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Canadian Market Analysis

Developed by:

Magnus Berntsen
Daniel Hellebust
Christian Etholm
Mai Tiril Thomassen

“This report has been completed as a part of the bachelor program in International Marketing, at Simon Fraser University / Norwegian School of Management BI. This does not imply that the methods which have been used, the generated results, or the conclusion drawn, have been verified by any of these institutions.”
Here is the report assessing the feasibility of Aquastructures AS entering the British Columbia aquaculture industry. This report includes analyses of the company, the Canadian industry, and any other relevant factors influencing an expansion. Furthermore, the report will suggest strategic courses of action based on the analysis, as well as recommendations for further development and research.

Although the present climate within the BC aquaculture industry presents several challenges for a potential market entrant, solutions for many of the existing barriers or problems have been suggested. A strategic timeline and courses of action is provided, on the basis of both primary and secondary research.

It is the intention of the authors to present a report which provides the insight needed and required details for the desired Canadian venture. Please let us know if there are any additional questions with regards to this report, or if any further information is needed.
Executive Summary

The following report has been completed on behalf of Aquastructures AS, a newly established Norwegian company operating within the engineering sector, to analyze a possible expansion to the market of British Columbia, Canada. Within the company’s various segments of expertise, the aquaculture segment has been the focus of this report. This includes a full service range of computer simulation and certification of open water fish farms. The company has developed a uniquely advanced technology enabling accurate and up-to-date simulation of forces acting on these marine structures.

The introduction phase of the report discusses the company’s background, the developed research problem, and the identified research objectives. The object is to determine which factors will prove crucial to the completion of the report, within the stated limitations. The report combines literature review with academic marketing theories to evaluate market opportunities and the company’s preparedness for the proposed Canadian expansion. Further, industry related issues such as political climate and involvement of environmental groups are identified, and their relevance is analyzed and evaluated. The report continues by providing a strategic problem definition, as well as specific short and long term goals as a basis for further strategic development.

Research Methodology

In order to obtain knowledge of the research topic, exploratory research has been conducted based on primary and secondary sources. As part of the primary exploratory research, interviews were carried out with key personnel related to the aquaculture industry including the Ministry of Agriculture & Land, dominant fish farming companies, environmental non-government organizations (ENGOs), the Consulting Engineers of British Columbia, as well as industry academics.

Secondary sources have been used as a main source of insight and knowledge to provide both an overall and in-depth perspective of the aquaculture industry and any related issues, as well
as the Canadian market as a whole. The secondary research primarily includes information obtained through electronics sources, as well as media and academic reports. Secondary sources have also been used to obtain descriptive research information relating to the topic at hand.

Summary of findings
Findings from the primary and secondary data collected show that the fish farming industry in British Columbia is dominated by a few large companies which are fully or partially Norwegian owned. There are no present companies in Canada offering the same complete service package as Aquastructures. The certification of the fish farms relies heavily on past experience, and the aquaculture industry is in lack of a standardised certification system. Current legislative vagueness provides few guidelines for inspections methods and inherent adequacy of the controls.

Environmental non-governmental organizations (ENGOs) are constantly fighting for stronger regulations regarding fish farming, including drastic improvements on containments used, such as closed containments. The fish farming is regarded as a highly sensitive topic in BC, and must be accounted for in spite of no direct effect on Aquastructures potential sales.

There is currently a market trend in which customers are demanding full traceability and environmental certification. Canadian fish farmers want to be in the forefront of sustainable aquaculture to meet these expectations.

Due to regulatory requirements, as well as the need to accommodate specific local requirements, the necessity of a local representative was examined. This has not only been considered as a long term strategy, but also as a potential entry mode. Both traditional less resource demanding cooperation strategies, as well as the more complex strategic alliance approach, have been explored. The latter of the two has been found to be the most desirable, as it enables the goal for a long term international strategy, and can therefore be used as a platform for further expansion.
The report also provides criteria on the type of characteristics a future partner should possess, in order to provide benefits in terms of overall cooperation and a mutual exchange of valuable industry knowledge.

**Recommendations**

In order for Aquastructures to succeed with the proposed strategy, several key issues will require further attention. The following is the recommended course of action:

- Conduct further research and explore potentially suited partners, to increase the chances of a successful Canadian expansion for Aquastructures.

- Participate in developing new viable and environmentally sound solutions.

- Participate in trade fairs/shows to efficiently build strategic relationships, and promote future sales.

- Pursue different options in terms of environmental organizations and potential partners. Through cooperation Aquaculture may be able to participate in creating a larger market for the company.

- Further develop the existing website. The international versions of the site should equal the Norwegian version in terms of content and professionalism.
Acknowledgments

The following report has been prepared as a conclusion of the authors Bachelor Degree in International Marketing. The report has been written and submitted at Simon Fraser University, as a part of the authors exchange program by the Norwegian School of Management BI. This is a project written for and in cooperation with Aquastructures AS, as a market analysis for the company’s proposed expansion to the aquaculture industry in British Columbia, Canada.

The authors would like to acknowledge key individuals for their help and contribution throughout the process of creating this report. First and foremost the authors would like to recognize and thank Mr. Bob Crockett, for his patience, involvement and overall guidance throughout the project. His feedback, ideas and contribution have been crucial in the development of this market analysis, as well as providing the authors with an in-depth insight of the issues regarding the aquaculture industry in BC. The authors would also like to acknowledge the many resourceful people involved in this industry, sharing their time and knowledge with the authors through various interviews, either in person or on the telephone.

For their hard work and valuable contribution in the editing process, the authors would like to send special thanks to Per Etholm and Sonia Paul. Your input and recommendations are greatly appreciated.

Finally, the authors would particularly like to thank Aquastructures AS, for the opportunity of conducting this market analysis, and allowing us to use their company as a basis for our bachelor project.

Vancouver, May 21, 2008.

__________________________________________________________
Magnus Berntsen

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Christian Etholm

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Daniel Hellebust

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Mai Tiril Thomassen
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Introduction

Background for research
Aquastructures is a Norwegian company operating within the engineering sector. The company has experienced rapid growth, and had a turnover of NOK 8.683.854 in 2006, a growth of 8.3% compared to 2005. Within the company there are several sectors of expertise including, aquaculture, renewable energy (wave and wind power), offshore oil and gas, as well as the maritime industry. One of their developed services is a full service range of computer simulation and certification of open water fish farms. The company has developed a unique advanced technology enabling accurate and up-to-date simulation of forces acting on marine structures. In 2007 Aquastructures requested a market analysis of the Canadian aquaculture industry from the Norwegian consultant agency Innovation Norway. The report described the services as:

"The competence covers the full spectrum from load formulation for wave, current-and wind loads - to capacity control against yield, fracture or fatigue." (Fredrik Gothe, Innovation Norway, March 2007)

As Canada is one of the largest producers of farmed fish in the world, especially salmon, it could provide a potential market for international growth. This report will focus on development in the British Columbia region.

(All interviews, and relevant contact information, for companies, organizations or key individuals, is provided in the Appendix.)

Research problem
“Is there a market demand for Aquastructures’ services within Canada, specifically the province of British Colombia, and will this market provide a profitable investment opportunity for Aquastructures?”
Research objectives
In order to successfully enter the Canadian market, it is necessary to first determine specific research objectives and goals. By doing so, the cause of action can be correctly identified. The research objectives include obtaining information on the following:
- The British Columbian / Canadian Industry
- Fish farming industry
- Local issues with regards to fish farming, i.e. interest groups, public opinion.
- Laws and regulations within the Canadian/BC market
- Market trends and demands
- Competitors within Canada
- Key decision makers, within the government and the industry
- Buyers and decision makers

Research limitations
This report has been compiled using primarily secondary sources, combined with some primary research. Due to monetary and time constraints, the research has been comprised mainly of sources located within the Greater Vancouver area and Vancouver Island. However, this should provide a representative insight to the aquaculture industry within the province of British Colombia.

Aquastructures AS
The following section is an outline of Aquastructures’ history and the situation the company is facing, both in the domestic and foreign markets. This section will also provide a brief introduction to Aquastructures’ potential market in Canada, by identifying customers and competitors within the aquaculture industry.

History
Aquastructures is a relatively new company, providing the leading certification tools for aquaculture safety in Norway. The company was established as a response to the Norwegian government’s new demands and legislature for documentation of secure fish farming. With this legislation came the need for a tool, which could analyze the structure of a fish-farm, and
also document the quality and safety of the impacting conditions. Through their unique and newly developed technology, Aquastructures is able to provide this tool (Aquastructures, 2008).

Founded in 2002, by Harald Tronstad; MBA and Dr.Ing. in Marine Construction, as well as Are Berstad; Dr.Ing, Marine Construction, the company is still in the early stages of development. Nevertheless, the company has experienced a rapid growth and demand for its products and services. Aquastructures is currently operating predominantly in the Norwegian domestic market, but the company is also providing software for installations in Europe and South America, among others. (Aquastructures, 2008)

In 2002, the Norwegian government, and the industry itself, realized that action was required to deal with the environmental problems occurring due to fish farming. Limiting escape of fish was also seen as an important challenge for the industry. Aquastructures was an active participant in the development of NS9415, which is the standardization regulation for the fish-farming industry in Norway (Norwegian Ministry of Fisheries and Coastal Affairs). In 2003, Aquastructures was one of the first operators in the industry accredited as an official inspection and certification body by Norwegian Accreditation. Norwegian Accreditation is a branch under the Ministry of Trade and Industry, with national responsibility for technical accreditation (Aquastructures, 2008). Through this accreditation, Aquastructures is able to assist the fish-farms in complying with the new regulations regarding operational liability, and the annual renewal of their licenses.

Current situation

Aquastructures provides services for companies in Europe, South America and Australia. The company has also had some experience with certain companies located in Canada as well. It has been exporting its goods and services since 2006, and 15% of its revenue currently derives from foreign markets (Adressa.no, 2006).

In 2006 Aquastructures won the title “Gazelle of the Year”, an award given by a leading financial newspaper in Norway. This award is given to recently founded companies, experiencing rapid growth, and reflects Aquastructures success in the domestic market.
Through new licensing agreements with Norwegian companies such as Grieg Seafood and Marine Harvest, the company saw opportunities arising in foreign markets, such as Canada and Chile. Several of the Norwegian fish-farming companies, including the companies mentioned, are also located in BC, Canada.

Aquastructures is now looking into the possibility of exporting the company’s aquaculture services, which include; AquaSim, AquaLog, and possibly the ROV service, to markets in need of standardized services. Canada is likely to provide such an opportunity. Details on these products will be provided later in the report.

Aquastructures has various segments operation and provides several services. The services currently under consideration for expansion are within the aquaculture segment. There are three main services included in this segment: AquaSim (Software Simulation and Analysis Tool), AquaLog (Monitor System), and the ROV (Remotely Operated Vehicle).

**AquaSim**

AquaSim is a digital computer program developed to estimate the impact of waves, currents, and other similar environmental factors influencing marine structures. AquaSim evaluates all physical components of the plant, estimates weaknesses, and evaluates areas that consequently will require improvement. The analyses provide information of potentially problematic areas, and can be a valuable input on how to solve these problems (Aquastructures, 2008).

**AquaLog**

AquaLog is a program developed for internal control and maintenance of the fish farm construction. This program is standardized to accommodate the Norwegian requirements for floating production facilities, through NS9415. Fish farms using this program will be able to better keep track of forces acting on their facility, such as currents, waves, and other natural forces acting on the construction. They will also be alerted to any divergence that might occur subsequent to an inspection, such as a breach in the constructions mooring, pen structure, or similar structural deficiencies. As an important note, the initial inspections are not included in the initial AquaLog sales. However this is a service which can be performed by Aquastructures or any other pre-approved inspection body externally (Aquastructures, 2008).
Aquastructures ROV

The Remotely Operated Vehicle (ROV) is the only component from Aquastructures’ service line that is not software related. A ROV is a mini-submarine with a camera attached. This mini-submarine is remotely controlled and enables inspection of under-water premises. Aquastructures uses state-of-the-art equipment from Mariscope for its inspections. Some fish-farms of larger magnitude have invested in similar equipment for themselves (Aquastructures, 2008).

As described by the company on their website: “Aquastructures is an accredited inspection-and certification organ; class A“ (Aquastructures, 2008). This means that all its analyses, calculations and advice are objective and independent from the fish-farm and the suppliers of marine equipment. The inspections and analyses will potentially help provide greater profitability, safety and overall corporate reputation for the customer.

Potential market

This report will evaluate the potential market for AquaSim and AquaLog in British Columbia, Canada. Firstly the report will cover the well established fish-farms in the area, focusing on larger companies, such as Marine Harvest, Mainstream Group, and The Grieg Group (See Appendix 1 for detailed map of locations). The report will also evaluate the potential of doing business with the first nation fish farms; these are private fish farms within the same area. These farms, however, fall under different legislative guidelines and rules. The focus will be on developing a primary market, as well as taking any potential secondary markets into consideration.

Market Needs & Trends

According to a report issued in November 2007 by the Food and Agriculture organization of the United Nations, “Aquaculture is the only way to fill the coming ‘fish gap’” (Food and Agriculture organization of the United Nations, 2007). This report discusses how by 2030, an additional 37 million tons of fish will be needed per year to maintain the current levels of fish-consumption of a constantly expanding world population. Currently, 45% of all fish consumed worldwide is produced through fish farms; salmon is the main product. Canada is
the fourth largest producer of Atlantic farmed salmon in the world, and ranked third in Pacific farmed salmon. Most of the salmon produced in BC is exported to the US market. The total salmon imports to the US grew a modest 10 000 tons from 233 000 tons in 2005 to 243 000 tons in 2006. The somewhat modest growth can be linked to an overall increase in food prices. According to Infofish, a technical and trade database for fisheries industry; industry related “Imports values showed a more impressive increase rising a significant 30% compared to 2005” (Infofish, 2006). This indicates a small market growth, where the farms in the BC region are some of the most desirable players. However some producers are experiencing growth beyond current capacities. "We just can't keep up with the requests for the product." said Mary Ellen Walling, the executive director in B.C. Salmon Farmers Association, in an interview in December 2006 (The Vancouver Sun, 2006).

**Environmental Impact**

Although British Colombia produces some of the most desired farmed salmon in Canada, it is an inevitable truth that this industry is subject to many passionate debates. Environmental non-governmental organizations (ENGOs) are constantly fighting for stronger regulations regarding fish farming, including drastic improvements on containments used. Living Oceans Society is one of these organizations, claiming that the fish produced in fish-farms are unsafe, and that the only solution to the problem of lice, waste and the high escape rates, is closed containments (Living-Oceans, 2008). This is seemingly not the impression within the farmed salmon industry, where one of the main arguments is the fact that it would not be profitable or sustainable for this important industry (King, 2008). As the Ministry of Agriculture and Land states, “Commercial harvesting activities in British Columbia, whether they be the commercial harvest of wild species or the raising of aquatic species on farms, are a vital element of the economy of the province” (Ministry for Agriculture and Land, 2008). Even though it is an important industry, the numbers speak for themselves. The problem of escaped salmon, sea-lice and waste-water pollution, are controversial issues and allegedly causing serious problems in BC waters. According to numbers from the Ministry of Agriculture & Land released in 2006, 19,085 salmon escaped from BC fish farms, many resulting from failing nets and farm structures (Fisheries and Aquaculture Licensing and Compliance Branch, 2007). The reasons for this type of net and structural failure are often
related to predators or failed maintenance, and are described in more detail in *Appendix 2 – Net Failure Factors*.

These statistics, as well as the increasing pressure from environmental groups involved, calls for actions to further enhance security of the current containments. Maintaining profitable operations may itself be a challenge.

**Inspection tools**

There are many regulations regarding fish farms and the safety of their construction, such as frequent inspections and approvals. Currently there are a limited number of companies in Western Canada providing similar services to the industry; however, none with equally advanced technology package as Aquastructures. The current inspections of the plants are completed using more complicated and costly procedures compared to Aquastructures solutions.

In order to obtain initial approval to start a fish farm, inspections must be performed by an external body licensed with proper technical equipment. In most cases the inspections will be performed by an independent engineering firm, or similarly by an approved construction company. Insurance companies are also often involved in the process of controlling and evaluating the security of the fish-farms. These generally employ third-party experts providing services similar to Aquastructures.

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**Market Background**

**Canadian Factors**

In order to successfully enter the BC market, it is critical to fully comprehend all local issues facing the fish farming industry within the region. The following topics briefly highlight the main factors, and will be further explored in the strategic part of this market analysis.
Process Insight

The Ministry of Agriculture & Land does all the final certification of all new fish-farming sites in BC, ensuring an appropriate standard. According to Mainstream Canada, the companies themselves have the best reasons and motivation for maintaining an environmentally reliable site. Some of the larger companies have managers and personnel educated within the science of biology, and therefore are aware of the necessity of appropriate inspections (Thomson, 2008).

With regards to the profitability of the fish-farms, Mr. Thompson at Mainstream Canada provided some insight on the economic factors involved. Thompson stated that the company has approximate sales of $30 million a cycle - per site. A cycle is somewhere between 18 and 22 months, depending on the growth of the fish. These numbers are estimated based on site production of approx. 3000 metric tons salmon per cycle, at the set price of $0.99 per 100g.

The current business model of fish farming is generally the same everywhere, with a few minor differences. First, in early spring, the process starts with the harvesting of the female salmon’s roe, which is then combined with the male salmon's milt. These two components result in fertilized eggs, which hatch 60 days later. Then, once the fish have reached the stage where they can be placed in the ocean, they are called "smolts". This usually occurs within the end of spring of year one in their lifecycle (Mainstream Canada, 2008). As mentioned by Brock Thomson at Mainstream,

“A site is granted in the ocean by the government in which a pen is situated. In these pens the fish are held until harvest time. These sites are strictly monitored to ensure a healthy environment for the fish” (Thomson, 2008).

When the fish have reached the desired size and age, usually after 18-22 months, they are ready for harvest.

There are alternative methods of fish farming being explored, one such model being closed containment. This entails a change of structure from the currently used sites, from open net cages in the water to enclosed systems on shore. However, the industry is reluctant and sceptical of such alternatives, as this will involve high costs and potentially strain resources
from the local environment, such as power usage and similar potential polluting factors. An economical analysis on the topic, undertaken by Yaije Liu and Ussif Rashid Sumaila at the University of British Colombia in 2007, provides a supporting conclusion of the economic ramifications – and disregards this as a viable option.

If closed containment is ever to be implemented as a requirement for the design of the pens, it would first have to be proven affordable, and then shown to be profitable for the industry. Any product is feasible at the right price; however, the study conducted by Yaije Liu and Ussif Rashid Sumaila further confirms that closed containments on land are not profitable. BC accounts for less than 5% of the total world farmed salmon production, and most of BC’s salmon products are exported to U.S. markets (Liu & Sumaila, 2007). As a result, it is not likely that farmed salmon from BC have any significant impact on the world price for farmed salmon. It is predicted that the price for farmed salmon will decline if farmed salmon production continues to increase (Liu & Sumaila, 2007).

Another possible suggestion promoted by the Georgia Strait Alliance, among others, is the closed containments in water (See Appendix 3, illustrations of closed containments). Closed containment in water is currently being explored as a more cost effective and environmentally sound alternative to on shore containments. No matter what the conclusion may be, Aquastructures is in a unique situation as the company’s products are fully functional on closed containments in water, as well as on open net cages. This potential change in the industry does not pose a specific threat for Aquastructures, but rather an opportunity. As new solutions and further development of closed containments emerge, the cost of such pens is likely to decrease and the feasibility of such fish farms becoming a national standard will increase.

An industry solution to the pressure of ENGOs and consumer preferences is Brand Canada. Brand Canada is a certification initiative developed to further accommodate environmental demands, while ensuring a growth in consumer preference for farmed fish. It is an official logo which can appear on product packaging for those operators which have implemented national standards and passed a third party certification audit. The goal is to have the brand recognized by buyers and consumers as the symbol of superior quality, and the highest possible standard (Canadian Aquaculture Industry Alliance, 2008).
Environmental Factors

The topic of farmed fish, especially salmon, has developed into a delicate issue within the BC region. Interest groups representing both sides are strong in both numbers and influence. ENGOs represent one side, the other being the aquaculture industry and its associations.

Environmental groups are lobbying for the abolishment of open water fish farming. The concern - which has gathered a high level of public support – is the depletion of wild salmon stocks in rivers and ocean regions. The two main factors presented by ENGOs and the media, are sea lice and escapes. Through the past decades, the level of controls and regulations has increased significantly. The safety concern has commonly been raised by ENGOs, related to depletion of wild salmon stocks and overall effects on the environment.

The issue of inadequately built and maintained fish farms has allegedly caused numerous situations where farmed salmon has escaped. Providing unbiased hard data on such a topic has proven to be difficult. Both sides in this debate will inflate/deflate numbers according to the desired measuring methods and desired results. An interview with Michelle Young of Georgia Strait Alliance, located in Nanaimo, Vancouver Island, provided insight on one side of the story. This organization clearly states that escapes are a big concern. Although Young was not able to provide actual numbers, she stated that escaped farmed salmon had been found in over 80 streams and rivers across BC in the past two decades. The escape issue is clearly specified as a major concern for this organization and is further emphasized by their current flyer “Think Twice”, and on one of the organization’s many web-sites, FarmedandDangerous.org.

Sea lice is explained as the main issue concerning this organization, and the problems involved in sea lice outbreaks have become a fighting cause. According to the organization, sea lice outbreaks occur frequently, and with devastating effects. However, Young was unable to present any specific numbers on the issue, stating this to be of high concern for local wild salmon stocks (Young, 2008).
The interview with Terry Nielsen of the Ministry of Agriculture & Land provided contrasting information. Both escapes and sea lice have not been a noticeable problem the past decade, as Nielsen explains, “…the controls of the fish farms in the area have become almost unreasonably strict” (Nielsen, 2008). According to Nielsen, there has been no discovered or registered outbreak of sea lice the past 5-7 years, and further specifies that this has not been as big an issue as many ENGOs and the media reflects. Escapes are not occurring, and can not be considered a threat at all (Nielsen, 2008).

For Aquastructures, this issue of sea lice and escapes may indirectly affect the company’s Canadian venture. The general political climate, as well as the influence of ENGOs such as Georgia Strait Alliance and The David Suzuki Foundation, has caused this to become a highly sensitive issue. However, all interviewed parties agree that the industry is not likely to disappear, or be further limited, but rather move towards sustainable environmentally sound solutions.

*Commercial Fishing Industry*

The regional influence of environmental interest groups will be weighed with the influence of industrial and commercial groups within the commercial fishing industry. Approximately 80% of all BC farmed fish is exported to the US, and the industry categorized as aquaculture showed revenues of $429 million in 2006 (Ministry of environment, 2007).

Within the segment of recreational fishing there were, according to a report created for the Ministry of Fisheries in 2004, 3590 employees within the province of BC. The number may be higher, as recreational fishing employment is seasonal (Ministry of Agriculture and Land, 2004). If ENGO statements of the increased risk of wild salmon extinction caused by fish farming are to be considered accurate, the recreational fishing industry may be affected. This is a potential topic for further development; however this will fall to political involvement, and should therefore be monitored along with the overall political landscape for environmental and industry related issues.
**First Nations**

The role of Canada’s native population is complex and somewhat unique with regards to the farmed fishing industry. The first nation population sidesteps both provincial and federal laws on certain issues, including aquaculture, providing some unique opportunities for these communities. The first nation groups are entitled to certain quotas, issued to allow the native people to sustain “personal needs” – this being a quantity to be widely interpreted. The rights of the first nation groups further involve certain regions, many containing non-industrial fish farms without legislative restrictions regarding their strength or safety.

Practical information in relation to the aquaculture industry on Vancouver Island was obtained through several interviews. Within this region, large areas are considered Native Nations territory. Terry Nielsen, from the Ministry of Agriculture & Land (MAL), was asked about the influence and importance of this part of the BC fish farming. He quickly dismissed this as an unstructured, small scale segment, with less incentive and use for the Aquastructures simulation tools and services. Although the first nation regions have lower levels of regulations, there are no indications, financial or political, to suggest any significant restructuring or growth within this small segment. As a potential market, the first nation fish farms should therefore be discarded, as they will neither serve as a cost-effective segment, nor a threat to the fish farming industry (Nielsen, 2008).

**Competitors**

There are two major players that dominate the certification process in BC. According to Mainstream Canada, who has been using Ocean Dynamics and Westmar Engineering Consultants, both companies provide full inspection and construction services. There are several players providing services for constructing and maintaining fish farming structures, most of which also provide services in other sections of marine technology and aquaculture.
Westmar Engineering

Westmar provides engineering and consulting solutions to clients worldwide, servicing various disciplines. Some of these are port and terminal planning, bridges and civil structures, industrial structures, and offshore/maritime structures - including structures for aquaculture sites. When working on aquaculture sites, mainly fish farming constructions, the company conducts statistical analyses of wind, wave, and water level data, using wave hind casting and numerical wave modeling (Westmar Consultants Inc., 2007). Westmar is also frequently contracted for inspections and design of mooring systems for aquaculture constructions, as well as for dynamic analysis of moored vessels and floating structures. Certified engineers perform all inspections, and WestMar is specialized in regular inspections of structures evaluating the condition of aquaculture sites.

As mentioned in an email from Norman Allyn, technical director of WestMar, the company is currently designing closed containment solutions for the industry. The company operates through their offices on the west coast of Canada and the US, and provides services on a worldwide basis.

Ocean Dynamics Canada Ltd.

Another company offering similar services as Aquastructures is Oceans Dynamics. Based in the BC region, the company must be considered a main competitor. Their mission statement is “To provide technically correct, cost-effective and timely solutions to each customer’s unique requirements.” Ocean Dynamics provides surface contour mapping in the range of 0 – 655 meters, mooring design/engineering and cable laying in addition to site and systems condition audits and recommendations (Ocean Dynamics Canada Ltd., 2008). These are all in direct competition with Aquastructures’ services. The company also conducts sub bottom profiling, sea floor and water column sampling/analysis and project management and installations.

The company has been present in the market for over 22 years. In the past number of years Ocean Dynamics has been working closely with some of the larger fish farming companies in BC, such as Creative Salmon Company and Marine Harvest Canada in 2003 (Ocean Dynamics Canada Ltd., 2008). Ocean Dynamics Canada Ltd. is affiliated with numerous
companies; which allows them a quick expansion, as well as to meet project requirements while maintaining maximum output at a minimum cost, according to the company (Ocean Dynamics Canada Ltd., 2008).

Literature Review

ACE Model

The ACE analysis is often used as an analytical tool to determine a company’s preparedness for export. It was developed on the basis of various studies exploring what characterize successful exporters. The model is often used as a tool identifying the aspects involved, and includes attitudes towards exporting, competence in exporting, and to what degree the export motive is embodied in the company.

Attitude

Aquastructures is currently showing a cautious but willing attitude towards international expansion. The company has already approached several international markets with parts of its service portfolio, specifically software. Aquastructures’ presence in Canada has until now been through assignments contracted by already established Norwegian fish farming companies such as Marine Harvest (Opala, 2008). The willingness to expand can be seen as moderate to high, demonstrated by the company’s presence in international aquaculture exhibitions such as AquaNor (Aqua Nor, 2007), and the subsequent contract work with several international companies. Aquastructures’ decision to request a report from Innovation Norway on market opportunities, as well as the market analysis presented in this report, further shows the company’s willingness to explore new and non-domestic markets, while equally evaluating the risks involved in the potential internationalization.

Competence

The competence of the company domestically can to some extent directly be transferred to, and used, in any international expansion. Although the company has limited resources and
personnel, the services Aquastructures provides can be offered worldwide with limited cost and without the need for extensive workforce expansion. Both AquaSim and AquaLog primarily rely on data collected from secondary sources such as firms constructing the fish farms. Because these services are software based, they may be analyzed from a centralized position, such as Aquastructures headquarters, without specific need of further local adaptations and representation. The competence level of the company demonstrates a potential and readiness for expansion to the Canadian market.

**Embodiment**

The company, through previous international contract work, demonstrates a determination and eagerness to explore new markets. Although Aquastructures is a relatively small company, the commitment from the staff is unified and secure. The risks involved in any new expansions are considered with a confident, yet cautious approach.

**The Bakka Internationalization Model**

In order to appropriately analyze the potential of a company considering international expansion it is necessary to assess the company’s level of preparedness. The Bakka Model employs five different stages of internationalization to categorize the company’s current situation. The Bakka Internationalization Model ranges are divided into consecutive phases: (1)Trial Exporting, (2)Extensive Exporting, (3)Intensive Exporting, (4)Multinational Marketing, and finally (5)Global Marketing (*See Appendix 4, the Bakka Internationalization Model*). This model does not provide an exact analysis of the company, but can be used as an estimation tool.

Currently Aquastructures is moving from the initial phase towards the *extensive export* phase. The company has begun exporting their services to several markets outside the domestic market. The company has however not fully followed Bakka’s initial stage to reach this position. In Bakka’s model *initial export* the object is to begin with neighbouring markets. Aquastructures has however followed new market opportunities as they appear, rather than focusing on the local markets. The export motive of Aquastructures is based on
the factors situated in the strategic/operative section of Bakka’s *intensive export* window. This further explains the company’s decision to diversify the first export phase to large fish farming markets worldwide. To conclude, the company has been classified in the *extensive export* window.

The company’s market share is currently growing, again showing signs of the company’s readiness for *intensive export*. Following Bakka’s model, the marketing mix and entry strategy can be categorized under the *extensive export* phase, where low price and partial local promotion is necessary. The level of promotion should be low to moderate, as Aquastructures mainly operates within the Business-to-Business segment. It is necessary to determine which segment of the fish farming industry provides sufficient scale for their business in order to target markets where demand for Aquastructures is relatively high. As the services provided by the company, specifically AquaSim and AquaLog, require few alterations, they will function worldwide. No, or very limited, local adaptation is required. This phase would also entail a proposed entry strategy through a local agent or similar local presence. Whilst Bakka advocates a commitment towards a local agent, the company’s relationship within the Norwegian aquaculture industry and the high presence of Norwegian fish farming companies in the BC region would be, by this report’s findings, sufficient to substitute the earlier stages of expansion. Considering recent trade agreements between Norway and Canada (Foreign Affairs and International Trade Canada, 2008), the Canadian market will be open to partial entry without the need for local representation – barring legal restrictions.

The organizational structure of Aquastructures places the company between the *trial export* and *extensive export* windows. This is mainly due to the limited number of staff currently available to handle an international expansion. As Aquastructures annual financial report indicates, administration costs and staff wages comprise the main expenditures. Considering the current level of revenue tied to domestic and international sales, the company operates between the *extensive-* and *intensive export* phases in Bakka’s model.

To conclude, the Bakka model places Aquastructures within the *extensive export* phase, with few barriers remaining until the *intensive export* phase can be considered as the appropriate placement of the company in the internationalization process.
**Degree of Globalization**

The aquaculture industry is a relatively global industry, as there is a few large multinationals controlling most of the industry. These large companies have operations world wide with Norway, Australia, Canada, Japan, Scotland and Chile being the leading markets of operation. However, there are factors decreasing the degree of internalization, one of which is the demand for a high level of technical expertise in the every-day operations, limiting the transferability from country to country. This is a necessity for companies such as Aquastructures to be able to promote their services. There are also local regulations, legislative differences, as well as country specific practices further limiting the degree of globalization within the sector. In conclusion the industry is found to be moderately global.

**The Nine Strategic Windows**

As the industry has now been classified as moderately global, the strategic approach of Aquastructures can be suggested by taking into account the company’s ability and preparedness for internationalization. This can then result in recommendations for future strategic choices Aquastructures will face in the case of an expansion.

Aquastructures preparedness for internationalization has been evaluated based on the information provided through the Bakka and ACE model. Aquastructures is currently one of the market leaders in terms of technology, as well as being the dominate company in the Norwegian market. Its domestic position is likely to remain stable and not be threatened by any other companies, local or international, especially in the short run. Although this indicates an ability to further internationalize the company, there are also factors limiting Aquastructures’ readiness. One of these limitations is the fact that Aquastructures only has nine employees and it has not expressed any desire to expand its workforce radically. This may thereby limit the ability to grow internationally.

Based on the information provided by the various models, Aquastructures belongs in window five in Solberg’s model, suggesting that the company consider expanding to new markets (Solberg, 2006). This then calls for a focus on an increased global direction. It will be crucial to develop strong strategic networks, improve the already existing networks and through this, establish a stronger market position in new potential markets.
PESTEL Analysis

Political

The capital of Canada is Ottawa, and the country is divided into 10 provinces and 3 territories. Canada is a constitutional monarchy, with a parliamentary democracy and a federation. The constitution is made up of unwritten and written acts, customs, judicial decisions and traditions. The chief of state, Queen Elisabeth II, is represented by Governor General Michaëlle Jean (CIA - World Factbook, 2008). Prime Minister Stephen Harper has been the head of Government since 2006. The monarchy is hereditary, and the governor general is appointed by the monarch on the advice of the prime minister for a five year term. Parliament consists of the House of Commons in Ottawa with 308 elected members from individual constituencies, and the Senate which has 104 members appointed by the Prime Minister (Euromonitor International, 2008).

Political Risk

Canada’s policy on the first nation population is a frequent source of tension. Land claims, often involving natural resources, are the most common source of contention (Euromonitor International, 2008). This is important for Aquastructures to be aware of, due to the number of first nations involved in the aquaculture industry.

Aquaculture management is a shared responsibility between the federal and provincial governments. The Department of Fisheries and Oceans Canada (DFO) is the federal branch responsible for aquaculture management. The following is an official DFO policy statement:

“We work with the provinces and other federal departments to create the policy and regulatory conditions necessary to ensure that the aquaculture industry develops in an environmentally responsible way while remaining economically competitive in national and international markets” ( - Fisheries and Oceans Canada, 2008).
The claim is posted on their website, and major players in the industry, such as Marine Harvest and Mainstream Canada, have confirmed this (Nielsen, 2008)(Thompson, 2008)(Opala, 2008).

Provincial regulations and legislation is the responsibility of the Ministry of Agriculture & Land (MAL). Unlike DFO which affects the industry as a whole and provides federal regulations, MAL is more directly influenced by local political decisions serving the province of British Colombia. Unlike Norway, the provincial governments have significant influence and strength to regulate any industry within their borders. There are also significant differences between the various provinces in terms of laws and regulations.

The current environmental situation, which is of high importance when considering the aquaculture industry in BC, has become a popular political cause. PM Stephen Harper’s conservative minority government has often been criticized for not providing adequate environmental policies. The opposing Liberal and Green Parties are however calling for changes – which also may have some affect on aquaculture issues in the long run. The Liberal Party’s Gordon Campbell, currently the Premier of BC, is using environmental issues as a political torch, highlighting popular issues and proposing changes in the provincial environmental policies. The current decision to move towards a ban of fish farming in the northern parts of BC is one such issue supported by Campbell. This can however be seen as an attempt to appease public and ENGO demand, without directly harming the industry as most of the fish farming is located further south than the area in question. This was further confirmed by MAL’s Terry Nielsen (Nielsen, 2008). Public opinion will likely shape the provincial policies on aquaculture to some extent, especially around the larger cities such as Vancouver and Victoria, where environmental causes are a popular issue. The Provincial Liberals have further set their reputation as environmental leaders, and are likely to support ENGO pressure, and follow public demands on environmental issues. However, there is no direct political threat of further dismantlement of the industry as a whole, as confirmed by interviews with ENGOs, industry players, as well as the Ministry of Agriculture & Land.
Trade Agreements

Canada and the EFTA countries Iceland, Lichtenstein, Norway and Switzerland signed the Free Trade Agreement in Geneva January 26th, 2008. Canada and Norway have also signed a mutual free-trade agreement. In the present agreement, all tariffs have been eliminated on industrial and fish products. The agreement is now the subject of ratification, acceptance and approval by the different countries, and we expect it to be in operation from January 1. 2009 (Innovation Norway, 2008). Work permits are excluded from this agreement, as there is no current legislative language providing special opportunities between Canada and Norway. When considering labour within the engineering sector, further complications may arise, as an engineering license will be required to operate - this partially due to liability issues (McAskill, 2008).

Economic

The Canadian economy has experienced steady growth over the past 10 years. During 2007, Canada enjoyed economic growth, moderate inflation, and the lowest unemployment rate in more than three decades (CIA - World Factbook, 2008). Canada resembles the US in its market-oriented economic system, patterns of production and affluent living standards (CIA - World Factbook, 2008). The Canadian dollar’s appreciation against the US dollar has had a negative effect on exporting companies; this could further cause a drop in future investment and employment (Reuvid, 2005). Canada’s most important trading partner is the US (2008 Euromonitor International, 2008). Canada had a low inflation rate of 2.2% in 2007, which is forecasted to further decrease to 2.0% within the next 5 years (Euromonitor International, 2008). GDP from the agricultural sector was approx. $25.205mn in 2007, with a growth index of 108 from a base index of 100 in 2002 (Euromonitor International, 2008). As a member of OECD, Canada is among 30 of the worlds most industrialized and technologically developed countries (CIA - World Factbook, 2008). These trends indicate that Canada will enjoy a steady economy in the years to come. The current US recession and exchange rate, may impact the overall imports over the next few years, and the situation should be followed closely.
**Socio-Cultural**

Canada has the world’s longest coastline and is the second largest country in the world after Russia (Euromonitor International, 2008). The population reached 33,390,141 in July 2007. Close to 80% of the population lives in the vicinity of the US border. Canada has two official languages; English and French. 59.3% of Canadians speak English, 23.2% speak French and the remaining 17.5% are other languages spoken by the first nations population as well as immigrants.

Canadians are generally relatively informal and relaxed. The common dress code for office is informal to casual for both men and women, yet suit and tie and is the appropriate business attire. People are expected to be addressed by ‘Mr. and Mrs’, using their last name until the person asks you to address them differently. Canadians value punctuality and lateness is frowned upon, so deadlines should be closely observed. As time passes, the initial formalities will be replaced by a more informal relationship. Canadians do not appreciate aggressive behaviour and have a low tolerance for shouting and public displays of affection. The customary greeting is a handshake and some Canadians give two kisses, one on each cheek, to well acquainted colleagues. This does, however only apply in Quebec (Crockett, 2008).

Work and occupation is important to Canadians and would be good topics to start a conversation. Topics to avoid on first contact are money, salary, religion and politics. Canadians try to distinguish themselves from the Americans, and the best way to impress most Canadians is to show what you have noticed differences between the two nations. Canadians in general, guard personal space and appreciate their privacy, making them a somewhat reserved people.

**Technological**

The market for analyses and security services within fish farming consists of different providers, but it is not apparent that any other company than Aquastructures offers a package which covers the full spectrum of services (Fredrik Gothe, Innovation Norway, March 2007). There are a number of analysis companies providing services such as plant design, monitoring systems, wastewater treatment and risk assessment (Fredrik Gothe, Innovation Norway, March 2007). There is currently a market trend where customers are demanding full traceability and environmental certification. Canadian fish farmers want to be in the forefront.
of sustainable aquaculture to meet these expectations (Fredrik Gothe, Innovation Norway, March 2007). According to Otto Langer, a biologist who worked 30 years for Canada’s department of fisheries, “a large salmon farm may pour as much liquid waste into the sea as an entire small sized city” (McCarthy, 2002). The most common causes of the escape of farmed fish are infrastructure failure and technical deficiencies (Fisheries and Oceans Canada, 2008).

Environmental

Aquaculture, as practiced in Canada is an environmentally sound and sustainable industry with a science based approach (Canadian Aquaculture Industry Alliance, 2008). This is the opinion of the Canadian Aquaculture Industry Alliance. Industry experts claim aquaculture done right could easily feed the world, without polluting it. However, public opinion and the highly involved ENGOs see this differently. In an article for the Vancouver Sun, Hans Tammemagi describes an interview with Simon Fraser University’s John Reynolds. As Reynolds explains,

“Peer-reviewed scientific studies […] clearly show that wild salmon stocks are damaged by nearby farms” (The Vancouver Sun, 2008).

He further describes the necessary action:

“…better farm management is needed and recommended that open net cages should not be allowed near salmon rivers or locations close to migratory routes. And to prevent transfer of disease or lice to wild salmon, pens should be kept empty when young wild salmon return to sea” (The Vancouver Sun, 2008).

Such interviews fuel the ongoing debate within the BC region. Statements provided by the industry may, however, yield little results with the local population, as alleged disclosures are persistently revealed by ENGOs and through academic studies. Although the industry may actually be operating within strict regulations with few errors, the public is likely to dismiss this if any mistake or safety failure is disclosed. The general influence of the BC citizens will determine to what extent the industry of fish farming, and aquaculture in general, is accepted.
Many alternatives have been introduced by ENGOs and independent sources, most gaining public support as the solutions are often portrayed as favourable for the environment – with the industry believed to be reluctant to change due to a high profit focus.

One such favoured alternative is the hard-walled pen systems which isolates the fish from the surrounding water in 12 metre deep tanks and catches their waste in the bottom. Similarly, The David Suzuki Foundation is an environmental organization strongly advocating changes to the methods and regulations fish farmer are operating with today. The organization argues that fish farming in open-net-cages result in sea lice, pollution, escapes and drifting nets harming natural marine life. Their proposed solution to the problem is also fish farming in closed containers, as supported by several other ENGOs (David Suzuki Foundation, 2007). The Canadian Government argues that aquaculture is like other industries, not completely free of effects on the surrounding environment. It is therefore subject to regulatory reviews, effectiveness and compliance monitoring, to constantly improve assessment and management practices (Fisheries and Oceans Canada, 2008).

**Porter’s Five Forces**

Porter’s five forces is a competitive analysis tool which models an industry as being influenced by five forces (Kotler, Keller, & Cunningham, 2006). The five forces to consider are industry competitors, potential entrants, substitutes, buyers and suppliers. As described in Porters model, “The strategic business manager seeking to develop an edge over rival firms can use this model to better understand the industry context in which the firm operates” (Kotler, Keller, & Cunningham, 2006). *(See Appendix 6 – Porter’s Five Forces, for detailed figure)*

**Industry Competitors**

A segment is unattractive if it already contains numerous, strong, or aggressive competitors (Kotler, 2006). Canada is the fourth largest producer of farmed Atlantic salmon in the world, ranking third in farmed Pacific salmon production. Over 80% of the production is exported to the US market (Euromonitor International, 2008), whereas the total salmon imports to the US grew a modest 10 000 tons from 233 000 tons in 2005 to 243 000 tons in 2006. “Imports values showed a more impressive increase rising a significant 30% compared to 2005”
(Infosh, 2006). This indicates a small market growth, where the farms in the BC region are some of the most desirable players. However some producers are experiencing growth beyond current capacities. "We just can't keep up with the requests for the product." said Mary Ellen Walling, the executive director in B.C. Salmon Farmers Association, in an interview in December 2006 (The Vancouver Sun, 2006).

The market segment for certification of open-water-cages is very attractive in Canada in terms of the limited number of direct competitors. Most current service providers are now to some extent computer based, which entail some initial development costs, but low variable cost.

Currently there are no other companies in western Canada providing equally advanced technology package as Aquastructures. Inspections of the plants are currently completed by other companies using more complicated and resource demanding methods, compared to what Aquastructures can deliver with their service package. As previously highlighted in the analysis, there are numerous regulations regarding fish-farming and the overall security of the facilities. The authors determine the degree of rivalry within the industry to be low to moderate, due to the low number of companies providing current service solutions, whilst not equalling Aquastructures on the completeness of their service package.

**Potential Entrants**

The most attractive segment is one in which entry barriers are high and exit barriers low (Kotler, 2006). As of now the aquaculture industry in BC has a complex regulatory regime with many jurisdictional overlaps, as it is a shared jurisdiction between the provincial and federal government. Further, there are requirements with regards to local presence and the necessity of a BC engineering license. These issues combined with the complex regulatory framework results in moderate to high entry barriers.

There exists few exit barriers, unless specific foreign direct investment in Canada is involved. A company entering with mostly software based services will find few exit barriers. However, if a local engineering license is obtained, and strategic alliances have been
explored, additional barriers will exist. Nevertheless, the exit barriers are considered to be low.

**Substitutes**

A segment is unattractive when there are actual or potential substitutes for the product (Kotler, 2006). There are many competitors on the Canadian market offering analyses services for structural verification, but no competitors alone seems to offer a product directly comparable to Aquastructures. Services like plant design, monitoring systems, wastewater management and risk assessment are available, but no other firm offers the same combination of these services. This will therefore ensure a more standardized and complete system, compared to the competitors. They are however to be defined as substitutes as they together can supply the same demand; therefore, threat of substitutes is moderate to high.

**Buyers**

A segment is unattractive if a buyer possesses strong or growing bargaining power (Kotler, 2006). The buyers of Aquastructures products would first and foremost be the fish farms in BC. Canadian aquaculture is in lack of good and efficient standardized certification (Thomson, 2008). The buyer bargaining power is therefore moderate, as Aquastructures is offering a differentiated product package. Due to the uniqueness of the product, the buyer will have costs in terms of switching to different products or providers. The buyers’ bargaining power would have increased if the fish farms were more coordinated and closer incorporated, buying the services organized as a group. This is however not the case within the BC aquaculture industry. That being said, the limited number of significant buyers will result in an overall moderate buyer power.

**Suppliers**

A segment is unattractive if the company’s suppliers are able to raise prices or reduce quantity supplied (Kotler, 2006). Aquastructures provides a distinctive software service and does not have significant additional suppliers beyond their labour force. The founders of Aquastructures and the general management team are to be considered the most valuable labour. Therefore, in terms of suppliers, the bargaining power is low.
**Summation**

Having examined the five competitive forces, BC is determined as a fairly difficult market to enter in terms of the identified entry barriers. On the other hand, Aquastructures can be considered adequately qualified and capable to enter the market due to the nature of the company’s product package and human capital. BC can also be considered a highly attractive market for Aquastructures, due to the moderate buyer power, and suppliers low bargaining power. There are also few direct competitors, and Aquastructures therefore has a high competitive advantage compared to the available substitutes. As a result of the Porter analysis, the overall attractiveness of the BC industry is determined as high. Aquastructures is therefore believed to have a high potential expansion opportunity within the BC market.

**The Canadian & BC Market**

The Canadian aquaculture industry is mainly located in the provinces of British Columbia and New Brunswick. The report will focus on the industry in British Columbia as this is the main centre for Canadian aquaculture.

**Aquaculture Industry**

Farmed salmon is B.C.’s largest agricultural export product. Along with other finfish, shellfish and marine plants, farmed marine life is a significant contributor to BC’s provincial economy (Ministry of Agriculture and Land, 2008). As a matter of fact, the industry employs approximately 1800 people and earns about $450 million per year. With over 80% of sales in the states, the industry brings in valuable foreign exchange (The Vancouver Sun, 2008). Most of the farming facilities are located around Vancouver Island in the southern part of the province. There are at the moment no facilities in the northern part of the province, nor are there likely to be any in the future, as both the provincial and federal government wants to preserve the area for wild species and commercial fishing.
The global increased demand for fish due to greater focus on nutrition is also present in Canada. As a result, farmed fish is playing an important part in supplying this growing demand. It is a growing market, even though most farmed fish in BC is exported.

**Climate**

The aquaculture industry in B.C. is concentrated around and in the vicinity of Vancouver Island. The Island is located in the southern part of the province situated just north of the U.S-Canada border. Brought in by the winds and currents of the Pacific, Vancouver Island's climate is considerably milder than that of the mainland (About Vancouver Island, 2008). In general, the climate in British Columbia is quite similar to that of Norway, therefore requiring few adjustments from Aquastructures experience operating in the Norwegian market. *For average temperatures and other statistics on climatic conditions in the province, see Appendix 7.*

**Regulations**

The aquaculture industry has a complex regulatory system with many jurisdictional overlaps. It is a shared jurisdiction between the province and the federal government. Federally, Fisheries and Oceans Canada is the lead for aquaculture and is responsible for administering the Fisheries Act, the Oceans Act, the Canadian Environmental Assessment Act, the Species at Risk Act, as well as a habitat policy and an aquaculture policy framework (The Legislative Assembly of British Colombia, 2007).

Provincially, the lead agency for aquaculture is the Ministry of Agriculture and Lands (MAL). MAL is responsible for administering, issuing and renewing aquaculture licenses under the provincial Fisheries Act; evaluating site management plans and ensuring compliance; collection of facility reporting data; inspection of existing and proposed sites; and providing fish health surveillance and auditing program (Nielsen, 2008). In BC, the regulatory environment is even more complex as the aquaculture industry is overseen by an additional two provincial agencies: the Ministry of Environment and the Integrated Land Management Bureau (The Legislative Assembly of British Colombia, 2007).

Municipal governments also play a role in aquaculture in terms of local land-use zoning.
Inspections and audit of the salmon aquaculture sites are conducted by MAL on behalf of Ministry of Environment & Integrated Land Management Bureau. The MAL fisheries inspectors are responsible for issuing violation tickets, but if further action is required, it is then referred to MoE or Fisheries and Oceans Canada (The Legislative Assembly of British Colombia, 2007).

This somewhat out-dated and complex regulatory environment hinders the BC aquaculture industry and its development. With such a large number of players and organizations wanting to have a say in the future direction of Western Canada’s aquaculture, the regulatory environment can be best described as a bottleneck for the entire industry.

The main result of this is lack of appropriate communication between the various departments. “In Norway they do not have all these non-accountable, non-elected groups out there determining the path for the industry” (The Legislative Assembly of British Columbia, 2007). As Patrick Marshall from Campbell River Economic Development Corporation, with personal knowledge of the aquaculture industry in Norway, puts it:

“Communication seems to be an area that British Columbia is a lot weaker in than Norway”.

The Committee became aware that in Norway, there is a very active and healthy relationship between the aquaculture industry and the ENGOs. The Committee noted however, that these relationships already are developing in BC, such as through the Framework Agreement between Marine Harvest Canada and the Coastal Alliance for Aquaculture Reform. (The Legislative Assembly of British Columbia, 2007)

In January 2008 the EFTA countries and Canada signed a free trade agreement. Norwegian companies, as a part of EFTA would benefit from this agreement. Norwegian companies, as a part of EFTA would benefit from this agreement.

“Important Norwegian export industries as suppliers to the oil industry, to the maritime industry, to aquaculture and fishery, automotive parts, renewables and ITC and electronics will get clear competitive benefits from this Agreement compared to products coming from EU and many Asian countries” (Innovation Norway, 2008).
Public/Political Issues

British Colombia is home of many environmental organizations including organizations such as Greenpeace and The David Suzuki Foundation. BC and especially the lower mainland area population are very active in the debate regarding local and global environmental issues.

The major concern has been the effect of fish farming on marine life. The various wastes produced from the cages and the large number of fish escaping the facilities has proven to be harmful to the wild marine life, causing the pressure on the industry to move towards new solutions. Therefore, there have been requests to move towards closed containment technology, either land or ocean based. The industry opposes these suggestions, as they believe it is unfeasible within the proposed timeframe. This is also believed to further harm the BC aquaculture industry.

Recently, concern has been raised regarding the consumption of farmed fish. Reports have been published, claiming that consuming more than two meals containing farmed fish a month can potentially be health threatening (Georgia Strait Alliance, 2008). ENGOs and their cohorts claim that farmed fish are fed a cheap and standardized diet. This leads to less nutritional variation than they would receive in the wild, which in turn creates less nutritional value, per pound, than wild fish. The diet fed to farmed fish is also high in fat, which consequently concentrates harmful toxins such as PCB’s. The aquaculture industry on the other hand claims that this is not the case, and that farmed fish can in fact have enhanced nutrition values compared to wild fish (Farmed Fresh and Healthy, 2008).

Environmental issues are not the only topic fuelling this already heated discussion. At the other end of the table, there are concerns regarding depopulation of rural communities in BC, and the highly linked issue of bringing young first nations population into the provincial economy. More than 90% of aquaculture jobs are in coastal and rural communities. Aquaculture is and will continue to be an important employer in coastal BC, dealing with and improving the issue of depopulation (BC Chamber of Commerce, 2005).

In terms of first nations and their part in the aquaculture debate is, in contrast to popular belief, not as one-sided as often claimed. Not all first nations oppose fish farming, and many
are positive and already involved in the industry. There is an organization, Aboriginal Aquaculture Association, promoting various forms of aquaculture. They have concluded that this may provide successful careers for their communities, especially among the young first nations population (Aboriginal Aquaculture Association, 2008).

The fish farming industry has also raised concerns regarding the threat of over-fishing if the current farms were to disappear. Mr. Opala, the Regulatory Compliance Coordinator at Marine Harvest, commented in an interview that,

"People should know that the absence of fish farming will result in over fishing. In fact, Canada has already seen a worst case scenario of over fishing. Escalating demand, rapidly advancing technology and massive government subsidies caused severe over fishing of the Atlantic Cod on Canada’s east coast. And the Cod stocks have failed to rebound more than a decade after the fishery was closed" (Ocean World, 2008).

This is a horrifying example of what can happen also happen on the West Coast. This part of the discussion does not usually get the same publicity as the high profile concern of sea lice and escaped salmon. It is, however, a very real threat as the wild salmon itself can not supply an increasing demand.

Due to these various concerns, the industry has come under political scrutiny. Various lobbyists on each side of the matter are constantly working on getting favouring laws and regulations on the political agenda. One side is comprised of the ENGOs, Commercial Fishing Industry, and similar interest groups; the other includes part of the industry itself with support from its own related industries and interest groups.

**Business Culture in Canada**

There are a range of aspects to a country or region’s business culture. It is therefore beyond the scope of this report to do an in-depth investigation of the Canadian business culture as a whole. However, certain parts of the Canadian culture that is imperative for Aquastructures and its future Canadian venture will be highlighted.
When looking at Geert Hofstede’s dimensions on business culture, Canada is found to be ranked high on the individualism scale, and that success is often measured by personal achievements (Hofstede, 2008). For Aquastructures this is vital information as they need to convince key decision makers that their service is beneficial for their organization, as the success of their decision will reflect their own personal position and success.

As the majority of Canadians have a high degree of individualism, Canadians tend to be self-confident and open to discussion on general topics. However, they hold their private life off limits to all but the closest friends and have relatively loose bonds with others (Hofstede, 2008).

Because the focus of this report is on the western part of Canada, Aquastructures will mainly be interacting with English Canadians, and this is an advantage for Aquastructures. Not only do English Canadians pronominally speak English as an alternative to French, the English Canadian business culture is also similar to the one found in Norway.

Managers will consult widely when a decision is called for and expect input from all concerned parties. This is clearly visible when looking at the number of parties involved in the decision and regulatory process concerning aquaculture. The final decision remains, however, firmly with the manager and quick decision-making is respected by all (World Business Culture, 2008).

In terms of Hofstede’s power distance, somewhat reflecting management style within Canadian organizations, we find a relatively low score (Hofstede, 2008). Aquastructures does, however, deliver a type of service that does not require a great deal of management in day to day interactions, and this information is therefore of less direct relevance.

**SWOT Analysis**

**Strengths**

Aquastructures’ main strength is the company’s unique technology and complete service package. This self-developed technology is the core of their business, and is what separates
them from other inspection companies working within aquaculture industry. This has again created a strong brand name for them in the industry, combined with the established reputation for quality and reliability. Aquastructures has developed close ties with major players within the industry worldwide, such as Marine Harvest, Mainstream and Grieg Seafood. Having already been through the process of certification in Norway, they have substantial experience and know-how of the certification process. Close ties to the government have been established in Norway, as the company provides services fulfilling the requirements of the new national standard – NS9415.

Aquastructures is a financially sound company, experiencing rapid growth. They were awarded the title “Gazelle of the Year, 2006”, a highly regarded award, presented to young companies experiencing tremendous growth. To be able to sustain their growth the company has developed products and services applicable to various aquaculture, thereby diversifying their services, and making them less dependent on specific segments. In terms of human capital, Aquastructures has a highly skilled and qualified workforce, mostly comprised of university degree engineers with specialized know-how of the marine environment. During their recent growth, Aquastructures has gained some international experience, as they are present in foreign markets.

**Weaknesses**

Even though Aquastructures has gained some international experience, it is still a relatively new company, and therefore has limited experience with international sales. It does not have a presence in Canada, therefore lacking knowledge of the Canadian market. Due to the small number of employees, which again are lacking extensive international business experience, Aquastructures may find difficulties with a rapid international expansion, as their resources are limited.

Aquastructures is accredited as an official certification service in Norway; however, this is not directly transferable to the Canadian market as different regulations apply. A related weakness for the company would therefore be the limited knowledge of both federal and provincial regulations, as well as no direct business experience in the Canadian market. Neither has the company established any contact with key industry players and decision
makers. Currently the company has not developed their brand name within Canada, and may find difficulties in developing a corporate reputation without proper brand associations.

**Opportunities**

There is a large market potential throughout the west coast of Canada, as the aquaculture industry is well established in the province of British Columbia, and the BC fish farmers are among the world leaders in farmed salmon production. There is a potential chance for substantial changes in the industry, through suggestions to move to closed containment systems, which is the process ENGOs are currently working towards (Georgia Strait Alliance, 2008). This could create additional demand for Aquastructures services. If these proposals were to be implemented, all existing sites would have to change their current structure, design new mooring constructions, and revise estimations of the forces affecting each site. This would then generate a strong demand for an accurate and strong analysis system. If Aquastructures is able to provide this within a competitive overall price level, this may create additional opportunities for the company in terms of market share and profits. This, however, must be considered a less likely scenario.

The Canadian market is not saturated at present, and this again provides an opportunity to become a significant player in a relatively large market, even without movement to closed containment systems.

When evaluating the industry, there is an apparent overall worldwide increase in demand for fish; farmed fish is currently providing 45% of this demand (Food and Agriculture organization of the United Nations, 2007). This indicates a strong demand for fish farms and their products, and a growing demand for the services Aquastructures is providing. In addition to a growing need for farmed fish, there is also a rapidly growing demand for regulations. The public and political pressure is significant, both advocating stronger legislative language and actions. There are currently no other companies in western Canada providing the exact same technologies and range of services offered by Aquastructures. Consequently, there is an opportunity to establish the company’s services as unique and enhanced analyzing tool within the market.
Another opportunity for Aquastructures is to become a part of the Brand Canada initiative, and through this be perceived as environmentally conscious, portraying their willingness to work together with both government and ENGOs. Consumers are demanding transparency and certified products, requesting products produced in safe and environmentally friendly conditions.

Environmental groups, such as Georgia Strait Alliance and The David Suzuki Foundation, are gaining political power and actively pushing toward stronger regulations of operations for fish farms. If the public pressure on this subject grows strong enough, the result might be political changes affecting the industry. If a stronger regulatory system is implemented, it will present another opportunity for Aquastructures, as new demand will be created, as stated above.

If expansion to the Canadian market should be successful, Aquastructures can use Canada as a model for a more global expansion, as the Canadian industry can be considered one of the most complex in the world.

**Threats**

The aquaculture industry is under constant public and political scrutiny. Fish farming is a sensitive issue provoking heated discussion among various groups. It has been, and still is, public opinion that farmed fish is not only bad for the aquatic environment, but also perceived as a health risk and less nutritious than wild seafood. There are also numerous environmental organizations opposing the BC fish farming industry. Such ENGOs are fuelling the already heated discussion, thereby influencing both political and public opinion. Overall, this may affect any new company planning to enter the BC industry, as public support for any industry player is limited. This is especially important to consider when entering the market, as credibility and perceived value added will fall to severe scrutiny.

Another sector lobbying against the current aquaculture industry is the commercial fishing industry, especially the wild salmon sector both domestically and in Alaska. They are constantly advocating stricter laws and regulations to be implemented. Such organizations have also been known to support ENGOs such as The Georgia Strait Alliance and Living
Oceans, joining forces for increased effect. All of these organizations are constantly lobbying for moving farming facilities to close containments on land, or alternatively closed containment in-water.

Another threat to consider is the complex regulatory environment in British Columbia. This makes the decision making process difficult to predict, and prolongs the process of accreditation. The industry may also not fully consider Aquastructures services as added value and differentiated enough from current products, thereby enhancing the strength of the competitors and presenting a possible threat.

*(See Appendix 8, for a detailed weighted SWOT-analysis)*

**Strategic Problem Definition**

“How can Aquastructures use their advanced technology and their strong human capital to overcome the barriers to be accredited as certification tool in Canada, especially in due of their lack of Government relations? Further, how can Aquastructures use the public and political demand for increased security for fish farming sites and demand for certified products such as the Brand Canada Logo to their benefit, and overcome the threats posed by the ENGOs and the changing political climate, along with the suggestion of fish farming in closed containments?”

**Goals**

For Aquastructures to achieve what is outlined in the strategic problem definition (SPD), the company will need specific goals stating the desired direction and results.

**Short term goals**

In order to reach proposed long-term goals, Aquastructures must determine short-term goals. The following short term goals involve action within 12 months:

- Become the main supplier of this service to one of the major fish farming companies
- Break-even within 12 months.
• Identify a strategic partner, and develop a long term alliance
• Develop ties with Norwegian and Canadian ENGOs

In order to become a certified inspection tool, Aquastructures needs to establish a relationship with a licensed Canadian partner. This relationship may take some time to establish; however, by becoming a main supplier of inspection services to one of the major fish farming companies in BC, a strategic partnership should be less difficult to obtain.

Long term goals
The following long term goals involve the preceding action after the initial 12 months:

• Build a stable and profitable alliance with a engineering company operating in BC
• Become the number one certification service provider for the Canadian aquaculture industry
• Participate in the development of closed containment fish farms in water
• Use the BC experience as a platform for further expansion
• Expand their business/technology to include international aquaculture markets

Aquastructures is currently not a certified inspection tool for Aquaculture in the Canadian market, and the overall goal for Aquastructures is to become a reliable brand name and a preferred inspection tool for the Aquaculture industry in Canada, and eventually worldwide. Pursuing and building a strong strategic alliance with a suited partner, to further gain access to the Canadian markets, is a crucial long term objective.

Industry Specifics & Company Preparedness

This section will highlight critical issues with regards to the industry, as well as the company’s preparedness for entry. Key Success Factors identifies crucial factors required to succeed in a given industry. Firm Specific Advantages provide essential details on the specific attributes possessed by the company in question. Both these tools together provide information which is then analyzed in the Strategic GAP Analysis. The analysis highlights which of the industry necessities the company is currently lacking.
Key Success Factors

- Establish relationships within the provincial government in BC
- Educate customers of Aquastructures product/service benefits
- Provide products/services perceived to be environmentally safe
- Acquire knowledge of Canadian business culture and decision making process, as well as in-depth knowledge of the BC industry
- Gain regulatory insight
- Explore possible ENGO cooperation
- Local representative

Firm Specific Advantages

- In-depth industry knowledge
- Human capital
- Well-established in domestic industry, Norway
- Relationship with BC aquaculture operating companies
- Unique software / Technologically advanced

Strategic GAP Analysis

Having established both the KSFs and the FSAs, it is now possible to extract the strategic disparities between these, the gaps. Aquastructures currently holds industry related experience, from both domestic and to some extent from international markets. However, as of now, the company has limited knowledge of the regulatory and political environment in British Colombia and Canada. Further, the company holds little knowledge of Canadian business culture and the decision making process. These are all factors which can be considered strategic gap. The company is not familiar with the competitive environment, and therefore holds a gap within the Canadian industry. Furthermore, there is a gap concerning
the relationship with both the Canadian and BC government, as no connections have been established at the present time. ENGOs have significant influence on public opinion, and must therefore be taken into consideration in order to be perceived as an environmentally conscious company. As of now Aquastructures has no affiliation with such groups in Canada, and should explore such options to avoid the current gap.

Strategy

The report will now use the findings from the analysis to develop and explore alternatives for an entry strategy. Developing a strategy is essential in order to determine the correct course of action for the chosen market.

Entry strategies

Important tasks for Aquastructures is to promote sales, set up sales, negotiate contracts, facilitate overseas payments, carry out service, and receive updates on developments in the foreign market (Solberg, 2006). Due to Aquastructures’ limited size and capacity, they can hardly conduct all these functions themselves, at least not in a foreign market such as Canada. Furthermore, there are legal requirements demanding a local representative. Based on these required functions and Aquastructures limited resources, the following section will discuss appropriate entry strategies.

Export agent/house

One option for Aquastructures is to get an export house to take care of their overseas sales. The export house would be responsible for the financial elements of all sales. This is however of less importance due to the nature of Aquastructures’ services. Sales would be less frequent than that of other export articles such as fast moving consumer goods. Export houses also benefit from having a large and widespread network of potential buyers and various suppliers (Solberg, 2006). This is again of less importance as the aquaculture industry in BC is of such a size and nature where the larger part of the market consists of a
few large companies. Identifying potential customers should therefore be a non-problematic task. This strategy can neither provide much in terms of educating customers or promoting sales, as Aquastructures’ services are complex, requiring in-depth knowledge of the various services provided. An export house would probably not be able to provide such promotional services.

In Aquastructures case, general information about the country is of less importance than the need for specific knowledge and insight about the technology and aquaculture market in general. Again, it is unlikely that an export house can provide such services.

**Agent**

By engaging an agent Aquastructures would address all of the functions mentioned in the beginning of this section. An agent would provide direct contact with potential customers, thereby efficiently promoting sales (Solberg, 2006). Due to the nature of Aquastructures services, and the limited sales volume, it should be possible for an agent to handle sales, oversee payments and negotiate any contracts. The agent should also be able to carry out the various service functions required, involving support, training and any updates. Another function would be the ability to ensure backward flow of information to Aquastructures. Developments and trends in the market will be observed and communicated back to key personnel in Norway.

The main downside to this strategy is the threat of opportunistic behaviour, especially since Aquastructures will have spent significant resources on training and providing product knowledge for the agent. However providing such information is vital for the success of not only the agent, but the overseas operations as a whole. Selecting the right individual for the job is crucial to create strong ties between company and agent.

The agent could also be a resource in terms of working towards the BC legislative and regulatory agencies, ENGOs, ensuring face to face contact, lobbying for the benefits of Aquastructures technology. In addition, the agent can be helpful in locating potential long term partnerships with local companies.
**Strategic Alliances**

Another alternative for Aquastructures is to enter the Canadian market through a strategic alliance with a local company. This way they will be able to draw on the resources of a Canadian based company, thereby gaining the local market knowledge they themselves lack. Potential partners could either be insurance companies or local engineering firms conducting similar aquatic analysis.

As mentioned earlier in the report, there is a rather complex regulatory system regarding the BC aquaculture industry. Joining forces with a local firm can provide Aquastructures with an advantage in terms of insight in the complex legal process. This strategy could also open up opportunities in regards to involving the chosen partner, and creating additional incentives for fish farmers to choose their services. If choosing to collaborate with an engineering firm, the partner would have the local responsibility, as well as managing the ongoing service. In addition, Aquastructures will get the advantage of “Canadianizing” its brand by adding a familiar and local name to their products and services.

The downsides to this strategy are the lack of direct control and a potential liability with regards to intellectual property right infringement. Setting up a strategic alliance is more resource demanding than the two previous alternatives. There is the process of locating a suitable partner, as well as negotiating the division of revenue and responsibilities. The company is also faced with the potential of opportunistic behaviour from partners. Even though this problem also occurs when dealing with an agent, the stakes here are much higher.

Since Aquastructures is a technology based company, relying on its core competency, which is its developed software, the issue of control is an important one. By joining forces with another firm, especially an engineering company, it would make itself vulnerable for loosing parts of their core technology.

**Direct Sales / Zero-Level Channel**

The final alternative is to initially sell Aquastructures products and services directly to the end customer, avoiding any intermediaries. This would, however, limit the number of services the company would be able to offer - strictly software services - as legal
requirements state that any service beyond this requires a local presence due to potential liability issues (McAskill, 2008).

By approaching the major players through industry trade fairs, there lies an unique opportunity of promoting sales as well as educating potential customers of Aquastructures favourable technology. This also creates an opportunity to build on any already established relationships, as well as creating new connections, expanding Aquastructures’ industry network.

Because most of the major aquaculture companies operating in BC are of Norwegian origin or ownership, there lies an opportunity to transfer these existing corporate relationships from the Norwegian to the Canadian market. Furthermore, this can provide Aquastructures with the prospect of gaining local market knowledge as well as establishing relationship with new Canadian partners.

The downside of this strategy, beyond limiting the company’s offered services and resulting revenues, is the risk of not receiving backward flow of information. Since the company would have no physical presence in Canada, local market knowledge and developments can be difficult to obtain. The industry operates with a number of certification bodies, each using company-specific technology or methods. This necessitates a direct and close surveillance of market changes and developments, which may be lost without an attentive market presence. If a competitive market position is to be obtained, local presence will be necessary in the long-run.

**Porter’s Generic Strategies**

In order for Aquastructures to successfully achieve the projected goals, it is necessary to determine and define suitable strategies. Porter has determined that a company’s strengths fall into two categories: cost advantage and differentiation. The strategies are to be considered generic, as they are not firm or industry specific (Kotler, Keller, & Cunningham, 2006).
Defining the Strategy

In Porter’s theories, the company in question or the given industry is the core focus and determinant. This, however, does not provide the company with potential strategic definitions and guidelines. The three generic models provide categories for the company to choose the most suited strategy: Cost Leadership, Differentiation, and Focus.

Aquastructures currently operates within a cross-section of both cost leadership and differentiation; however, it is most accurate to position the company within the differentiation section. Cost leadership would entail a company strategy of high competitive focus, aimed at retaining a low cost – low price sales focus. Although providing a more affordable alternative to conventional services in this industry, Aquastructures can be more suitably positioned as a company within the segment of differentiation. This is mainly due to the high risk of negative quality perceptions often related to cost leadership. In this industry, especially within the BC region, it is highly important to retain a focus on quality and corporate expertise. This is a result of the intense public and political involvement within the aquaculture industry. Cost leadership may cause irreparable damage to a company selling quality solutions.

The differentiation section provides a strategic position definition aimed to distinguish the product/service offerings of the company by focusing on core competencies. To practically achieve this, a differentiation strategy should be placed on Aquastructures’ offered services, highlighting quality and the wide range the company’s service package includes. By building on the value perceived by customers it is possible to achieve a higher level of customer loyalty and commitment, as well as keeping the price level within desired profit margins. As customers perceive the product/service acquired to be of higher general quality and of advanced technology, it will ensure customer retention due to higher switching barriers. Collaborating with high profile organizations, such as prominent ENGOs, can help build stronger perception of value. This will be a further step towards Aquastructures’ mission statement – “safety through technology.”
Many of the strengths found when analyzing Aquastructures can be associated with Porter’s qualifications to follow the generic differentiation strategy. Corporate strengths such as leading scientific research, overall reputation, current market experience, and a strong presence in their current operational markets, were found to be accurate with Aquastructures and confirm the differentiation segment.

It is important to consider potential risks if this strategy is to be followed, as a competitive ability must be retained. However, the differentiation strategy may entail a high risk of property right infringements, possibly leading to imitations of Aquastructures technology. The strategy will therefore be suitable only if the development of technologies and customer relations is cautiously maintained. *(See Appendix 9 – Porter’s Generic Strategies)*

**Country of Origin as a Marketing Strategy**

The Norwegian national business reputation and perceived corporate profiles within the aquaculture industry is highly varied depending on the source questioned. However, Norwegian companies are considered market leaders globally within the aquaculture industry. The national legislation and political environment within Norway also provides a transferable image for the operating companies as being safety cautious and adaptable. For Aquastructures this would represent an opportunity to focus on the company’s ability to comply and utilize the changing regulatory environment on which the company currently operates. The recent cooperation between WWF and the Norwegian company Marine Harvest, will further add to the possibility of positive perceptions when regarding Norway as country of origin *(Nortrade.com, 2008)*. In addition Norway has been recognized for having an active and healthy relationship between the aquaculture industry and ENGOs, possibly helping them convince Canadian environmental organizations of their environmental contribution *(The Legislative Assembly of British Columbia, 2007)*.

The current situation would also provide unique opportunity to market the country of origin base, as the 3 largest companies located in BC are Norwegian owned or operated. Some of the companies operating in the BC region have already used Aquastructures solutions in Norway, and will potentially present a re-buy relationship for Aquastructures. Further, the
association towards the Norwegian expertise can be considered beneficial as Norway currently holds a place as one of the dominating market players for fish farming.

There are some potential risks to consider before using the country of origin strategy as a branding device. As the public perception of the origin country may change, especially when considering specific industries where the country is a dominant player, the overall perception may cause issues in new markets. Closely related industries such as whaling, seal hunting and similar marine activities may affect the overall perception of exported industries from Norway. This can relate to issues such as quality, price level, cultural aspects, or industry-specific issues. However, even though public opinion towards the aquaculture industry is highly sensitive within British Colombia, the potential level of prejudice or perception towards Aquastructures due to its country of origin can be considered minimal. This is due to Aquastructures service qualifying on all sensitive issues, as price is competitive, quality can be considered high, and perception issues towards the industry may be diluted as the company provides a “safety” feature – as well as operating within the Business-to-Business (B2B) segment.

**Aquastructures in Canada (BC)**

In the following section of the report, the authors will identify the primary, as well as a secondary, target market for an introduction of Aquastructures’ services. Further, demand estimations, the marketing mix and financial aspects are included to develop a basis for the strategic recommendations to come.

**Target market**

To be able to successfully enter the Canadian market, it is important to identify the target market. The focus will be on successfully targeting potential customers in British Columbia.
Primary Market

Aquastructures’ products and services are set to accommodate a specialized market, and it is therefore imperative to have a clearly identified primary target market. The analysis of the industry suggests that fish farming companies themselves will be the primary market. The primary research, combined with extensive secondary research within the industry of BC, support these findings.

Furthermore, to be able to establish full usage of the company’s services and analytical tools, it is desirable to focus on sites holding an adequate level of technological systems, as well as structures built for large scale production. Fish farming sites in general will be the primary market; however, it will be beneficial to focus on the four largest companies operating in this region: Mainstream Canada, Marine Harvest, Grieg Seafood and Creative Salmon. These companies best fit the described target market characteristics.

Secondary Market

Defining the best suited secondary market is also of importance. There are several segments to be considered potential secondary markets. One option would include the sale or licensing of Aquastructures services to engineering companies. This will only be a viable option if the software is the sole service provided, and the zero-channel entry strategy is the one chosen. This has been supported by the procedures being practiced in other markets, as well as from the industry in BC (Nielsen, 2008).

Insurance companies have been eliminated as potential buyers of Aquastructures’ services in the initial phase. After obtaining information through the various interviews, it was found that insurance companies will only be a potential customer when fish farms, as well as governmental and legislative agencies have been convinced of Aquastructures technology. If that is to happen, and the technology becomes the standard, as we have seen happen in Norway, the fish farms might be offered a lower insurance fee as soon as the technology is in place. We therefore do not at this point see the feasibility of targeting the insurance sector as potential buyers before the Aquastructures solutions have been accredited by the provincial government. However, after such accreditation is in place, the insurance sector would be
projected as a potential customer for Aquastructures – in line with engineering companies and the industry itself.

Within BC there are several other market segments which can be targeted at a secondary level. Government agencies may find the services desirable as a standardized low cost method of certifying aquaculture sites throughout the region. Smaller independent fish farmers including, the first nations segment, may be a minor source of business. There may also be market potential on similar marine construction segments in need of related services. The initial phase does not include pursuing this segment, but it may be a viable source of business in the long run.

**Demand estimation**

In order to estimate the demand for Aquastructures’ services in BC, the authors have used both primary and secondary sources. Projections can be made based on the numbers of large fish farming companies in BC, the number of sites operated by each company, as well as the cycles of maintenance on each site. According to interviews with both the Ministry of Agriculture & Land and key industry players, the overall industry is currently at a static level with few changes occurring. This situation therefore limits the demand for controls and inspections of new sites, but there is a demand for maintenance-work on existing sites. Although most companies already operate well within legislative requirements, using accredited certification and inspection services, the growing push from ENGOs and overall political climate necessitates a constant improvement of the services used. Profit margins will also create demand for increased efficiency and overall lower cost of such services. Hence, there is a demand for the services provided by Aquastructures.

BC aquaculture is dominated by three large companies. Marine Harvest is the largest of the three leading companies. They are currently operating with 7 hatcheries and fresh water sites located near the towns of Campbell River, Port McNeill, Port Hardy, Quatsino and Klemtu. The company has 37 seawater sites located near the towns of Campbell River (14 sites), Port McNeill (12 sites), Port Hardy (7 sites), Quatsino (2 sites) and Klemtu (2 sites).
(Marine Harvest, 2008). If each of these sites needs maintenance or control every second year, this would result in 37 sites in need of inspection services within Marine Harvest. Grieg Seafoods, is a smaller company than Marine Harvest, but however substantial. The company is registered with 18 sites, and one smolt production facility (Grieg Seafood, 2008). Mainstream Canada has 29 sites, three hatcheries, and two processing plants (Mainstream-Group, 2008).

In addition to these estimations it is also important to remember that the one of the short-term goals for Aquastructures in Canada is to be accredited as a licensing tool by the Canadian authorities. The fact that three of the four biggest fish-farming companies currently operating in BC hold 84 of the total 133 operational sites (See Appendix 10, for site listings), and that these have an origin from, or are heavily operation in Norway, provides Aquastructures with an advantage when it comes to customer knowledge of the services provided. Further, there are more than 70 registered companies registered within the segment of marine engineering in BC (Yellowpages Canada, 2008). These may be potential customers for any direct sale of Aquastructures services.

The possible shift of the industry towards closed containment fish farming would dramatically increase the demand the services Aquastructures provides. Closed containment systems would entail a change of all current sites, and a need to inspect and estimate the requirements for each new closed containment pen built.

**Marketing Mix**

A well-developed marketing mix is crucial for a successful market entry. Aquastructures is selling a service in the business-to-business segment. The traditional marketing mix is therefore not fully applicable. The authors have used an adapted marketing mix more appropriate for the B2B marketing (Michelangelo Celli of The Cornucopia Group, N/A). These four P’s are derived from Philip Kotler’s initial theories, but have been further adapted to better suit the role of B2B marketing.
Prospect

The Canadian process of accreditation is currently not operating within clearly defined a framework compared to what is found in Norway. Hence, there is an underlying need for a standardized certification tools in the BC market. By reacting to this demand, Aquastructures can gain access to the BC market, and position their offered services as a technologically advanced tool to be used for certification.

Promise

By promoting the advantages, high quality of service and strong expertise of its products, Aquastructures can prove what makes its products different from the current services available to their customers. Aquastructures can further distinguish itself by positioning its services as a preferable alternative due to lower overall costs. On their homepage they communicate their mission statement as “safety through technology.” This may be perceived as an appealing statement due to the focus on innovative technology. The company further states that:

“With employees with background from naval architecture and marine technology, as well as IT development we work towards sustainable growth. [...] . Our competence range from Master of Science, to PhD’s. Our competence covers the full spectrum from load formulation for wave, current and wind loads to capacity control against yield, fracture or fatigue.” (Aquastructures, 2008)

By including their previous experiences developing the NS9415 together with the Norwegian government, credibility has been gained through this experience. The following was obtained from Aquastructures web-site:

“Aquastructures AS performs certification of new and existing equipment for the fish farming industry according to an international technical standard for floating fish farm installations, NS 9415. Our highly competent employees perform technical analysis of the strength of the fish farming system based on cutting-edge technology.” (Aquastructures, 2008)
Product

As explained earlier in the report, Aquastructures’ main strength is their technologically advanced service package and human capital. It will be important to make these strengths transferable from their domestic market to the market within BC. In addition to transferring current product advantages, the company should be able to provide an augmented service to the customers. For example, a need for standardized inspection analysis output was observed through many interviews.

At the present time, control benchmarks are based on the inspection body’s personal experience and not on hard numbers. The control methods are therefore vulnerable to changes and turnover within the inspection bodies.

Aquastructures’ end result of an analysis presents specific numbers and classifications. According to the overall quality of the construction, this gives the client a specific numeric outcome. The data can be used in comparing previous results to newly collected results.

As previously discussed, there are other companies in BC providing similar services as Aquastructures; however the company’s ability to provide a full service to the consumer must be promoted. All functions, from finding a site, developing the constructions, measuring forces to find the required strength of the mooring systems, as well as maintaining and supervising the site to ensure the overall long term quality, are steps in which Aquastructures can be fully involved. Through the complete service package, the customer is provided with a more transparent control tool to maintain their site, and thus eliminate previously unforeseen problems.

Position

Aquastructures provides tools to maintain areas which are exposed to the forces of nature, and prevent failure of the construction in question. Their services can, however also be used to reassure sceptics among external parties.

By positioning the company as a provider of tools for accurate data analysis, which can standardize the current business of certifying the structures of fish-farming sites, access to the
BC markets can be provided. The option of a strategic partner to manage all local issues, could help Aquastructures better reach the desired long term goal of a position as one of the leading suppliers of maritime analytical services.

Financial

In order to determine Aquastructures’ possibility of successfully entering the Canadian market, as well as the economical risks. Due to complexity of the industry, the lack of standardization, as well as the limitations of available financial data, the following financial aspects are based on estimates.

Aquastructures has allocated NOK 1-2 million for initial investment for wages and location costs. According to the company, this amount is expected to cover all fixed costs. However, it is likely that such fixed costs may not apply to the following strategic alternatives. The company is also expecting to break even within the first year of operations. Variable cost regarding the product is, according to Aquastructures – are travelling cost and wages - which approx is NOK 13 000 per assignment. Aquastructures services are priced at approx. NOK 60 000 for new sites, and average around NOK 20 000 for maintenance of already existing sites. In conclusion, they have a good coverage of variable cost, currently generating profit on all segments, before fixed depreciation and financial expenses.

Aquastructures does not need any specific initial investment entering the Canadian market, thereby lowering its exit barriers. The current budget is therefore based on entering the BC market without establishing a physical presence in terms of offices and staff, which also minimizes the fixed costs required. Travelling expenses will however be significant.

According to several sources, including Terry Nielsen at MAL (Nielsen, 2008), there is a current static situation in the BC aquaculture industry and BC offices would demand initial costs not justifiable by the current market potential. Aquastructures is therefore not facing any direct financial risks when entering the Canadian market. Due to the low initial investments, the company should be able to break even after concluding their initial contracts. This will however, greatly depend on how the contracts are designed. If a strategic
alliance with a local partner is considered, any revenue or costs will need to be divided and covered as pre-determined in the partnership agreement. The development cost of Aquastructures software solutions must be classified as sunk costs, but there will, however, be limited fixed costs when considering a strategic alliance.

**Region Specific Requirements**

**Engineer Approval & Partnership**

If Aquastructures is to pursue the strategy of partnering with a local Canadian company, it is crucial to find a partner who has the specific capabilities and resources which Aquastructures is looking for. The first step of this process is to specifically determine these requirements. The authors have previously identified the key success factors to be able to succeed in the BC aquaculture industry. Furthermore, we have recognized which of these factors Aquastructures possess, and which areas are not sufficiently covered. It is therefore imperative that the partner chosen will possess these factors. On these premises, the requirements for a potential long term partner as part of a proposed global strategy are presented.

Aquastructures is in possession of a well developed and advanced technology. Since the services require little or no maintenance, as it is mainly software based, the potential partner’s technological proficiency is of lesser importance. There is however, a requisite that the partner has some experience and insight in the BC aquaculture industry. Aquastructures is familiar with the aquaculture industry in general; there are however some factors unique and specific to the BC and overall Canadian industry. Local knowledge is therefore desirable, not only in terms of the industry, but also in regards to legislative issues and the provincial, federal and the corporate decision making process. Political insight will also be beneficial in terms of possible industry and legislative changes or demands.

Although Aquastructures holds some previous relationships with the international fish farming companies currently operating in BC, the company will still require up to date information of the competitive environment. This will especially regard the companies currently delivering similar or substituting monitoring solutions to the aquaculture sites, such
as Westmar and Ocean Dynamics. Similar insight is also desirable in terms of government/political issues. A local partner should therefore hold previous experience and relationships with both provincial and federal governmental agencies. This may also accelerate Aquastructures learning curve regarding Canadian matters.

Even though there are several trade agreements between Canada and Norway, there are still some barriers existing with regards to employment and work permits. However, the company should find little or no difficulty in applying for permits, should this be necessary in future. This has been further confirmed through the interview with Brian McAskill of the Consulting Engineers of British Columbia (CEBC) (McAskill, 2008).

The issue of a local workforce should however not be a topic of concern, as the recommended strategy will entail partnership with local companies. However, it will be advantageous that a future partner has an already qualified work force. Aquastructures will need personnel in Canada able to execute analysis, educate customers as well as being available to provide on site assistance. This requires a certain degree of insight and knowledge about the aquaculture industry, as well as highly skilled and educated labour.

As part of a long term global strategy we recommend Aquastructures to be proactive and take initiative in collaborating with environmental organizations. A future partner should be involved or at least not have negative associations with the environmental movement. Aquastructures will be looking to create some goodwill among these organizations and can therefore not be seen as cohorts to an environmental hazardous company. This goes in line with wanting a larger sized partner as they are more likely to have had some previous experience collaborating with environmental organizations in the past.

**The Perfect Partner**

The potential partner for Aquastructures should be a local BC engineering firm. This has been determined based on the previous analyses and discussion, suggesting that such a company besfits suits Aquastructures required characteristics.
By joining forces with a locally based firm, Aquastructures will benefit from the partner’s local knowledge, as well as simplifying the process of acquiring desired region specific information such as market updates, the changes in the competitive environment, and legislative/political issues. An engineering firm is likely to have similar attitudes and background as Aquastructures, as they have a common platform in terms of education, experience, and values.

A large sized company with establishments not only in BC, but in foreign markets as well, is recommended. This would enable a long term global strategy, which has been suggested as the ultimate goal. Aquastructures is a relatively small sized and newly established company, and therefore holds limited experience both in terms of managing a strategic alliance, as well as foreign operations. An experienced and larger sized partner can offer and share their experience and resources with Aquastructures. A first-rate partner should also have some previous experience or collaborations with the local environmental movement. A project such as the closed containment initiative, in which Marine Harvest took part, is an example of such desirable experience. The David Suzuki Foundations states on their website:

“As part of an ongoing dialogue between CAAR and Marine Harvest Canada, the biggest salmon farming companies in B.C. are initiating a joint study to assess the technical and economic feasibility of ocean-based closed-containment systems. Marine Harvest and CAAR are urging the province to work with them when seeking answers to outstanding technical and economic questions” (David Suzuki Foundation, 2007).

Through research, it has been determined that Westmar Engineering Consultants is the company most suited to the characteristics identified above.

**Establishing a Strategic Alliance**

Depending on the type of strategy the company is to choose - whether it is a short term or a long term focus – it is recommend that Aquastructures either take a more traditional approach to cooperation or pursue a more involving strategic alliance. If the company is to start of their expansion cautiously and have a more short term focus a traditional approach should be
sufficient. In Aquastructures’ case, this would involve providing their partner with their technology in exchange for market access and market knowledge. The cooperation would be limited to the BC, or the Canadian market, and the ramifications of a dysfunctional partnership would be limited to that specific market (Solberg, 2006).

If a more long term focus is desirable, a strategic alliance should be formed. This form of alliance is similar to the one just described, but is not limited to one specific market, and therefore the ramifications of failure is therefore of greater magnitude. In addition, the cooperation can potentially involve developing new and improved products/services, as they can cooperate on various projects as well as research and development (Solberg, 2006).

Due to limited market knowledge, financial strength and management resources, a form of contract manufacturing could be a viable approach for Aquastructures. The title of the entry mode may seem somewhat misleading, as there would be no manufacturing involved in this partnership. It is however, an entry mode that is likely to suit Aquastructures position well. In his book, ‘Internasjonal Markedsføring’, Solberg explains two motives for pursuing such an approach. The first is the desire to exploit technological expertise. This is clearly in Aquastructures’ interest as they have significant amount of sunk costs tied to developing their software, and are therefore looking to get return on their initial investments. The second motive regards the lack of resources, both in terms of financial and management (Solberg, 2006). We have already described the shortage of international experience in the preliminary analysis, and due to their limited size, the capital requirements for a global expansion require a strategic partnership to succeed. (See Appendix 11 – Contract Customers)

**Contract Specifics**

The importance of adequately creating contracts is embedded in any partnership. The objective of such contracts would be to secure both the chosen partner and Aquastructures’ interests, while preventing the possibility of intellectual property right infringement. As a potential strategic partner would likely be of a larger size, it is important to secure any issues
which could lead to opportunistic behaviour. Consulting organizations such as CEBC may be beneficial; as such organizations will be able to provide guidelines and advice specific to this region and industry. Contracts will vary in regards to content and width, as well as the complex regulatory system involved in creating such agreements. It is beyond the scope of this report to further detail the agreement, as these are subject to negotiations between the involved parties.

**Environmental Endorsement & Cooperation**

The aquaculture industry, especially with regards to the fish farming segment, has caused controversy worldwide throughout its history. The two most commonly discussed factors of stated concern are escapes and sea lice. These threats are highlighted as to allegedly causing potential harm to the local environment.

The province is home to several high-profiled environmental groups, including Greenpeace, Georgia Strait Alliance, and The David Suzuki Foundation - all contributing to a high level of media coverage. The average BC citizen has a relatively high level of involvement with regards to issues related to the local environment, and media coverage often reflects the concerns of “green” NGOs.

With concern to the fish farming industry, the relative power of influence is held by three dominating and intertwined factors; public opinion, ENGOs, and the Government. These three factors are highly co-dependent, which also means that any influence by external factors on either of these is likely to affect the other two. Public opinion is part of what drives both the Provincial and Federal governments, with resulting policies and regulations. As the general public opinion in BC is overwhelmingly pro-environment, the political legislative drive and general focus aim to fulfill these public expectations. The fish farming industry in BC has to some extent become an industry which can be targeted politically, often through media involvement, due to its limited size, when compared to other major BC industries.

The different ENGOs located in the BC region have a strong influence on the level of attention aimed at this particular issue. When these organizations raise issues such as sea lice
and escapes, often through the media, the public is presented with the potential environmental damages this small industry allegedly creates. If the lobbying of these ENGOs is adequate enough to create public outcry, political involvement is likely. One of the results of the ENGO lobbying and resulting political actions is apparent in the move to ban fish farming in the Northern region of BC (Fletcher, 2008).

The ENGOs represents the most direct threat towards the current aquaculture industry of BC. Strong influence, and a consistent pressure on governmental branches to increase safety measures, has been highly involved in creating the current static situation (Nielsen, 2008). As fish farmers are reluctant to comply with ENGO demand - partially due to economical factors, as well as their belief of necessity – the industry will see few changes.

**Working with the Community**

For Aquastructures, the high level of environmental concern potentially poses a threat due to the potential limitations of the market. However, this issue can be dealt with in a manner which potentially can provide the company with a market opportunity with several future benefits.

In order to successfully extend the potential market, and create a brand name with positive associations, all sides to the aquaculture industry must be considered and dealt with. As the environmental organizations located in the BC region yield great influence on both public opinion and the resulting political legislative stance, their overall power cannot be disregarded.

To fully exploit this as an opportunity it is recommended that some level of cooperation or endorsement should be obtained in Norway in advance of an expansion to the Canadian market. Having the support of a domestic ENGO will likely provide a better opportunity for approval within the Canadian/BC region, as “environmentalists listen to other environmentalists” (Crockett, 2008). Examples of cooperation between ENGOs and industry players are not uncommon. This year, WWF-Norway and Marine Harvest agreed to enter into a joint commitment to improve the environmental impacts of the aquaculture industry in Norway (Nortrade.com, 2008). WWF, an organization with worldwide presence, enables the
impact of the partnership to be of mutual benefit for both parties. A recommended approach for Aquastructures would be to follow this example, and enter into an agreement with WWF or similar ENGOs. Bellona and Greenpeace are other possible options – the main focus should be to find an organization with the ability to provide trustworthy and adequate endorsement transferable to the Canadian ENGOs.

In an open letter to the Vancouver Sun, the Regional Science Director of Department of Fisheries & Ocean (DFO), Laura Richards, describes how a multi-stakeholder workshop on closed containment could benefit both the industry and the environment (The Vancouver Sun, 2008). Fisher explains how the DFO hosted such a workshop in Victoria, with high attendance. She further explains;

“In collaboration with the BC government, non-government organizations and other stakeholders, DFO is committed to developing technologies that protect the environment as a sustainable aquaculture industry continues to develop in Canada” (The Vancouver Sun, 2008).

Hence, there is an undeniable interest and opportunity for new parties to enter this type of collaboration, and provide technological solutions. Aquastructures would likely be able to use their service package in such cooperation, and consequently build both relationships and reputations with all parties involved in the subject.

The Canadian organizations to consider will depend on localization and willingness to cooperate. Georgia Strait Alliance is a relatively small, yet highly visible organization within the BC market. It has already showed initiative to cooperate with government and industry players, with the aim of developing new solutions such as in-water closed containments (Georgia Strait Alliance, 2007).

Other organizations, such as the more controversial David Suzuki Foundation has established itself to be a highly recognized and active ENGO within the BC region, as well as on a global scale. A partnership with this organization may provide a crucial endorsement in the Canadian market. However, the organization is considered to be one of the most extreme ENGOs and may therefore be less eager to cooperate with an industry player.
A less prominent and equally controversial organization within the BC region is Living Oceans. This organization is opposed to the current practice within the fish farming industry. It is one of the founding members of the Coastal Alliance for Aquaculture Reform (CAAR) (Georgia Strait Alliance, 2008), an organization calling for innovation and changes within the industry (Living Oceans, 2008). Approaching such organizations may yield positive results, if the service is presented as an improvement on current practices.

**Brand Canada**

The Canadian aquaculture industry has developed the Brand Canada initiative. Brand Canada is a visual image symbolizing Canadian aquaculture products as safe, of high quality and produced in an environmentally responsible manner – in addition to being fully traceable. In the future, Brand Canada could be used as a certification logo that can appear on product packaging for those operators which have implemented national standards and passed a third party certification audit. The goal is to have the brand recognized by buyers and consumers as the symbol of superior quality, and the highest possible standard (Canadian Aquaculture Industry Alliance, 2008). Brand Canada will be an opportunity for the industry to produce products, and educate the end consumer on the high level of controls regarding the production methods. Further, this can provide incentive for the industry to closely follow the environmental and legislative requirements as the end consumers are likely to prefer products packaged with the certified logo.

In order to ensure that the Brand Canada initiative is accepted by the public, it is vital that adequate support is gathered. By ensuring ENGO support and participation in the accreditation process, the logo is more likely to be acknowledged as an official and reliable certification label. Further, all market participants must be involved to help the promotion of such a label. One important endorsement would be from the food and beverage segment. There are signs of willingness to cooperate if convinced of adequate controls. Convictions like these are likely to come from ENGOs such as The David Suzuki Foundation (The Vancouver Sun, 2008), which supports our eagerness in getting the organizations involved in the Brand Canada Logo. The requirements and controls involved should be transparent in order to ensure public knowledge and trustworthiness. This creates an opportunity for
Aquastructures to become involved, as they can provide a standardized and transparent method of control.

**Alternatives**

When taking into account the possible entry strategies, two main alternatives are developed as the best courses of action for Aquastructures’ expansion to Canada.

**Direct Sales**

The option of selling Aquastructures products and services directly to the end customer would entail a continuation of current practices. As discussed, this can be achieved by approaching the major players through industry trade conventions. Having already established relationships with several of the international companies within the industry, further sales to these would not involve the resource demanding process of educating and promoting the features of the offered service.

However, Aquastructures will find some limitations to this approach. The alternative does not provide an opportunity for market growth, as the industry is not likely to expand within the present environment. Hence, no or few new sites will be constructed, and the market will mainly rely on maintenance of established constructions. Aquastructures will likely be able to obtain a certain market share, due to the previous connections with the industry players, but a growth beyond this point is not feasible as it would require a physical presence.

To extend the alternative to include some physical presence, an agent can be hired. By using an agent Aquastructures will be able to receive market updates and provide direct promotion aimed at the industry, widening the potential market. Neither the option of direct sales nor the use of an agent are, however, likely to provide sufficient presence to involve the company in such projects as the current in-water closed containment.
Strategic Alliance with an Engineering Firm

Aquastructures can form a strategic alliance with an engineering firm to obtain a foothold in the aquaculture market in British Columbia. This alternative can be broken into two phases, one structured to suit the short term goals, and the other pursuing the desired long term objectives.

Phase I

Aquastructures needs to be seen as a credible and reliable firm to be accredited as an analysis/inspection tool for BC aquaculture. This will also entail providing its services through a licensed BC engineering firm. According to Consulting Engineers of British Columbia, a local presence is required to be able to sign as an accredited body. Aquastructures would need to remain in control over their provided services and avoid opportunistic behaviour. In terms of this issue it is important to develop an appropriate and adequate contract. A vital part of this strategy is locating the “perfect” partner, one which will adequately fulfill the predetermined needs of Aquastructures.

The selected engineering firm can benefit from having a strategic alliance with Aquastructures in terms of then being able to offer a more complete and standardized service. Examples of such benefits would be the widening of both companies’ customer portfolio, resulting in mutual gains. This can further provide the potential partner with access to market opportunities in Norway.

Phase II

The BC Aquaculture industry is today at a stand still, but demand for new regulations as well as the work done by environmental groups can result in dramatic shifts in the industry. If explored thoroughly and at an early stage, the forecasted shift can potentially create opportunities for Aquastructures.
The long term incentive to enter the Canadian market could be the pending results of environmental groups’ fight for closed containments. This can potentially provide a huge opportunity for Aquastructures and similar engineering firms, as it will result in new and increased demand for engineering and anchoring/analysis services. The process of developing in-water closed containment facilities is presently in progress, with several parties cooperating to develop an economically and environmentally viable solution. If closed containments would reach the stage of general implementation in Canada, it has the potential to become a global standard, as the industry worldwide is facing ever increasing pressure from both legislation and ENGOs.

The development of new solutions, such as closed containment in water, provides Aquastructures with the prospect of securing a market position as a major service provider for the new developments. Advantages are likely to be obtained if participation in the process is undertaken rapidly, and together with all participating parties. Aquastructures should explore the option of working closely together with environmental groups such as Georgia Strait Alliance, The David Suzuki Foundation, and other members of CAAR, to further develop this alternative.

Further, Aquastructures can use BC as a model for a long-term global strategy. Canada is one of the most environmental conscious countries in the world, and as studies show, the Canadian public believes environmentalists to be more trustworthy than lawyers (Crockett, 2008). Although the environmental image of the average Canadian may be more talk than individual action, succeeding in an industry with such a level of public scrutiny and ENGO involvement will likely enable the company to succeed in other somewhat hostile environments.

This will also result in a large market potential for engineering firms in terms of producing closed containments structures, further providing incentive for strategic cooperation. Environmentalists have a tendency to trust each other, thus collaboration with environmentalists can make it easier for Aquastructures in the future. As mentioned in the report, an endorsement from both a Norwegian and a Canadian ENGOs would provide a higher level of acceptance with similar organizations worldwide – easing the development of brand recognition and market position.
Conclusion & Recommendations

The report has in its entirety been developed from the initially defined research problem:

“Is there a market demand for Aquastructures’ services within Canada; specifically the province of British Colombia, and will this market provide a profitable investment opportunity for Aquastructures?”

In order to correctly answer the research problem, information was obtained from several sources, including interviews, electronic and print sources, as well as academic sources. The information was then combined with relevant theories from international marketing to analyze the topic at hand: Aquastructures’ potential presence in the Canadian aquaculture industry.

After analyzing the information gathered, a SWOT analysis was used to determine the goals of Aquastructures and to specifically define the strategic problem definition:

“How can Aquastructures use their advanced technology and their strong human capital to overcome the barriers to be accredited as certification tool in Canada, especially in due of their lack of Government relations? Further, how can Aquastructures use the public and political demand for increased security for fish farming sites and demand for certified products such as the Brand Canada Logo to their benefit, and overcome the threats posed by the ENGOs and the changing political climate, along with the suggestion of fish farming in closed containments?”

The SPD provides a further definition of the strategy to be considered, and combined with key success factors, firm specific advantages, and a GAP analysis the strategy was developed.

After considering the different courses of action and proposed entry strategies, we recommend a strategic alliance with an engineering company. This strategy would call for Aquastructures to approach a company in possession of the criteria previously detailed in the
The strategy would entail a partnership with a company well established domestically, as well as internationally. The company found to be best fit in such a partnership is Westmar Engineering Consultants. The company is of substantial size, as well having extensive international experience. Westmar operates within several areas of engineering, including the aquaculture industry. The authors recommend Aquastructures to explore the possibility of partnering with this company. The strategic alliance would be a step towards the long term goal of expanding beyond the limitations of the current market, using BC as a platform, and ultimately providing Aquastructures solutions worldwide as part of a global strategy.

Further, with reference to Phase II of the chosen alternative, the authors strongly recommend to look at the possibility of ENGO cooperation. As discussed in the report, there are several examples of projects in which the industry participants, Government and representatives from the environmental cause have cooperated to explore sustainable and environmentally sound solutions for the aquaculture industry. The increased focus on the potential transition from open net cages to closed containments in water, has been the most prominent solution resulting form this type of collaboration. Aquastructures is therefore recommended to follow the suggestions provided in this report on this topic.

In order for Aquastructures to succeed with the proposed strategy, several key issues will require further attention. The following is the recommended course of action:

- Westmar Engineering Consultants has been identified for a strategic alliance. However, there are several other potential partners within the Canadian market: Ocean Dynamics being one of these. Further exploration of suited partners should be conducted, to increase the chances of a successful Canadian expansion for Aquastructures.

- Because the process of developing alternative solutions within the aquaculture industry is already in progress, Aquastructures is recommended to begin their participation in such developments within the end of 3rd quarter 2008.
- Participating in trade fairs/shows, can be an efficient way to build strategic relationships, and promote future sales. Attendance and service promotion at such industry forums, both in Norway and internationally, is recommended to further market Aquastructures offered services.

- Pursuing different options in terms of environmental organizations and potential partners. At the time being the Canadian market is somewhat limited and is currently at a standstill. Through cooperation Aquaculture may be able to participate in creating a larger market for the company. As a result, Aquastructures would be “making the pie bigger.”

- Further developing the exiting website. After having established contact at tradeshows it is imperative that potential partners and customers are met with a professional and informative website. The authors strongly suggest improving the already existing content as well as providing additional information. The English version of the site should equal the Norwegian version in terms of content and professionalism. At the very least, spelling and grammar should be flawless.
Discussion

The report has been developed using resources available to the authors within the predetermined timeframe. The following is the authors’ criticism, as well as suggestions for further research.

Criticism

In the process of developing this report, there have been several limiting factors with regards to the process of gathering information. The authors have faced several barriers in the making of this report, but most of these have been overcome. The barriers not overcome have been described in the limitations section, or in the appropriate sections of the report.

Due to the complexity of the aquaculture industry in Canada, specifically in regards to the regulatory requirements and the public/ENGO involvement, providing accurate and relevant sources of information has proven difficult. The sensitivity of fish farming as a topic of discussion, as well as the available time and resources in the development of this report, may have affected the availability of unbiased information. The changes of industry security demands and often biased sources, may also have affected the relevance of earlier studies used in the report. Changes to the industry and its regulations are likely to occur based on several factors such as, public and ENGO pressure, as much as it will be based on academic studies.

Due to the geographical dimension of Canada, this report does not evaluate the potential market in Eastern Canada, as the authors have chosen to limit the research to the province of BC. Because most of Aquastructures’ desired primary market is located in this area, further supporting this decision. To be able to gain knowledge on the topic of aquaculture in BC and collect information for this report, the authors have relied on both primary and secondary sources. These sources are considered reliable, barring any potential bias. Several interviews with key sources in possession of industry experience have been conducted.

Aquastructures were not able to provide full financial data, which resulted in estimation regarding the financial section. Furthermore, the authors have not been able to obtain in-depth information of costs involved in a possible strategic alliance. Such costs, and further
contractual issues detailed in partnership agreements, are subject to negotiations between the involved parties. However, additional research has been recommended, and Aquastructures should consider the authors’ proposed strategies as a platform for further research.

Suggestions for further studies
The authors have conducted research essential for the task at hand, and for the completeness of the report. The provided alternatives are based on the information obtained, in combination with relevant academic theories and the discretion of the authors. The conduction of further studies is however recommended, with specific focus on the following topics:

- **Strategic Partner.**
  In order to find the best suitable partner for Aquastructures in Canada, the company must determine its own corporate goals and opportunities to attain a preferable strategic position in the industry. Furthermore, cost estimates and contractual issues involved in such an alliance must be evaluated.

- **Industry/Political Changes.**
  A successful Canadian market entry is highly dependent on accurate up to date information on the political situation regarding legislative changes, regulations and public opinions that might affect their chosen entry strategy. Additional research and observation is therefore necessary.

- **ENGOs.**
  It is the recommendation of the authors that further research should be conducted concerning the cooperation with an ENGO. By further exploring the possible benefits provided by participating in projects such as closed containment, and industry related solutions such as The Brand Canada initiative, successful access to the BC market can be better secured. This can also provide valuable relationships for a long term international approach in the search of additional markets.
Competitive Climate.

As the aquaculture industry is projected to undergo substantial changes in the years to come, it is also likely that the competitive climate will change accordingly. Research and market observation is therefore recommended to obtain vital information of the competitive landscape and its potential changes.
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Crockett, B. (2008, April). Visiting Professor SFU / Project Supervisor. (Etholm, Interviewer)


Living-Oceans. (2008, March 5). (T. Thomassen, Interviewer)


Appendix

Appendix 1 – Fish Farm Locations, BC Coast

Source: http://www.focs.ca/img/fishfarming/FishfarmsBC_nov07_poster_final_resized.jpg
Appendix 2 – Net Failure Factors

The factors contributing to escapes can be roughly divided into six general categories:

System Failure: failure of containment structures or anchoring systems that result from a technological failure not related to nets, generally of a catastrophic nature. Can most often be attributed to extreme weather or ecological events (i.e. floods).

Boat Operations: net tears or infrastructure damage resulting from propeller or whole boat collisions with the net pen system.

Net Failure (predators): net tears resulting from seal, sea lion or dogfish attacks.

Net Failure (maintenance): net tears resulting from poor or inadequate maintenance such as chafing of nets due to contact with abrasive equipment, failure to repair small holes, deterioration of nets with age, failure to remove dead fish or debris, etc.

Net Failure (known or suspected vandalism): fish loss resulting from a suspected or known vandalism incident.

Handling: fish loss that results during fish handling events such as fish transfer, net changes, towing, sorting, grading, harvesting, etc and is not related to failure of the integrity of a net-pen or containment structure. This type of escape can generally be directly attributed to human error.

Source: [http://www.agf.gov.bc.ca/fisheries/escape/escape_reports.htm](http://www.agf.gov.bc.ca/fisheries/escape/escape_reports.htm)
Appendix 3 – Closed Containments (in water)

Source:
http://www.democracyinaction.org/dia/organizationsORG/farmed/campaign.jsp?campaign_KEY=11390

Source:
http://www.farmedanddangerous.org/solutions/index.html
## Appendix 4 – The Bakka Internationalization Model

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<td><strong>Financial results</strong></td>
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<td>Marginal or</td>
<td>Positive</td>
<td>Mutual</td>
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Appendix 5 – Nine Strategic Windows

Appendix 6 – Porter’s Five Forces

### Appendix 7 – BC Province Climate

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<th>Month</th>
<th>Average Temperature Celsius (Fahrenheit)</th>
<th>Average Monthly Precipitation (mm)</th>
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<td>January</td>
<td>-0.1 (32)</td>
<td>5.9 (43)</td>
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<td>March</td>
<td>1.7 (35)</td>
<td>9.8 (50)</td>
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<td>May</td>
<td>6.9 (44)</td>
<td>16.8 (62)</td>
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<td>July</td>
<td>10.9 (52)</td>
<td>21.9 (71)</td>
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<td>September</td>
<td>8.8 (48)</td>
<td>19.2 (67)</td>
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<td>November</td>
<td>2.8 (37)</td>
<td>9.6 (49)</td>
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<td><strong>Annual</strong></td>
<td><strong>5.3 (42)</strong></td>
<td><strong>13.9 (57)</strong></td>
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Appendix 8 – SWOT Analysis (Weighted)

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<th>STRENGTHS</th>
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<td>- Reputation of quality and reliability (A)</td>
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<td>4</td>
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<td>- Diversity of services/unique technology (B)</td>
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<td>5</td>
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<td>- Human capital (C)</td>
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<td>4</td>
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<td>- International experience (D)</td>
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<td>2</td>
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<td>- Rapid growth (E)</td>
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<tr>
<td>- Connections with established fish farming companies in BC (F)</td>
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<td>3</td>
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<th>WEAKNESSES</th>
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<tr>
<td>- Physical presence in Canada (H)</td>
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<tr>
<td>- Workforce (I)</td>
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<tr>
<td>- Accreditation as certification tool/engr. license (J)</td>
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<td>1</td>
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<tr>
<td>- Government relations (K)</td>
<td>3</td>
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<td>- ENGO ties (L)</td>
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<th>OPPORTUNITIES</th>
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<tr>
<td>- Industry changes (M)</td>
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<tr>
<td>- World wide increase in demand for fish (N)</td>
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<td>High</td>
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<tr>
<td>- Public and political demand for increased securing of fish farming sites (O)</td>
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<td>High</td>
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<tr>
<td>- Currently no companies providing similar service package (P)</td>
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<td>Medium</td>
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<tr>
<td>- Brand Canada initiative (Q)</td>
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<td>Medium</td>
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<tr>
<td>- Closed containments (R)</td>
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<td>Medium</td>
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<tr>
<td>- ENGO pressure and influence (S)</td>
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<td>High</td>
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<tr>
<td>- Degree of saturated market (T)</td>
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<table>
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<tr>
<th>THREATS</th>
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<td>- The strength of the Canadian dollar (U)</td>
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<td>- Fish farming under constant public and political scrutiny (V)</td>
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<td>High</td>
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<tr>
<td>- ENGO threats and lack of cooperation (W)</td>
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<td>Medium</td>
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<td>- Complex regulatory environment (X)</td>
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<td>- Suggestions to move farming on land (Y)</td>
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<tr>
<td>- Commercial fishing industry (Z)</td>
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<tr>
<td>- Wild Salmon Industry (Æ)</td>
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<tr>
<td>- Competitors (Ø)</td>
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(Solberg, 2006)
(Framnes and Thjømøe, 2002)
Appendix 9 – Porter’s Generic Strategies

![Porter's Generic Strategies Diagram](http://www.quickmba.com/strategy/generic.shtml)

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**SOURCE:**
http://www.agf.gov.bc.ca/fisheries/licences/MFF_Sites_Current.htm
Appendix 11 – Contract Customer

Interview Appendix

Interview with Terry Nielsen - The Ministry of Agriculture & Lands.

The Ministry of Agriculture & Lands (MAL) consists of several divisions parting the provincial regulatory issues. One such branch is the BC governments Aquaculture Development Branch for Finfish and Aquaculture. This branch is in charge of regulatory issues regarding the provincial aquaculture industry. To clarify several issues with regards to the aquaculture industry, the authors met with MAL’s Finfish Aquaculture Specialist, Terry Nielsen, for an interview at their offices in Courtenay, Vancouver Island.

As stated by Nielsen, the ministry’s responsibilities are tied to inspections of any sites within the BC area. The inspections, set to limit safety concerns, vary in frequency and intensity. The tools and form of inspections ranging from camera surveillance, dive inspections, sediment testing, waste monitoring, and the most common surface inspection. Mr. Nielsen further explained the regulations and legislative issues involved to be limited in its overall transparency and with no clear guidelines. Currently there are two main independent inspection organs certified to approve and inspect a fish farming site; WestMar& Ocean Dynamics.

The aquaculture industry involving finfish can be considered as static within BC. There are currently no new fish farming licenses being applied for. However, as the regulatory issues involved in the process of approving new sites, changes to current sites, expansions, or relocation, become increasingly demanding, the situation is likely to encourage the renewal of existing sites. Nielsen suggested this to be an important potential approach for Aquastructures, as he predicts the industry to be likely to remain at its current, and strained, level. As a note, Nielsen explained how the last 7 years had seen 10 new fish farms approved, as well as 10 sites being closed.

Mr. Nielsen provided an in-depth insight into the industry, as it is operating at the present time. Through his statements it became apparent that - in his opinion - the political climate followed the strong public perception of fish farming endangering the local environment and wild salmon stocks. He further stated that this directly influenced both the federal and
provincial government’s lack of support for the fish farming industry, politicizing an industry which can easily be targeted due to its somewhat limited employment levels and comparatively lower revenue scale – when compared to other BC industries such as oil and forestry.

Nielsen, when asked about the influence of environmental organizations, backed previous notions mentioned by Richard Opala of Marine Harvest; stating that there are seemingly close ties between the Alaska Wild Salmon industry and E-NGOs within British Colombia. Mr. Nielsen’s comment strongly implied that there is a strong incentive for the wild salmon industry to target - and fund - the fish farming industry in order to limit sales and production of farmed fish.

The issue of First Nation rights, influence and participation in the fish farming industry was also discussed. The opinion of Mr. Nielsen was concurrent with much of our preliminary findings. First nations fish farming is currently a widely spread throughout the BC region, especially on Vancouver Island. However, these farms are small in size, without a build or production level of significance for the general fish farming industry. When asked, Nielsen argued that although there is less regulations within the First Nation territories, the production is strictly limited to personal need/use, and is not structured to be a competitive industry or market participant. Nielsen further dismissed that there would be any market for Aquastructures’ products in connection to the first nations fish farms, unless the product would involve small scale on-site inspections and measurements. This would however be unlikely, as the smaller fish farms will be more price-sensitive.

Mr. Nielsen closed by mentioning that any new tool which could be used to ensure safety of fish farms would of course be interesting for the industry and the ministry. However, the current situation is rather opposite of the general public opinion. To his knowledge there has been no significant level of escapes from any BC fish farm, and the current regulations are more than sufficient, when considering overall safety. The public issue, he states, is however more related to the issue of sea lice – an issue which in his opinion is non-existent.
Interview with Richard Opala - Marine Harvest

Through earlier research of the BC fish farming industry, the authors contacted Marine Harvest. Marine Harvest Canada operates on the coast of British Columbia and Vancouver Island, where 500 people produce 45,000 tonnes of high quality fresh salmon a year. At Marine Harvest’s office in Campbell River, the authors met the Regulatory Compliance Coordinator Richard Opala.

Mr. Opala started our meeting with a brief background of the company. The company was a part of Stoltseafarm/Panfish up until three years ago. The company is a result of an acquisition of several minor companies with different experience and have merged the various experiences together. When asked how the current situation regarding certification worked, Mr. Opala explained that they had an engineer, Jeff King, employed in their company. He explained that they did not use any tools to estimate how they should secure the anchoring; it all relied on past experience. He stated that marine facilities are doubled in what is necessary for security too make sure nothing goes wrong. Government conduct a site inspection annually. An Inspector from Agriculture & Land has an onshore inspection as well as confirming whether the appropriate documentation is in place. Regulators just need a sign off, “wash their hands if anything happens in the future”. The governmental inspection is a visual thing, the do not go under water to check it physically.

When asked where Marine Harvest locates their fish farms, Mr. Opala responded that they locate their farms wherever the fish is, but they also relocate sites with public pressure, “out of sight out of mind”. The authors asked why there were so many different attitudes and opinions regarding fish farming. Mr. Opala explained that Wild Fisheries in Alaska see Marine Harvest as a major threat; they give foundations to environmental activists to fight against Marine Harvest. They tell people that wild salmon has to be protected and that farmed salmon results in Sea Lice. Mr. Opala said that Sea Lice does not exist and that the public lack knowledge. This makes it a difficult subject, due to the difficulty of explaining something that does not exist. He further stated that no fish farming will result in over fishing.
The interview provided the authors with a good insight into the procedures being practiced at Marine Harvest, and the general practices of the industry. Mr. Opala was interested in further information about Aquastructures products and services, and mentioned that the company had previously used Aquastructures’ services for a mooring analysis.
Interview with Brock Thompson - Mainstream Canada

Through previous research of the BC fish farming industry, the authors contacted Mainstream Canada. The company is one of the largest farmed-salmon companies in Canada, and a part of the Mainstream Group. This is a farming division of the Norwegian holding CERMAQ, a fully integrated world leader in salmon production.

At Mainstream Canada’s offices, the authors met with Physical Operations Manager, Brock Thompson for an interview. When asked about the current system of certifications and inspections, he explained that the initial application process for establishing a new site takes about two years, and is a rather complicated matter. Mainstream Canada normally use two engineering companies for design and construction of the facilities; Ocean Dynamics and Westmar Engineering. Mainstream provides the companies with information regarding the currents surrounding the site. All other weather information the companies attain from selected weather stations.

Regarding inspections of the sites, Mr. Thompson described how the onsite, surface inspections were held, and that these often are quite expensive. He also stated that the Ministry of Agriculture & Land inspects the company’s sites annually. These inspections are mainly a control of coherence between the official site plans, and the paperwork in the form of bookkeeping, registration of escapes, and complying with the required security levels.

There are no specific regulations instructing the company on how to verify the quality of the structures. Mr. Thompson also described how most of their customers were US companies, both from the east- and west coast. Upon conclusion of the interview, the authors inquired about the production capacity for Mainstream Canada. The company produces 600 metric tons per pen, approximately 3000 Mt per site. This is approx. 600 000 salmons each of an estimated 5 kilo weight average. Brock Thompson has provided the authors with a good insight into the procedures being practiced at Mainstream Canada, and the general practices of the industry.
The Georgia Strait Alliance (GSA) is a non-profit organization based in Nanaimo, Vancouver Island. The organization’s main focus is protecting the marine environment in and around the Strait of Georgia, an area hosting the majority of the aquaculture industry on Vancouver Island. Their campaigner Michelle Young provided us with insight into the organization, and their stance on the fish farming industry.

Upon arrival at the GSA headquarters we received a flyer - “Think Twice” – describing the issue of salmon farming, and the environmental impact GSA portrays as significant to this segment of the industry. As Young stated, the GSA are not against the aquaculture industry as a whole, but would rather see the industry change to adapt to environmentally sustainable operations. When asked about the fish farming industry and the current players, Young presented her opinion on the overall state of the industry. As a main concern, the issue of sea lice was discussed. Young described this topic as the main hazard to the local marine life, especially the wild salmon stocks in the area. According to Young the sea lice issue has been a substantial participant in the decrease of wild salmon stocks. When asked about the frequency of incidents and the numbers involved, Young could not provide specific numbers or hard data – but stated that such numbers exist. However, she specified that such numbers would never be completely accurate, as neither the industry, government, nor the ENGOs, have the resources to provide detailed overview of complete salmon stocks, or sea lice outbreaks.

When asked about the problem of escapes from salmon farms, Young stated that this is not the most crucial issue at hand, but the issue would still be considered of high concern. The safety of the salmon farms was stated to be of a high concern, however the organizations main task would be to see closed containment fish farms.

The authors asked about the feasibility of closed containment fish farming, both on- and off-shore. Young stated that this of course would be the best solution for the industry and environment, as it would limit the issues of both sea lice and escapes dramatically. She however mentioned that the industry was hesitant and reluctant, due to the financial costs, and specified that the feasibility of off-shore containment would be low. This is mainly due
to the high costs, and environmental factors involved, such as the resource demand of such pens straining local sources. She mentioned how in-water closed containments would be a great advance in fish farming, and that this was of higher potential due to costs and environmental issues. GSA is currently involved in a test project for in-water closed containment fish farms.

Young, when asked, stated that the wild salmon industry is an important source of food and income, but must be protected from over-fishing. She further disregarded the notion of the wild salmon industry being of higher threat of over-fishing if a hypothetical ban on farmed fish would be put in place.
Interview with Yajie Liu - Fisheries Department, University of British Colombia.

After contacting the fisheries department at UBC, the authors were contacted by Yajie Liu, who has done her PhD on the economical pros and cons of closed containments versus open-net-cages. The authors wanted to get some basic knowledge of the results Ms. Liu had discovered through her analyses, and to gain a deeper understanding of the many forces working this industry.

When asked what the results of the analyses were; Ms. Liu explained that they had come to the conclusion, that closed containment on land was not a possible due to the geographical formations in the BC region. Regarding the current system of closed containments in water, the investigations concluded that this provided only marginal profits for the executors, even when being subsidised by the government. The current systems have been tested by several companies in the BC region the last 3-4 years, and they have also come to the same conclusion. Further she explained the lack of regulations from the government’s side, and the high demands for strong regulations from environmentalist groups, such as the David Suzuki foundation. The current regulations, she explained, were not specific enough, and the practice is that the company needs an environmental assessment from a third party (not the government or the company itself) to get a licence to operate. This would then be valid for approximately five years, before the plant requires a re-evaluation. After the second examination, the licence would in theory last for about 25 years, taken big storms, floods etceteras, into consideration.

With regards to Aquastructures services she saw great potential in the BC-market for this sort of control- and examination tool, both for salmon, black cod and other fin- and shell-fish. Ms. Yajie Liu even offered some recommendations on how to approach the market. These were mostly focused on contacting representatives from the Ministry of Agriculture and Land, and the larger fish-farming companies located in BC, which she provided the contact information for. At the end of the interview, she informed the authors that the BC government is constantly looking at what the Norwegian government is undertaking regarding aquaculture, and looking at opportunities to transfer this into the BC market. Ms.
Liu suggested a comparison between the pre- and after results of the usage of Aquastructures services in Norway.

Ms. Yaije Liu have provided the authors with new insight, written material to use for further work, and a list of contacts.
Interview with Brian McAskill – Consulting Engineers of British Columbia (CEBC)

In order to clarify issues with regards to the potential regulatory and industry-specific requirements in BC, the authors contacted the Association of Canadian Engineering Companies (ACEC). The representative for this company suggested a better suited source, the Consulting Engineers of British Columbia (CEBC), operating within issues related to the BC industry.

Brian McAskill, Communications Manager of the CEBC, when told about Aquastructures and the potential Canadian expansion plans, was able to clarify several issues. As McAskill explained, the situation in BC enables any company to enter the BC market, as long as it is registered as an official engineering company. To further comply with provincial regulations, local staff is required to obtain a local engineering license. However, unlike other Canadian provinces such as Manitoba and Ontario, there is no requirement in BC for an official certificate of authorization. As McAskill explains; “this simplifies the requirements for BC companies, as this authorization process is somewhat of a costly and bureaucratic procedure”. He however, also mentioned that a federal pilot program is being planned, possibly for the end of 2009, where the Association of Professional Engineers and Geoscientists (APEG), will test the use of a similar form of authorization for the province of British Columbia.

When asked about the procedures in BC for cooperation between engineering companies, McAskill told the authors that such cooperation where frequent. He further specified that our company would benefit from an alliance with a local company, as local knowledge and reputation will be easier to obtain through such partnerships.

McAskill also mentioned that to his knowledge, no other specific requirements than local presence and a license as an engineering firm would be required to operate in BC. A local partnership is likely to provide this if desired.
General Interview Background

Through the research process the authors have been in contact with several resourceful people. For a complete list of interview objects, both phone and in person, see research list. Throughout this process, the purpose of these interviews has been to gather as much information as possible about the fish-farming industry in Canada, focusing on the region of British Colombia. Another objective has been to get insight into how the licensing and certification process currently are working. Through these interviews, first-hand knowledge of these processes has been passed on. This first interview-process has not been as in-depth as the upcoming sequence will be, since personal, in-depth interviews have been scheduled with most of the participants.
Research Summary

The following list indicates organizations, companies, and government branches currently used in this report.

Primary Research

Interviews

- Mainstream Canada – Brock Thomson, operational manager
- Marine Harvest Canada – Richard Opala, Regulatory Compliance Coordinator
- Ministry of Agriculture and Lands, Aquaculture Development Branch – Terry Nielsen, Finfish Aquaculture specialist
- Georgia Strait Alliance – Michelle Young, Salmon Aquaculture Campaigner
- Fisheries Economic Research Unit, Fisheries Center, University of British Columbia – Yaije Liu

Telephone Interviews

- Ministry of Agriculture and Land – Fishing Inspector & Marco P. Moeller
- Living Oceans – Local Representative
- SalmonFarmers.org – Mary Ellen Walling
- Marine Harvest Canada – Jeff King
- Aquastructures – Harald Trondstad
- Grieg Seafoods Canada – Corporate contact
- Consulting Engineers British Columbia (CEBC) – Brian McAskill
Secondary Research

General Sources & Inquiries

Fish Farming Companies:
- Grieg Seafood Canada
- Mainstream Canada
- Marine Harvest Canada
- PanFish Canada

Engineering companies:
- Ocean Dynamics Canada Ltd
- Westmar Engineering
- Bureau Veritas Group

NGO:
- Aboriginal Aquaculture Association
- AboriginalAquaculture.com
- Aquaculture Association
- Canadian Aquaculture Industry Alliance
- David Suzuki Foundation
- Farmed fresh and healthy
- Food and Agriculture Organization of the UN
- FriendsOfWildSalmon.ca
- Georgia Strait Alliance
- Infofish.org
- Innovation Norway
- Living Oceans Society
- Nortrade.com

Academic Sources:
- Euromonitor’s Global Market Information Database
- EuropaWorld.com
- Ocean World
- QuickMBA.com
- 2008 Euromonitor International

Online Sources:
- Aquastructures
- Aquametrix Research
- CIA - World Factbook
- Handbook of Country Risk
- GeertHofstede.com
- Michelangelo Celli of The Cornucopia Group
- The World Fact book CIA
- Northern Aquaculture
- VancouverIslandAbound.com
- WorldBusinessCulture.com
- Yellowpages Canada
Media Sources:

- Dagens Næringsliv
- The Vancouver Sun
- CBC.ca

Printed Source:

- Kotler, Marketing Management
- Solberg, Internajonal Markedsføringer

Governmental sources:

- BC Chamber of Commerce
- BC Government
- Fisheries and Aquaculture Licensing and Compliance Branch
- Fisheries and Oceans Canada
- Foreign Affairs and International Trade Canada
- Legislative Assembly of British Colombia
- Ministry of Agriculture and Land
- The Legislative Assembly of British Colombia
- Ministry of environment
- Norwegian Ministry of Fisheries and Coastal Affairs
### Contact List

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<td><a href="http://www.mainstreamcanada.com">www.mainstreamcanada.com</a></td>
<td>Brock Thomson, Mobile: +1 250-286-0022, E-mail: <a href="mailto:Brock.Thomson@mainstreamcanada.com">Brock.Thomson@mainstreamcanada.com</a>, 1690 Maple Street, Campbell River, BC V9W 3G2, Telephone: +1 250-286-0115, Fax: +1 250-286-0165</td>
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<td>Marine Harvest Canada</td>
<td><a href="http://www.marineharvestcanada.com">www.marineharvestcanada.com</a></td>
<td>Richard Opala, Mobile: +1 250-850-9085, E-mail: <a href="mailto:richard.opala@marineharvest.com">richard.opala@marineharvest.com</a>, 1334 Island Highway, Suite 124, Campbell River, BC V9W 8C9, Telephone: +1 250-850-3276. Ext. 7260, Fax: +1 250-850-3275</td>
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<td>Grieg Seafood BC Ltd</td>
<td><a href="http://www.griegseafood.ca">www.griegseafood.ca</a></td>
<td>#200 – 1170 Shoppers Row, Campbell River BC V9W 2C2, Telephone: +1 250-286-0838, Fax: +1 250-286-1883, General e-mail: <a href="mailto:info@griegseafood.ca">info@griegseafood.ca</a></td>
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<td>Oceans Dynamics Canada Ltd</td>
<td><a href="http://www.oceandynamics.ca">www.oceandynamics.ca</a></td>
<td>1401B Maple Street, Campbell River, BC V9W 3G2, Telephone: +1 250-850-0118, Fax: +1 250-850-0119, General e-mail: <a href="mailto:oceandyn@oberon.ark.com">oceandyn@oberon.ark.com</a></td>
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<td>Westmar Engineering</td>
<td><a href="http://www.westmar.com">www.westmar.com</a></td>
<td>233 West 1st St, Suite 400, North Vancouver, BC, V7M 1B3, Telephone: +1 604-985-6488, Fax: +1 604-985-2581, General e-mail: <a href="mailto:lhickman@westmar.com">lhickman@westmar.com</a></td>
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<td>Consulting Engineers of British Colombia, (CEBC)</td>
<td><a href="http://www.cebc.org">www.cebc.org</a></td>
<td>Suite 657 - 409 Granville Street, Vancouver, BC, V6C 1T2, Telephone: +1 604-687-2811, Fax: +1 604-688-7110, General e-mail: <a href="mailto:info@cebc.org">info@cebc.org</a></td>
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<tr>
<td>The Association of Professional Engineers and Geoscientists of British Columbia (APEG)</td>
<td>200 - 4010 Regent Street, Burnaby BC V5C 6N2, Canada</td>
<td>Telephone: +1 604-430-8035, Toll Free Canada-wide: +1 888-430-8035, Fax: +1 604-430-8085, General email: <a href="mailto:apeginfo@apeg.bc.ca">apeginfo@apeg.bc.ca</a></td>
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<tr>
<td>Association of Canadian Engineering Companies (ACEC)</td>
<td>130 Albert Street, Suite 616, Ottawa, ON K1P 5G4</td>
<td>Telephone: +1 613-236-0569, Toll Free: +1 800-565-0569, Fax: +1613-236-6193, General e-mail: <a href="mailto:info@acec.ca">info@acec.ca</a></td>
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<td>BC Salmon Farmers Association (BCFSA)</td>
<td>Campbell River, BC V9W 6Y4</td>
<td>Telephone: +1 250-286-1636, Toll Free: +1 800-661-7256, Fax: +1 250-286-1574</td>
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<td>Georgia Strait Alliance</td>
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<td>Michelle Young, E-mail: <a href="mailto:michelle@georgiastrait.org">michelle@georgiastrait.org</a>, Main office: Nanaimo, 195 Commercial St., Nanaimo, BC V9R 5G5</td>
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<tr>
<td>David Suzuki Foundation</td>
<td>Suite 219, 2211 West 4th Avenue, Vancouver, BC, V6K 4S2</td>
<td>Telephone: +1 604-732-4228, Toll free: +1 800-453-1533 in the rest of Canada, Fax: +1 604-732-0752, General e-mail: <a href="mailto:contact@davidsuzuki.org">contact@davidsuzuki.org</a></td>
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