</td>
<td></td>
<td>$2,000</td>
</tr>
<tr>
<td>Air Compressor</td>
<td></td>
<td></td>
<td>$500</td>
</tr>
<tr>
<td>Glycol Refrigeration System (for fermenters)</td>
<td></td>
<td></td>
<td>$8,500</td>
</tr>
<tr>
<td>Refrigerated walk-in cold room</td>
<td></td>
<td></td>
<td>$15,500</td>
</tr>
<tr>
<td>Low-Pressure High Efficiency Boiler - Optional</td>
<td>3</td>
<td></td>
<td>$13,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>$48,000</strong></td>
</tr>
<tr>
<td><strong>Included</strong></td>
<td></td>
<td></td>
<td><strong>$30,000</strong></td>
</tr>
</tbody>
</table>

**Notes:**

1. Would be included if new SUB not supplying HVAC services to brewery area
2. To be included based on water analysis results
3. Would be included if new SUB not supplying steam to brewery
**6.5.2 Installation and Start-up costs**

In addition to the cost of equipment, other costs will be incurred prior to opening. These include construction and installation costs, consulting and other expenses described below.

**Lease-Hold Improvements:**

Prior to the installation of equipment, First Key is able to work with architects, engineers, and local contractors to ensure the brewery site meets structural requirements and is prepared for the brewery equipment installation.

**Installation:**

Installation will take approximately 2 weeks, and will commence approximately 3 months prior to schedule opening date. If required, First Key can work with the original equipment manufacturer (OEM) to ensure the smooth and timely delivery and installation of all brewery equipment.

A summary of these costs is as follows:

**Table 06: Construction and Installation Costs**

<table>
<thead>
<tr>
<th>Construction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Installation</td>
<td>6,000</td>
</tr>
<tr>
<td>Shipping Cost</td>
<td>3,000</td>
</tr>
<tr>
<td>Leasehold improvements</td>
<td>20,000</td>
</tr>
<tr>
<td>Soft and Infrastructure costs</td>
<td>30,000</td>
</tr>
<tr>
<td><strong>Total Construction</strong></td>
<td>59,000</td>
</tr>
</tbody>
</table>

**Brewery Preparation and Start-Up:**

In preparation for the start-up and operation of the brewery the following tasks are conducted prior to the completed installation of all the brewery equipment.

- Develop recipes
- Conduct trial brews
- Provide a detailed vendor list for brewing and operating supplies along with supplier recommendations and cost analysis, if required
- Acquire necessary supporting equipment and supplies.
- Acquire necessary brewing materials.

Once installation of all the brewery equipment is completed the start-up process is initiated. The start-up process involves the following tasks:

- Conduct a wet test of the brewing system
- Organize lab / equipment
- Commission brewing equipment in conjunction with the trades’ people.
- Prepare quality control standards and operational procedures
- Hire and train staff brewer and assistant
- Educate bar/restaurant staff about beers produced, and provide beer-food pairing suggestions, if required
- Develop a maintenance management system

A summary of these costs is included in the following tables.

**Table 07: Pre-Opening Consulting Costs**

<table>
<thead>
<tr>
<th>Consulting</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment specifications, request for proposals, evaluations, recommendation</td>
<td>2,250</td>
</tr>
<tr>
<td>Consult with local Architects and Engineers re: site and building</td>
<td>6,000</td>
</tr>
<tr>
<td>Acquire supporting equipment and supplies</td>
<td>4,500</td>
</tr>
<tr>
<td>Acquire brewing materials</td>
<td>4,000</td>
</tr>
<tr>
<td>Organize lab and lab equipment</td>
<td>6,000</td>
</tr>
<tr>
<td>Formulate beer recipe (5 recipes) *</td>
<td>5,000</td>
</tr>
<tr>
<td>Brewing trials and beer development with beer samples (5 recipes) *</td>
<td>11,000</td>
</tr>
<tr>
<td>Startup and commissioning of brewery equipment in conjunction with equipment suppliers and local trades.</td>
<td>6,000</td>
</tr>
<tr>
<td>Hire and train staff brewer</td>
<td>17,000</td>
</tr>
<tr>
<td>Educate and train staff about beers</td>
<td>4,500</td>
</tr>
<tr>
<td>Prepare quality control standards and procedures (Manual)</td>
<td>13,000</td>
</tr>
<tr>
<td>Develop brewery maintenance management system</td>
<td>9,000</td>
</tr>
<tr>
<td>Staff Training - Direct Salaries (pre-opening)</td>
<td>14,766</td>
</tr>
<tr>
<td><strong>Total Consulting</strong></td>
<td>103,016</td>
</tr>
</tbody>
</table>

**Table 08: Other Pre-Opening Costs**

<table>
<thead>
<tr>
<th>Other Costs</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>License application/registration fees</td>
<td>4,040</td>
</tr>
<tr>
<td><strong>Total Other Costs</strong></td>
<td>4,040</td>
</tr>
</tbody>
</table>

**6.5.2 Total Project Costs**

A summary of the costs associated with all of the above activities are provided in the following table. These costs are based on a detailed brewery preparation and start-up cost analysis prepared by First Key. All financial information and calculations have been incorporated into a fully integrated financial model, which accompanies this report.
6.6 Production Costs

Production costs consist of direct manufacturing expenses involved in the brewing, fermenting, filtering and packaging of the beer (raw materials, energy, supplies, etc.), the direct labour for staff, and the indirect manufacturing expenses (insurance, licensing, etc.). The nature of these costs is described in section 6.4.

These production costs are used to determine the cost of sales for each period in our financial projection. For this purpose, Production Costs have been categorized as either fixed or variable in our financial model.

6.6.1 Variable Production Costs

Variable costs include raw materials and other inputs consumed in the production process (see section 6.4.3), and therefore vary with the volume of beer produced and sold. The following tables illustrate the cost and usage of each variable production input factor.

Table 09: Ingredient Costs

<table>
<thead>
<tr>
<th>Ingredient Costs</th>
<th>Unit (u)</th>
<th>Cost ($/u)</th>
<th>Usage (u/hl)</th>
<th>Cost ($/hl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malt</td>
<td>kg</td>
<td>$1.09</td>
<td>15.00</td>
<td>$16.42</td>
</tr>
<tr>
<td>Adjuncts</td>
<td>kg</td>
<td>$1.76</td>
<td>3.00</td>
<td>$5.28</td>
</tr>
<tr>
<td>Hops</td>
<td>kg</td>
<td>$20.39</td>
<td>0.10</td>
<td>$2.04</td>
</tr>
<tr>
<td>Yeast</td>
<td>unit</td>
<td>$169.00</td>
<td>0.01</td>
<td>$2.25</td>
</tr>
<tr>
<td>Brewing Salts</td>
<td>kg</td>
<td>$2.09</td>
<td>0.18</td>
<td>$0.38</td>
</tr>
<tr>
<td>Total Ingredient Costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based Case

<table>
<thead>
<tr>
<th>Capital Expenditures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Costs (Table 5)</td>
<td>346,279</td>
</tr>
<tr>
<td>Construction, installation (Table 6)</td>
<td>59,000</td>
</tr>
<tr>
<td>Capitalized Pre-opening costs</td>
<td>405,279</td>
</tr>
<tr>
<td>Pre-opening Expenses</td>
<td></td>
</tr>
<tr>
<td>Consulting, and start-up costs (Table 7)</td>
<td>103,016</td>
</tr>
<tr>
<td>Other Pre-openings Costs (Table 8)</td>
<td>4,040</td>
</tr>
<tr>
<td>Expensed Pre-opening costs</td>
<td>107,056</td>
</tr>
<tr>
<td>Total Capital Requirements</td>
<td>512,335</td>
</tr>
</tbody>
</table>
These above estimates were used in our base case financial analysis to determine project feasibility. They are not the “lowest cost” estimates, as we planned on using local premium high-quality ingredients, and green, eco-friendly process materials to make the beers. We estimate that $3,300 could be saved without these features.

A summary of these costs is provided in the following table. For years 2-5, we assumed cost inflation would be approximately 2% per year.

Table 10: Process Costs

<table>
<thead>
<tr>
<th>Process Costs</th>
<th>Unit (u)</th>
<th>Cost ($/u)</th>
<th>Usage (u/hl)</th>
<th>Cost ($/hl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>O2</td>
<td>lb</td>
<td>1.10</td>
<td>0.35</td>
<td>$0.39</td>
</tr>
<tr>
<td>CO2</td>
<td>lb</td>
<td>0.76</td>
<td>2.00</td>
<td>$1.52</td>
</tr>
<tr>
<td>Sheet filters</td>
<td>sheets</td>
<td>1.59</td>
<td>3.00</td>
<td>$4.77</td>
</tr>
<tr>
<td>Keg Caps</td>
<td>cap</td>
<td>0.05</td>
<td>2.00</td>
<td>$0.10</td>
</tr>
<tr>
<td>Keg Date Tags</td>
<td>tag</td>
<td>0.02</td>
<td>2.00</td>
<td>$0.04</td>
</tr>
<tr>
<td>Alkali Cleaner (green)</td>
<td>kg</td>
<td>10.97</td>
<td>0.02</td>
<td>$0.22</td>
</tr>
<tr>
<td>Acid Cleaner (green)</td>
<td>L</td>
<td>3.40</td>
<td>0.04</td>
<td>$0.14</td>
</tr>
<tr>
<td>Sanitizer (green)</td>
<td>L</td>
<td>12.20</td>
<td>0.08</td>
<td>$0.98</td>
</tr>
<tr>
<td><strong>Total Process Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$8.15</strong></td>
</tr>
</tbody>
</table>

Table 11: Utilities Costs

<table>
<thead>
<tr>
<th>Utilities Costs</th>
<th>Unit (u)</th>
<th>Cost ($/u)</th>
<th>Usage (u/hl)</th>
<th>Cost ($/hl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>hL</td>
<td>0.08</td>
<td>4.00</td>
<td>0.32</td>
</tr>
<tr>
<td>Sewer</td>
<td>hL</td>
<td>0.03</td>
<td>2.50</td>
<td>0.07</td>
</tr>
<tr>
<td>Electricity</td>
<td>kWh</td>
<td>0.0740</td>
<td>23.00</td>
<td>1.70</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>GJ</td>
<td>10.60</td>
<td>0.18</td>
<td>1.91</td>
</tr>
<tr>
<td><strong>Total Utilities Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$3.99</strong></td>
</tr>
</tbody>
</table>

Table 12: Summary of Variable Production Cost per HL

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredient</td>
<td>$26.36</td>
<td>$26.89</td>
<td>$27.43</td>
<td>$27.98</td>
<td>$28.54</td>
</tr>
<tr>
<td>Process</td>
<td>$8.15</td>
<td>$8.31</td>
<td>$8.48</td>
<td>$8.65</td>
<td>$8.82</td>
</tr>
<tr>
<td>Utilities</td>
<td>$3.99</td>
<td>$4.07</td>
<td>$4.15</td>
<td>$4.24</td>
<td>$4.32</td>
</tr>
<tr>
<td><strong>Variable cost per HL</strong></td>
<td>$41.63</td>
<td>$42.40</td>
<td>$43.18</td>
<td>$43.98</td>
<td>$44.80</td>
</tr>
</tbody>
</table>
The above costs, expressed on a per unit basis, were multiplied by our estimated sales volume to derive total variable costs for each year of the projection. However, estimated sales volumes were first adjusted upward to account for the following assumed liquid losses:

- **Shrinkage (10%)**: which includes beer lost during the manufacturing process (due to tank transfer losses, spills, yeast collection losses); and,

- **Serving Spillage (3%)**: which refers to the beer lost after it has been served into the glass/pitcher (due to broken glasses, tap cleanings, tap overfills, etc)

### Table 13: Summary of Projected Production Volume

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sales volume in HL*</td>
<td>458.26</td>
<td>488.74</td>
<td>481.00</td>
<td>422.54</td>
<td>371.01</td>
</tr>
<tr>
<td>Shrinkage / Spillage Gross Up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewing to Tap loss (10%)</td>
<td>50.92</td>
<td>54.30</td>
<td>53.44</td>
<td>46.95</td>
<td>41.22</td>
</tr>
<tr>
<td>Serving Spillage (3%)</td>
<td>14.17</td>
<td>15.12</td>
<td>14.88</td>
<td>13.07</td>
<td>11.47</td>
</tr>
<tr>
<td>Required Production (HL)</td>
<td>523.35</td>
<td>558.16</td>
<td>549.32</td>
<td>482.55</td>
<td>423.71</td>
</tr>
</tbody>
</table>

* excluding purchased products

Using the above estimates and assumptions, we developed the following Variable Production Cost projection.

### Table 14: Variable Production Costs

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredient</td>
<td>13,797</td>
<td>15,009</td>
<td>15,067</td>
<td>13,501</td>
<td>12,091</td>
<td>69,466</td>
</tr>
<tr>
<td>Process</td>
<td>4,263</td>
<td>4,638</td>
<td>4,656</td>
<td>4,172</td>
<td>3,736</td>
<td>21,465</td>
</tr>
<tr>
<td>Utilities</td>
<td>2,090</td>
<td>2,274</td>
<td>2,282</td>
<td>2,045</td>
<td>1,832</td>
<td>10,523</td>
</tr>
<tr>
<td>Excise Taxes</td>
<td>1,634</td>
<td>1,743</td>
<td>1,715</td>
<td>1,507</td>
<td>1,323</td>
<td>7,921</td>
</tr>
<tr>
<td>Variable cost</td>
<td>$21,785</td>
<td>$23,664</td>
<td>$23,720</td>
<td>$21,224</td>
<td>$18,982</td>
<td>$109,374</td>
</tr>
</tbody>
</table>
6.6.1 Fixed Production Costs

Fixed costs include direct labour costs based on having one full-time head brewer and one part-time assistant brewer managing the operation of the brewery (see 6.6.6 “Personnel Requirements”). Other direct manufacturing costs include supporting brewery expenses, such as equipment maintenance, environmentally-friendly cleaning chemicals, biodegradable filter-aids, process gases and other facility supplies. Fixed costs do not vary with production volume, but are generally constant from period to period (approximately $100,000 per year.)

A summary of these costs is provided in the following table.

Table 15: Fixed Production Costs

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Brewer Salary/Wages</td>
<td>54,996</td>
<td>56,096</td>
<td>57,218</td>
<td>58,362</td>
<td>59,529</td>
<td>286,201</td>
</tr>
<tr>
<td>Staff Brewer Salary/Wages</td>
<td>30,000</td>
<td>30,600</td>
<td>31,212</td>
<td>31,836</td>
<td>32,473</td>
<td>156,121</td>
</tr>
<tr>
<td>Extended Health</td>
<td>2,400</td>
<td>2,448</td>
<td>2,497</td>
<td>2,547</td>
<td>2,598</td>
<td>12,490</td>
</tr>
<tr>
<td>Provincial Beer Manufacturing Fees</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>1,100</td>
<td>5,500</td>
</tr>
<tr>
<td>Cleaning Supplies</td>
<td>900</td>
<td>918</td>
<td>936</td>
<td>955</td>
<td>974</td>
<td>4,684</td>
</tr>
<tr>
<td>Safety Supplies</td>
<td>80</td>
<td>82</td>
<td>83</td>
<td>85</td>
<td>87</td>
<td>416</td>
</tr>
<tr>
<td>Repairs and Maintenance</td>
<td>1,200</td>
<td>1,224</td>
<td>1,248</td>
<td>1,273</td>
<td>1,299</td>
<td>6,245</td>
</tr>
<tr>
<td>Rent / Lease</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Office Supplies</td>
<td>140</td>
<td>143</td>
<td>146</td>
<td>149</td>
<td>152</td>
<td>729</td>
</tr>
<tr>
<td>Lab Supplies</td>
<td>2,000</td>
<td>2,040</td>
<td>2,081</td>
<td>2,122</td>
<td>2,165</td>
<td>10,408</td>
</tr>
<tr>
<td><strong>Total Fixed Production Costs</strong></td>
<td><strong>92,816</strong></td>
<td><strong>94,650</strong></td>
<td><strong>96,521</strong></td>
<td><strong>98,430</strong></td>
<td><strong>100,376</strong></td>
<td><strong>482,794</strong></td>
</tr>
</tbody>
</table>
7.0 Financial Analysis

7.1 Approach

Based on all of the Operating and Capital Investment assumptions described in this report, we prepared the following Financial Analysis:

- **Financial Projections:** This information presents a summary of the projected operating results (revenues, expenses, cash flows) and financial position (assets and liabilities) for the draft beer segment of the business. The analysis assumes the new Brewery installation is completed by August 31, 2014. Projections are provided for a five year period following the opening date (September 1, 2014). For comparative purposes, we prepared a second set of projections to show the expected results for the Draft Beer segment in the event the Brewpub investment is not approved.

- **Investment Analysis:** To aid in management decision making, we prepared several investment analyses to illustrate:
  - The improvement in projected operating results of the Draft Beer segment. The analysis indicates a significant improvement in profitability is expected from the new brewery investment.
  - The financial viability of the new brewpub investment. This analysis was performed by comparing the improvement in operating results (determined above) to the cost of the project. Based on the projected amount and timing of incremental cash flow arising from the investment, we conclude that the Brewpub investment will generate a positive net present value of approximately $600,000, provide a 30+% return on investment, and pay for itself over a 3 – 4 year period. We also concluded the project could support a $200,000 bank loan without any significant risk of default.

7.2 Projected Financial Statements

The following projections include only the results the Draft beer segment of the business. They exclude all other revenues and expenses associated with AMS’s pub operations. Two scenarios are presented:

- **Scenario 1** assumes a continuation of the status quo (i.e., AMS continues to sell draft beer products with substantially the same mix as sold today).

- **Scenario 2** assumes an investment is made to install in house brewery that will produce five new draft beer products. The number of Draft beer products currently purchased from existing suppliers is reduced, but not eliminated (see discussion in section 5.4 “Projected Draft Beer Sales Volumes”).
7.2.1 Projected Income Statement

Scenario 1: Status Quo (no Brewpub)

The following tables provide a summary of the projected pre-tax income from the existing Draft beer segment for the five year period following the opening date (currently estimated to be September 2014).

Table 16: Income Summary: Scenario 1

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hectoliters On-Site - Brewed Draft to Tap</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hectoliters Off-Site - Kegs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hectoliters - Purchased Draft Tap sales</td>
<td>388</td>
<td>417</td>
<td>410</td>
<td>361</td>
<td>310</td>
<td>1,885</td>
</tr>
<tr>
<td>Total Hectoliters</td>
<td>388</td>
<td>417</td>
<td>410</td>
<td>361</td>
<td>310</td>
<td>1,885</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revenue</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Site Sales - Draft to Tap</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Off-Site Sales - Kegs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>On-Site Sales -Purchased Draft</td>
<td>389,675</td>
<td>425,771</td>
<td>424,117</td>
<td>380,434</td>
<td>331,886</td>
<td>1,951,884</td>
</tr>
<tr>
<td>Gross Revenue</td>
<td>389,675</td>
<td>425,771</td>
<td>424,117</td>
<td>380,434</td>
<td>331,886</td>
<td>1,951,884</td>
</tr>
<tr>
<td>Less BC Prov mark-up</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net Revenue</td>
<td>389,675</td>
<td>425,771</td>
<td>424,117</td>
<td>380,434</td>
<td>331,886</td>
<td>1,951,884</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased Draft Products</td>
<td>185,809</td>
<td>203,021</td>
<td>202,232</td>
<td>181,403</td>
<td>158,254</td>
<td>930,719</td>
</tr>
<tr>
<td>Variable Production costs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fixed Production costs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Cost of sales</td>
<td>185,809</td>
<td>203,021</td>
<td>202,232</td>
<td>181,403</td>
<td>158,254</td>
<td>930,719</td>
</tr>
<tr>
<td>CGS%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>203,866</td>
<td>222,750</td>
<td>221,885</td>
<td>199,031</td>
<td>173,632</td>
<td>1,021,164</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Costs</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Distribution (Kegs)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Marketing</td>
<td>769</td>
<td>845</td>
<td>846</td>
<td>759</td>
<td>665</td>
<td>3,884</td>
</tr>
<tr>
<td>Selling</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Operating Costs</td>
<td>769</td>
<td>845</td>
<td>846</td>
<td>759</td>
<td>665</td>
<td>3,884</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>203,097</td>
<td>221,906</td>
<td>221,039</td>
<td>198,272</td>
<td>172,967</td>
<td>1,017,281</td>
<td></td>
</tr>
<tr>
<td>Interest</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Depreciation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net Income Before Taxes</td>
<td>203,097</td>
<td>221,906</td>
<td>221,039</td>
<td>198,272</td>
<td>172,967</td>
<td>1,017,281</td>
</tr>
</tbody>
</table>

The principal assumptions used in these projections are summarized below. Some of these assumptions were derived from an analysis of historical operating data provided by AMS. All of this historical information and analysis is provided in the accompanying data package (excel workbook entitled “AMS Financial Tables”).
Scenario 1 Assumptions

Volumes Sales HL

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On-Site - Draft to Tap</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projected Volumes under new</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>brewery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewed draft</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Purchased Draft (60% of</td>
<td>388</td>
<td>417</td>
<td>410</td>
<td>361</td>
<td>310</td>
</tr>
<tr>
<td>Scenario 2 Tap Vol)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forecast tap sales for</td>
<td>388</td>
<td>417</td>
<td>410</td>
<td>361</td>
<td>310</td>
</tr>
<tr>
<td>Scenario 1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Hectolitres Off-Site - Kegs

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Draft sales</td>
<td>388</td>
<td>417</td>
<td>410</td>
<td>361</td>
<td>310</td>
</tr>
</tbody>
</table>

Price per HL

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average price per HL - Tap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewed products</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Purchased products</td>
<td>$1,005</td>
<td>$1,020</td>
<td>$1,035</td>
<td>$1,055</td>
<td>$1,071</td>
</tr>
<tr>
<td>Average for all draft sold</td>
<td>$1,005</td>
<td>$1,020</td>
<td>$1,035</td>
<td>$1,055</td>
<td>$1,071</td>
</tr>
<tr>
<td>at tap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average price per HL - Keg</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average price per HL - All</td>
<td>$1,005</td>
<td>$1,020</td>
<td>$1,035</td>
<td>$1,055</td>
<td>$1,071</td>
</tr>
<tr>
<td>draft</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Cost per HL

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed products (on and off-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>site)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased products sold on-</td>
<td>$479</td>
<td>$486</td>
<td>$494</td>
<td>$503</td>
<td>$511</td>
</tr>
<tr>
<td>site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average for All Draft</td>
<td>$479</td>
<td>$486</td>
<td>$494</td>
<td>$503</td>
<td>$511</td>
</tr>
<tr>
<td>products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CGS% on Purchase draft product sales

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed products (on and off-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>site)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased products sold on-</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
</tr>
<tr>
<td>site</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average for All Draft</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
</tr>
<tr>
<td>products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expense

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mktng cost per HL (Tap sales)</td>
<td>1.98</td>
<td>2.02</td>
<td>2.06</td>
<td>2.10</td>
<td>2.15</td>
</tr>
</tbody>
</table>

Scenario 2: Brewpub Acquisition

The following tables provide a summary of the projected pre-tax income from the new Brewpub’s Draft beer segment for the five year period following the opening date.
Table 17: Income Summary: Scenario 2

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hectolitres On-Site - Brewed Draft</td>
<td>365</td>
<td>396</td>
<td>388</td>
<td>331</td>
<td>279</td>
<td>1,759</td>
</tr>
<tr>
<td>Hectolitres Off-Site - Kegs</td>
<td>93</td>
<td>93</td>
<td>93</td>
<td>92</td>
<td>92</td>
<td>462</td>
</tr>
<tr>
<td>Hectolitres - Purchased Brands</td>
<td>281</td>
<td>300</td>
<td>295</td>
<td>270</td>
<td>237</td>
<td>1,383</td>
</tr>
<tr>
<td><strong>Total Hectolitres</strong></td>
<td>739</td>
<td>789</td>
<td>776</td>
<td>693</td>
<td>608</td>
<td>3,605</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost of Goods Sold</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased Draft Products</td>
<td>134,660</td>
<td>145,910</td>
<td>145,589</td>
<td>135,825</td>
<td>121,033</td>
<td>683,016</td>
</tr>
<tr>
<td>Variable Production costs</td>
<td>21,785</td>
<td>23,664</td>
<td>23,720</td>
<td>21,224</td>
<td>18,982</td>
<td>109,374</td>
</tr>
<tr>
<td>Fixed Production costs</td>
<td>92,816</td>
<td>94,650</td>
<td>96,521</td>
<td>98,430</td>
<td>100,376</td>
<td>482,794</td>
</tr>
<tr>
<td><strong>Total Cost of sales</strong></td>
<td>249,260</td>
<td>264,224</td>
<td>265,830</td>
<td>255,479</td>
<td>240,391</td>
<td>1,275,184</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Gross Profit</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CGS%</td>
<td>39.6%</td>
<td>37.9%</td>
<td>38.1%</td>
<td>40.6%</td>
<td>43.3%</td>
<td>39.7%</td>
</tr>
<tr>
<td><strong>Gross Profit</strong></td>
<td>379,913</td>
<td>433,208</td>
<td>432,085</td>
<td>374,390</td>
<td>314,341</td>
<td>1,933,937</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Costs</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution (Kegs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>63,594</td>
<td>64,865</td>
<td>66,163</td>
<td>67,486</td>
<td>68,836</td>
<td>330,944</td>
</tr>
<tr>
<td>Selling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Operating Costs</strong></td>
<td>63,594</td>
<td>64,865</td>
<td>66,163</td>
<td>67,486</td>
<td>68,836</td>
<td>330,944</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earnings Before Interest and Taxes</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>9,119</td>
<td>7,092</td>
<td>5,066</td>
<td>3,040</td>
<td>1,013</td>
<td>25,330</td>
</tr>
<tr>
<td>Depreciation</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>101,320</td>
</tr>
<tr>
<td><strong>Total Earnings Before Interest and Taxes</strong></td>
<td>316,319</td>
<td>368,343</td>
<td>365,922</td>
<td>306,904</td>
<td>245,505</td>
<td>1,602,993</td>
</tr>
</tbody>
</table>

| Net Income Before Taxes          | 286,936  | 340,986  | 340,592  | 283,601  | 224,228  | 1,476,344|

The principal assumptions used in these projections are summarized below. Many of these assumptions were derived from First Key’s sales and marketing analysis (section 5), and technical brewing study (section 6), where estimates have been made to quantify:

- Sales volumes and prices by product line
- Brewing materials and operational requirements
- Capital Equipment and other Pre-opening costs,
- Production and Operating Costs (fixed and variable).

All of this historical information is provided in the accompanying data package (excel workbook entitled “AMS Financial Tables”). This includes supporting schedules that illustrate the calculation of selected revenue and expense line items (including Sales of Brewed and Purchased Draft Products, Fixed and Variable Production Expenses, Interest and Depreciation Expense) as well as balance sheet accounts (Working Capital, Fixed Assets, Bank Loans, etc).
### Scenario 2 Assumptions

<table>
<thead>
<tr>
<th>Volumes Sales HL</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On-Site - Draft to Tap</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projected Volumes under new brewery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brewed draft</td>
<td>365</td>
<td>396</td>
<td>388</td>
<td>331</td>
<td>279</td>
</tr>
<tr>
<td>Purchased Draft</td>
<td>281</td>
<td>300</td>
<td>295</td>
<td>270</td>
<td>237</td>
</tr>
<tr>
<td>Forecast tap sales for Scenario 2</td>
<td>646</td>
<td>696</td>
<td>683</td>
<td>601</td>
<td>516</td>
</tr>
<tr>
<td><strong>Hectoliters Off-Site - Kegs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>93</td>
<td>93</td>
<td>92</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td><strong>Total Draft sales</strong></td>
<td>739</td>
<td>789</td>
<td>776</td>
<td>693</td>
<td>608</td>
</tr>
</tbody>
</table>

#### Price per HL

<table>
<thead>
<tr>
<th>Average price per HL - On-site Tap sales</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed products sold on site</td>
<td>$958</td>
<td>$1,000</td>
<td>$1,020</td>
<td>$1,039</td>
<td>$1,057</td>
</tr>
<tr>
<td>Purchased products sold on site</td>
<td>$1,005</td>
<td>$1,020</td>
<td>$1,035</td>
<td>$1,055</td>
<td>$1,071</td>
</tr>
<tr>
<td>Average for all draft sold on site</td>
<td>$979</td>
<td>$1,008</td>
<td>$1,026</td>
<td>$1,046</td>
<td>$1,064</td>
</tr>
<tr>
<td>Average price per HL - Keg sales</td>
<td>$310</td>
<td>$324</td>
<td>$330</td>
<td>$336</td>
<td>$343</td>
</tr>
<tr>
<td>Average price per HL - All draft</td>
<td>$851</td>
<td>$884</td>
<td>$899</td>
<td>$910</td>
<td>$912</td>
</tr>
</tbody>
</table>

#### Cost per HL

<table>
<thead>
<tr>
<th>Cost per HL</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed products (on and off-site)</td>
<td>$250</td>
<td>$242</td>
<td>$250</td>
<td>$283</td>
<td>$322</td>
</tr>
<tr>
<td>Purchased products sold on-site</td>
<td>$479</td>
<td>$486</td>
<td>$494</td>
<td>$503</td>
<td>$511</td>
</tr>
<tr>
<td>Average for All Draft products</td>
<td>$337</td>
<td>$335</td>
<td>$343</td>
<td>$369</td>
<td>$395</td>
</tr>
</tbody>
</table>

#### CGS% on draft product sales

<table>
<thead>
<tr>
<th>CGS% on draft product sales</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewed products (on and off-site)</td>
<td>30.2%</td>
<td>27.8%</td>
<td>28.2%</td>
<td>31.9%</td>
<td>36.5%</td>
</tr>
<tr>
<td>Purchased products sold on-site</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
<td>47.7%</td>
</tr>
<tr>
<td>Average for All Draft products</td>
<td>39.6%</td>
<td>37.9%</td>
<td>38.1%</td>
<td>40.6%</td>
<td>43.3%</td>
</tr>
</tbody>
</table>

#### Expense

<table>
<thead>
<tr>
<th>Expense</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mktng cost per HL (Tap sales)</td>
<td>98.41</td>
<td>93.24</td>
<td>96.88</td>
<td>112.29</td>
<td>133.28</td>
</tr>
</tbody>
</table>

### 7.2.2 Projected Balance Sheet

The following table presents the projected assets and liabilities related to the Draft beer segment the new Brewpub assuming investment is approved and commissioning is completed as expected.
Table 18: Projected Balance Sheet under Scenario 2

<table>
<thead>
<tr>
<th>Years ended August 31,</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>245,672</td>
<td>565,394</td>
<td>885,723</td>
<td>1,149,560</td>
<td>1,355,024</td>
</tr>
<tr>
<td>Inventory</td>
<td>42,000</td>
<td>44,000</td>
<td>44,000</td>
<td>43,000</td>
<td>40,000</td>
</tr>
<tr>
<td></td>
<td>287,672</td>
<td>609,394</td>
<td>929,723</td>
<td>1,192,560</td>
<td>1,395,024</td>
</tr>
<tr>
<td>Long term assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Assets, at cost</td>
<td>405,279</td>
<td>405,279</td>
<td>405,279</td>
<td>405,279</td>
<td>405,279</td>
</tr>
<tr>
<td>Accumulated Depreciation</td>
<td>(20,264)</td>
<td>(40,528)</td>
<td>(60,792)</td>
<td>(81,056)</td>
<td>(101,320)</td>
</tr>
<tr>
<td></td>
<td>385,015</td>
<td>364,751</td>
<td>344,487</td>
<td>324,223</td>
<td>303,960</td>
</tr>
<tr>
<td>Liabilities</td>
<td>672,688</td>
<td>974,146</td>
<td>1,274,210</td>
<td>1,516,783</td>
<td>1,698,983</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>21,000</td>
<td>22,000</td>
<td>22,000</td>
<td>21,500</td>
<td>20,000</td>
</tr>
<tr>
<td>Debt</td>
<td>162,112</td>
<td>121,584</td>
<td>81,056</td>
<td>40,528</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>183,112</td>
<td>143,584</td>
<td>103,056</td>
<td>62,028</td>
<td>20,000</td>
</tr>
<tr>
<td>Shareholders Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital</td>
<td>309,696</td>
<td>309,696</td>
<td>309,696</td>
<td>309,696</td>
<td>309,696</td>
</tr>
<tr>
<td>Retained Earnings</td>
<td>179,880</td>
<td>520,866</td>
<td>861,459</td>
<td>1,145,060</td>
<td>1,369,288</td>
</tr>
<tr>
<td></td>
<td>489,576</td>
<td>830,562</td>
<td>1,171,154</td>
<td>1,454,755</td>
<td>1,678,983</td>
</tr>
<tr>
<td></td>
<td>672,688</td>
<td>974,146</td>
<td>1,274,210</td>
<td>1,516,783</td>
<td>1,698,983</td>
</tr>
</tbody>
</table>

The principle assumptions used estimate the projected balance sheet accounts are provided in the financial model.

7.2.3 Statement of Projected Cash Flow

The following table presents the projected Cash Flow from the Draft beer segment assuming the Brewpub investment is approved and:

- Construction is completed on schedule with full commissioning carried out prior to the schedules opening date of the new pub,
- Equipment, installation and other pre-opening costs incurred approximate the amounts projected, and
- Sales volumes of new products brewed in-house will materialize as projected.
### Table 19: Projected Cash Flow under Scenario 2

<table>
<thead>
<tr>
<th>Years ended August 31,</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash flow from Operating Activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net income</td>
<td>286,936</td>
<td>340,986</td>
<td>340,592</td>
<td>283,601</td>
<td>224,228</td>
</tr>
<tr>
<td>Plus Depreciation</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
</tr>
<tr>
<td></td>
<td>307,200</td>
<td>361,250</td>
<td>360,856</td>
<td>303,865</td>
<td>244,492</td>
</tr>
<tr>
<td>Change in working capital</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>(42,000)</td>
<td>(2,000)</td>
<td>-</td>
<td>1,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Accounts payable</td>
<td>21,000</td>
<td>1,000</td>
<td>-</td>
<td>(500)</td>
<td>(1,500)</td>
</tr>
<tr>
<td></td>
<td>(21,000)</td>
<td>(1,000)</td>
<td>-</td>
<td>500</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>286,200</td>
<td>360,250</td>
<td>360,856</td>
<td>304,365</td>
<td>245,992</td>
</tr>
<tr>
<td><strong>Cash flow from Investing Activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of fixed assets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Cash flow from Financing Activities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repayment of debt</td>
<td>(40,528)</td>
<td>(40,528)</td>
<td>(40,528)</td>
<td>(40,528)</td>
<td>(40,528)</td>
</tr>
<tr>
<td></td>
<td>(40,528)</td>
<td>(40,528)</td>
<td>(40,528)</td>
<td>(40,528)</td>
<td>(40,528)</td>
</tr>
<tr>
<td>Change in cash during period</td>
<td>245,672</td>
<td>319,722</td>
<td>320,328</td>
<td>263,837</td>
<td>205,464</td>
</tr>
<tr>
<td>Opening cash resources</td>
<td>-</td>
<td>245,672</td>
<td>565,394</td>
<td>885,723</td>
<td>1,149,560</td>
</tr>
<tr>
<td>Closing cash balance</td>
<td>245,672</td>
<td>565,394</td>
<td>885,723</td>
<td>1,149,560</td>
<td>1,355,024</td>
</tr>
</tbody>
</table>

### 7.3 Financial Feasibility

#### 7.3.1 Incremental Change Analysis

The following table calculates the incremental change in projected revenue and expenses of the Draft beer business resulting from the new Brewpub investment.
The following table illustrates the change in key assumptions between each scenario that drive the changes in operating results above.

<table>
<thead>
<tr>
<th>Table 20: Change in Income Attributable to New Brewpub Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Change in Projected Sales Volume - HL</strong></td>
</tr>
<tr>
<td>Increase in On-Site - Draft to Tap Sales Vol</td>
</tr>
<tr>
<td>Increase in Off-Site - Kegs Sales Vol</td>
</tr>
<tr>
<td>Decrease in Sales of Purchased Brands</td>
</tr>
<tr>
<td>Net Increase in Sales Volume under Scenario 2</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>365</td>
</tr>
<tr>
<td>93</td>
</tr>
<tr>
<td>(107)</td>
</tr>
<tr>
<td>352</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Change in Projected Revenue - $</strong></td>
</tr>
<tr>
<td>Increase in On-Site Revenue from - Draft to Tap Sales</td>
</tr>
<tr>
<td>Increase in Revenue from Off-Site Sales - Kegs</td>
</tr>
<tr>
<td>Decrease in Revenue from Sales of -Purchased Draft</td>
</tr>
<tr>
<td>Net increase in Gross Revenue under Scenario 2</td>
</tr>
<tr>
<td>Less increase in BC Provincial mark-up on (remitted)</td>
</tr>
<tr>
<td>Increase in Net Revenue under Scenario 2</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>349,983</td>
</tr>
<tr>
<td>28,863</td>
</tr>
<tr>
<td>(107,270)</td>
</tr>
<tr>
<td>271,577</td>
</tr>
<tr>
<td>(32,078)</td>
</tr>
<tr>
<td>239,498</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Change in Cost of Goods Sold</strong></td>
</tr>
<tr>
<td>Increase in Cost of Purchased Draft Products</td>
</tr>
<tr>
<td>Increase in Variable Production costs</td>
</tr>
<tr>
<td>Increase in Fixed Production costs</td>
</tr>
<tr>
<td>Increase in Cost of Sales</td>
</tr>
<tr>
<td>Decrease in CGS as a % of sales</td>
</tr>
<tr>
<td>Increase in Projected Gross Profit</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>(51,150)</td>
</tr>
<tr>
<td>21,785</td>
</tr>
<tr>
<td>92,816</td>
</tr>
<tr>
<td>63,451</td>
</tr>
<tr>
<td>-8.1%</td>
</tr>
<tr>
<td>176,047</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Changes in Operating Costs</strong></td>
</tr>
<tr>
<td>Marketing</td>
</tr>
<tr>
<td>Total Operating Costs</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>62,824</td>
</tr>
<tr>
<td>62,824</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Increase in Earnings Before Interest and Taxes</strong></td>
</tr>
<tr>
<td>Increase in Interest under Scenario 2</td>
</tr>
<tr>
<td>Increase in Depreciation under Scenario 2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>113,222</td>
</tr>
<tr>
<td>9,119</td>
</tr>
<tr>
<td>20,264</td>
</tr>
<tr>
<td>29,383</td>
</tr>
<tr>
<td>83,840</td>
</tr>
</tbody>
</table>
The above table was based on a comparison of the projected operating results as between Scenario 1 and 2. The following commentary provides an explanation of the change in key performance indicators related to the draft beer segment:

Higher Sales Volume

- With the installation of a brewpub the projected sales volume is expected to increase by 91% over a five year period. This substantial improvement results from a combination of:
  - The introduction of five new draft products brewed in-house. These new products will be supported with significant investment promotional activities that will replace programs previously provided by external draft beer suppliers. The additional volume from new product sales will be offset by a reduction in sales of purchased draft products.
  - Additional sales of brewed draft products in sold in Kegs to offsite customers.
Lower Average Price

- Based on the assumed product mix, there will be a decline in the average selling price of draft beer products under Scenario 2. The lower average price of draft beer sold under Scenario 2 arises from a combination of:
  
  - No material change in the average price of draft sold at the tap. Note however that remittances are payable to BC Govt for the $70/HL mark-up on all sales of beer manufactured on-site, which reduces the Net amount of revenue accruing to UBC.
  
  - A much lower price is realized on off-site keg sales which are assumed to occur only in Scenario 2. Based on our projected price per keg, the average price per HL for off-site sales is only $310 (approximately one third of the price for manufactured beer sold on site, or $958 per HL.)

Increased Revenue

- The combination of higher sales volumes and lower average prices assumed under Scenario 2 result in a net improvement in projected gross revenue of $1.4 million (or 76%) over the five year period (or $1.2 million on a net revenue basis)

Lower Average Cost of Sales %

- Based on the assumed mix of products sold under each scenario, the average cost of draft beer sales, expressed as a percentage of net revenue (“CGS %”), is expected to decline significantly from 48% in Scenario 1 to approximately 39.7% in Scenario 2. The decrease in projected CGS% of approximately 10 basis points is expected to result from a combination of:
  
  - A much lower cost per HL associated with draft beer products brewed in house compared to those purchased from external suppliers. For example, the average cost per HL of beer produced internally is projected to be $250 in the first year. This compares to an average cost per HL of $479 for purchased draft products (projected for the same period). This is offset by:
  
  - The lower profit margin realized on manufactured beer sold off-site, due to the lower price of beer sold in kegs vs. the retail price of beer sold at the tap (as explained above).

---

5 Note that the cost of beer manufactured internally includes a combination of fixed and variable costs. Since the fixed cost component does not vary with sales volume, the total cost per HL will increase as volume declines and vice versa.
Higher Gross Profit

- The combination of higher projected gross revenues of $1.4 million ($250,000-$300,000 per year) and a lower CSG% resulting from in-house manufacturing in Scenario 2, offset by the $.70 / per Liter BC mark-up on manufactured beer sales (amounting to $155,000 over five years) results in a $.9 million net improvement in gross profits earned over five years.

Higher Marketing Expenses

- Projected marketing expenses are expected to increase by approximately $65,000 per year (or $327,000 over five years) in Scenario 2. This is due to elimination of promotional contributions from existing beer suppliers that will no longer supply draft beer products after the brewpub commences production. The cost of these promotional activities will have to be borne by the brewpub in Scenario 2.

Higher Other Expenses

- Scenario 2 includes projected Depreciation (on the capital cost of the brewery equipment) and Interest expense (on the portion of the equipment financed with debt). These expenses, which total $127,000 over five years, would not be incurred under Scenario 1.

Increase in Net Income before taxes

- The combination of a higher gross profit contribution, less the projected increase in operating and other expenses, indicated a net increase in pre-tax income of $459,000 over five years (averaging about $92,000 per year).

7.3.2 Financial Viability

Methodology

The improved operating results (described above) were compared to the cost of the new brewery investment in order to determine the financial viability of the project. Our analysis was prepared on a cash flow basis, adjusted to reflect to reflect the time value of money.

Conclusion

As shown in the following table, our analysis indicates the Brewpub investment has a positive Net Present Value of $331,000. Based on this analysis, we concluded the New Brewpub Project is financially viable.
Table 21: Net Present Value of Brewpub Investment

AMS New Brewery Project
Analysis of Financial Viability

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected improvement in pre-tax income</td>
<td>$83,840</td>
<td>$119,080</td>
<td>$119,553</td>
<td>$85,329</td>
<td>$51,261</td>
<td></td>
</tr>
<tr>
<td>Less income taxes</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Projected improvement in after-tax income</td>
<td>83,840</td>
<td>119,080</td>
<td>119,553</td>
<td>85,329</td>
<td>51,261</td>
<td></td>
</tr>
<tr>
<td>Add back interest</td>
<td>9,119</td>
<td>7,092</td>
<td>5,066</td>
<td>3,040</td>
<td>1,013</td>
<td></td>
</tr>
<tr>
<td>Add back depreciation</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td>20,264</td>
<td></td>
</tr>
<tr>
<td>Less working capital reinvestment</td>
<td>(21,000)</td>
<td>(1,000)</td>
<td>-</td>
<td>500</td>
<td>1,500</td>
<td></td>
</tr>
<tr>
<td>Less Capital maintenance expenditures</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Projected improvement in cash flow</td>
<td>92,222</td>
<td>145,437</td>
<td>144,883</td>
<td>109,132</td>
<td>74,038</td>
<td>763,000</td>
</tr>
<tr>
<td>Discount rate</td>
<td>13.0%</td>
<td>0.9407</td>
<td>0.8325</td>
<td>0.7367</td>
<td>0.6520</td>
<td>0.5770</td>
</tr>
<tr>
<td>PV of annual improvement</td>
<td>87,000</td>
<td>121,000</td>
<td>107,000</td>
<td>71,000</td>
<td>43,000</td>
<td>414,000</td>
</tr>
</tbody>
</table>

Present Value of Incremental Cash Flow [A] 843,000

Initial Capital Investment and Pre-opening Costs [B] (512,335)


Discount Rate Assumptions

<table>
<thead>
<tr>
<th>Type of Capital</th>
<th>Req'd RoR</th>
<th>Financing Mix</th>
<th>Weighted Ave. Cost of Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt</td>
<td>5%</td>
<td>40%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Equity</td>
<td>18%</td>
<td>60%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Weighted Average Cost of Capital</td>
<td>12.9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Present Value of Projected Cash Flow

We started with our estimates of the net increase in pre-tax income that is expected to result from the brewpub investment (as discussed above). We then added back non-cash accounting expenses (e.g. depreciation) and financing costs (interest). We then subtracted projected cash outflows for the additional working capital needed to run the brewing operations. This resulted in a stream of projected cash flows that are attributable to the brewpub investment.

We discounted these cash flows to their present value as of the opening date. We used a 13% discount rate based on our estimate of the cost of capital required to fund the project, recognizing the risks inherent in projecting the results of a start-up business. The cost of capital also reflects our estimate of the likely source and mix of funds (debt vs. equity) used to finance the investment, including current interest rates and other lending parameters.

The present value of projected future cash flow attributable to the Brewpub investment is estimated to be approximately $1.1 million, as shown in the table above. We subtracted the initial Capital Investment required to fund project of approximately $512,000 (including capital expenditures for equipment as well as estimated pre-opening expenses.) This resulted positive net present value of approximately $330,000.
7.3.3  **Internal Rate of Return**

We estimate the Brewpub investment project will provide an internal rate of return (“IRR”) of approximating 22%. This was estimated by determining the interest rate that would result in the discounted net present value of the projected cash flow improvements being equal to the Capital Investment ($512,000). The following table illustrates that this would be achieved using a discount rate equal to 22%. This analysis indicates that the return on Investment exceeds the cost of capital deployed (estimated to be 13%). This suggests the Brewpub investment is likely to generate positive net economic value-added, another measure of financial viability.

**Table 22: Internal Rate of Return on Brewpub Investment**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected improvement in cash flow</td>
<td>92,222</td>
<td>145,437</td>
<td>144,883</td>
<td>109,132</td>
<td>74,038</td>
<td>404,000</td>
</tr>
<tr>
<td>Discount rate to equalize A and B</td>
<td>22.0%</td>
<td>0.9052</td>
<td>0.7417</td>
<td>0.6077</td>
<td>0.4979</td>
<td>0.4080</td>
</tr>
<tr>
<td>NPV of annual improvement</td>
<td>83,000</td>
<td>108,000</td>
<td>88,000</td>
<td>54,000</td>
<td>30,000</td>
<td>149,000</td>
</tr>
<tr>
<td>[A] NPV of Project Cash Flow</td>
<td>$512,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial Capital Investment</td>
<td>[B] $(512,000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.3.4  **Pay-Back Period**

Based on the above projections, the pay-back period for the Brewpub Investment is approximately 4 – 5 years, estimated as follows:

**Table 23: Brewpub Investment Pay-back Period**

<table>
<thead>
<tr>
<th>New Brewery Project</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected Pay back Period</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Investment costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening balance</td>
<td>512,335</td>
<td>420,113</td>
<td>274,676</td>
<td>129,793</td>
<td>20,661</td>
</tr>
<tr>
<td>Annual recovery from improved cash flow</td>
<td>(92,222)</td>
<td>(145,437)</td>
<td>(144,883)</td>
<td>(109,132)</td>
<td>(74,038)</td>
</tr>
<tr>
<td>Unrecovered Investment Cost carried forward</td>
<td>420,113</td>
<td>274,676</td>
<td>129,793</td>
<td>20,661</td>
<td>0</td>
</tr>
<tr>
<td>Cumulative cash return as a % of Initial Investment</td>
<td>92,222</td>
<td>237,659</td>
<td>382,542</td>
<td>491,675</td>
<td>565,713</td>
</tr>
<tr>
<td>as a % of Initial Investment</td>
<td>18%</td>
<td>46%</td>
<td>75%</td>
<td>96%</td>
<td>110%</td>
</tr>
</tbody>
</table>
This table shows that 96% of the Initial Investment cost is recovered by the end of year 4, with full pay-back falling in year 5 (plus a 10% premium over investment cost).

7.3.5 Debt Service Coverage

We estimate that bank loan financing would be available for up to 50% of the cost of equipment purchases (estimated to be $405,000 – Section 6.5). These expenditures represent approximately 80% of the total project costs of $512,000.

The balance of $106,000 (or 20% of the total) represents consulting and other pre-opening expenses (Section 6.6) which must be funded with internal resources.

Therefore, we have assumed a bank loan of approximately $200,000 will be included in the mix of funds used to finance the capital requirements for the brewpub project. We assumed a 5 year repayment period with interest at prime plus 2%. Based on these assumptions, the following table provides a summary of the projected debt service costs for the five year period.

### Table 24: Projected Debt Service Costs

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Principle balance</td>
<td>202,640</td>
<td>162,112</td>
<td>121,584</td>
<td>81,056</td>
<td>40,528</td>
</tr>
<tr>
<td>Repayment (5 years)</td>
<td>40,528</td>
<td>40,528</td>
<td>40,528</td>
<td>40,528</td>
<td>40,528</td>
</tr>
<tr>
<td>Closing Principle balance</td>
<td>162,112</td>
<td>121,584</td>
<td>81,056</td>
<td>40,528</td>
<td>-</td>
</tr>
<tr>
<td>Average balance outstanding</td>
<td>182,376</td>
<td>141,848</td>
<td>101,320</td>
<td>60,792</td>
<td>20,264</td>
</tr>
<tr>
<td>Interest cost 5%</td>
<td>9,119</td>
<td>7,092</td>
<td>5,066</td>
<td>3,040</td>
<td>1,013</td>
</tr>
</tbody>
</table>

We compared the projected cash flow under Scenario 2 to the total debt service cost estimated above. As shown in the following table, there is ample coverage with projected debt service ratios ranging between 5.9x and 8.0x, well in excess of what the bank would require. This provides additional support for our conclusion that the brewpub project is financially viable.

### Table 25: Projected Debt Service Ratio

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal repayment</td>
<td>40,528</td>
<td>40,528</td>
<td>40,528</td>
<td>40,528</td>
<td>40,528</td>
</tr>
<tr>
<td>Interest expense</td>
<td>9,119</td>
<td>7,092</td>
<td>5,066</td>
<td>3,040</td>
<td>1,013</td>
</tr>
<tr>
<td>Total debt service costs</td>
<td>49,647</td>
<td>47,620</td>
<td>45,594</td>
<td>43,568</td>
<td>41,541</td>
</tr>
<tr>
<td>Projected EBITDA</td>
<td>316,319</td>
<td>368,343</td>
<td>365,922</td>
<td>306,904</td>
<td>245,505</td>
</tr>
<tr>
<td>Debt Service Ratio</td>
<td>6.4</td>
<td>7.7</td>
<td>8.0</td>
<td>7.0</td>
<td>5.9</td>
</tr>
</tbody>
</table>
7.3.6 Sensitivity Analysis

We determined that the most sensitive assumption used in our Financial Projections was the assumed volume sales of Draft beer products by the New Brewpub. To understand the impact on projected operating results from a shortfall in actual sales (from the Base Case projection), we prepared the following table.

Table 26: Sensitivity of Projected On-Site Sales of New Draft Products

<table>
<thead>
<tr>
<th>Reduce Annual Vol. Sales of Brewed beer (sold on-site)</th>
<th>Sensitivity Trigger: % Reduction in HL</th>
<th>25%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Total Hectolitres On-Site Brewed Draft to Tap</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case HL</td>
<td>365</td>
<td>396</td>
<td>388</td>
<td>331</td>
<td>279</td>
<td>1,759</td>
</tr>
<tr>
<td>Revised HL</td>
<td>274</td>
<td>297</td>
<td>291</td>
<td>248</td>
<td>210</td>
<td>1,320</td>
</tr>
<tr>
<td>Change</td>
<td>(91)</td>
<td>(99)</td>
<td>(97)</td>
<td>(83)</td>
<td>(70)</td>
<td>(440)</td>
</tr>
<tr>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revenue On-Site Brewed Draft to Tap</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case Revenue</td>
<td>349,983</td>
<td>395,516</td>
<td>395,529</td>
<td>343,798</td>
<td>295,522</td>
<td>1,780,350</td>
</tr>
<tr>
<td>Revised Revenue</td>
<td>262,488</td>
<td>296,637</td>
<td>296,647</td>
<td>257,849</td>
<td>221,642</td>
<td>1,335,262</td>
</tr>
<tr>
<td>Change</td>
<td>(87,496)</td>
<td>(98,879)</td>
<td>(98,882)</td>
<td>(85,950)</td>
<td>(73,881)</td>
<td>(445,087)</td>
</tr>
<tr>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
<td>-25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total &quot;Net&quot; Revenue (after mark-up remittance)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case</td>
<td>629,173</td>
<td>697,432</td>
<td>697,915</td>
<td>629,869</td>
<td>554,732</td>
<td>3,209,121</td>
</tr>
<tr>
<td>Revised</td>
<td>548,069</td>
<td>605,478</td>
<td>605,822</td>
<td>549,712</td>
<td>485,742</td>
<td>2,794,823</td>
</tr>
<tr>
<td>Change</td>
<td>(81,104)</td>
<td>(91,954)</td>
<td>(92,093)</td>
<td>(80,157)</td>
<td>(68,990)</td>
<td>(414,299)</td>
</tr>
<tr>
<td>-13%</td>
<td>-13%</td>
<td>-13%</td>
<td>-13%</td>
<td>-13%</td>
<td>-12%</td>
<td>-13%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Cost of Goods Sold</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case</td>
<td>249,260</td>
<td>264,224</td>
<td>265,830</td>
<td>255,479</td>
<td>240,391</td>
<td>1,275,184</td>
</tr>
<tr>
<td>Revised</td>
<td>244,920</td>
<td>259,435</td>
<td>261,047</td>
<td>251,322</td>
<td>236,816</td>
<td>1,253,540</td>
</tr>
<tr>
<td>Change</td>
<td>(4,341)</td>
<td>(4,790)</td>
<td>(4,783)</td>
<td>(4,157)</td>
<td>(3,575)</td>
<td>(21,644)</td>
</tr>
<tr>
<td>-2%</td>
<td>-2%</td>
<td>-2%</td>
<td>-2%</td>
<td>-2%</td>
<td>-1%</td>
<td>-2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net income before tax</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case</td>
<td>286,936</td>
<td>340,986</td>
<td>340,592</td>
<td>283,601</td>
<td>224,228</td>
<td>1,476,344</td>
</tr>
<tr>
<td>Revised</td>
<td>210,172</td>
<td>253,822</td>
<td>253,282</td>
<td>207,600</td>
<td>158,813</td>
<td>1,083,689</td>
</tr>
<tr>
<td>Change</td>
<td>(76,764)</td>
<td>(87,165)</td>
<td>(87,310)</td>
<td>(76,001)</td>
<td>(65,415)</td>
<td>(392,654)</td>
</tr>
<tr>
<td>-27%</td>
<td>-26%</td>
<td>-26%</td>
<td>-27%</td>
<td>-29%</td>
<td>-29%</td>
<td>-27%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Incremental Net Income Improvement from Brewpub</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Case Improvement</td>
<td>83,840</td>
<td>119,080</td>
<td>119,553</td>
<td>85,329</td>
<td>51,261</td>
<td>459,063</td>
</tr>
<tr>
<td>Revised Improvement</td>
<td>7,076</td>
<td>31,916</td>
<td>32,243</td>
<td>9,328</td>
<td>(14,154)</td>
<td>66,409</td>
</tr>
<tr>
<td>Change</td>
<td>(76,764)</td>
<td>(87,165)</td>
<td>(87,310)</td>
<td>(76,001)</td>
<td>(65,415)</td>
<td>(392,654)</td>
</tr>
<tr>
<td>-92%</td>
<td>-73%</td>
<td>-73%</td>
<td>-89%</td>
<td>-128%</td>
<td>-86%</td>
<td>-86%</td>
</tr>
</tbody>
</table>

The table illustrates the impact of a 25% reduction (from the Base Case projections) in the volume of new Brewpub products sold onsite. The following comments explain the result of this shortfall on selected key performance indicators:
The percentage reduction in total gross revenue is only 13% (or about half of the percentage reduction in on-site sales). The dilution reflects the fact that manufactured beer sold onsite accounts for only about 46% or total projected beer sales, as shown in the following table.

**Table 27: Contribution to Projected Revenue**

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Site Sales - Brewed Draft to Tap</td>
<td>46%</td>
<td>47%</td>
<td>47%</td>
<td>45%</td>
<td>44%</td>
<td>46%</td>
</tr>
<tr>
<td>Off-Site Sales - Kegs</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>On-Site Sales - Purchased Draft</td>
<td>49%</td>
<td>48%</td>
<td>48%</td>
<td>50%</td>
<td>50%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Total Gross Revenue</strong></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The impact on cost of sales is negligible (approx 2%) as most of the production costs are fixed and thus do not change with sales volume. This underscores one of the risks of the brewing business, a large fixed cost component that cannot be reduced in the short-run. This contrasts with the economics of selling purchased beer products where the cost of sales is tied to volume of goods sold. The upside is that production costs do not rise at the same rate as revenue growth, thus brewing on the premises can be very profitable as volumes rise.

The impact of a 25% reduction in onsite sales of new products results in a reduction to projected net income of $392,000 over 5 years (27%). The annual impact is approximately $70,000 to $90,000. However, we note that the brewery still shows a healthy profit each year even after the 25% reduction sales reduction.

Another important point is that the reduction in new product sales has the effect of eliminating 86% of the profit improvement expected from the new brewery (relative to the status quo under scenario 1). Since the economics of the project are tied to incremental profit improvement, there is a risk that the new brewpub will fail to achieve adequate financial returns to justify the expenditure if sales do not materialize as projected. However, we are comfortable with our revenue projections. In additional, our financial model shows that there is headroom for a 29% drop from projected onsite new product sale before the new brewery profit improvement drops to zero, becoming uneconomic.

### 7.3.7 Conclusion on Financial Viability

Based on our Marketing, Technical and Financial Analysis, we conclude that the AMS Brewpub project is feasible and financially viable.