

**STRATEGIC ANALYSIS OF A NEW DIVISION IN THE NORTHERN CIVIL  
CONSULTING INDUSTRY**

by

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## **Abstract**

The purpose of this paper is to identify options the Binnie Northern Division (BND) can implement and execute to help improve its strategic position in the Northern Civil Consulting Industry (NCCI) in Northern British Columbia (NBC).

The paper will provide:

- A description of the NCCI and its limits (geographic and services)
- BND's current strategic position
- An industry analysis of customers and competitors to help identify the BND's strengths, weaknesses, and industry opportunities and threats (SWOT)

Alternatives will then be identified and narrowed down to options, which address the SWOT and can be implemented by the BND.

The key strategic issue the BND faces is finding qualified staff. The recommended options include building alliances with educational institutions and purchasing a small firm in the NCCI.

## **Dedication**

I wish to dedicate this paper to my parents, Wayne and Maureen Bush, for their on going support and unconditional love.

## **Acknowledgements**

I would like to thank all of the staff at R.F. Binnie & Associate Ltd. for their support during the entire EMBA program. In particular, I would like to thank Robert Campbell, Gordon Wagner, Scott Campbell, Gary Shilling, and Michael Richardson.

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## Glossary

NCCI	Northern Civil Consulting Industry
NBC	Northern British Columbia
BC	British Columbia
BND	Binnie Northern Division
BNDM	Binnie Northern Division Manager
BCL	Binnie Consulting Ltd.
Binnie	R.F. Binnie and Associates Ltd.
BCS	Binnie Construction Services Ltd.
APEGBC	Association of Professional Engineers of British Columbia
CEBC	Consulting Engineers of British Columbia
LD	Land Development
Muni	Municipal
Hwy	Highway
PM	Project Manager
BCMoTI	British Columbia Ministry of Transportation and Infrastructure
BCMoF	British Columbia Ministry of Forest
BCMoE	British Columbia Ministry of Environment
GDP	Gross Domestic Product - refers to the market value of all officially recognized final goods and services produced within a country in a given period. <sup>1</sup>

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<sup>1</sup> [http://en.wikipedia.org/wiki/Gross\\_domestic\\_product](http://en.wikipedia.org/wiki/Gross_domestic_product)

# **1: Introduction**

This paper will focus on the strategic analysis of the newly established Northern Division of R.F. Binnie & Associates Ltd.(Binnie). As a medium sized Consulting Engineering Firm established in the Lower Mainland, Binnie has recently opened an office in Prince George, in line with its corporate strategy of continual growth and expansion into new locations and markets. Northern British Columbia (NBC) provides many opportunities and challenges for Binnie, which this paper will discuss. Setting up a new office in a remote geographic location must be analysed carefully to help maximize Binnie's probability of success for the present and future.

Binnie has already completed a number of fairly significant highways projects in the North and has the opportunity to build upon its existing reputation to attract new clients. Establishing and growing a successful office in NBC does pose many challenges such as staff recruitment, staff training, staff retention, remoteness, and client base. These challenges will be analysed and discussed throughout this paper in order to help position the Binnie Northern Division (BND) in the best possible scenario for success.

Following this introduction, the BND's current position will be discussed giving a snapshot of its organizational overview, current strategy, current performance, and current strategic challenges. Open since June 2011, the BND does not have much historic data and its current position is still rather pre-mature, when compared to other established consultants in NBC. Section 3 will define the industry, discuss competitors, customers, sources of advantages, and wrap up with a relative competitiveness analysis. All of the information will be summarized in a SWOT, which will clearly identify BND's internal strengths, internal weaknesses, external opportunities, and external threats. Once all the options are identified in Section 3, Section 4 will evaluate them based on relative industry criteria. Section 5 and 6 will look at the feasibility of the options and recommend how they can be realized by the BND.

This paper will provide a strategic roadmap for the BND enabling it to capitalize on existing internal resources and help increase its probability of success by carefully looking at the business options available in NBC. Binnie is already well established in the Lower Mainland and must penetrate new geographic markets to continue its corporate goal of growth.

## **2: Organisation's Current Position**

Binnie is a medium sized civil engineering firm. The Binnie Northern Division (BND) is the smallest and most remote division and was established during the summer of 2011. This section will discuss the services the BND provides and how it currently depends on the resources of other divisions. The section will conclude with some issues and problems the BND must address and overcome to be successful.

### **2.1 Organisation Overview**

The parent firm of Binnie is Binnie Consulting Ltd. (BCL), which is privately owned by 15 shareholders. All shareholders are senior staff members working at the firm. BCL owns two companies – R.F. Binnie and Associates Ltd. (Binnie) and Binnie Construction Services (BCS). The main reason for the two separate companies is the difference between insurance requirements for providing engineering services at Binnie and for providing construction services at BCS. For the most part, Binnie and BCS work together on projects and for discussion purposes of this paper they are considered as one, which will be referred to as Binnie.

The BND is the tenth division established at Binnie, with the twelfth and most recent division being the Legal Survey Division. Binnie's divisions are created to service geographic locations, market sectors, or a combination of the two. They are typically formed to help Binnie better serve its existing clients or establish new clients in areas of potential. Binnie's reputation relies heavily on the collaboration of staff and divisions to ensure clients are kept satisfied through successful projects.

#### **2.1.1 Product and Services**

Binnie is a medium sized consulting civil engineering firm, operating out of seven offices throughout British Columbia. The services Binnie currently provides to its customers include:

- Municipal, land development, parks, and transportation design – Binnie's core competencies are engineering and providing clients with design and inspection services. Binnie provides a variety of municipal services for public and private sector clients including sanitary sewer design, water systems design, drainage design, infrastructure

renewal design, roadway design, and inspection services for all previously mentioned design services. Binnie also provides design and inspection services for parks; primarily synthetic fields. Since 2002, Binnie has also established a reputable transportation division delivering highway geometric and drainage design to clients such as the British Columbia Ministry of Transportation and Infrastructure (BCMoTI).

- **Project Management** - Binnie provides a wide range of specialized project management services in combination with, or separate from its engineering services. Binnie's experienced project managers draw on their diverse range of expertise garnered from private sector projects, municipal and provincial public sector projects, and formal PMI-certified professional project management training. A project manager's primary function is to communicate with staff, clients, and stakeholders. They are primarily concerned with project scope, schedule, and budget.
- **Construction Services** - Binnie has provided construction supervision and field services to the BCMoTI on numerous projects over the past decade and was a finalist in the BCMoTI's annual awards in the construction management and supervision category on five occasions. Projects range in size from a few million to over \$30 million and project durations from a few months to multiple years. The majority of projects are located in rural areas, with Binnie setting up site-specific field offices. The construction services team leaders are consulting veterans, with several members having over thirty years experience. Binnie has recruited several former Ministry staff and they all have the ability to address the issues and complexities of highway construction throughout British Columbia. Binnie's services include project supervision, inspection, surveying, and quality management.
- **Geometrics (Survey)** - Binnie has been offering engineering survey services in the Lower Mainland, Fraser Valley, and Sea to Sky country for over forty years. With nine fully equipped survey crews, Binnie has the flexibility to handle topographic or volumetric surveys of any size. Binnie is experienced in all types of construction layout. Using conventional or robotic total stations, Binnie can deliver on any layout requirement. Binnie has provided quality assurance/quality control surveys on numerous high profile construction projects, with services including third party checks on layout and control, and horizontal and vertical movement monitoring.
- **Legal Survey** – Binnie offers legal survey services out of the Burnaby office. This division was established in 2012 and works with other divisions that require legal

survey. This was a strategic addition, as most land development projects require a legal survey and the legal surveyor is usually one of the first professions on a project. Being first in the door on projects can lead to opportunities for other divisions at Binnie.

### 2.1.2 Size and Geographic Scope

Currently, the Binnie team consists of more than 100 professional engineers, technologists, and technical support staff.

An organizational chart is included in the appendices showing the structure at Binnie. The twelve divisions that make up Binnie are summarized in the Table 2.1, showing the date established, location, size, and areas of expertise. This information will help identify which offices can support the BND in areas of opportunity in NBC. It will also help identify any gaps in Binnie’s areas of expertise.

Table 2.1 Binnie Divisions

Division Name	Established	Location	# of Staff	LD	Muni	Hwy	PM	Inspection	Survey	Other
Legal Survey	2011	Burnaby	1							Legal Survey
Sports & Recreational	2011	Burnaby	3							Sports
Northern (BND)	2011	Prince George	2				X			
Construction Services	2010	Mobile	5 to 20							Construction Services
Project Services	2009	Burnaby	6				X			
Vancouver Island	2006	Qualicum	5	X	X		X	X		
Sunshine Coast	2006	Sechelt	3	X	X	X	X	X		
Transportation	2002	Burnaby	25			X				
Engineering Survey	1997	Burnaby	5 to 15						X	
Fraser Valley	1995	Surrey	20	X	X	X	X	X	X	
Sea to Sky	1992	Squamish	5	X	X		X	X		
Lower Mainland	1985	Burnaby	40	X	X	X	X	X		

As seen in Table 2.1, there are a total of twelve divisions at Binnie which results in some overlapping areas of expertise. The head office in Burnaby has the most divisions and accounts for approximately half the staff company wide.

### 2.1.3 History

Binnie was first established in 1969 as a consulting engineering and surveying company by Robert F. Binnie in West Vancouver. In 1981 the employee count was at twenty three, and Binnie was ranked 40<sup>th</sup> on the list on Canada’s fastest growing companies. The current mission statement is “to be one of the best engineering firms in BC.”

Over the past ten years Binnie has experienced steady growth thanks to service diversity and a healthy economy. The average growth rate has been around 11% per year since 1985. The majority of Binnie’s growth has been organic, with the exception of the acquisition of Martyn Engineering Ltd. Binnie grows by acquiring talented staff to either go after work in new markets and geographic locations, or to provide expertise and support in sectors it is established in.

A major contributing factor to the successful and ongoing growth at Binnie is the hiring of talented staff from the British Columbia Ministry of Transportation and Infrastructure (BCMoTI). For example, the manager of the BND (BNDM) recently retired from the BCMoTI, where he worked for over thirty-five years. Prior to retiring, the BNDM held many positions at the BCMoTI, from designer to manager of the Prince George Office.

### 2.1.4 Binnie Northern Division (BND)

Figure 2.1 Northern Division Region



The Northern Division was formed in June of 2011 and is the one of the latest additions to Binnie. It is the second smallest and most remote division at Binnie, located in Prince George (approximately 775km for the Binnie Head Office in Burnaby). Figure 2.1 illustrates the geographic limits that this office is planned to provide services to. As seen in Figure 2.1, the geographic reach of the small office is quite substantial.



The BND is currently providing the following services to its clients:

- Highway Design (with support from the Transportation Division)
- Project Management (with support from the Project Services Division)
- Survey (with support from the Survey Division)

Some other services, which the BND could provide to potential clients but has not yet successfully sold to clients include:

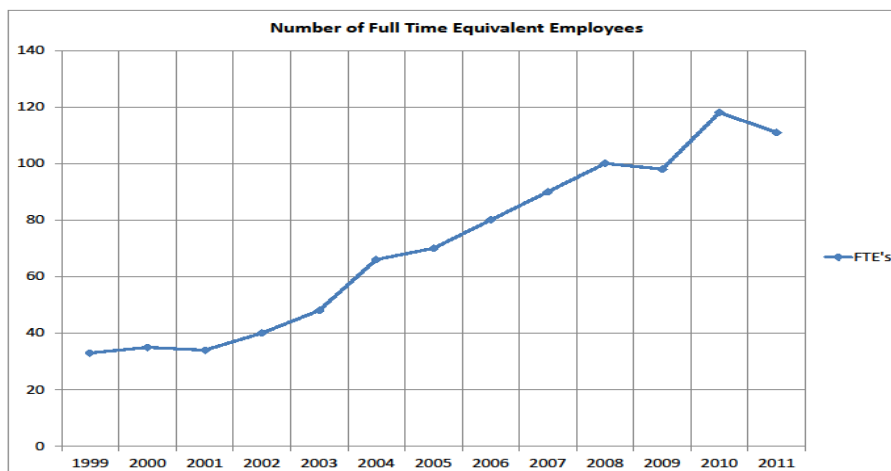
- Construction Services (with support from the Construction Services Division)
- Legal Survey (with support from the Legal Survey Division)

Given the current staffing level and capacity of the BND, it relies heavily on the support of other divisions.

## 2.2 Current Strategic Position

Binnie's current strategy is to grow through acquisition of talented staff and training of new staff. To date most of the growth has been organically, but as Binnie continues to grow it has started looking at growth by acquisition. As the number of staff grow and revenues increase, Binnie is able to purchase small firms (such as the acquisition of Hal Martyn Engineering in 2008). The strategy of growth is company wide and something the BND also looks to achieve. Figure 2.2, illustrates Binnie's on going growth since 1999.

Figure 2.2 Number of Full Time Equivalents



The acquisition of the BNDM and starting up the BND is in line with Binnie's corporate strategy of growth.

The BND benefits from being the successful proponent on the Site C Project, which is a very large multi year project requiring the support of other divisions, forcing the BND to collaborate with other divisions immediately. While having a chargeable project does help, the BND must also look ahead and establish its own client base, which it can service independently.

### **2.2.1 Where – Product & Customer Segment Focus**

The NCCI is a service-based industry where consulting firms provide design, project management, survey or construction inspection services to the customer. The customers in the NCCI can be broken out into either the Public or Private Sector, which is discussed further in Section 3.3 Customers. The BND will initially target the products and customers segments for which it has the capability of working. Since the division is small, most of BND's customers are ones that it is familiar with and has experience with (primarily the public transportation sector, since that is where BNDM worked previously). This approach is enabling the BND to build up its own reputational capital within the NCCI.

BND is a fairly new division and it is currently providing services to the following customers:

- BC Hydro, Site C Project: The BNDM is the project manager on this highway design and relocation assignment with support from the Transportation Division for design, Engineering Survey Division for survey, and the Project Services Division for project management. Although the BND is only providing a portion of the services to BC Hydro, it is a crucial element due to the reporting demands of the customer, and the responsibility associated with being the project manager.
- Ministry of Transportation, Highway 2 Tupper 4 laning project: The BNDM is the project manager on this highway design assignment. Support from other divisions is similar to those mentioned under the BC Hydro bullet above.
- Other miscellaneous projects including:
  - A small railway design project in Chetwynd, where the BNDM performed a quality assurance check on the design to ensure it met the railway design code.
  - Various value engineering assignments for the BCMoTI

Although the BND is small in size, it is providing key services for some of Binnie's largest projects. The Site C Project will be one of the largest design assignments Binnie has ever completed.

The customer segments that the BND would like to work with are described in Section 3.3.2 Customer Segments. The Private Sector includes land development, oil & gas, and mining. The Public Sector includes the BCMoTI, BCMoF, Municipalities, and BC Hydro. Generally speaking, the private sector tends to be more price sensitive, whereas the public sector places equal importance on price and utility.

### **2.2.2 What – Value Proposition**

The BND will provide its clients with:

- Quality Designs – with the support of its award winning transportation division and under the leadership of the BNDM, Binnie can provide customers with quality designs.
- Delivery Speed – as staffing levels increase, the BND will be able to provide clients with fast and efficient service, which is key for all clients, especially in the resource industries such as mining and oil & gas industry, where time is money. The BND can also use technology, allowing other divisions to support them in delivery of design.
- Average Price – The rates are fairly established in Consulting Engineering and Binnie has always ensured its rates reflect what the market can bear. BND's rates are inline with the market average and do not rely on low rates to gain competitive advantage. BDN will rely on quality designs produced efficiently, resulting in lower costs to the customer (high quality results in less time spent on iterations of designs).
- Relationships – The BND has extensive experience and an excellent working relationship with the BCMoTI. A large number of sectors interact with the BCMoTI, which could result in a positive “word of mouth” regarding the BND. BND will leverage its existing relationships in NBC and continue to build new ones.

### **2.2.3 How – Core Activities**

In order to deliver fast and efficient products to clients, the BND will rely on its local knowledge, BCMoTI experience, and support from other divisions. The BNDM is a long time resident of Prince George and he has a sense of pride and commitment to the community. Prior to joining Binnie, the BNDM had a very long and established career with the BCMoTI. Part of the reason for Binnie's growth since 2002, is due to the acquisition of talented staff from the BCMoTI, which started during their lay-offs in 2002 (also known as Black Monday).

Having the ability to leverage the resources of the other divisions gives the BND a leg up on some of its "local only" smaller competitors. As Binnie continues to grow and expand into new areas, the BND will benefit. For example, the newest division at Binnie is the Legal Survey Division, which the BND can leverage to obtain work.

## **2.3 Current Performance**

The BND has only recently been established and has a very limited client base. Since being established, the primary focus of the BND has been the provision of services related to the highway transportation sector. The majority of its services provided are through the Transportation and Project Services Divisions. As of early 2012, it is working on the Site C Project for BC Hydro, which is a multi year project involving over 30kms of highway relocation. The BND was also recently successful on a design project for the BCMoTI along Highway 2, just outside of Prince George.

## **2.4 Current Industry Strategic Issues**

Some of the key issues the BND faces and needs to address or resolve include:

- Staffing – The BND must attract, hire, train, and retain talented and capable staff. This is a challenge in the professional work force, especially north of Vancouver. Most younger staff are attracted to the variety of professional and entertainment options in Vancouver and the surrounding Lower Mainland. Increasing staffing levels allows for promotion and opportunity. The Prince George Office could be the next regional office, encouraging other smaller satellite offices to open up in areas such as Prince Rupert, Fort St John, or Fort Nelson. How can the BND build up staff in the NCCI?

- Isolation – the BND is fairly remote, in comparison to the other offices at Binnie. This is something Binnie has not had to deal with in the past and it will pose many challenges and test the systems in place for communication and collaboration. Through these challenges, new systems may be required to help reduce the affects of isolation and allow the BND to feel as if it is part of the Binnie Team.
- Leveraging resources – The BND must be able to efficiently communicate and utilize the resources and experience available from other divisions. In order to fully leverage all the resources at Binnie, the BND must know the other divisions’ areas of expertise are and their availability.
- Expanding – Once the BND is established and providing services to its core customer segments, it will want to start diversifying its client base. Diversification can be done in both the private and public sectors. Some of the work required in new industries such as the oil & gas or mining industry may or may not be in alignment with core competencies. If they are, then staff can be trained internally, if they are not, then new staff with different skill sets must be hired.

Section 1 and 2 provided a snap shot of Binnie and how the BND fits its corporate goal of growth. The BND is young, small, and much more remote in comparison to the other divisions at Binnie, but depends heavily on the help of other divisions during projects. One of the key strategic issues that the BND faces is growth, which can only be accomplished by hiring competent staff to acquire and complete projects. Section 3 will take a closer look at the NCCI and identify BND’s strengths and weaknesses, along with the industry opportunities and threats. This information will help establish some strategic alternatives that the BND can implement to increase its probability of success.

## **3: External Analysis**

Having already identified the issues and problems the BND faces, this section will take a closer look at the relevant players that make up the Northern Civil Consulting Industry (NCCI). The industry opportunities and threats that all the competing firms in the NCCI face will be discussed. Once the opportunities and threats are identified, the possible sources of competitive advantage the NCCI firms have or could have will be identified. All the firms that compete within the NCCI will be rated relative to each other to help identify BND's strengths and weaknesses. Everything will be summarized in a SWOT (strengths, weaknesses, opportunities, and threats) analysis at the end of this section.

### **3.1 Industry Overview**

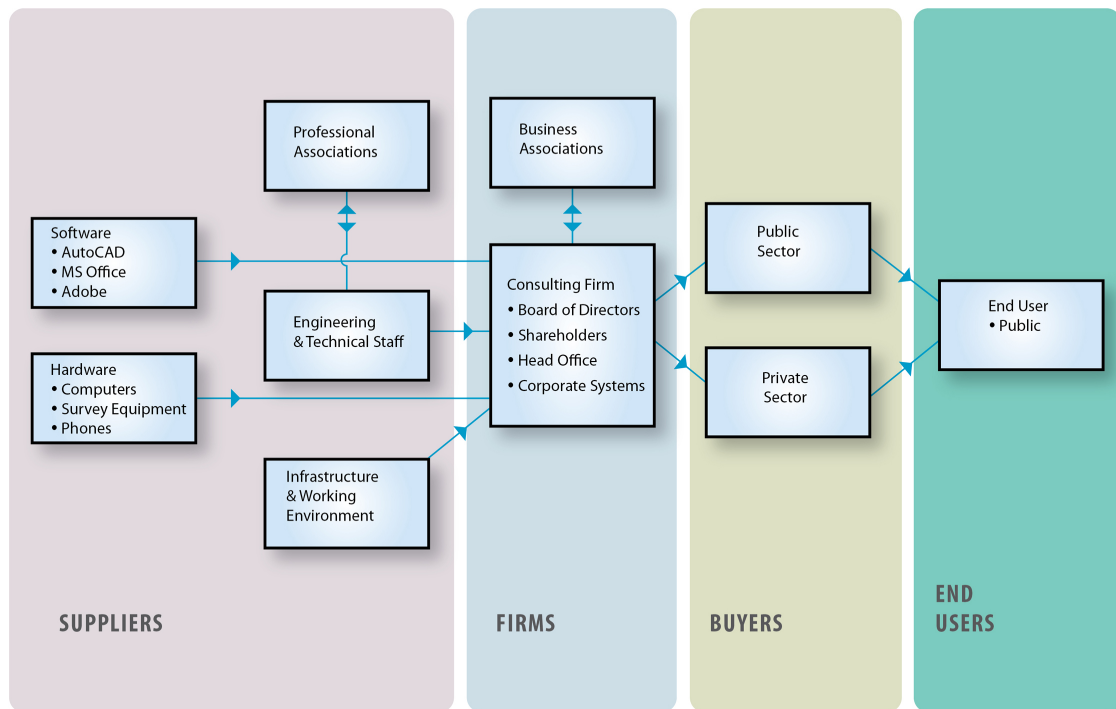
#### **3.1.1 Industry Definition**

The geographical limits of the NCCI have already been identified in Section 2.1.2 Size and Geographic Scope. The NCCI is a service-based industry where either private or public sector customers hire NCCI firms to provide professional services related to civil design, project management, survey, or construction services. The range of civil design includes highway, roadway, storm sewer, sanitary sewer, waterworks, and drainage.

### 3.1.2 Industry Value Chain

The industry value chain is illustrated in Figure 3.1, which outlines the industry suppliers, firms, buyers, and end users.

Figure 3.1 Northern Civil Consulting Industry Value Chain



As seen in Figure 3.1, the Engineering and Technical Staff play a key role in the NCCI value chain. They are a critical component for the firms, buyers, and end users. One of the key challenges in the NCCI is the shortage of Engineering and Technical Staff, which will be discussed throughout this paper.

The following sections will discuss all the industry elements in the value chain, which will provide input into the five forces synthesis. The five forces synthesis identifies industry rivalry, threats of entry, substitutes, buyers, and suppliers.

## 3.2 Competitors

Section 3.2 will identify the group of competitors in the NCCI, based on information from the internet, professional associations, and interaction with industry experts. It will identify how many primary competitors exist in key geographic locations within the NCCI.

### 3.2.1 Industry Structure

The majority of firms in the NCCI are concentrated in and around major city centres where the majority of infrastructure projects are constructed and or designed. There are also temporary site offices and camps set up for projects in more remote locations (highways, mining, oil & gas). Company sizes in the NCCI vary from:

- Small –consulting firms with staff < 50
- Medium –consulting firms with staff 50 to 200
- Large –consulting firms with staff 200 to 800
- Mega –consulting firms with staff > 800

Table 3.1 below identifies location, size, and area of service for firms registered with the Consulting Engineers of British Columbia (CEBC) within the NCCI.

Table 3.1 NCCI CEBC Firms

	SIZE	Trans	Survey & Mapping	PM	Muni	Civil Eng. for Oil/Gas	Civil Eng. For Mining
<b>Prince George</b>							
AMEC	Mega	X	X	X	X	X	X
Binnie	Med	X	X	X	X		
Focus	Large	X	X	X	X	X	
McElhanney	Large	X	X	X	X		
Opus	Mega	X	X	X	X	X	
Fransen Eng. (Tetra Tech)	Mega		X	X	X	X	
<b>Fort St John</b>							
AMEC	Mega	X	X	X	X	X	X
EWD Cons. (Focus/EBA)	Mega	X	X	X			
Focus	Large	X	X	X	X	X	
McElhanney	Large	X	X	X	X		
Golder	Mega	X	X	X	X	X	X
Northern Geo	Med	X	X	X	X		
Urban Systems	Large	X	X	X	X		
<b>Smithers</b>							
McElhanney	Large	X	X	X	X		
Opus	Mega	X	X	X	X	X	
<b>Terrace</b>							
McElhanney	Large	X	X	X	X		
<b>Fort Nelson</b>							
Opus	Mega	X	X	X		X	



	SIZE	Trans	Survey & Mapping	PM	Muni	Civil Eng. for Oil/Gas	Civil Eng. For Mining
<b>Kitimat</b>							
LaPointe Eng.	Small	X			X		
McElhanney	Large	X	X	X	X		
Worley Parsons	Mega	X	X		X		

Most of the reputable Civil Engineering Consultant Firms in BC are registered with CEBC, providing an excellent source for top competitors in the NCCI. As seen in Table 3.1, AMEC, Focus, and McElhanney all have a very strong presence in the NCCI. Fort St. John and Prince George are the two major cities in the NCCI and have the most amount of infrastructure to provide consultants with project work. The BND has been in the NCCI for less than one year so it does not register in the CEBC database yet, but has been added to the table regardless.

### 3.2.2 Types of Competitors

As referenced in Table 3.1, the primary competitors in the NCCI are broken out into transportation design, survey and mapping, project management, and municipal engineering. Unfortunately these sectors do not clearly identify some of the other sectors discussed in Section 2.1.2 Size and Geographic Scope, such as land development and construction services. All these sectors are most closely related to municipal engineering, so it is assumed they fall under that category. The scope of a project determines which skills are required. Table 3.1 identifies the areas each firm competes in. In cases where a firm lacks certain areas of expertise, they will typically build alliances with other firms and hire them as sub-consultants on projects.

Given the geographical size of the NCCI, there was not a large number of firms identified on the CEBC website that competed in NBC. This might be a result of some smaller firms not being registered with CEBC. Most of the firms registered with CEBC in the NCCI are large and mega, which might initially come as a surprise. There has been a trend of large and mega size firms growing by acquisition and the data provided in Table 3.1 verifies that this is what has been happening in the NCCI. Most of the offices in the NCCI start out as small firms that are later purchased by larger firms.

Most of the firms compete in the transportation, survey and mapping, project management, and municipal fields. This would initially lead one to believe that these markets are saturated, but that is not the case in the NCCI as there is currently ample work. Some of the major multiyear projects currently underway in NBC include the Hwy 97 improvements and the Site C

Project. Both of these projects are discussed in later sections. The oil & gas and mining industries appear to have fewer competitors, which might be a result of the data provided. The firms listed under these categories are likely involved in both the civil engineering and the actual engineering involved in the extraction and processing of the natural resources, which is an entirely different market outside of the NCCI. For example, McElhanney are not listed under the oil & gas sector, but do in fact provide survey services and mapping to the oil and gas industry. Therefore, it is likely that more of the firms listed on Table 3.1 do in fact compete in providing design, survey, and project management services for civil engineering services for the oil & gas and mining industry.

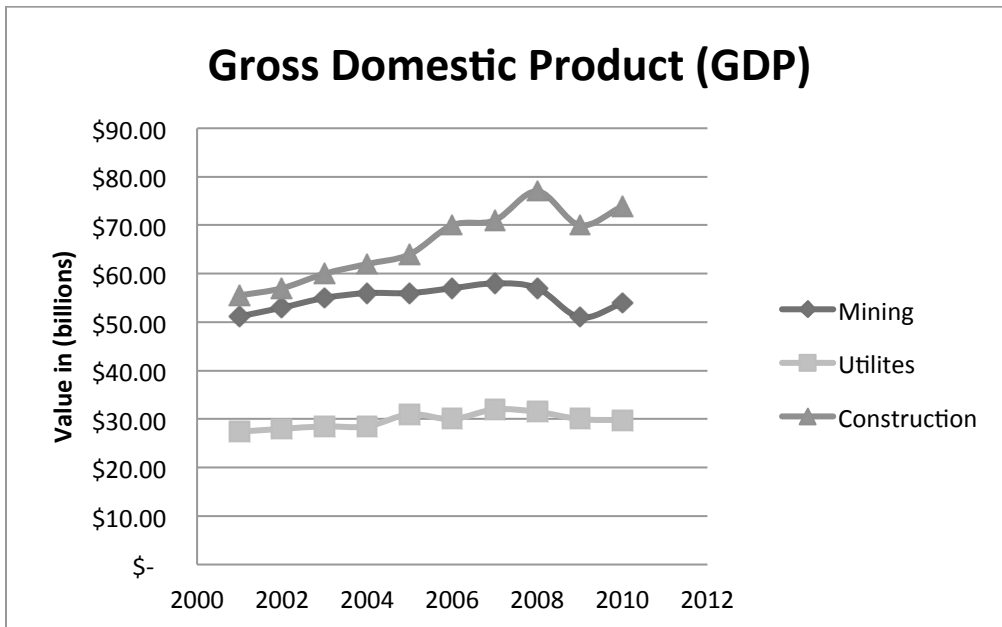
### **3.3 Customers**

#### **3.3.1 Market Size & Growth Rate**

Northern British Columbia (NBC) is a resource rich region and shows no signs of slowing down. All the resources in NBC need to be extracted, processed, and transported. Transportation, survey, project management, municipal engineering are all key components in the extraction and movement of resources, whether they are raw or refined. As these industries grow, the surrounding cities also grow and require housing and infrastructure to support population growth.

Figure 3.2 identifies the Gross Domestic Product (GDP) dollar values for mining, utilities, and construction in British Columbia. The information in the graph is from Stats Canada and the dollar value gives a representation of the financial trends in each industry. As seen in Figure 3.2, there was a GDP decline in the mining and construction industry during the recession in 2008/2009. The economy has recovered and is on an upward trend following the recession.

Figure 3.2 GDP for Mining, Quarrying, and Oil and Gas Extraction (NAICS 21)



Source: <http://www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE.html>

Although Figure 3.2 represents the entire Province of BC, a large portion of mining activity does take place in NBC (refer to Operating Mines and Selected Major Exploration Projects in British Columbia 2011 in the Appendix), so it is an indicator that the industry is starting to recover. Utilities and construction are not as dominant in NBC, but the positive trend does reflect potential in NBC.

According to a recent study done by the University of Northern British Columbia and information from stats BC, “Natural resources have on average contributed 12% to the total annual provincial revenues over the past decade. Natural resources included forestry (28.8%), natural gas (30%), and others such as energy and minerals (41.3%)”.<sup>2</sup>

“It has been long understood that British Columbia’s natural resources, and hence the province’s resource-rich regions, are the engines of B.C.’s economy. Two-thirds of provincial export income is earned by the forestry, mining, fishing, energy and agricultural sectors, sectors that, to varying degrees, dominate the economies of NBC. In 2007, international and interprovincial exports made up nearly half (48.3%) of B.C.’s total GDP, approximately one-third of B.C.’s GDP is thus derived from the province’s natural resource sectors”.<sup>3</sup>

<sup>2</sup> Northern British Columbia: A Vision for Prosperity, UNBC

<sup>3</sup> Northern British Columbia: A Vision for Prosperity, UNBC

The Mining Association of British Columbia (MABC) puts out yearly reports on the industry, which are fairly detailed and describe the economic status of the industry and future prospects. In 2010, it had the following summary:

“The rapid turnaround of the mining sector after the dramatic economic crisis of 2008 saw the re-launch of major expansions at existing BC mines and the advancement of new projects. MABC coined the phrase “BC Mining Renaissance” generating public awareness of and support for the numerous mining opportunities across the province. For the first time in history, mining’s contribution to provincial coffers exceeded that of forestry (while out-performing oil and gas). Mining led BC’s economic recovery, with over \$1 billion in new mining development spending in 2010, while mineral exploration expenditures returned to pre-crisis levels.”<sup>4</sup>

“The year of 2010 was a year of steady growth, marked by major investments in existing operations, new project approvals, rising exploration expenditures and continued advancements in permitting major mining projects. The Northwest looks increasingly attractive for mining and exploration with the very real prospect of the Northwest Transmission Line.”<sup>5</sup>

All the natural resources must be accessed, extracted, and exported. In order to access and export these resources transportation infrastructure must be in place. One of the key sections of highways running to and from NBC, is the Cariboo Connector (also known as Highway 97). The first phase is a 460km section from Cache Creek to Prince George and is currently being designed/constructed. It is estimate to cost \$200 million with a completion date of around 2015. The entire project is estimated to cost \$2 billion dollars.<sup>6</sup> This is an area of work Binnie has already been heavily involved in and provided a significant amount of services through the Binnie Construction Services Division.

NBC and the NCCI depend heavily on the natural resources, which are currently in demand on the global market. All of the products society uses are manufactured from these natural resources. As the world continues to increase its consumptions of products, so will its demand for natural resources, placing NBC and the NCCI in an excellent position for years to come.

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<sup>4</sup> <http://www.slideshare.net/MiningAssociationBC/2010-mabc-annual-report>

<sup>5</sup> <http://www.slideshare.net/MiningAssociationBC/2010-mabc-annual-report>

<sup>6</sup> [http://www.th.gov.bc.ca/cariboo\\_connector/index.htm](http://www.th.gov.bc.ca/cariboo_connector/index.htm)

Figure 3.3 Economic Stimulation in NBC

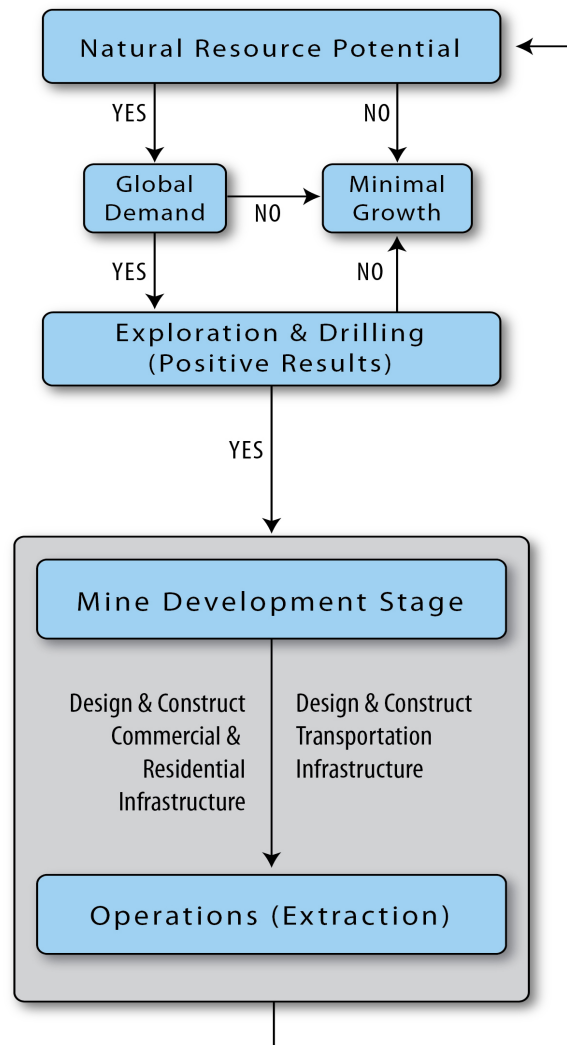
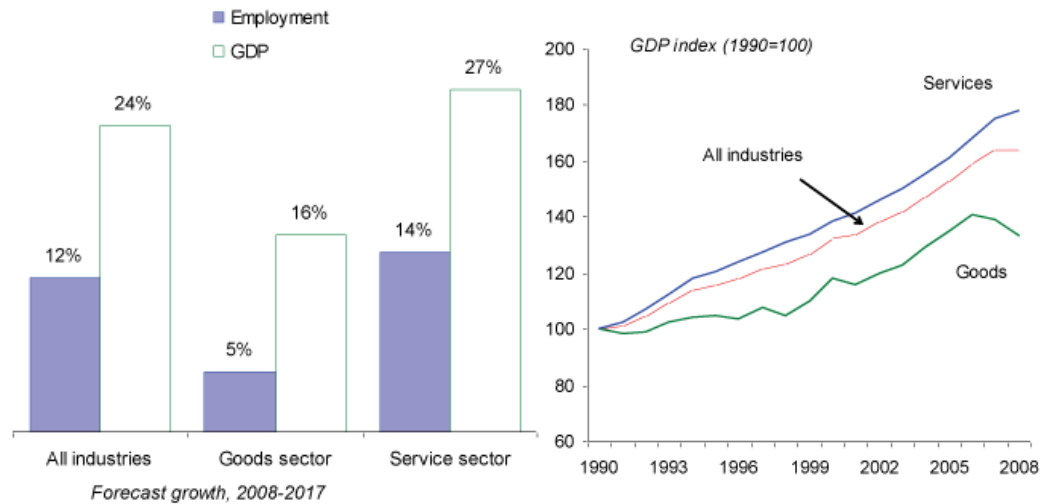


Figure 3.3 illustrates the sequence of events in NBC that result in work for the NCCI. It is already known that there is a natural resource potential in NBC and currently a global demand. According to reports from MABC exploration and drilling is also underway in NBC. The large grey box identifies when the NCCI gets involved and is required to assist the mining industry. When mines are being developed, transportation infrastructure must be in place to support the development. Current upgrades to Highway 97 are an excellent example of how highway infrastructure is designed and constructed to support mining development and operations. During mining operations the communities in the local area are also stimulated and local commercial and residential developments require the services of the NCCI during design and construction. Given

that the demand for natural resources does fluctuate, so does the demand for the services of the NCCI. Although forecasts point to continued growth in the goods sector (refer to Figure 3.4), there will be peaks and valleys as experienced in the past and seen on the graph in Figure 3.4.

Figure 3.4 Goods and Services in BC



Source: [http://www.guidetobceconomy.org/bcs\\_economy/overview\\_services\\_goods.htm](http://www.guidetobceconomy.org/bcs_economy/overview_services_goods.htm)

Figure 3.4 identifies positive forecasted growth in the goods and services sectors throughout BC. A contributing factor to this continued growth will be the result of continued growth in NBC. Growth will have peaks and valleys, especially in the goods sectors. The service sector has shown a fairly steady increase. Although the NCCI is in the service sector, it does heavily really on the goods sector in NBC (mining and oil & gas). Firms must be aware of this relationship of sectors in order to be successful in NBC.

### 3.3.2 First Nations and BCMoE

Resistance to projects from First Nations and the BCMoE can also have negative impacts for the NCCI. First Nations are very interested in any industry that disrupts Mother Nature and will speak out if their issues are not heard, addressed, and incorporated into projects. First Nations are organized, educated, and have been able to voice their concerns through the media and websites such as the First Nations Land Rights and Environmentalism in British Columbia.

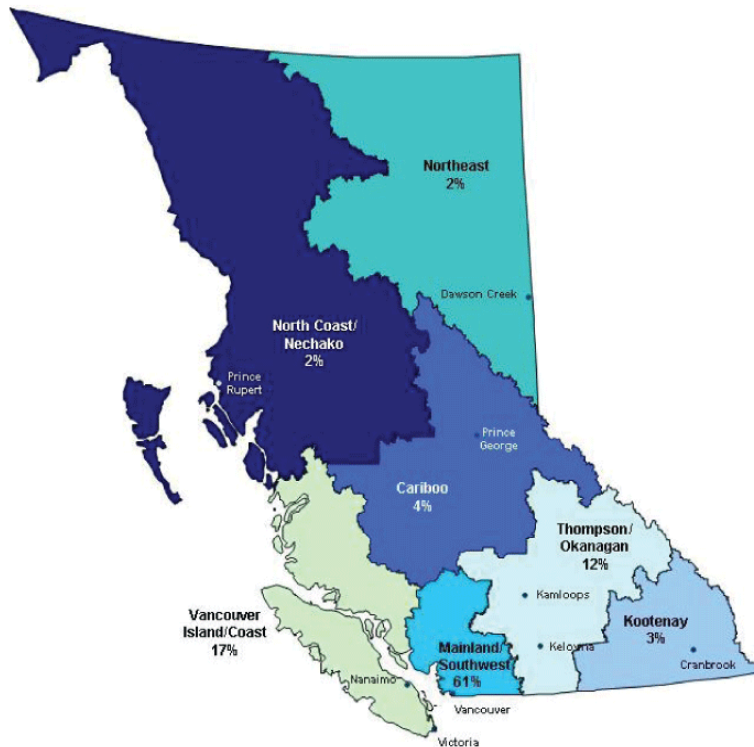
Some of their concerns can be mitigated if they are involved in a project at an early stage and are able to also benefit from it. Trade-offs can be negotiated to help both parties benefit.

All projects involving construction are also subject to strict environmental constraints that must be identified early and addressed to avoid projects from not being approved. The Site C Team is currently preparing to submit preliminary designs and documentation for the Canadian Environmental Assessment Act (CEAA) application. The CEAA has the ability to reject the application, which would result in cancellation of the project and significant loss of work in the NCCI.

### 3.3.3 Regions

Figure 2.1 identified the geographical boundaries of the NCCI, which accounts for approximately 70% of British Columbia’s land area, but only 8% of its population, according to Stats Canada 2010 census and as seen in Figure 3.5. Although NBC is spread out, it still produces a very large portion of the Province’s wealth. Figure 3.5 provides additional information on the regions in BC. The regions that make up the NCCI include all of the Northeast, Northcoast and Nechako, and the Cariboo regions. The NCCI also includes the northern portions of the Vancouver Island/Coast and the Thompson Okanagan.

Figure 3.5 Population within each region



Source: [http://www.guidetobceconomy.org/bcs\\_economy/about\\_regions.htm](http://www.guidetobceconomy.org/bcs_economy/about_regions.htm)

### 3.3.4 Customer Segments

The customers of the NCCI can be divided into the private and public sector. As seen below, each sector can be broken out further:

- **Private Sector**
  - Land development (small, medium, and large) – requires civil engineering firms to provide design, project management, survey, and construction supervision services.
  - Oil & Gas – requires civil engineering firms to provide design, project management, survey, and construction supervision services for access roads and lodging infrastructure.
  - Mining – same as Oil & Gas
- **Public** - requires civil engineering firms to provide design, project management, survey, and construction supervision services.
  - British Columbia Ministry of Transportation and Infrastructure (BCMOTI)
  - British Columbia Ministry of Forest (BCMof)
  - Municipalities, Townships, and Cities (Municipalities)
  - BC Hydro

For the most part, consultants are hired through a formal or informal Request for Proposals (RFPs), which establishes the scope of services required. Following review of the RFP, the customer selects the preferred consultant, who is hired for the duration of the project. In some cases projects are terminated early, extended, or expanded, depending on the quality of services provided by the consultant. Both the private and public customers are affected by economic conditions, although they can experience alternating peaks and valleys in funding and volume of projects. For example, in 2010 when the land development sector (private sector) was slow, the public sector was still very busy and ramping up designs in preparation for the Federal Infrastructure Stimulus Fund in 2010/2011.



### **3.3.5 Relative Size & Growth of Segments**

Both the private and public sector in NBC show signs and promise of continual growth, but are very dependent on the global demand of natural resources. The most attractive sector for the NCCI is the transportation sector. Transportation is critical in NBC and can involve additional areas of expertise such as survey & mapping and project management. There are also other forms of transporting goods in NBC, such as the Port of Prince Rupert, which is North America's closest port to key Asian markets with two days less transport time than shipment via traditional West Coast ports, such as Vancouver, Tacoma, Seattle, Los Angeles, and Oakland. This port is another reason for continued infrastructure growth in NBC for the movement of goods locally, nationally, and internationally.<sup>7</sup>

NBC does have natural resource potential, but without global demand and the transportation infrastructure to move it, the potential is never realized. A recent study done by the University of Northern British Columbia identified NBC as being “a region of boundless economic potential with a broad array of renewable and non-renewable natural resources.”<sup>8</sup>

Other advantages, which will continue to contribute to growth in NBC and the NCCI include low tax rate, low cost of electricity, and lower overall cost of doing business.<sup>9</sup>

#### **3.3.5.1 Private Sector**

The Private sector of the NCCI comprises land development, oil and gas, and mining. As discussed in Section 3.3.1 Market Size & Growth Rate, growth in the land development sector is closely linked to the global demand of natural resources.

In order to realize the full potential of the mining and oil and gas industries in NBC, conditions must be established to ensure that not only mining and oil and gas exploration continues, but also that exploration projects progress to the next level of development and operation. These conditions include both a favorable policy environment that supports industry development within the context of First Nations and Environmental concerns, and the available power, pipeline, road, and communications infrastructure to facilitate and support the movement of oil.

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<sup>7</sup> Northern Development Initiative Trust

<sup>8</sup> Northern British Columbia: A Vision for Prosperity, UNBC

<sup>9</sup> Northern Development Initiative Trust

### **3.3.5.2 Public Sector**

The public sector of the NCCI is comprised of BCMoTI, BCMoF, Municipalities, and BC Hydro. Growth in the public sector is typically an indication that there is business potential within the areas that the public sector infrastructure touches or connects. The public sector will typically lead growth, followed by the private sector. In order for the private sector to efficiently grow, the public sector infrastructure must be in place to support its growth.

Public infrastructure in NBC is being upgraded and it does not show any signs of slowing down, with major highways projects such as the \$2 billion dollar Highway 97 Project and the \$7 billion dollar Site C Project underway. These two projects alone will span the next decade and require the services of the NCCI during design, construction, operation, and maintenance stages. Public infrastructure upgrades are the result of the government's commitment to opening up NBC and exploiting its ports for movement of goods and natural resources in the mining and oil and gas industries.

### **3.3.6 Customer Preferences**

The customers within the private and public sector all consider the same characteristics when hiring a consultant, but place importance on different areas. Table 3.2 identifies each customer's preference and weights their importance.

The preferences in the Table 3.2 include:

- (UND) Understanding: How well does the consultant understand the project?
- (EXP) Experience/Expertise: What similar jobs (size and scope) has the consultant firm worked on?
- (PER) Personnel: What personnel are working on this project? Do they have appropriate experience?
- (SCHD) Schedule: Will the consultant firm deliver on time?
- (SYN) Synergy: Have all the consultants team members worked together on similar projects? Do they work well together?
- (REL) Relationship: Strength of the Buyer/Consultant Relationship
- (METH) Methodology: How will the consultant deliver the project?
- (\$) Price: How price sensitive is the Buyer?

Table 3.2 NCCI Customer Comparison

<b>Public Sector</b>								
<b>Customer</b>	<b>UND</b>	<b>EXP</b>	<b>PER</b>	<b>SCHD</b>	<b>SYN</b>	<b>REL</b>	<b>METH</b>	<b>\$</b>
Ministry of Transportation & Infrastructure	4	4	5	4	4	3	4	3
Ministry of Forest	4	4	5	4	4	3	4	4
Municipalities/Townships/City's	3	3	4	4	4	3	4	3
BC Hydro	3	4	4	4	4	3	4	3
Total Category Score	14	15	18	16	16	12	16	13
% of total	12%	13%	15%	13%	13%	10%	13%	11%

<b>Private Sector</b>								
<b>Customer</b>	<b>UND</b>	<b>EXP</b>	<b>PER</b>	<b>SCHD</b>	<b>SYN</b>	<b>REL</b>	<b>METH</b>	<b>\$</b>
Medium/Large Land Developers	4	4	3	5	3	3	3	5
Small Land Developers	2	2	2	5	2	3	2	5
Oil & Gas	3	3	3	5	3	3	2	2
Mining	3	3	3	5	3	3	2	2
Total Category Score	12	12	11	20	11	12	9	14
% of total	12%	12%	11%	20%	11%	12%	9%	14%

**LEGEND**

1	minimal importance
2	some importance
3	important
4	very important
5	critical

As seen in Table 3.2, the public sector places fairly even preference on all areas and looks for a consultant that is well rounded. The private sector on the other hand, places the most importance on schedule. In the private industry, time is money, and both are very important, as stakes are high if projects fall behind or overrun financially. The following sub-sections discuss each preference in more detail.

### 3.3.6.1 Understanding

Most of the sectors place fairly equal importance on understanding, except for small land developers. They are typically not as well educated as the other customers and therefore not able

to determine the level of a consultant's project understanding. In most cases they also assume all consultants are equal and driven to place higher importance on schedule and price.

### **3.3.6.2 Experience and Expertise**

This category is similar to understanding, where most customers place similar importance on it except for small land developers. The reasoning is similar the one described in the previous section.

### **3.3.6.3 Personnel**

In general, the public sector places more importance on the personnel who will be working on the project. The public sector is under the constant scrutiny of the public eye, so it wants to hire the most capable team. This helps minimize the number of project issues and reduce the openings for public scrutiny. All of the private sector customers do place considerable importance on personnel, except for the small land developer, who places only some importance. As previously mentioned, the small land developer is very schedule and price sensitive, and assumes that all consultants are equal.

### **3.3.6.4 Schedule**

The private sector is made up of private owners, whose livelihood is at stake when it comes to the financial performance of the business they own. In order for projects to be profitable, they must be delivered on time. Time is money in both sectors, but the private sector does tend to place a higher importance on it. For example, if a large commercial development is not complete on time, the developer can lose a substantial amount of potential revenues. Opening dates are also inline with consumer buying patterns to help give businesses a financial jump-start. If a retail store is not able to meet a pre-Christmas opening date, the potential revenue loss will become a financial burden that will likely be passed onto the developer and their team.

The public sector also places high importance on schedule and is held to dates that are typically a result of political commitments. In order to meet project schedules, the public sector looks to hire consultants with a track record of completing projects on time.

### **3.3.6.5 Synergy**

The public sector does place higher importance on the consultant's team synergy and requires them to demonstrate teamwork on past projects in their proposals. This becomes crucial

during large multi-discipline projects. These projects can benefit significantly if the consultant team has worked together on similar projects with lines of communication already established.

In general, the private sector places less importance on synergy, because projects tend to have a smaller breadth of scope in comparison to the public sector.

#### **3.3.6.6 Relationship**

Relationships are equally important in both the private and public sector. Projects require a certain level of trust and relationship building provides groundwork for it.

#### **3.3.6.7 Methodology**

Methodology is most important to the public sector because they have staff members that are also subject matter experts and who want to see how the consultant plans to tackle a project. The private sector is not as concerned with knowing the details of the consultants methodology.

#### **3.3.6.8 Price**

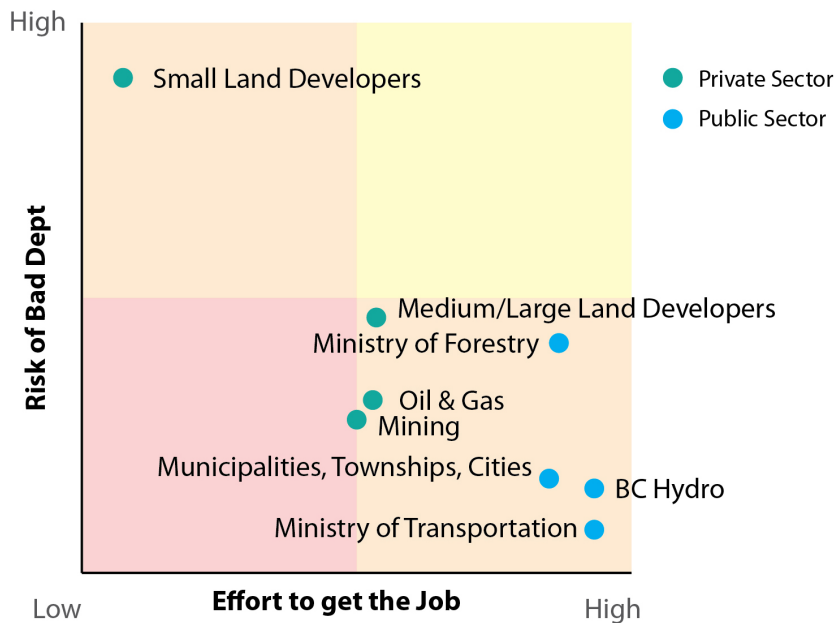
This is the one category that ranges from 2 to 5 and includes the widest variance of scores. The mining and oil & gas industry are the least price sensitive, because the cost for civil engineering services is small in comparison to the cost of not getting the project complete on time. It is also very difficult to find talented consultants willing to work in these sometimes-remote locations, so companies are forced to pay a higher price to get the services they require. On the flip side of that in the private sector are the land developers. The land development market is known to be very price sensitive with the margins of profit a lot tighter than in the mining or oil & gas sectors.

Within the public sector, the forestry industry places the highest importance on price. Forestry is a demising industry due to a decrease in annual allowable cut and the recent pine beetle infestation. This has resulted in a very competitive industry, where the BCMoF can place a high importance on price to save money. Furthermore, the civil engineering required during forestry projects requires less skill than all the other customers. This allows smaller “mom and pa” companies to compete with very low overhead. The BCMoTI, Municipalities, and BC Hydro are fairly neutral on price, and are willing to negotiate price after selecting the most capable consultant.

### 3.3.7 Cost and Risk by Segment

For the consulting firms, each customer presents different levels of risk and reward. Table 3.6 identifies the amount effort required to be hired by the customer and the risk of them not paying on time for the professional services rendered.

Figure 3.6 Customer Risks



The colours in the four regions in Figure 3.6 represents the following relationship between risk of bad debt and effort to get the job:

- Red: the most favourable type of client with low risk of bad debt and low effort to get the job.
- Orange: the typical type of client with either high risk of bad debt and low effort to get the job or low risk of bad debt and high effort to get the job.
- Yellow: the least favourable type of client with high risk of bad debt and high effort to get the job

Figure 3.6 shows that all clients in the NCCI reside in the orange region and have a trade off between risk of bad debt and effort to get the job. The public sector requires more up front effort in proposal preparation, but the trade off is knowing payment will be received once the

services are rendered. The private sector trends more to the middle and upper left corner of Figure 3.6, with small land developers having the highest risk of bad debt and lowest effort to get the job.

Firms must know their clients and realize what risks they present. They can mitigate the high risk of bad debt by preparing fair, clear, and concise contracts with customers. They can also be proactive in collecting bad debts and not allowing it to get out of hand. In most cases the risk of not collecting bad debts increases dramatically after ninety days. Firms can also reduce the upfront effort required to get a job by having a systematic approach to producing proposals. Systems can include proposal templates and a database with company resumes, experience, and divisional/corporate experience. These can help reduce the effort required to respond to requests for proposals.

### **3.3.8 Summary of Customer Opportunities and Threats**

The customer opportunities and threats are summarized in the bullets below:

- Opportunities
  - The amount of natural resources in NBC is high and as long as global demand continues, the NCCI will continue to flourish.
  - The government is currently committed to major projects in NBC, such as the Site C and Highway 97 project. These projects are multi-year and will likely span the next decade.
  - According to MABC, the outlook for mining in NBC is positive.
  - Knowing each customer's preference can help consultants tailor their strategy for going after different customer segments.
- Threats
  - Decline in global demand for natural resources.
  - Environmental or First Nations resistant to the oil & gas or mining industry. The other sectors depend heavily on the continued growth of natural resource exploration, extraction, and refinement.

- The infrastructure is not developed and improved at the same rate as the demand to move goods throughout BC, causing a bottle neck along routes (port, road, air, and train)

## **3.4 Suppliers**

The suppliers in the NCCI can be divided into staff, sub-consultants, hardware, software, infrastructure, and working environment segments. The engineering and technical staff members are the most important suppliers and without them, the other elements in the supply chain would not exist or be required.

### **3.4.1 Staff**

Engineering and technical staff do the majority of the work that is purchased by buyers or customers. Bodies, such as the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) and Applied Science Technologists and Technicians of British Columbia (ASTTBC), govern engineers and technical staff. These governing bodies ensure the professionalism of its members is held to a high standard. They also collect data on wages based on experience, education, and area of expertise. Data is published, which helps establish fair wages for staff. Staff can increase their worth by gaining experience through mentorship, work, and formal education. Engineering and technical staff members do depend heavily on their industry for work. A significant amount of work produced by consulting firms does require professional engineers to sign and seal drawings/documents. There are no substitutes for professionals, and they must be accredited by their governing association.

Project Managers (PMs) manage the projects that engineers and technical staff work on. PMs are typically engineers or technical staff who have worked their way up to management through mentorship and training. PMs can be involved in fairly lengthy and detailed projects that increase their value to a firm – ultimately increasing the firm's value. They do not require formal training, but do require knowledge and experience in the field, due to the technical issues faced during engineering projects.

### **3.4.2 Sub-Consultants**

Firms in the NCCI will get involved in projects, which require technical expertise outside their knowledge base. In these instances, sub-consultants are hired to provide the team with the appropriate level of expertise for projects. Some large or mega firms are multi-disciplined and



can gain a competitive advantage in schedule, synergy, and cost over smaller one-dimensional firms. Generally speaking, most NCCI firms require sub-consultants for the following areas:

- Geotechnical – provides the design of sub-surface structure and investigation of soil materials. They are required on the majority of civil engineering projects.
- Structural – provides the design and inspection of structural elements such as bridges and buildings.
- Electrical – provides the design and inspection of electrical elements such as street lighting and ducting.
- Environmental – provides input into the design requirements from an environmental perspective. Communicates project's scope, requirements, and deliverables with outside agencies, such as the Ministry of Environment and the Department of Fisheries and Oceans.
- Planning – Provides pre-engineer planning and high-level conceptual design of projects.
- Specialized – Provides specialized services specific to a project.

### **3.4.3 Hardware**

The hardware used in the NCCI includes survey instruments, computers, and other miscellaneous support hardware. Hardware suppliers, much the same as software suppliers, will offer some cost savings to consultants making large volume purchases. These savings are either used to increase the consultant's rents, or decrease the buyer's purchase price. Since both parties are aware of the potential savings, economies of scale can be an issue during budget negotiations between consultants and buyers. In general, the increase or decrease in hardware price affects the entire industry equally and does not result in any competitive advantages.

### **3.4.4 Software**

The main software programs used in the NCCI are Microsoft Office Suite, Adobe, and AutoCAD. Over the years, they have become the accepted programs and files are transferred within the industry in their respective formats. Any increase in cost from a software supplier would affect all other parties in the supply chain. An increase in costs could reduce profits for the consultant or increase costs to the buyer. The increase in software and licensing fees has been

fairly gradual, and most software providers do offer some savings to large clients, allowing them to benefit from economies of scale. Those cost savings are typically offset by higher overhead costs associated with larger firms.

Support staff is also required to perform tasks such as accounting, human relations, legal advice, information technology, and secretarial duties.

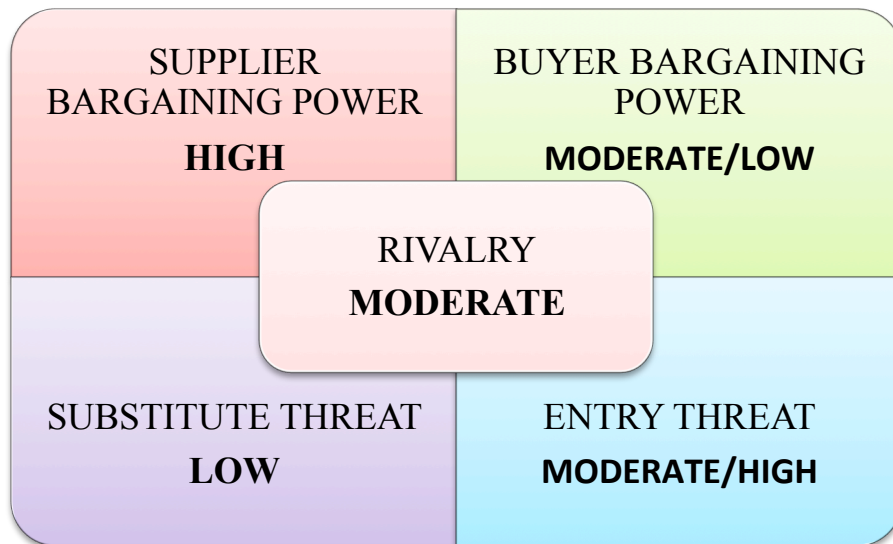
### 3.4.5 Infrastructure and Working Environment

The infrastructure and working environment is the area that houses the staff and enables them to communicate and utilize those services or products provided by the other suppliers. As a firm grows and advances, it may require an increase or remodelling of its infrastructure and working environment to support change.

## 3.5 Five Force Synthesis

Section 3.5 will evaluate the five forces within the NCCI, discuss their level of impact, and examine which factors might increase or decrease their impact in the future. It will also look at which factors contribute to the low, moderate, or high force assigned to each area.

Figure 3.7 NCCI Industry Five Forces



### 3.5.1 Rivalry

The NCCI industry continues to grow and does not show any sign of slowing down with major projects such as Site C and Highway 97 currently underway. Firms are able to enter with an abundant amount of work available. As previously mentioned, one of the key challenges for firms is not getting work; it is getting skilled staff to do the work. The NCCI is also very tight knit community where even competing firms look out for each other and in most cases have worked together on past projects. Some of the rivalry between firms might stem from the rivalry that exists in other regions such as the Lower Mainland. The following bullets provide insight into some of the key factors affecting rivalry and rate how they impact rivalry:

- The structure of the competition: there is a mixture of firms with no clear market leader. (moderate)
- Structure of Industry Costs: There is a minimal amount of price-cutting while the economy is positive and there is a global demand for resources with the support from the government and other stakeholders such as First Nations, BCMoE, and BCMoF. When the economy suffers, the NCCI will react by cutting costs to survive. (moderate)
- Degree of Differentiation: It is difficult for competing firms to differentiate the services they provide. They can combine services and offer customers a breadth of services. (moderate/high)
- Switching Costs: Projects in the NCCI have a set life cycle and once projects are complete, the customer can chose a different consultant if they are unhappy with the services provided. Since there are not as many firms in the NCCI, it does raise switching costs from low to low/moderate.
- Strategic Objectives: There is a mixture of firms that want to grow or just remain status quo. Given the number of acquisitions in the NCCI, it appears that firms will grow if they are able to find the staff to allow growth. (moderate/high)

The average of the points above is moderate, therefore the rivalry in the NCCI is moderate based on the quantitative and qualitative data presented so far in this analysis.

### **3.5.2 Threat of Entry**

Throughout BC (including NBC), a number of large and mega firms have been purchasing small and medium size firms to enter new geographic areas and markets. Given the amount of work available in the NCCI, these large and mega firms have the ability to provide project expertise and have the financial backing to deal with the inevitable periods of economic downturn. These mergers do threaten existing small and medium sized firms, which rely on a certain volume of work every month to keep their doors open for business. Smaller firms do not have the work force and expertise to compete on larger multi-discipline projects, such as the Site C Project, which is a \$7 billion project. Small firms must either join larger teams or search for other smaller projects. As larger firms enter the market, they can also build up relationships within the private and public sectors, and start to penetrate some of the smaller markets. Due to the low barrier of entry, low capital start up costs, and number of recent mergers, the current threat of entry is moderate/high. Some recent examples of large or mega firms purchasing smaller firms include:

- McElhanney purchased Armstrong Engineering and Land Surveying Inc., located in Cranbrook, British Columbia in 2009.
- McElhanney purchased Adam Engineering in Terrace in mid 2000.
- Tetra Tech purchased numerous medium and large firms, such as EBA, to expand into new locations and markets.

### **3.5.3 Substitute Threat**

The only substitute for consultants providing services to customers is for the customers to build up internal staff with the skills and expertise to perform some of the work. The risk of this is fairly low, as most customers benefit from being able to hire consultants based on the amount of work they have. Furthermore, Professional Engineers practicing in BC must be accredited by APEGBC to sign and seal any drawings or documents.

### **3.5.4 Buyer Bargaining Power**

The customer is the primary source of a consultant's revenue stream. In the NCCI, the number of buyers does fluctuate and depends on the global demand for resources. The current demand is high and the number of buyers is higher than the number of consultants able to provide services. Examples of this include the high number of jobs posted on BC Bid (government

website for work) recently in the private sector. Buyers have also resorted to cold calling reputable consultants for services they might not be as experienced in. The BND has experienced this and even completed some projects in the railway industry. The BND has also turned down some recent project offers due to insufficient staffing capacity to deliver projects on schedule.

The customers are spread throughout NBC. The land development and municipalities customers are concentrated in and around city centres. Most of the oil & gas, mining, BC Hydro, and Ministry of Transportation customers are situated on the project site and also have representation within city centres.

Given that the number of customers is higher than the number of consultants, the buyer bargaining power is moderate/low.

### **3.5.5 Supplier Bargaining Power**

Most of the key professional and technical staff do have the ability to switch firms, but their cost do so can increase as they become shareholder's or build relationships with other staff members. In the NCCI, talented staff is hard to come by giving them very high bargaining power. In some cases, firms are willing to offer potential staff increased salary, living out allowances, or moving bonuses, just to get their offices in the NCCI staffed.

Hardware suppliers have very low bargaining power, whereas software suppliers such as AutoCAD or MS Office, can set their own prices due to their saturation of the market and user dependencies.

In the NCCI, the professional and technical staff is a key factor, resulting in a high bargaining power for suppliers.

### **3.5.6 Summary of Industry Threats and Opportunity**

The five forces identifies that the NCCI is an industry with lots of potential for new and existing firms both today and well into the future. The key to any firm's success is to hire, train, and retain qualified and capable professional and technical staff willing to work in NBC. There will be increased costs for firms operating in the NCCI, due to the very high bargaining power of professional and technical staff. Some of the increased costs for staff can be passed onto the customers. Any firm able to establish relationships with customers in the NCCI will have a competitive advantage on all types of projects.

## **3.6 Sources of Advantage**

The two primary sources of advantage in most industries, including the NCCI, are cost and customer utility. Within each source of advantage, there are sub sources, which contribute to the overall advantage of each firm relative to each other. This section will identify the sources of advantage, their importance, and their weight relative to each other. Once the sources of advantage have been identified and quantified the key competing firms will be evaluated in Section 3.7 Relative Competitive Analysis.

The data used for the quantitative and qualitative analysis is based on input from Binnie staff, discussions with clients, and interaction at professional association seminars (APEGBC, ASSTBC, CEBC). The BNDM also provided great insight into this section. He previously worked for the BCMoTI and was on the customer side of the NCCI. He has hired and worked with all the firms mentioned in this section. This inside knowledge helped score competing firms more accurately.

### **3.6.1 Cost Advantage**

In the NCCI, customers hire firms through formal proposals and the customer is charged on an hourly or lump sum deliverable basis. The proposal sets the project budget, which the firm cannot exceed without approval from the customer. The sources of cost advantage for the competing firms include the range of services, utilization rates, overhead costs, office locations, staff, and outsourcing. Each area can help competing firms gain a cost advantage and are discussed in the following sections. Table 3.3 provides a category score and weight for each firm in each category, and is based on input from Binnie staff, discussion with clients, and interaction at professional association seminars (APEGBC, ASSTBC, CEBC).

#### **3.6.1.1 Range of Services**

Projects in the NCCI can require a variety of expertise. Competing firms with more internal expertise can reduce the cost of service to the customer if issues can be handled in-house. A firm with more expertise will not need to hire high-priced help, cutting down on additional cost from sub-consultants. Instead of hiring a sub-consultant, staff can draw on internal resources to address project issues. In some cases these resources are not charged to the project if discussions take place during lunch breaks or after work. Having the in-house ability also reduces the amount of overhead charges to the customer that can add up if too much work is outsourced to sub-consultants.

### **3.6.1.2 Utilization Rates**

If firms have enough existing chargeable work on the books, staff will not have as much non-chargeable time, and will be required to work efficiently to accomplish the work they have been assigned. If a firm is very low on chargeable work, staff may be tempted to overcharge their time to projects, which can result in project budget overruns. Although budget overruns are ultimately the responsibility of the project manager, hours may go undetected, resulting in possible cost increases to the customer.

### **3.6.1.3 Overhead Costs**

As previously mentioned, the types of firms operating in the NCCI can be divided into:

- Small –consulting firms with staff < 50
- Medium –firms with staff 50 to 200
- Large –firms with staff 200 to 800
- Mega –firms with staff > 800

Typically the amount of overhead costs increase as the firm size increases. This is due to the head office staff required to manage procedures and protocol, to ensure the company functions as one unit. The more staff at a company, the greater the challenge for head office to maintain and promote staff unity.

### **3.6.1.4 Office Locations**

If firms have multiple locations near the client and or project they can reduce travel costs during design and construction projects. These travel costs can be quite substantial, especially during construction supervision projects, where staff is required to commute between the office and site on daily basis. Design staff must also visit sites before and during construction, to access the existing land and monitor construction activity. Firms typically want to position themselves near their primary customer so they can provide quick and cost effective service.

Firms can also outsource work to other offices and create a cost advantage over competitors. When one office is busy, it can outsource work to other offices that are slow and increase the overall company utilization rate, which can result in more competitive pricing on other projects. These cost savings can translate into increased profits or more competitive pricing.

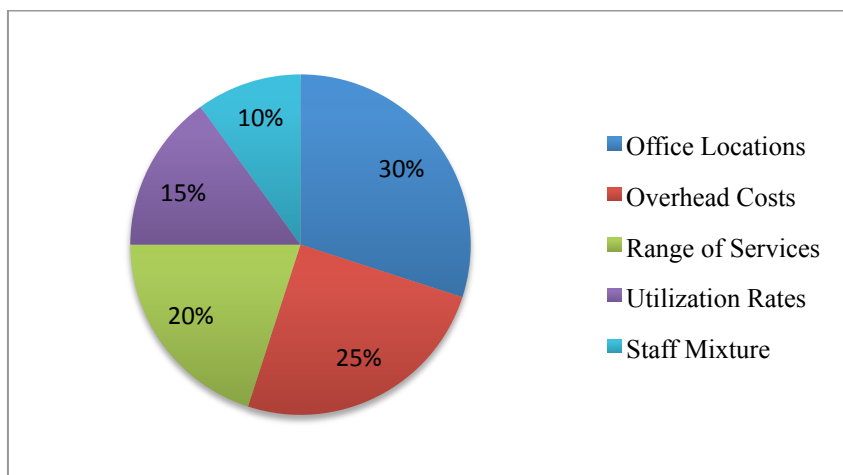
### 3.6.1.5 Staff Mixture

Staff can be divided into contract staff and regular staff. Contract staff is brought in for the duration of a specific project and once the project is complete they can be let go without any financial burden to the firm. This allows firms to adjust staffing levels in relation to workload. Firms do not need to waste money on staff during slow periods and can use the savings to either increase profits or decrease charge out rates. Firms can also attract quality contract and regular staff that work more efficiently and save time on projects, which results in less cost to the customer.

### 3.6.1.6 Relative Importance of Cost Advantages

In order to determine the net impact each source of cost advantage has, they have each been assigned a weight in the Figure 3.8 below.

Figure 3.8 Cost Advantage Weighing



As seen in figure 3.8, office locations and overhead costs are the primary sources of cost advantage, followed by the range of services. By having offices within the vicinity of the client or project, firms can directly reduce their cost of doing business and pass the savings onto the customer. Firms with low overhead costs can also pass savings onto the customer. Firms with a wide range of services can increase efficiencies during multi-disciplined projects that reduce time wasted and additional overhead cost mark-ups. The cost advantages in the NCCI have less impact than the sources of customer advantage because it is a business of selling time. Competing firms can only charge clients rates similar to those established by their competitors, making it difficult to gain a significant cost advantage.



### **3.6.2 Customer Utility Advantage**

Having a positive customer utility advantage in the NCCI can be a key source of advantage, resulting in more projects and higher revenues for consulting firms. The more chargeable staff a firm can have working on projects, the more rents they can earn. This section will discuss some of the sources of customer utility advantage and provide the relative weighting of importance for each source.

In the NCCI, the source of customer utility advantage includes reputational capital, office location, range of services, quality of work, market knowledge, and staff diversity. Each area can help a firm differentiate itself from competitors and increase the customer's willingness to hire and pay.

#### **3.6.2.1 Reputational Capital**

Reputational capital is critical in the NCCI and is based on relationships, track record, experience, and expertise. Without high reputational capital, a firm will have difficulties finding customers willing to hire them. Firms can gain a competitive advantage if they are able to increase their reputation with existing clients and use them as references for future clients. High reputational capital can also help attract better staff members, which produces better work. Reputation is built on the relationships between the firm's and customer's key staff. Relationships can be improved through trust, quality of work, and general enjoyment during projects. A proven track record will also help improve a firm's reputational capital. Customers also want to hire firms with experienced staff who are experts in dealing with the project at hand. Reputation is fragile and takes time to build, but only moments to destroy.

This once again ties back into hiring, training, and retaining experienced and reputable staff to build up a firm's reputational capital, which is a challenge for firms in the NCCI. If firms can devise methods to deal with this issue, it will have a positive impact on all the sources of cost and utility advantage. This is an issue that has been mentioned numerous times throughout this paper for good reasons; it is a huge challenge the NCCI faces.

#### **3.6.2.2 Office Locations**

Customers will typically favour firms with offices close to projects. It is not only a cost advantage as previously mentioned, but also allows the customer to interact with the consultant face to face more frequently. Face to face meetings are crucial during projects, which typically require a team of subject experts to interact in an open forum and sketch out project issues on a

white board. Office locations also demonstrate a firm's commitment to the local community, which can increase customer value. Having a local presence is even more important as you move into smaller and more tight knit communities. Furthermore, offices that are very isolated can also experience coordination challenges during projects that require the services of divisions at other offices.

### **3.6.2.3 Range of Services**

Firms, which offer a range of services, can increase their value for the customer because they are able to tackle a variety of project requirements in-house. Having the expertise in-house reduces the amount of communication required with sub-consultants and streamlines communication between the consultant and the customer. The consulting firm can also provide quicker answers on project issues, which the customer will appreciate. Projects typically involve more than one area of expertise, and the more areas a firm can cover, the better their chances at being the successful proponent of a proposal.

### **3.6.2.4 Market Knowledge**

Firms, which have experience working in a client's local market, will typically be able to serve the client's needs more efficiently. The firm's staff will have a better grasp on the local design requirements and standards, which will vary, in different geographic locations. Customers may also be used to a certain level of local expertise and not want to waste time informing the firm of local requirements.

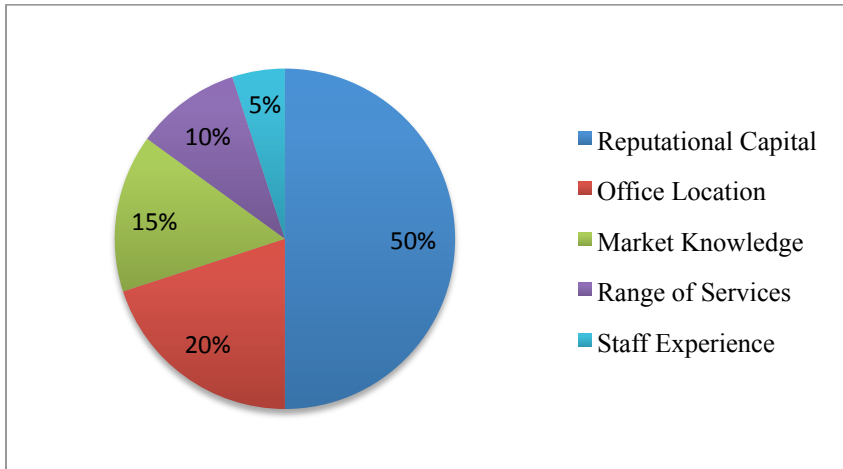
### **3.6.2.5 Staff Experience**

The customer wants to hire a consultant with staff who know their business and can hit the ground running on projects. Customers do not want to spend time training the consultant's staff on the process and procedures required during a project. Having experienced staff on a project will result in a smoother project with less problems/issues. If firms also have a diverse group of regular staff, they can meet a variety of client and project needs.

### **3.6.2.6 Relative Importance of Utility Advantages**

In order to determine the net impact each source of customer utility advantage has, they have each been assigned a weight in the Figure 3.9.

Figure 3.9 Customer Utility Advantage Weighing



As seen in Figure 3.9, the most important customer utility advantage is reputational capital followed by office location. In the NCCI, a firm's reputation is their lifeline, and without a good reputation, no customer will hire them. Firms can also gain an advantage in the NCCI by being local, which is a reason why larger firms buy smaller firms already established in NBC.

### 3.7 Relative Competitiveness Analysis

In the Northern Civil Consulting Industry (NCCI), there are a number of competing firms that try to gain advantages through cost and customer value. Section 3.2.1 Industry Structure, identified some of the key competing firms in the NCCI and the areas they provide service in. AMEC, Focus, McElhanney, and Urban Systems all have a strong presence in the NCCI and cover all the key locations identified in Table 3.1, except for Kitimat. These four firms and the BND will put through a relative competitiveness analysis in this section. This will help identify what firms are currently doing and how they rate compared to each other.

#### 3.7.1 Relative Competitors

##### 3.7.1.1 AMEC

*source: <http://www.amec.com>*

Amec is a mega firm (over 27,000 employees) offering a wide range of engineering services, both inside and outside of the services identified in Section 3.2.1 Industry Structure. They are an international firm with offices and projects in approximately forty countries worldwide. With offices in Prince George and Fort Nelson, they are very well positioned to serve

NBC. In the NCCI, AMEC are primarily known for their geotechnical expertise, but have started to take on more transportation design projects with support from the Lower Mainland offices.

### **3.7.1.2 Focus**

*source: <http://www.focus.ca>*

With over 1,100 staff, Focus is mega firm and has been in business since 1977. Focus has offices in Prince George and Fort St. John. In the NCCI they provide services primarily to the transportation sector, but do not have any Professional Engineers residing in NBC. The Prince George office is not a full services office; it is generally a place for their contract employees to have access to a desk and provides them with a local address. The staff in NBC work primarily on a contract basis for Focus Construction Management Services (CMS).

### **3.7.1.3 McElhanney**

*source: <http://www.mcelhanney.com>*

McElhanney Consulting Services has offices in Prince George, Fort St. John, Smithers, Terrace, and Kitimat, which is the largest geographic coverage out of all the competing firms listed in this section. They provide transportation, survey & mapping, project management, and municipal engineering services. One of their largest clients in the NCCI is the oil and gas sector. They also have capacity in legal survey and geotechnical engineering. They are well established in the NCCI and as a large firm with over 480 staff; they have the resources to complete projects on time and within budget.

### **3.7.1.4 Urban Systems**

*source: <http://www.urban-systems.com>*

Urban Systems was established in 1975 and currently has 300 staff. They have an office in Fort St. John, which provides services to the transportation, municipal, land development and oil & gas sectors. Primarily technicians and technologists staff the office. In May 2011, they did not have a full time Professional Engineer on staff. They do not have any surveying capacity and rely on contract surveyors when required.

### 3.7.2 Relative Position of Each Competitor

Having identified the sources of advantages and primary competitors within the NCCI, Table 3.3 and 3.4 below provides a score and weight for each firm in each source of advantage identified in Section 3.6 Sources of Advantage. The section following the two tables will discuss each source of advantage and how the scores were determined for each consulting firm.

Table 3.3 Cost Advantage

	<b>FIRM:</b>				
	BND	AMEC	Focus	McElhanney	Urban
	<b>SIZE:</b>				
	Med	Mega	Large	Large	Large
<b>SOURCES of COST ADVANTAGE</b>					
Category - Range of Services	3	5	4	4	3
Score	0.6	1	0.8	0.8	0.6
Category - Utilization Rates	3	3	3	3	3
Score	0.45	0.45	0.45	0.45	0.45
Category - Overhead Cost	3	1	2	2	2
Score	0.75	0.25	0.5	0.5	0.5
Category - Office Locations	1	3	3	5	1
Score	0.3	0.9	0.9	1.5	0.3
Category - Staff Mixture	4	2	5	2	3
Score	0.4	0.2	0.5	0.2	0.3
<b>Total Cost Advantage</b>	<b>2.5</b>	<b>2.8</b>	<b>3.2</b>	<b>3.5</b>	<b>2.2</b>

#### LEGEND

Very Low Advantage:	1
Low Advantage:	2
Average Advantage:	3
Above Average Advantage:	4
High Advantage:	5

Weight: Percentage (as defined in Figure 3.8)

Score = (% weight) x (category score)

Table 3.4 Customer Utility Advantage

	FIRM: SIZE:	BND Med	AMEC Mega	Focus Large	McElhanney Large	Urban Large
<b>SOURCES of CUSTOMER UTILITY ADVANTAGE</b>						
Category - Reputational Capital		2	3	3	4	3
Score		1	1.5	1.5	2	1.5
Category - Office Locations		1	3	3	5	1
Score		0.2	0.6	0.6	1	0.2
Category - Range of Services		2	5	3	4	2
Score		0.2	0.5	0.3	0.4	0.2
Category - Market Knowledge		2	3	3	4	2
Score		0.3	0.45	0.45	0.6	0.3
Category - Staff Experience		3	3	3	4	2
Score		0.15	0.15	0.15	0.2	0.1
<b>Total Customer Utility Advantage</b>		<b>1.9</b>	<b>3.2</b>	<b>3.0</b>	<b>4.2</b>	<b>2.3</b>

**LEGEND**

Very Low Advantage:	1
Low Advantage:	2
Average Advantage:	3
Above Average Advantage:	4
High Advantage:	5

Weight: Percentage (as defined in Figure 3.9)

$$\text{Score} = (\% \text{ weight}) \times (\text{category score})$$

**3.7.2.1 Cost Advantage - Range of Services**

All of the firm's scores are directly related to the number of areas they provide services to as identified in Table 3.1 NCCI CEBC Firms. AMEC offers the widest range of in-house services of any of the firms being compared and therefore scored the highest.

**3.7.2.2 Cost Advantage - Utilization Rate**

Firms in the NCCI are private which makes it difficult to determine how much work other firms have on the books. Based on discussions with senior staff at Binnie and conversations with clients, all the firms identified do not have any shortage of work. All the firms were scored equally in this category. The BND is fortunate to have acquired the Site C Project allowing it to be fully chargeable immediately. This project is a multiyear project that can be leveraged to build up staffing levels.

### **3.7.2.3 Cost Advantage - Overhead Cost**

The scoring for this section is directly related to the size of each firm. The smaller the firm, the less the overhead costs associated with their charge out rates, resulting in a cost advantage. As the only medium sized firm in this table, Binnie scored the highest. Firms such as AMEC tend to have higher charge out rates for staff to cover their internal overhead costs, but try to make up for this in the other sources of advantage, which can be gained through their breadth and depth of expertise.

### **3.7.2.4 Cost Advantage - Office Locations**

The scoring in this category directly relates to the number of offices a firm has in NBC. Table 3.1 NCCI CEBC Firms provided information on the number of offices each firm has in the NCCI. McElhanney scored the highest with offices in five out of the six city centres.

### **3.7.2.5 Cost Advantage - Staff Mixture**

All of the firms in the NCCI hire contract staff and this has become a very popular trend for firms in the NCCI. All the firms realize that having a mixture of regular staff and contract staff can help them manage work fluctuations and minimize the amount of time staff is on payroll without chargeable work. Binnie and Focus have been doing this more than the other firms during construction supervision projects and scored higher in this category.

### **3.7.2.6 Utility Advantage - Reputational Capital**

An excellent signal for high reputational capital is length of time in business. Most of the firms have been in business in NBC for a substantial amount of time, which is largely due to their excellent reputation within the NCCI. McElhanney has an excellent reputation in the NCCI and are a firm others try to mimic. Although Binnie has an excellent reputational capital in the Lower Mainland, it is still new in the NCCI and scored the lowest.

### **3.7.2.7 Utility Advantage - Office Locations**

McElhanney scored the highest in this category because they are able to provide customers in the NCCI with more face-to-face interaction. Binnie and Urban scored the lowest because they only have an office at one location. The geographic area of the NCCI is large and firms with only one office location are unable to have as many face-to-face interactions with

customers. The Binnie office is also very isolated from head office, which can cause some coordination challenges during projects that require the services of multiple divisions.

### **3.7.2.8 Utility Advantage - Range of Services**

The score in this category is related to the breadth of services a firm provides. As seen on Table 3.1 NCCI CEBC, AMEC provides the most services and therefore scored the highest in this category.

### **3.7.2.9 Utility Advantage - Market Knowledge**

It is difficult to determine the level of each firm's market knowledge in the NCCI without speaking to their senior staff or clients they have worked with. The scoring has been correlated to the number of offices as more offices result in more staff knowing what is going on in the NCCI. It has also been correlated with the length of time doing business because the longer a firm is in the market, the more knowledge it will typically have.

### **3.7.2.10 Utility Advantage - Staff Experience**

McElhanney and AMEC both have been operating in the NCCI for a substantial length of time and have built staff with experience and expertise customers' value. Both these firms scored the highest in this category. Urban scored the lowest and does not have an engineer on staff who resides in the north. The BND scored a three due to the experience of the BNDM.

## **3.8 Summary & Conclusion**

Adding up all the cost and customer utility advantages results in the following ranking from highest to lowest is:

1. McElhanney scored 7.7
2. Focus scored 6.2
3. AMEC scored 6.0
4. Urban scored 4.5
5. BND scored 4.4

Given that the BND is new in the NCCI, it seems logical that it scored the lowest and has the most amount of room for improvement.



The current industry strategic issues BND faces identified in section 2.4 are staffing, isolation, leveraging resources, and expanding its client base. Section 3 took a closer look at the industry as a whole then focused in on sources of cost and customer utility advantage. One of the key issues all firms face in the NCCI is staffing. If any firm wishes to increase its potential for success, it must overcome the hurdles of hiring, training, and retaining talented professional and technical staff.

Using all the information provided in Section 3, Table 3.5 summarizes BND’s strengths and weaknesses. It also identifies the industry opportunities and threats. This information will help establish some of the strategic alternatives for the BND in Section 4 and provide a baseline to measure how the alternatives impact the items identified Table 3.5.

Table 3.5 SWOT Analysis

<p><b>BND Strengths</b></p> <ul style="list-style-type: none"> <li>• The BNDM is a local resident with over 30 years experience in the NCCI</li> <li>• Site C Project to help establish the BND</li> <li>• Part of a medium sized firm with low overhead cost</li> <li>• Able to supplement high work volumes with Contract Staff (from Binnie)</li> <li>• Support from Binnie with the goal of growth</li> </ul>	<p><b>NCCI Opportunities</b></p> <ul style="list-style-type: none"> <li>• NBC is rich in natural resources which are currently in demand on the global market</li> <li>• NBC is a gateway and major highways projects are underway, such as Hwy 97</li> <li>• Site C Project (design &amp; construction services)</li> <li>• Getting involved in local educational institution to build relationships with the future of the NCCI</li> <li>• Low cost of doing business</li> </ul>
<p><b>BND Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Attracting, maintaining, training, and growing staff</li> <li>• New guy on the block</li> <li>• Only one office to service a very large geographic area</li> <li>• Office is very far from the Binnie head office in Burnaby</li> <li>• Lack of diverse client base (BCMOTI and BC Hydro)</li> <li>• BNDM is managing projects which takes away from business development</li> <li>• BND is highly dependent on one individual (BNDM)</li> </ul>	<p><b>NCCI Threats</b></p> <ul style="list-style-type: none"> <li>• NCCI is very dependent on the global demand for natural resources</li> <li>• Change in government policy</li> <li>• Environmental and First Nations resistance</li> <li>• It is difficult to find staff willing to work in NBC</li> </ul>

## **4: Strategic Alternatives Analysis**

### **4.1 Strategic Priorities**

To determine what alternatives to consider for the BND, we must first recap some of the key points and determine what its strategic priorities are. Section 2.4 identified some of the key strategic issues to be resolved: staffing, isolation, leveraging resources, and expanding customer base. The SWOT analysis identified that the BND needs to build up staff, leverage the support of Binnie, capitalize on the existing Site C Project, and exploit the experience of the BNDM. The NCCI appears to be in a positive trend and the time is now for the BND to grow. One of the key weaknesses that the BND must address is staffing levels to help it take advantage of the opportunities in the NCCI and provide support to the BNDM. The BND is very dependent on one individual and a few specific customers. The BND must diversify its client base to not be so dependent on only a handful of customers.

Based on the issues discussed in the previous paragraph and throughout this paper, the key priorities for the BND currently include:

1. Increasing staffing levels
2. Leveraging the experience and support of other divisions at Binnie (in particular the transportation, project management, construction services, and engineering survey division).
3. Building the existing client base beyond the BCMoTI and BC Hydro. The first new customer it should consider serving is the oil & gas sector. BND could attempt to enter this sector by offering surveying services. It could also assist with the design and construction supervision for access roads into remote sites. These are all areas that the BND has experience in (with support of other divisions). If it does go after the oil & gas sector, staff must be prepared to go wherever the work is within NBC.
4. Marketing the Binnie brand in the NCCI

The alternatives will focus on resolving the most important issue the BND faces, which is the staffing issue. Since the other three priorities are still very important, the alternatives will be

ranked against all four priorities. Some of the alternatives do address the other three priorities, but the primary focus will be to resolve the staffing issue.

#### **4.1.1 Alternative 1- Build alliances with educational institutions**

Binnie has already experienced the benefits of building alliances with educational institutions in the Lower Mainland and could do the same in NBC. One of the factors of recent growth in the Burnaby and Surrey office is the on going relationship with the key educational institutions like the British Columbia Institute of Technology (BCIT) and the University of British Columbia (UBC). Senior staff have been involved with BCIT and UBC over the years, and in early 2000 Binnie got more involved in open houses and started setting up display booths at BCIT and UBC, which resulted in an increased interest and recognition of Binnie at these institutions. Through these open houses and display booths, Binnie was able to get direct interaction with the students, whereas prior to 2000, most of the interaction was at a higher level and had less impact on students.

The BND could get involved with the College of New Caledonia (CNC) and the University of Northern British Columbia (UNBC), as Binnie is doing at BCIT and UBC. The UNBC is an excellent opportunity and is currently seeking approval to begin offering a civil engineering program. BND could leverage Binnie's reputational capital with APEGBC, CEBC, BCIT, UBC, Private Customers, and Public Customers, to help UNBC in the approval process. The BNDM has already been involved with the UNBC in discussions relating to this matter and is familiar with challenges this program faces. If the BND can help the UNBC in the early stages of getting a Civil Engineering program approved, it will help establish the BND's name in NBC and might help resolve the problem of hiring new staff. The CNC currently offers an Engineering (Applied Science) Certificate Program that is similar to the program offered at BCIT. Graduates from this program can start work immediately and are typically well trained for the work force. The BND could start getting involved in any open houses or student project sponsorship to help build its name with students in NBC. This will also leave a positive impression on school faculty that likely have relationships and influence within the NCCI.

Building an alliance with UNBC or the CNC takes minimal effort with a significant pay back. As a new firm in the NCCI, BND must start making a name for itself and spread the word to students and faculty members that BND is one of the most exciting companies to work for.

#### **4.1.2 Alternative 2 – Rotate staff into the BND**

As Binnie continues to grow as a company, so does its staff. As in most things in life, if you don't ask you will never know. The same is true for potential opportunities at the BND office for existing staff at Binnie. This alternative can help break down the divisional silo mind-set, provide opportunities for staff to experience new markets, and provide the opportunity for the BND to learn how the other Binnie offices operate first hand from staff.

Staff rotation can be done based on the staffing needs of the BND. This could be incorporated into the Binnie Engineer in Training or the Technologist in Training Programs, to help broaden junior staffs' perspectives and ultimately make them better engineers or technologists. It is easy to find qualified staff in the Lower Mainland, so any staff willing to move to the BND could be replaced. The move would probably cause some initial inconvenience for the division the staff member left, but would have a net benefit to Binnie as a whole, given the potential in the NCCI.

Rotation periods can be established to help entice staff willing to work at the BND, but not ready to commit to working there for an extended period of time. This allows staff to explore the possibility of working and living in NBC and provides them with the opportunity to decide for them self based on experience. Binnie can also provide measures such as career advancements and financial incentives for staff willing to work at the BND. This will help make the decision of whether or not to try working at the BND easier for staff contemplating it.

Many larger and more established firms in the NCCI already have staff rotation programs, so introducing it at Binnie will help it stay competitive with other firms and attract a variety of staff wishing to have the option to work in other parts of BC. The key to making this program a success at Binnie will be having buy-in from all the Division Managers at Binnie, convincing them to see the potential net benefit this program offers, and not getting caught up in the short term staffing issues it creates.

#### **4.1.3 Alternative 3 – In-House educational program**

This is something that McElhanney is currently doing in NBC and has helped contribute to their high score in Section 3. Some of the skills required for staff does not require education from a formal institution and could be taught to students coming out of high school or adults wishing to change careers. Some of the positions include:

- Survey Assistant – holds the survey rod for the lead instrument person. Binnie has a large core group of qualified surveyors who could train new staff. Once staff is trained as survey assistants, they always have the option of upgrading their skills to become lead instrument personnel. Becoming a lead would require some formal education that could be done with help from Binnie’s staff educational allowance (a program already in place for all staff).
- Construction Inspectors – most of the construction supervisors working for the construction services division at Binnie were educated on the job and did not have any formal post high school education when they were hired. A large number of them took night classes or attended courses put on by their work (most worked for the BCMoTI) to help increase their skills. These staff members have first hand experience in what is required to train new staff without any formal education in the field. They could provide input and help run in-house programs for new staff. There is a great deal of construction activity planned in NBC over the next decade (Hwy 97 and Site C) and starting to train staff now will put the BND in an excellent position for the coming years.
- Administrative Staff – As the BND grows, it will eventually require administrative staff to perform tasks such as answering phones, compiling proposals, and helping staff with other non-technical tasks. Binnie already has a core group of administrative staff with experience. These existing administrative staff could prepare modules to help train new administrative staff. Modules would contain information on how to perform daily tasks and provide tips and tricks.

#### **4.1.4 Alternative 4 –Purchase small firm in the NCCI**

BND has fairly low reputational capital in the NCCI, which is a critical component of the customer utility advantage. Binnie also only has one office in Prince George and scored low in the office location category for the cost and customer utility advantage. The BND could improve its position in the NCCI if it were to expand to a new geographic location through the purchase of an existing consulting firm. The firm would be selected carefully to ensure it has an excellent reputation and is in line with the strategy of both Binnie and the BND. The new firm could also be used as a gateway into other markets. Binnie does not do any civil work directly for the mining

or oil & gas sectors. These two sectors are critical components of the NBC economy and are areas the BND might want to penetrate through acquisition of a small firm.

Firm acquisition is something the Binnie already has experience in on Vancouver Island. In 2008 Binnie purchase Hal Martyn Engineer to help expand North of its Parksville Office and gain a professional engineer on the Vancouver Island.

## 4.2 Evaluation of Alternatives

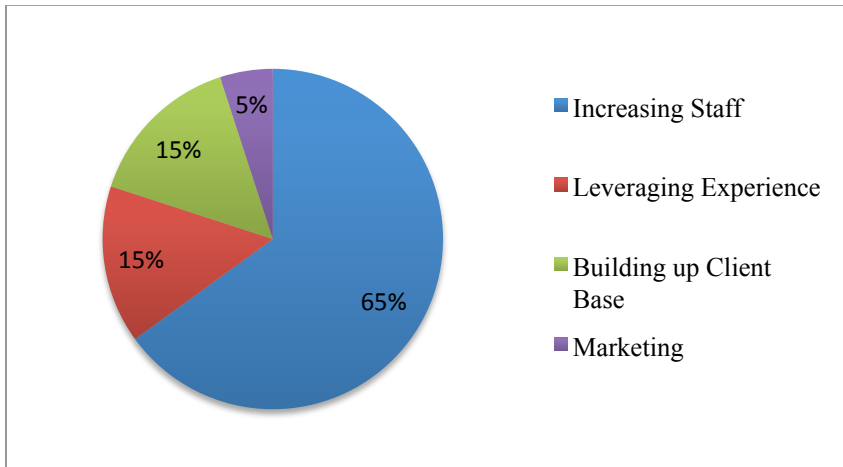
This section will evaluate the alternatives suggested in the previous section and determine how well they address the key priorities that the BND has.

### 4.2.1 Key Priorities & Relative Weight

The key strategic priorities for the BND include:

- Increasing staffing levels – attracting, maintaining, and growing staff
- Leveraging the experience and support of other divisions
- Building up client base
- Marketing in the NCCI

Figure 4.1 BND Priorities and Weighting



The weighting of each priority is related to how well it exploits BND’s strengths, exploits NCCI opportunities, mitigates BND’s weaknesses, and mitigates NCCI threats. As previously

mentioned, one of the most significant goals of the BND is to attract, train, and grow staff levels. Growing staff is an issue most of the firms in the NCCI currently face and it is an item that would be present in all of the competing firms' SWOTs. Building up staff can also contribute to the success of the other three goals identified. Once staff is trained they can help diversify the client base and market the BND. BND must also continually leverage the experience of the other divisions as it is still fairly young and does require assistance. In the NCCI the staff are the lifeline of the firm and without them the firm will fail. Table 4.1 summarizes how each priority addresses the items identified in the SWOT, and Figure 4.1 displays the quantitative weighting assigned to each priority.

*Table 4.1 Exploitation of Strengths & Opportunities and Mitigation of Weaknesses & Threats*

Priority	Exploit Strength	Exploit Opportunity	Mitigate Weakness	Mitigate Threat
Staffing	In line with corporate strategy of growth  Binnie have core staff in the Lower Mainland to support/train new staff	Build up staff to do the work  Already enough work to keep a new staff member busy  New staff might already have relationships with educational institutions	New staff might already have client base  New staff might be able to attract other new staff  New staff can help free up the BNDM time and provide opportunity for transfer of knowledge	More staff means more ears on what is going on the market  Staff might have skills to help diversify the BND
Leveraging Experience	Binnie has depth of knowledge	Assist the BND with the experience of Binnie	Reduce the feeling of isolation  Diversify client base	More staff involved means more ears on what is going on in the NCCI
Build up client base	Continued growth	Tap into the work resulting in the global demand for natural resources	Diversify client base	Diversify client base and attract staff
Marketing	Market the work underway on the high profile Site C Project  Market the BND and BNDM	Market to help get involved in the community	Help move away from the new guy on the block  Attract interest from new staff and clients	Attract new staff

## 4.2.2 Alternative Assessment

Table 4.2 provides the scoring of each alternative in relation to how well they accomplish the key priorities identified in Section 4.2.1.

Table 4.2 Alternatives Assessment

	Alt 1: Build Alliances	Alt 2: Rotate Staff	Alt 3: In-House Edu.	Alt 4: Purch. Firm
<b>ALTERNATIVES ANALYSIS</b>				
Staffing	4	3	4	4
Score	2.6	1.95	2.6	2.6
Leveraging Experience	3	3	4	3
Score	0.45	0.45	0.6	0.45
Building up Client Base	3	1	1	4
Score	0.45	0.15	0.15	0.6
Marketing	4	1	3	3
Score	0.2	0.05	0.15	0.15
<b>Total Score</b>	<b>3.7</b>	<b>2.6</b>	<b>3.5</b>	<b>3.8</b>

### LEGEND

Very Low Accomplishment:	1
Low Accomplishment:	2
Average Accomplishment:	3
Above Average Accomplishment:	4
High Accomplishment:	5

Weight: Percentage (as defined in Figure 4.1)  
 Score = (% weight) x (category score)

## 4.2.3 Alternative Scoring

This section explains how each alternative was scored in Table 4.2 and will provide a ranking of the alternatives. The alternatives with a higher total score best address the all the issues that the BND faces internally and externally. Section 5 will discuss the feasibility of implementation of the alternatives.

### 4.2.3.1 Alternative 1: Build alliances with educational institutions

This alternative scored the second highest and provides a large return for a minimal amount of effort. Getting involved with the educational institutions will help ensure graduating students know about the BND and the opportunities it can provide. This can help increase junior staffing levels. It is also a great way to market the BND in the NCCI. Most staff members at educational institutions are also involved to some degree in the NCCI and may be able to provide BND with insights into acquisition opportunities. They might also have dealings with potential



clients in the NCCI and could recommend the BND to them. This alternative will require assistance from other divisions and will help increase the bond between divisions. The BND will need to leverage the experience of other DM's who have experience with this in the Lower Mainland.

#### **4.2.3.2 Alternative 2: Rotate staff into the BND**

This alternative scored lowest. It does have potential in building up staffing levels, but there is the risk that staff interested in the NCCI might have a change of heart once working in it. Having rotating staff does more for the individual's career than it does for the BND. Rotating staff helps the BND leverage the experience of the other divisions and allows them to get hands-on time with other division staff members. Although some of the rotating staff may have existing clients in the Lower Mainland, they are not likely to have the same clients in NBC. Rotating staff might promote internal communication between staff but does very little for external marketing.

#### **4.2.3.3 Alternative 3: In-House educational program**

This alternative scored the third highest and provides a great opportunity to increase staffing levels by training residents of NBC. It can also be used as a marketing tool because Binnie is providing training and creating jobs for local residents. This alternative does leverage the experience of other divisions, who will be responsible for the training. Staff in this program will not be able to help build up the client base and will depend on BND's existing clients.

#### **4.2.3.4 Alternative 4: Purchase small firm in the NCCI**

This alternative scored the highest. It allows the BND to instantly increase staffing levels and build up client base. This alternative has worked well for other firms in the NCCI. The challenge is finding a small firm that fits well with Binnie and that can have a seamless transition while maintaining its existing client base. It is also challenging branding the purchased firm as a Binnie firm. There will be some resistance from staff of the purchased firm, as they will be set in their own ways (procedures and protocol). There will be a certain "break in" period for the new firm that allows them time to learn the Binnie way of doing business. Binnie must also consider the purchased firm's procedures and protocols and perhaps use them to enhance the systems in place at Binnie. The BND must also ensure that any new firm fits well with the existing culture at Binnie to help promote teamwork. This alternative did score average in regards to leveraging and will give the BND another firm to leverage experience from.

#### **4.2.4 Summary**

The final ranking of the alternatives in order of preference are as follows:

1. Alternative 4: Purchase small firm in the NCCI scored 3.8
2. Alternative 1: Build alliances with educational institutions scored 3.7
3. Alternative 3: In-House educational program scored 3.5
4. Alternative 2: Rotate staff into the BND scored 2.6

The next section will take a closer look at all the alternatives and determine the feasibility of each option. The feasibility is based on BND's internal capabilities to make each option a reality.

## 5: Feasibility Analysis

### 5.1 Alternative Feasibility Analysis

This section will help determine if the BND’s internal capabilities are adequate, or could be made adequate to implement the four alternatives identified, evaluated, and ranked in Section 4. If any of the alternatives cannot be implemented, they will be discounted immediately, regardless of how well they ranked in Section 4.

The “Diamond-E Drill” from Crossan Killing & Fry will be used to evaluate each alternative. This method will focus on the following existing internal capabilities of the BND (with support from Binnie) and help identify any gaps:

- Management preferences and expertise (preferences, decision criteria, experience, and management team)
- Organizational (structure, systems, and organizational culture)
- Resources (operational, human, and financial)

Figure 5.1 Diamond-E Framework

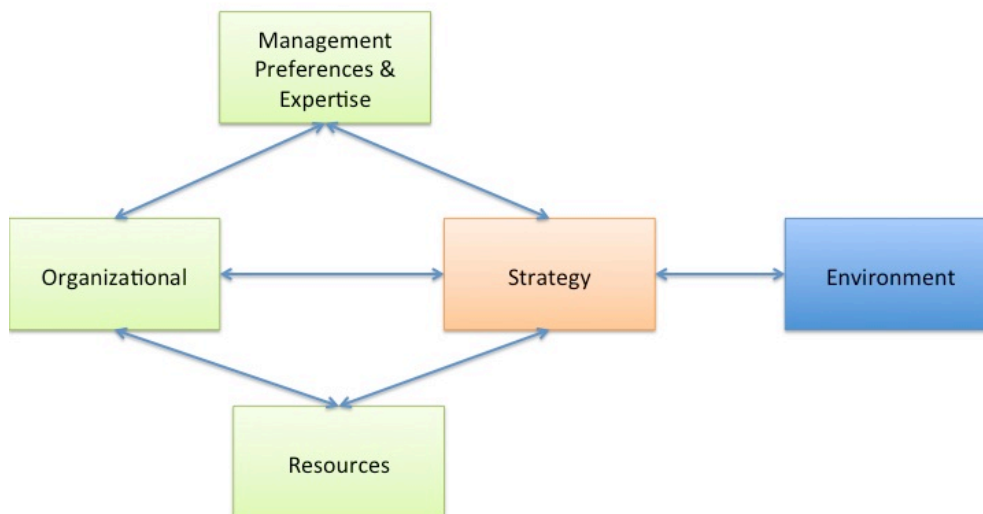


Figure 5.1 illustrates how the strategy evolves based on the environment, but also must fit within the internal capabilities of the BND.

Each section will have a table that identifies the requirements of each alternative and the internal capabilities of the BND (with support from Binnie). If a gap is identified it will include information on how the gap can be bridged or in some case, it cannot be bridged. A very high level cost estimate will be provided for items that would incur costs above and beyond current normal business activities. There is also a brief discussion following each table that identifies the key takeaways.

The alternative preference rating will then be based on the combination of the alternative ranking in Section 4 and how well it fits the internal capabilities of the BND.

### 5.1.1 Alternative 1: Build alliances with educational institutions

Table 5.1 Alternative 1: Management Preference & Expertise

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Senior staff with experience collaborating with educational institution	No Binnie has experience	None	None
Support from the Senior Management at Binnie	No Board of Directors supports this type of activity	None	None

The management and senior staff at Binnie would fully support this alternative and no gaps appear to be present. They have experience in building alliances with educational institutions and could support the BND with implementation.

Table 5.2 *Alternative 1: Organisation*

<b>Level/Requirement</b>	<b>Does Gap Exist?</b>	<b>Gap Bridging</b>	<b>Estimated Cost</b>
The decision regarding implementation	No Could be made between the BNDM and the CEO	None	Minimal
Framework for building alliances	Somewhat BND could get support from Binnie. Binnie has experience working with educational institutions	The BNDM will need to discuss how Binnie has been successful with other institutions such as BCIT and UBC	Minimal
Culture in support of building alliances	No All of the senior staff attended educational institutions and realize their importance to the NCCI	None	None

The BND does have the organization structure, systems, and culture to implement this alternative. The only gap exists in the framework for building alliances that could be bridged with the support of Binnie.

Table 5.3 *Alternative 1: Resources*

<b>Level/Requirement</b>	<b>Does Gap Exist?</b>	<b>Gap Bridging</b>	<b>Estimated Cost</b>
Corporate information to help promote BND with educational institutions	Somewhat Binnie has primarily been marketing in the lower mainland and not much in NBC	Have the BNDM and Marketing & Communications Manager discuss options to help promote BND to educational institutions	Prepare material specific to the BND. Time and materials \$10k per year
Staff willing to help build alliances (attend open houses, support students, dialogue with staff)	Yes BND staff is small. The BND needs staff to help with this; the BNDM can't do it all	In the short term, the BND will need support from Binnie	Flights to and from the BND and costs of staff time from Binnie (\$5k to \$10k per year, per staff member)

The BND is remote and understaffed resulting in some resource gaps. These gaps could be filled but there is a cost associated with filling them. Some of the costs could be reduced once staffing levels increase at the BND.

### 5.1.2 Alternative 2: Rotate staff into the BND

Table 5.4 Alternative 2: Management Preference & Expertise

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Division Managers (DMs) willing to let staff work at the BND	Yes Some DMs are reluctant to offer up staff and lose expertise/profit within their division	Show DMs the net benefit to Binnie if the BND is successful as a result of this alternative	
Human Resources (HR) would be required to set up an official rotation program	Yes There is no program in place similar to this alternative	HR would need to attend seminars or workshops on how to successfully implement this alternative	Time required for HR training (\$5k per year for each HR staff member)

The largest hurdle for this alternative will be getting buy in from all the DMs. This is a hurdle that will take time to overcome and presents a huge obstacle to this alternative.

Table 5.5 Alternative 2: Organisation

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Systems in place to allow for staff rotation	Yes There are no systems in place for staff rotations at Binnie.	Set up systems to allow for staff rotation	Head Office will need to add administrative tools and procedure documents (\$30k per year)
How candidates are selected for this program	Yes	DMs and HR will need to discuss how candidates are selected	DMs and HR time to discuss and implement (\$30k per year)
Compensation package for staff willing to participate in this program	Yes	CEO will need to evaluate this further	varies

There are no systems currently in place and this type of alternative would require modifications to the existing staff practices and procedures.

Table 5.6 Alternative 2: Resources

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Room at the BND for staff rotating	Somewhat There is currently some office space at the BND for additional staff, but this may become an issue at a later date	Ensure there is a dedicated desk or desks for rotating staff	Office space for the program. If the space/desk is vacant for long periods of time there is a potential for financial losses. (assume vacancy amounts to losses of \$3k per year)
Support to keep rotating staff busy	Somewhat This will depend on how much work the BND has	Plan ahead to ensure work is available for staff rotating into the BND	Time required to train or find replacement staff (\$20k per year for each staff member)  Cost to relocate staff to NBC for periods of time (\$10k per year for each yearly rotation per staff member)

This alternative also requires room at the BND and enough work to keep rotating staff busy. If rotating staff leaves a busy division to work at a slow division it will result in significant revenue losses to Binnie.

### 5.1.3 Alternative 3: In-house educational program

Table 5.7 Alternative 3: Management Preference & Expertise

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Experience in developing, launching, and teaching	Yes None of the staff have been involved in the type of program	Hire a consultant to help develop, launch, and provide support	Estimate to hire a consultant \$100k and lost time training senior staff \$20k
Upper management support	Yes This alternative has never been discussed at Binnie	Start discussions, although some senior staff might be resistant to this alternative. This gap would take a lot of discussion to bridge	Minimal

Management do not have any experience in delivering this alternative. Training will be required to educate senior staff, which will cost Binnie. This is an alternative that senior management have never considered and would require further discussion at the Board level.

Table 5.8 Alternative 3: Organisation

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Department responsible for the implementation of this alternative	Yes There is no division at Binnie with experience in the alternative	A new educational division would need to be set up. This is a large gap and is not inline with any of Binnie's current expertise. A consultant would be required	(same consultant as in Table 5.7)
Systems to ensure the alternative is properly preparing students	Yes No experience in this area	Work with consultant to come up with measuring metrics for the program	(same consultant as in Table 5.7)

There is no structure or system in place to deal with this alternative. New ones would have to be developed with support from a consultant.

Table 5.9 Alternative 3: Resources

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Space to train and educate staff	Yes Some of the training could be done out in the field, but some would require office space	Monitor office space to ensure there is room for new staff training	Lost profit if the staff being trained is not chargeable. This is difficult to estimate. Assume training takes 6 months at 50% chargeability. (\$30k per year for each staff member being trained)
Staff members willing to participate as mentors/instructors	Yes Although some staff does have the experience and may be capable, there is no guarantee they will be willing	Entice staff with new titles and compensation	Assume \$5k is required to entice staff to teach



Space will be required to facilitate some of the training for this alternative. It will also be a challenge to find existing staff that is both qualified and willing to participate. Furthermore, the BND is already short staffed.

#### 5.1.4 Alternative 4: Purchase small firm in the NCCI

Table 5.10 Alternative 4: Management Preference & Expertise

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Senior management support	No The senior management at Binnie do support expansion by acquisition	None	Minimal

This is an alternative that has already been discussed at the Board level. The senior management realize that this is a viable option and have experience in purchasing firms.

Table 5.11 Alternative 4: Organisation

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Binnie's ability to support another small office	No Binnie has experience in purchasing small firms. There are 7 Binnie offices throughout BC so it is capable of opening another small office	None	A small office would use the support of the Binnie Head Office. Additional costs would be minimal
Systems in place to support another office	No Binnie has IT, HR, and Financial systems in place, which could be easily implemented	None	The lost rents for the new firms learning curve regarding the Binnie System (assume \$15k)
Company Culture fit	Possibly This gap would all depend on the firm Binnie decides to purchase	Reduce the culture clash by purchasing a firm with a similar culture	Varies, depending on the time to adapt to the Binnie Culture (assume \$10k)
Re-Branding	Possibly There will be some resistance from the purchased firm to do things the "Binnie" way	Work with staff at the purchased firm and help them understand the benefits of the systems in place	Same as above

There is already and structure and systems in place for this alternative. The value of this option is instant increase in staffing levels, clients base, and geographic market share. There are also financial and re-branding risks associated that will need to be closely examined by senior management and Binnie’s accountants.

Table 5.12 Alternative 4: Resources

Level/Requirement	Does Gap Exist?	Gap Bridging	Estimated Cost
Senior staff search for and purchase firm	Yes Senior staff at Binnie have experience in this area, but might not have adequate free time to take this task on	Seek assistance from other internal staff or an outside consultant	Estimate 200 hours at \$150 per hour is roughly \$30k
Purchase firm	Yes Binnie currently does have the financial capacity to purchase a small firm, but will be required to find and purchase one	Yes, funds required to find and purchase a firm	Cost to purchase five person firm is roughly \$750k

Binnie does currently have the financial capacity to purchase a small firm, but it is very difficult to determine the cost. There are so many variables other than the EBIT that come into play such as financial track record, time in business, size and growth, area of expertise, client type, and typical project size. The number provided is a very rough estimate, but does signify that although this alternative ranked the highest in Section 4, it does have the highest initial price tag to implement. The hope is that the new firm would start turning a profit immediately and pay for itself within five years. After five years, all the profits contribute to Binnie’s bottom line.

## 5.2 Identified Preferred Alternative

The information provided in Sections 4 and 5 is summarized in Table 5.13. The table is in the order of the rankings from Section 4. Each alternative has a brief summary of the internal capabilities, number of gaps, and estimated cost to implement.

Table 5.13 Alternative Ranking

Alternative	Ranking	Capability	Gaps	Estimated Cost
Alt 4 - Purchase a small firm in the NCCI	3.9	Very capable and have done this in the past. It has a the highest cost risk out of all the alternatives	Minor Senior management will need assistance  Possible culture clash and re-branding the purchased firm with the Binnie name	\$805k
Alt 1 - Build alliances with educational institutions	3.8	Very capable and have done this in the past	Gaps exist in resources but could be bridged with support staff, until staffing levels at BND increase	\$20k/year
Alt 3 - In-house educational program	3.4	Not very capable and will require outside consultant	Lots of gaps exist	\$155k/year
Alt 2 - Rotate staff into the BND	2.5	Somewhat, but it will be tough to get DMs on board	Lots of gaps exist	\$90k for initial program set up

Based on the results presented in Table 5.16, I recommend moving forward with Alternative 1 immediately to help build alliances with faculty staff and students of educational institutions. This alternative requires little upfront effort and Binnie has the internal resources to make it a reality. Alternative 1 also scored second highest in Section 4 and will help address the issue of staffing levels. I also recommend that Binnie continue their search to purchase another small firm in the NCCI as identified in alternative 4. Although Alternative 4 has the highest upfront cost, it instantly increases staff, builds up clients, and expands office locations. The upfront can be spread out over a period to allow the rents from the new office to cover some of the acquisition costs. The right firm can also increase the BND's reputational capital in the NCCI, which is one of the most important items identified in this customer utility advantage.

Alternative 2 will require much more discussion between DMs and there are many gaps to fill. Alternative 3 could be implemented, but requires additional consultation with consultants experienced in setting up an in-house educational program. Both these alternatives will be sidelined for now.

The next section will provide a re-cap on the analysis outcomes that have led to the two chosen alternatives (now called options). It will also provide a summary of the gaps and a timeline for implementation of each option.

## **6: Final Recommendation**

This section will discuss the recommended options, the internal changes required to implement them, and the timeline for implementation.

### **6.1 Recommended Options**

The two options have been recommended based on how well they exploit the strengths of BND, exploit the opportunities of the NCCI, mitigate the weakness of the BND, and mitigate the threats that exist in the NCCI. The degree of accomplishment for each alternative to the BND SWOT was summarized in Table 4.2 Alternative Assessment. In Section 5 the alternatives were evaluated to determine how well they could be implemented given the BND's (with the support of Binnie) internal capabilities. Each alternative also had an associated cost to implement.

The two options recommend based on the analysis thus far are:

- Option 1: Build alliances with educational institutions
- Option 4: Purchase a small firm in the NCCI

Option 1 ranked second on Table 4.2 and provides a very high potential to increase staffing levels. It also provides opportunities for leveraging of existing resources and increasing client base through interactions with school faculty. Getting involved in educational institutions also provides great marketing to potential staff. This is a cheap alternative and can be started immediately.

Alternative 4 ranked the highest on Table 4.2 and provides a very high opportunity for staffing and increased client base. This alternative is something many of firms in the NCCI do to increase their presence in NBC. This alternative will also take the longest to implement and will cost significantly more than Option 1. Binnie is currently in a financial position to purchase a firm if it is determined to be the right fit.

## **6.2 Gap Filling Solutions**

All of the key gaps and methods to bridge them were identified in the tables for each alternative in Section 5. This section provides a brief summary of the gap bridging solutions for each alternative.

### **6.2.1 Alternative 1: Build alliances with educational institutions**

This alternative will require support from Binnie. The BNDM is very busy and his time is a valuable commodity that is committed to other things such as projects and manager duties. Binnie has staff and it will be a matter of selecting those who are willing and capable to assist the BNDM with this alternative.

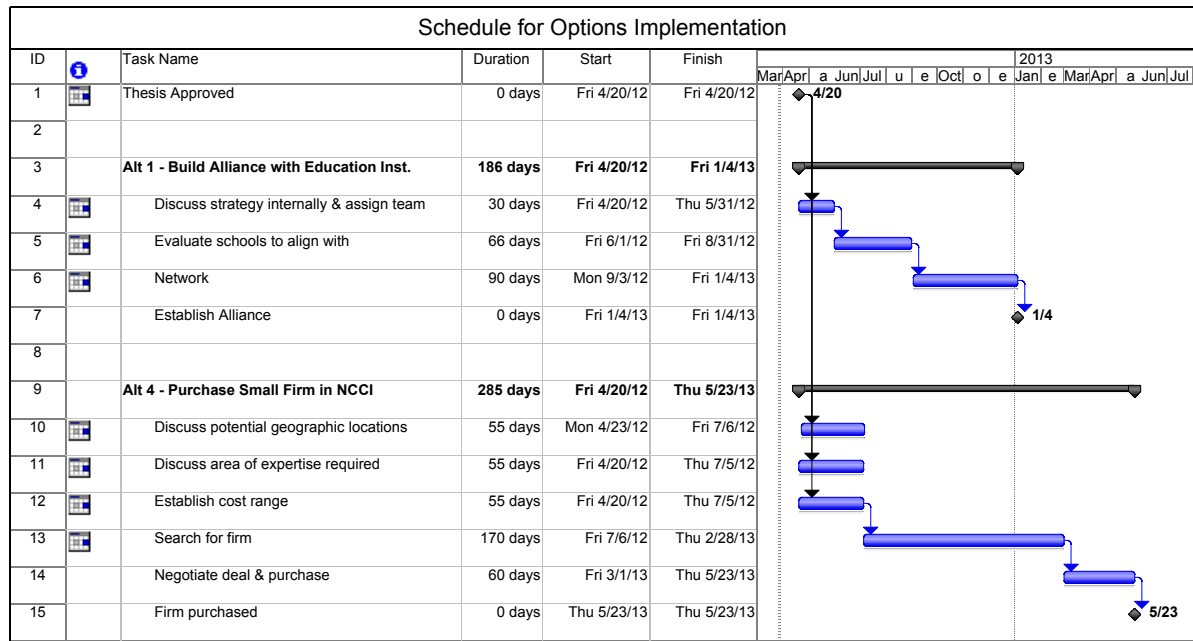
### **6.2.2 Alternative 4: Purchase a small firm in the NCCI**

This alternative will require careful planning before it is implemented. Once a firm is selected and purchased, senior management at Binnie will need to monitor and resolve any culture clash or re-branding resistance. The upper management at Binnie are currently very busy and will require assistance from either internal senior staff or outside consultants.

## **6.3 Implementation Timeline**

Figure 6.1 illustrates the proposed implementation timeline for each alternative. The reasoning behind the schedule is discussed after Figure 6.1.

Figure 6.1 Implementation Schedule



### 6.3.1 Option 1: Schedule

The ultimate goal of this option will be to begin networking with schools during the start of the first semester in September of 2012. The BNDM and senior staff will discuss the strategy and assign a team to this project. During the summer of 2012 the team will evaluate which schools best suit the needs of the BND. The team will first look at the two educational institutions suggested in this paper and will consider others. Networking with the chosen educational institutions will start in September 2012. The alliance with the chosen institutions will start in early 2013.

### 6.3.2 Option 2: Schedule

This alternative has the most uncertainty with regards to schedule. The search for a firm could take from one month to a few years, depending on what is available and how aggressive Binnie wants to be. The senior management will initially discuss the potential geographic locations, areas of expertise, and the range of cost they are willing to spend on a purchase. Once a firm is found, the terms of the purchase will be negotiated. The schedule includes a target purchase date of May 2013. This allows Binnie enough time in the calendar year to build up cash flows and determine how much profit the calendar year will result in. It is also a time when most consulting firms start to get busy with design assignments for the coming summer.

### **6.3.3 Conclusion**

This paper analysed the BND and the NCCI that it operates and competes in. The NCCI is dependent on work from the private and public sector. These sectors thrive when there is a global demand for natural resources, which NBC is rich in. There is currently a demand for resources and the NCCI appears to be an area of excellent opportunity. One of the key issues the BND currently faces is finding qualified staff to do the work and take advantage of the opportunities in the NCCI.

The strategic alternatives presented focused on resolving the staffing issue. The two most feasible options appeared to be:

- Building an alliances with educational institutions
- Purchasing a small firm in the NCCI

Both these alternatives can be implemented and will help contribute to the success of the BND.

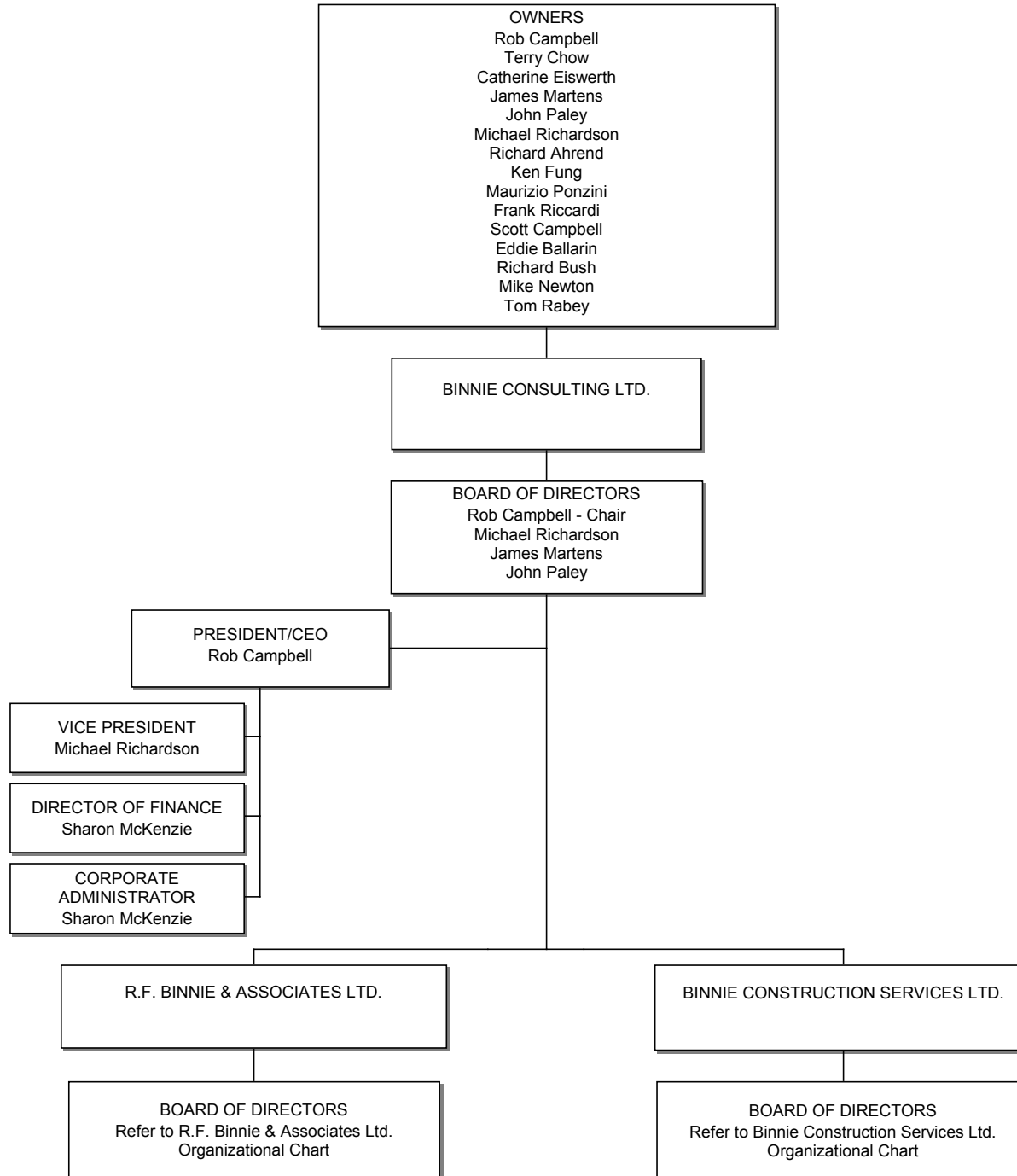


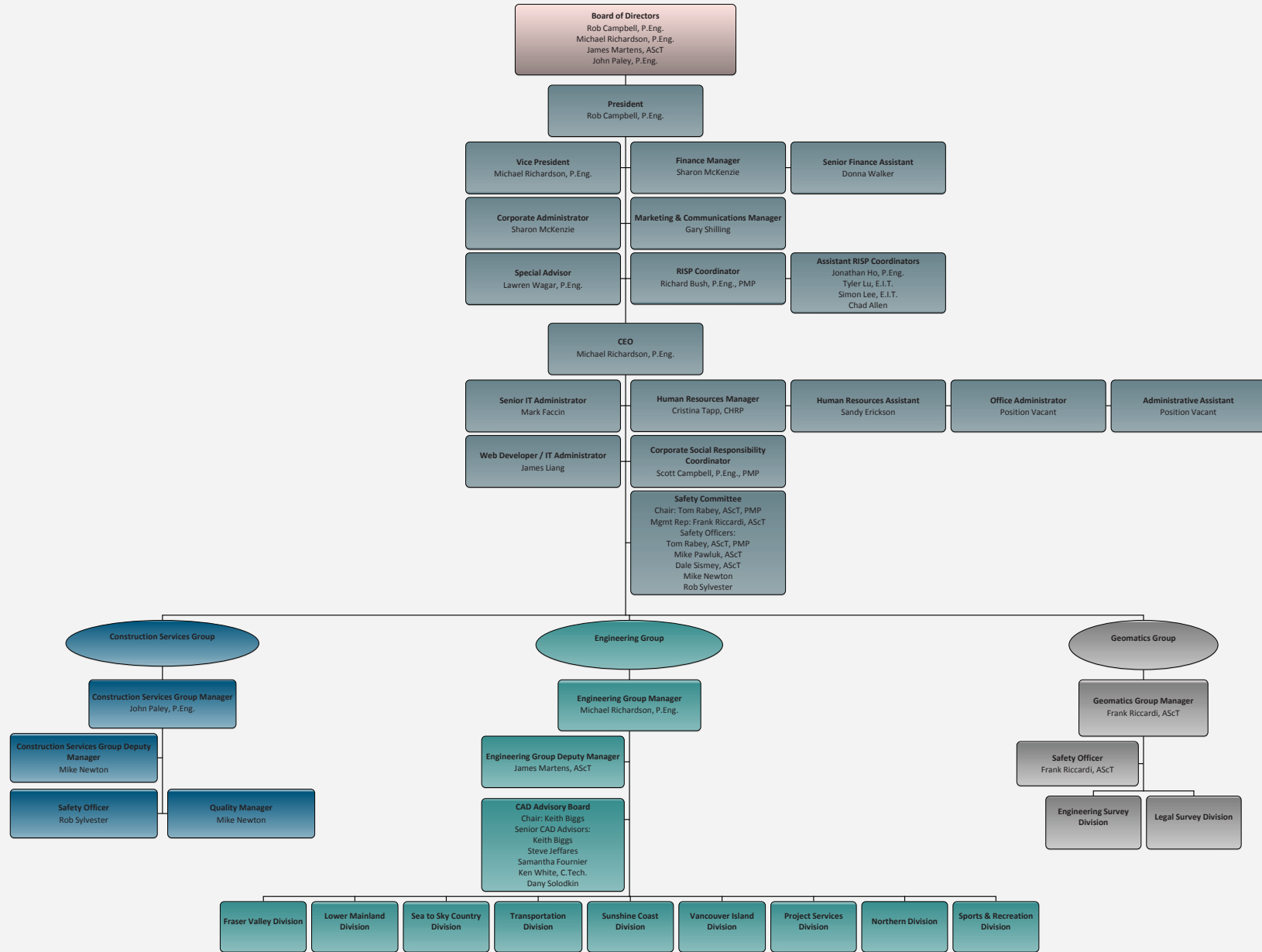
## **Appendices**

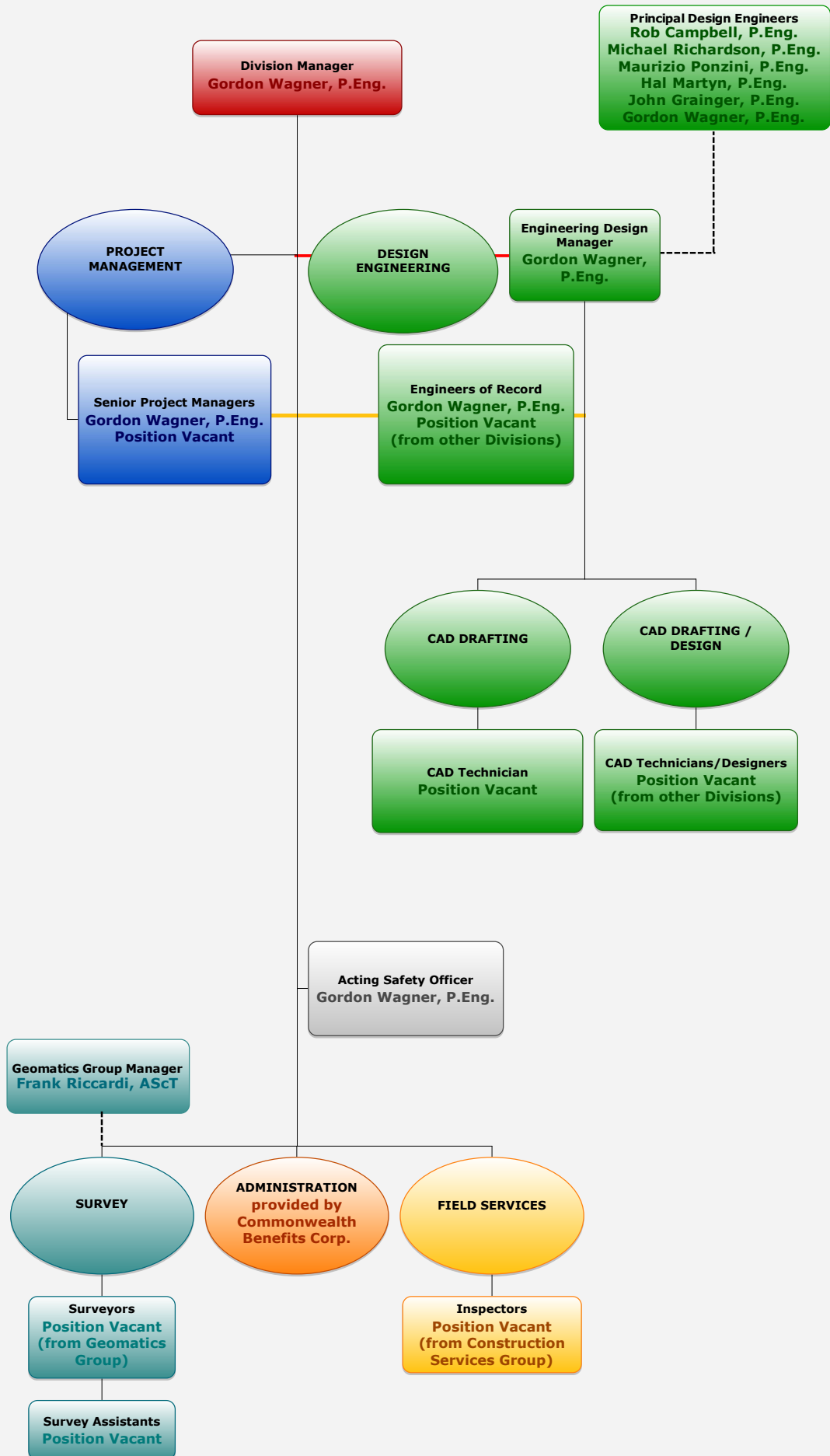
## **Appendix A – Organizational Charts**



FIGURE 2.1  
BINNIE CONSULTING LTD. - CORPORATE ORGANIZATION







Project Reporting ————

Division & Project Reporting ————

Division Reporting ————

Advisory - - - - -

**Appendix B - Operating Mines and Selected Major Exploration Projects  
in British Columbia 2011**

## Operating Mines and Selected Major Exploration Projects in British Columbia 2011

Jim Britton; John DeGrace; Dave Grieve; Paul Jago; Jeff Kyba; Bruce Madu; Bruce Northcote; and Robin Chu

*Open File 2012 - 1*

<p><b>Coal</b></p> <p>11  Mine</p> <p>5  Proposed Mine</p> <p>8  Significant Project</p> <p><b>Metal</b></p> <p>10  Mine Development</p> <p>2  Proposed Mine</p> <p>15  Significant Project</p> <p>92  Significant Project</p> <p><b>Infrastructure</b></p> <p> Rail Line</p> <p> Major Roads</p> <p> Ports</p> <p><b>Metal Mine Commodity Codes</b></p> <p>Ag - Silver Au - Gold Cu - Copper Mo - Molybdenum Zn - Zinc</p> <p><b>Industrial Minerals Commodity Codes</b></p> <p>At - Aggregate Ba - Barite Bn - Bentonite Bs - Basalt Bu - Building Stone Cy - Clay Do - Dolomite Fr - Fuller's earth Gy - Gypsum Jd - Jade Ls - Limestone</p>	<p><b>Industrial Minerals Producers and Exploration Projects*</b></p> <ol style="list-style-type: none"> <li>1. Apple Bay (Si, Cy)</li> <li>2. Benson Lake (Ls)</li> <li>3. Orca (At)</li> <li>4. De Cosmos Lagoon (Cy)</li> <li>5. Blubber Bay (Ls, At)</li> <li>6. Gillies Bay (Ls, At)</li> <li>7. Van Anda (Ls)</li> <li>8. K2 (Bu)</li> <li>9. Earle Creek (At)</li> <li>10. Sechelt Mine (At)</li> <li>* 11. McNab Valley (At)</li> <li>12. Mount Meager (Pm, At)</li> <li>13. Pitt River Quarry (At)</li> <li>14. Cox Station (At)</li> <li>15. Sumas Shale (Sh, Cy, Si)</li> <li>16. Pavilion Quarry (Ls)</li> <li>17. Décor (Sh)</li> <li>18. Ashcroft (Bs)</li> <li>19. Red Lake (Fr)</li> <li>20. Bud (Bn)</li> <li>21. Harper Ranch (Ls)</li> <li>22. Buse Lake (Si)</li> <li>23. Falkland (Gy)</li> <li>24. Klinker (Op)</li> <li>25. Kettle Valley (Bu)</li> <li>26. Winner (Mw)</li> <li>27. Lime Creek (Ls)</li> <li>28. Crawford Bay (Do)</li> <li>29. 4J (Gy)</li> <li>30. Elkhorn (Gy)</li> <li>31. Mount Brussilof (Mt)</li> <li>32. Moberly (Si)</li> <li>* 33. Blue River (Ta, Nb)</li> <li>* 34. Angus (Si)</li> <li>* 35. Carbonatite Syndicate (RE)</li> <li>* 36. Carbo (RE)</li> <li>* 37. Aley (Nb)</li> <li>* 38. Provencher, Kutcho, Cassiar (Jd)</li> <li>39. Fireside (Ba)</li> <li>* 40. Nonda (Si)</li> </ol> <p>* Exploration Projects</p>
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**Ministry of Energy and Mines**

**Ministry of Forests, Lands and Natural Resource Operations**

*Notes*

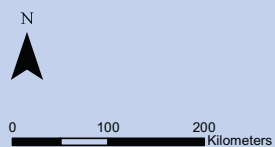
This map shows the coal, industrial mineral and metal mines, and major exploration projects of British Columbia that were active in 2011. Some sites were active for only part of 2011. Large exporting aggregate producers are shown but not the many aggregate quarries serving local markets around the Province. Not all exploration projects in the Province are shown on this map.

Information provided by the Province's regional geologists: Jim Britton, John DeGrace, Dave Grieve, Paul Jago, Jeff Kyba, and Bruce Northcote. Information compiled by Sarah Meredith-Jones, Pat Desjardins, and Robin Chu of the British Columbia Geological Survey.

<p><b>Kootenay-Boundary</b></p> <p>Name: Dave Grieve Phone: 250-426-1758 Email: Dave.Grieve@gov.bc.ca</p>	<p><b>Skeena</b></p> <p>Name: Jeff Kyba Phone: 250-847-7787 Email: Jeff.Kyba@gov.bc.ca</p>
<p><b>Coast Area</b></p> <p>Name: Bruce Northcote Phone: 604-660-2713 Email: Bruce.Northcote@gov.bc.ca</p>	<p><b>Northeast and Omineca</b></p> <p>Name: Paul Jago Phone: 250-565-4132 Email: Paul.Jago@gov.bc.ca</p>
<p><b>Thompson-Okanagan-Cariboo</b></p> <p>Name: Jim Britton Phone: 250-371-3903 Email: Jim.Britton@gov.bc.ca</p>	<p><b>Vancouver Mineral Development Office</b></p> <p>Name: Bruce Madu Phone: 604-660-3332 Email: Bruce.Madu@gov.bc.ca</p>

**BC Geological Survey**

[www.empr.gov.bc.ca/geology](http://www.empr.gov.bc.ca/geology)



# **Bibliography**

## **Works Cited**

Map of BC

[http://www.exploretravelcanada.com/Maps/Map\\_British\\_Columbia.gif](http://www.exploretravelcanada.com/Maps/Map_British_Columbia.gif)

Industry Canada

<http://www.ic.gc.ca/eic/site/ogt-ipg.nsf/eng/og00187.html>

CEBC

<http://membersearch.cebc.acec.ca/>

<http://www.cebc.org/selecting.html>

Northern British Columbia: A Vision for Prosperity

[http://www.unbc.ca/assets/reports/outlook\\_2020\\_northern\\_bcs\\_vision\\_for\\_prosperity2\\_august\\_24\\_09.pdf](http://www.unbc.ca/assets/reports/outlook_2020_northern_bcs_vision_for_prosperity2_august_24_09.pdf)

GDP for Mining, Quarrying, and Oil and Gas Extraction (NAICS 21)

<http://www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis-sic21vlae.html>

GDP for Utilities (NAICS 22)

<http://www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis-sic22vlae.html>

GDP for Construction (NAICS 23)

<http://www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis-sic23vlae.html>

Northern BC Business Advantage, Northern Development Initiative Trust

<http://northerndevlopment.bc.ca/uploads/file/NorthernBCBusinessAdvantage.pdf>

BC Stats

<http://www.bcstats.gov.bc.ca/Home.aspx>

A Guide to BC Economy and Labour Market

[http://www.guidetobceconomy.org/bcs\\_economy/welcome.htm](http://www.guidetobceconomy.org/bcs_economy/welcome.htm)

Economic Analysis of British Columbia

[http://www.central1.com/publications/economics/pdf/ea2009/ea%202008\\_06.pdf](http://www.central1.com/publications/economics/pdf/ea2009/ea%202008_06.pdf)



Operating mines and selected major exploration projects in British Columbia 2011

<http://www.empr.gov.bc.ca/Mining/Geoscience/PublicationsCatalogue/OpenFiles/2012/Documents/2012-1/OF2012-01.pdf>

Mining Association of British Columbia

<http://www.slideshare.net/MiningAssociationBC/2010-mabc-annual-report>

Porters 5 Forces

[http://tutor2u.net/business/strategy/porter\\_five\\_forces.htm](http://tutor2u.net/business/strategy/porter_five_forces.htm)

First Nations Land Rights and Environmentalism in British Columbia

<http://www.firstnations.eu/mining.htm>

AMEC

<http://www.amec.com>

FOCUS

<http://www.focus.ca>

McElhanney

<http://www.mcelhanney.com>

Urban Systems

<http://www.urban-systems.com>

Michael E. Porter, *The Five Forces That Shape Strategy*. Harvard Business Review, January 2008.

Investin BC 2012, Business and investment across British Columbia. BIV Magazines, 2012.

## **Interviews**

Informal discussions were held with the following senior staff at Binnie

Robert Campbell, P.Eng., President

Michael Richardson, P.Eng., Vice President, CEO

Gordon Wagner, P.Eng., Northern Division Manager

Scott Campbell, P.Eng., Project Services Division Manager

## **Company Documents**

Binnie Employee Manual