

Northwest BC Mining Projects Socio Economic Impact Assessment

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EXECUTIVE SUMMARY

The objectives of this report are to determine the strategic level impacts of the proposed Galore Creek, Red Chris, and Mount Klappan mining projects, in terms of their work force and population impacts and to identify major service capacity constraints on Highway 37 and Highway 16 communities. We were also asked to report on the key concerns from the perspective of the most significantly impacted First Nations communities.¹

Regional Overview

- The study area includes the Northwest Highway 16 communities of Terrace, Hazelton, Smithers, Telkwa, Houston (and Prince Rupert port) and the much smaller communities along Highway 37, such as Stewart, Iskut, Dease Lake, Telegraph Creek, and Good Hope Lake.
- The Highway 16 communities are larger and more economically diversified (e.g. forestry, mining, public sector, services, tourism), than the Highway 37 communities (e.g. primarily public sector and mining).
- Between 1996 and 2001, Highway 37 communities experienced a population decline of 14.1 percent – Highway 16 population declined by about 2.2 percent.
- Figure ES-1 shows the Northwest study area, the existing and new mines, the existing and proposed access roads, rail and port facilities.
- With respect to the location of the new mines, Stewart is the closest port facility for offshore shipments and Kitwanga is the closest rail load-out, providing rail access to North American smelters, such as Noranda in Quebec. The terminus of the Dease Lake rail extension is 70 km. south of Mount Klappan, which could provide rail access via Prince George to the Ridley coal terminal near Prince Rupert (capable of 250,000 DWT ships, vs. Stewart up to about 60,000 DWT).²

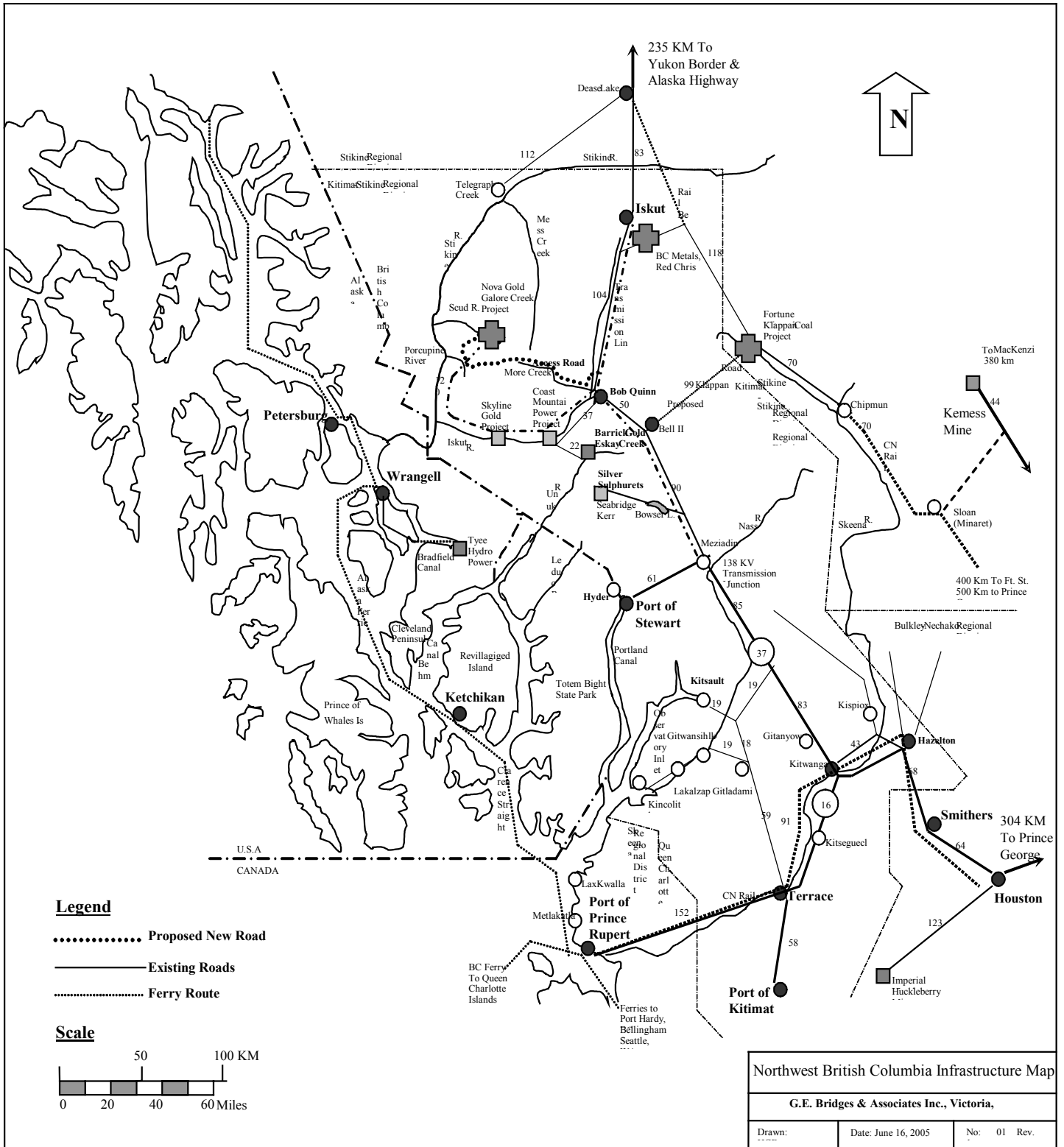
Mining Developments

- The existing mining operations (Eskay, Kemess and Huckleberry) are summarized in Appendices B, C and D.
- The residency location of the new mine work force has been based on the existing mines, primarily Eskay Creek since it is closer to the location of the new mines than Kemess or Huckleberry.
- Table ES-1 provides a summary of the base case situation by Highway 16 and Highway 37 corridor communities.
- Table ES-2 provides a summary of the key cumulative positive and negative mining developments impacts by Highway 16 and Highway 37 corridor.

¹ Contacts for the study are listed in Appendix A.

² DWT stands for Deadweight Tonnes, which is the weight of cargo, fuel, stores, passengers and crew carried by a ship when loaded to her maximum loadline.

**Figure ES-1
Northwest Study Area, Mine Locations, Communities, Road, Rail and Ports**



**Table ES-1
Base Case Situation -- Summary**

Positive Aspects	Negative Aspects
<p>Highway 16</p> <ul style="list-style-type: none"> Highway 16 economy appears to be turning around (most notably for Smithers), with the exception of the Hazelton area. Loss of population and skilled labour force appears to have slowed and even reversed in some communities. New investments creating optimism -- Blue Pearl mine 10 km. from Smithers -- Morrison/Hearne mine 65 km. northeast of Smithers – container port in Prince Rupert – CN rail upgrades - LNG investments (see Appendix G). Smithers expanding its airport, expectations are for increased tourism and ‘amenity migrants’. <p>Highway 37</p> <ul style="list-style-type: none"> With the exception of Stewart, the Highway 37 communities are heavily reliant on the public sector for employment (60%) and mining (30%). Tahltan Nation Development Corporation (TNDC) pursuing business opportunities with Shell (coal bed methane drilling near Mount Klappan), Iskut Hydro, Alberta, and with new mines. With closing of Eskay there will be fewer “mine widows” in Tahltan communities -- men will be there to help take care of children. Optimism that the Stewart Omineca resource road will bring new business to Stewart. Building of Long Lake hydro project will have a beneficial construction impact on Stewart. 	<p>Highway 16</p> <ul style="list-style-type: none"> Populations in almost all communities below levels of the late 1990’s, (except Telkwa). Socio-economic conditions of Smithers ranked higher than Terrace, and both are well above Hazelton (Upper Skeena LHA) Closing of Eskay will have minor depressing impact on economy but the mine’s current contribution to communities is not highly visible. Closing of Huckleberry will impact Houston (123 km. by road). <p>Highway 37</p> <ul style="list-style-type: none"> In the absence of new mining development, Highway 37 communities will be severely impacted from scheduled mine closures (e.g. Eskay, Huckleberry) in terms of lost mining jobs, lost transport jobs and reduced port-shipping business, leading to population reductions (e.g. Stewart). Stewart Bulk terminals will lose Eskay’s and Huckleberry’s shipments, presently their main customers -- Eskay mine closing will put about 100 Tahltan people out of work. Reported that for the smaller Highway 37 communities, drug and alcohol abuse is a problem, which can lead to family breakdown, and is now a major community concern recognized by health care providers (also causing disruption in high school). Reports of 5 suicides in 2 years, other deaths in communities, most are substance abuse related. Zero tolerance at mine resulted in some employees being fired, leading to other social problems in the community. High school students have low Foundation Skills Assessment (FSA) scores; likely that few will attend university, some capable of college. High paying jobs in the mining industry drawing kids out of high school, generally don’t return and as a result, they stay in low skilled positions (e.g. better paying mining jobs going to out-of-region employees). Traditional ways are being lost. Both spouses working and no one taking care of elders and children. Mine has not helped community needs to address social issues. Small population base, no incorporated community, leads to limited range of programs and services. On the Indian reserves officials report there is a chronic shortage of band housing and sharing of housing prevents some people from getting away from household disruption. Band health officials report that services are small and are challenged to meet the existing communities health and social problems (3-yr. lag between funding and population increase). Most Tahltans members (60% to 80%) do not live on their reserves.

Base Case Gaps

- A number of other projects may be going ahead. Timing and labour requirements for construction and operation are not well documented.
- Closing mines could be delayed -- Huckleberry might operate till 2010 (Appendix C) -- Eskay Creek may continue some limited operations, if recovery rates improve, or another operator processes the tailings.
- Not clear whether the health and social issues facing the Iskut and Tahltan communities will be exacerbated, or ameliorated by the pending mine closures and loss of economic opportunities.

**Table ES-2
Summary Mining Development Impacts**

New Mine Developments (General)

Positive Aspects

Highway 16

- Based on the opinions of the interviewees, all would like to see mining projects proceed. Region needs economic development and to retain (and expand) its skilled labour force and population.
- As a result of declining populations since the late 1990's most communities have excess capacity in schools, hospitals. In some cases, may need some expansion of staff for service delivery (not identified).

Highway 37

- Stewart has ample capacity in physical infrastructure, housing stock and developable land (likely truckers hauling from the new mines would live in Stewart).
- Mining developments may increase population of Dease Lake near previous level in the 1990's and increase general prosperity of the region.
- Some optimism that more Tahltans may return to their traditional territory.
- Need training for local population to take full advantage of operating employment opportunities.
- Opportunity for region and population to participate in real economic development.

Negative Aspects

Highway 16

- No major issues reported.

Highway 37

- With the exception of Stewart, small regional population results in corresponding sized capacity in infrastructure and social service delivery. Small increments to population can lead to noticeable reduction in service, or conversely need to add capacity in education, health, and housing.
- Reported that the higher incomes from the mining developments will exacerbate existing drug and alcohol and related social and community problems.
- Camp takes members from community, and when they return after 2 weeks they are ready to 'bust out'. For those living in the community its described as a 'non-stop party, which is expected to get worse.
- Reported that Iskut and Tahltan Band health resources are unable to cope with additional population, given resources are at capacity currently.
- Reported that mines are not contributing to Band programs to ameliorate social problems.
- While many Tahltan's participate in the modern consumer economy, mining development will contribute to the 'erosion' of Tahltan's traditional way of life and culture.
- Reported that the fly in/fly out camps facilitate drugs coming from outside communities (view not substantiated, may have been more apparent with Golden Bear, current source of drugs not identified).

Red Chris

Highway 37

- Although not mentioned in the interviews, the proximity of Red Chris may allow residents to commute to the mine eliminating the 2-week camp rotations for Iskut Band members.
- Similar to Eskay in terms of Tahltan participation, Red Chris would neatly fill employment gap left by the pending closing of Eskay Creek.

Highway 37

- Concern is the mine is *too close to Iskut* and will overwhelm the community. Examples cited include Cassiar/Good Hope Lake, Farrow/Ross River (note that the mechanism for overwhelming may also be noted so this concern is double counted. Also, there are probably examples where the experience has been positive, but no one cited these examples).
- Reported concern is the intermingling (e.g. inter-marriage) with Iskut Band members with non-Indian status mine workers could lead to loss of Indian Status within a couple of generations.
- Non-native workers could set up seasonal homes around lakes in area, as there is private land, and commute to work. Tahltan's could become a minority in their traditional territory.
- Health issues: dust from Red Chris would affect many Iskut community members who suffer from asthma -- noise from mine also mentioned as an issue.

Mount Klappan

Positive Aspects

Highway 37

- Smaller power requirements means project could self-generate power and not be subject to power line extension and its timing.
- Could offer up to 200 jobs, appropriate to the Tahltan's (less technical) skill set.
- If coal goes out by rail, likely coal transport may not have much impact for trucking jobs. Corollary is that if coal hauled by road, coal transport would have greater social impact. Not clear what the latter would be, as traffic would probably enter Highway 37 below Iskut at Ealue Lake road.
- May require expansion of Stewart Bulk Terminals for coal storage and loading. Cost of port expansion estimated at \$10 to \$12 million and probably double the work force.

Negative Aspects

Highway 37

- Impacts traditional Tahltan hunting area
- If coal is trucked to Stewart, a road by-pass will likely be required to divert truck traffic away from the main street.
- Some community interests in Stewart don't want the by-pass or the increase in truck traffic.

Galore Creek

Positive Aspects

Highway 37

- With respect to the Galore Creek mine, the Iskut Band is "assuming the project is going ahead" and do not have the same level of concerns as with the Red Chris and Mount Klappan projects.
- TNDC working with Galore – TNDC confident the company is willing to address what the Band perceives as the company's social responsibilities.
- Galore Creek has set up company office in Band house in Dease Lake.
- Bigger operation than Eskay, access road may need twice the current Eskay road crew of 20.
- Depending on ship frequency may require expansion of Stewart Bulk terminal.

Negative Aspects

Highway 37

- The southern access road (under investigated early 2005) may have greater wildlife impacts, than shorter northern route that has more tunneling/higher cost uncertainties.³

Limitations of Study

- It should be appreciated that final engineering and transportation studies have not been completed. As a consequence, the information in this study is *preliminary*, which means the work force and the population estimates could change, in some cases dramatically.
- Second, the dates of mine closures of existing mines are subject to change as new geological and engineering information and higher commodity prices could extend mine life. Similarly, the start dates for new mines are uncertain. The timing of mine closures relative to mine openings have important implications with respect to population, labour force and use of social and public infrastructure.

³ The "modified northern route" was not known at the time of the interviews in May 2005, thus no comments are available for this option.

- Third, it should be appreciated that many of the comments noted in this report are *personal comments and perceptions*, and as such may not be accurate or representative of all views in the communities. Where possible the validity of statements were examined, but that was not always possible.
- Fourth, some of the social issues and concerns identified in some Tahltan communities are complex, and involve personal and sociological issues, which are beyond the scope of this report.
- Lastly, in order to adhere to project timing and budget constraints, the study focused on identifying the communities to be most likely impacted, and the nature of the impact. In this large region with a large number of diverse communities, it was not feasible to complete a more comprehensive assessment.

Some Conclusions

Most of the social concerns related to the new developments in the most effected communities, exist presently and in general, are not specific to mining development. Rather they are characteristic of economic development problems experienced in many communities in the North.

Nevertheless, in spite of the uncertainties and limitation noted above, we feel some firm conclusions are evident, and would remain valid over a wide range of alternative project configurations.

- In the *absence* of new mining development, Highway 37 communities will be severely impacted in terms of lost mining jobs, lost trucking jobs and reduced port-shipping business, leading to population declines (e.g. Stewart). Stewart Bulk terminals will lose Eskay and Huckleberry's shipping business, presently their main customers -- Eskay closing will put about 100 Tahltan people out of work.
- With respect to mine development impacts, communities along the Highway 16 corridor that would likely be affected by the mines, have adequate capacity to address the incremental needs. The region is recovering from the economic downturn of the 1990's and has excess capacity with respect to social service infrastructure. Also, the respective communities are incorporated, providing them a framework and capacity to plan for, finance and deliver services that might be required, and to meet the incremental growth from the new mine development.
- It is reported that the Iskut and Tahltan communities are having difficulty coping with the problems that bear some association with existing mine operations. There is evidence to suggest (e.g. mortality data) that existing education, social and health programs and capacities are not adequate to meet present demands. The closure of Eskay mine, and the opening of one or more of the proposed mines, may increase the stress on the present communities. Either future poses challenges to these vulnerable communities.
- The potential socio-economic impacts of a large, long lived mine, such as Galore Creek (e.g. 2010 to 2030), could provide stable employment, training and apprenticeship openings, and business supplier opportunities that would provide economic stability to a region that is otherwise prone to shorter-term 'boom to bust' cycles.

Northwest BC Mining Impacts

- The Tahltan and Iskut communities are small and their ability to participate in the mines is limited. Hence, the effect of one mine proceeding may be significant, while the impact of a second or third mine proceeding would be less so. Nevertheless, for the community of Iskut, the Red Chris mine poses the more significant range of challenges because of its proximity.
- As a result of this situation there was little benefit in formulating “scenarios”, because the outcome for most of the plausible scenarios would be about the same, in terms of the major finds from this study.

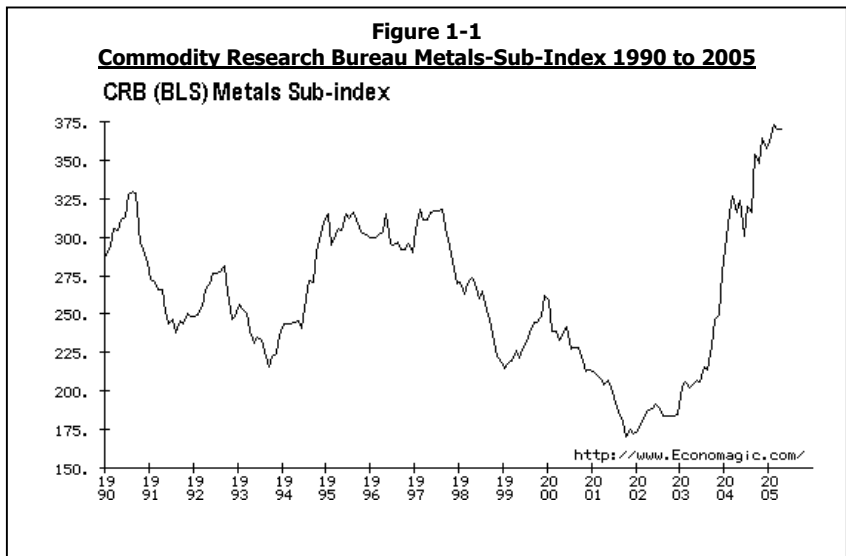
1.0 INTRODUCTION

Mining activity in British Columbia (BC) is influenced by world market conditions (i.e. metal prices), which vary by cyclical and by longer-term secular cycles.

Many believe we are in the front-end of a long-term upward secular commodities cycle. This expectation is due to a number of factors, perhaps the most significant being China and India's industrial revolutions. Strong economic growth in China is drawing in unprecedented volumes of metal concentrates. China has now overtaken the US as the largest industrial consumer of iron ore, steel and copper. Figure 1-1 is the Commodity Research Bureau's metal sub-index (for copper, lead, zinc steel, and tin) from 1990 to 2005, illustrating the upswing in metal prices since 2002.⁴

In BC this has translated into a resurgence of mining exploration investment. This is the result of more accommodative mineral policy, the resolution of land use issues and of course, improved world commodity markets.

Expenditures in BC mining exploration have recovered from a four decade low of \$29.1 million in 2001 (the lowest level since 1960), to \$120 million for 2004.⁵ Exploration expenditures are an indicator of expected future mine development and represents the lifeblood of the industry since new mining developments are needed to replace the existing mines as they are depleted.



Northwest BC has had a long and interesting mining history. Currently the Northwest has three operating mines, which are Eskay Creek (Eskay), Kemess South (Kemess) and Huckleberry. Three-advanced exploration mining projects in the Northwest include Galore Creek (Galore), located west of Highway 37 and Red Chris, and Mount Klappan, located east of Highway 37.

1.1 OBJECTIVES

The objectives of this report are to determine the strategic level impacts of the Galore, Red Chris, and Mount Klappan mining projects, in terms of their work force and population impacts and to identify

⁴ Since about 1980, commodity prices have exhibited a declining trend as measured by the CRB commodity price index. http://www.crbtrader.com/crbindex/spot_calc.asp

⁵ <http://www.em.gov.bc.ca/mining/MiningStats/61expendminexp.htm>

potential service capacity constraints on Highway 37 and Highway 16 communities. The primary indicator of demand for service capacity is the incremental increase in resident population that may accompany the new mine developments, including impacts and opportunities upon First Nations, primarily the Tahltans. We were also asked to report on the key concerns from the perspective of the most significantly impacted communities.⁶

It should be appreciated by the reader that final engineering studies have not been completed and as consequence, the work force and the derived population estimate presented in this report are preliminary and subject to final project design.

1.2 APPROACH

During April and May 2005 we completed a survey of socio-economic information related to the three existing mines (Eskay, Huckleberry and Kemess) and the three proposed mines (Galore, Red Chris and Mount Klappan), based upon telephone interviews, company reports, websites and our in-house files from previous related projects. Information included mine description, operating life, access, construction investment and employment, operating costs and employment, skill levels and location of current operating work force. The data and information was used to build a mining development population impact model for the Northwest region.

In addition to the above information, we conducted a five-day field trip during May 16 to 20, 2005. The trip involved interviews of government officials, local business people, including Highway 16 and Highway 37 (i.e. Stewart and Tahltan) community representatives, where the preliminary population impact estimates were presented and discussed. The objective of the field trip was to assess perceptions of the public service capacity to accommodate the forecast population and record community issues and social concerns related to the mine development impacts. Additional telephone interviews were conducted with representatives of agencies who were unable to meet, due to logistical and time constraints. A list of primary contacts is provided in Appendix A.

⁶ Most contacts used in the study are listed in Appendix A.

2.0 BASE CASE COMMUNITY TRENDS AND OUTLOOK

This section provides an overview of the Northwest region, including a profile of each community.

2.1 REGIONAL OVERVIEW

The study area includes the Northwest region of BC, which includes communities along Highway 16, such as Terrace, Hazelton, Smithers, Telkwa, and Houston and the much smaller communities along Highway 37, such as Stewart, Iskut, Dease Lake, Telegraph Creek, and Good Hope Lake. Highway 37 interconnects Highway 16 with Highway 97 in the Yukon Territory (mile Post 650 on the Alaska Highway). The study refers to the Highway 16 communities and Highway 37 communities as two sub-regions, within the larger impact region, because of their major differences (e.g. community size/services and socio-economic conditions).

With the exception of Stewart, a large proportion of the population in the Highway 37 communities belongs to the Tahltan, Iskut and Dease River Bands (e.g. Good Hope Lake). The three proposed mines are in the asserted Tahltan's traditional territory. We made considerable effort to document and present the perspectives of the Tahltan communities with respect to the three mining developments.

Figure 2-1 shows the location of the three operating mines. These are Barrick Gold's Eskay Creek mine (discussed in Appendix B), Imperial Metal's Huckleberry mine (Appendix C), and Northgate's Kemess mine (Appendix D). The map also locates the proposed new mines -- NovaGold's Galore Creek project, bcMetals' Red Chris project and Fortune Minerals' Mount Klappan anthracite coal project.

Figure 2-1 also shows the proposed 'modified northern route' to the Galore project, the required transmission line extension north from Meziadin junction to the new mines, the Ports of Stewart and Prince Rupert, the rail load out at Kitwanga and the CN Rail line extension (formerly BC Rail) as far as Chipmunk station on the Dease Lake Extension rail bed, which interconnects to Prince Rupert via Prince George.

Regional Population

Table 2-1 summarizes the 1996 and 2001 populations and 2004 population for larger communities where it was available. The Northwest has a resource-based economy, which is subject to resource commodity cycles with population rising and falling with the expansion or contraction of the industry.

Between 1996 and 2001, Highway 37 communities experienced an overall decline in population of 14.1 percent, made up by a 7.5 percent decline in population of communities north of Stewart and 25.6 percent decline in population in Stewart and surrounding area. Highway 16 population declined by 2.2 percent over the same period.

In total, the Northwest population declined by about 1.0 percent between 1996 and 2001 as compared to the provincial population, which increased by 5.3 percent over the same period.

**Table 2-1
Population Estimates for Northwest Region⁷**

		1996	2001	2004
Smithers Area				
Smithers	T	5,856	5,651	5,637
Houston	T	4,098	3,733	3,666
Telkwa	VL	1,241	1,431	1,417
<i>Sub-total Incorporated</i>		<i>11,195</i>	<i>10,815</i>	<i>10,720</i>
Bulkley Nechako "A"	EA	5573	5696	n.a.
Jean Baptiste 28	IR	2	5	n.a.
Total		16,770	16,516	
Hazelton Area				
Hazelton	VL	363	360	354
New Hazelton	DM	857	783	763
<i>Sub-total Incorporated</i>		<i>1220</i>	<i>1143</i>	<i>1117</i>
Kitimat/Stikine B	EA	2098	1948	n.a.
Gitanyow 1	IR	408	369	n.a.
Gitwangak 1	IR	481	475	n.a.
Gitsegukla 1	IR	506	432	n.a.
Kispiox 1	IR	553	651	n.a.
Hagwilget 1	IR	262	237	n.a.
Moricetown 1,2	IR	259	190	n.a.
Bulkley River 1	IR	49	63	n.a.
Babine 17	IR	121	157	n.a.
Gitanmaax 1	IR	638	693	n.a.
Sik-e-dakh 2	IR	177	171	n.a.
Total		6772	6529	
Terrace Area				
Terrace		13,298	12,639	12,565
Kitimat/Stikine C (Pt 1)	EA	3092	2998	n.a.
Kitsumkaylum	IR	248	265	n.a.
Kshish	IR	1	58	n.a.
Total		16,639	15,960	
Stewart Area				
Stewart	DM	893	690	715
Kitimat/Stikine A	EA	143	81	n.a.
Total		1036	771	
North of Stewart				
Kitimat/Stikine D	EA	100	88	n.a.
Stikine Region	PN	1003	931	n.a.
Kluachon Lake 1	IR	0	0	n.a.
Iskut 6	IR	271	283	n.a.
Telegraph Creek 6, 6a	IR	234	83	n.a.
Guhthe Tah 12	IR	0	140	n.a.
Dease Lake 9	IR	104	66	n.a.
Dease Lake ex Reserve ⁸			426	
Good Hope Lake	IR	90	75	n.a.
Total		1802	2092	
Total Incorporated		26,606	25,287	25,117
Region		43,019	41,442	n.a.

⁷ Source BC Stats. T = Town, VL = Village, DM = District Municipality, EA = Electoral Area, IR = Indian Reserve.

⁸ Dease Lake Census Bloc less Dease Reserve population for 2001 from BC Stats via Dannie Carson (E-Mail April 20, 2004)

2.2 SMITHERS AREA

The communities of Smithers, and to the east Telkwa and further along Houston, are located on Highway 16, approximately halfway between Prince George and Prince Rupert. As shown in Table 2-2, Smithers had a 2004 population of 5,600, which is the second most populous community in the impact corridor after Terrace.

Telkwa, “where the rivers meet’ in the Wet’suwet’en language, is located at the confluence of the Bulkley and Telkwa Rivers, 11 km. east of Smithers. Houston is located 58 km. east of Telkwa. Houston’s economy is dominated by the forest industry and also is the closest community to the Huckleberry Mine operated by Imperial Metals. Although, Smithers and Houston have experienced population declines since 1996, the population of Telkwa appears to have grown.

**Table 2-2
Smithers Area Population Trends⁹**

Community	1996	1997	1998	1999	2000	2001	2002	2003	2004
Smithers	5,856	5,869	5,835	5,766	5,738	5,651	5,673	5,581	5,637
Telkwa	1,241	1,339	1,403	1,420	1,418	1,431	1,423	1,428	1,417
Houston	4,098	4,219	4,193	3,988	3,870	3,733	3,524	3,577	3,666
Total	11,195	11,427	11,431	11,174	11,026	10,815	10,620	10,586	10,720

The economic base of the Smithers area is diversifying although it is still resource oriented as reflected in the labour force figures. The distribution of the skilled labour force is summarized in the following table. Of particular relevance is the number of persons in the mining and the construction industries.

**Table 2-3
Smithers Area Labour Force by Industry: 2001 Census**

	Logging	Agric.	Mining	Cons.	Utilities/ Mfg.	Trade	Private Services	Public Services	Total
BC	1.7%	2.3%	0.7%	5.9%	10.2%	15.7%	41.0%	22.4%	100%
Smithers and Houston	6.1%	1.2%	3.2%	3.9%	17.9%	14.6%	30.6%	22.4%	100%
Number of Persons									
Smithers	100	10	85	135	280	465	1085	810	2970
Telkwa	55	35	20	30	55	70	310	200	775
Houston	195	25	80	60	700	310	370	285	2025
Total	350	70	185	225	1035	845	1765	1295	5770

Smithers is the centre of the Northwest mining industry, notwithstanding the forest industry is the leading resource sector in the area followed by mining, agriculture and tourism. Smithers is the

⁹ For consistency, all population estimates are quoted from BC Stat unless otherwise noted. The estimates may differ somewhat from Census counts because of subsequent for adjustment for under-count as estimated y BC Stats.

service center for the area and is a divisional point for Canadian National Railway. The runway at the Smithers airport is being extended so this is expected to increase the number of visitors stimulating economic activity in the visitor related businesses.

**Table 2-4
Smithers Area Basic Income by Sector¹⁰**

	Forestry	Mining	Agriculture	Tourism	Public	Transfers	Other
2001	34	5	3	5	26	12	14
1996	36	3	3	7	22	12	17
1991	26	9	3	5	19	13	25

As implied in Table 2-4, about three quarters of the basic income in the Smithers area is derived from employment, which is higher than the provincial average. Pension and investment income make a much smaller contribution to community incomes (i.e. roughly 13 percent) than the provincial average of 20 percent. In 2001, Smithers had the highest average household income of communities in the entire study area of \$62,100. The corresponding income levels were \$58,400 and \$56,500 in Houston and Telkwa, respectfully. These compare to provincial average household income of \$54,840. The communities are younger than the provincial average, with an average age of about 32 years old, compared to a provincial average of 38.4 years.

In 2001, the unemployment rate in Smithers was 9.4 percent, 15.2 percent in Houston and 8.3 percent in Telkwa. The corresponding provincial average was 8.5 percent.

Socio-Economic Indices

BC Stats has constructed indices of social and economic statistics, which allows the comparison of Local Health Areas (LHA) in the province.¹¹ Individual indices have been computed for Human Economic Hardship, Crime, Health, Education, and Children and Youth at risk. The individual indices are ranked in order of LHA ratings from 1 (the LHA most under stress) to 78 (the LHA least under stress) for each index. An overall index or rank is also computed.

The comparative measure for the Smithers LHA is 53, as summarized in the table below. Given, the mean rank for the province is 39, Smithers is realizing better than average social and economic conditions for its residence as compared to the provincial average.

¹⁰ BC Stats (2001). *British Columbia Local Area Economic Dependencies* 2001

¹¹ BC Stats, *Socio-Economic Indices* Local Health Areas (LHAs)
http://www.bcstats.gov.bc.ca/data/sep/i_lha/lha_main.htm

Table 2-5
Index of Social Conditions for the Smithers Area (LHA): 2004

(Comparative LHA Rankings out 78, provincial average is 39)

	Overall Rank	Economic Hardship	Crime	Health	Education	Children	Youth
Smithers LHA	53	47	54	64	53	27	34

Smithers Mining Developments

The mining sector around the Smithers area is experiencing an upswing. Blue Pearl Mining is planning to develop the Davidson molybdenum deposit located under Hudson Bay Mountain.¹² The Davidson deposit, formerly known as the Yorke-Hardy deposit was discovered in 1944. The gross in-situ value of the deposit is estimated at \$12 billion (\$US), based on \$US20.00/lb. Blue Pearl Mining is planning on production by mid-2007, with an estimated operating work force of 200 persons. The mine is close to infrastructure, 3 km. from the CN Rail mainline and 10 km. east of Smithers.

Located 65 km. north-east of Smithers, is Pacific Booker Minerals' Morrison/Hearne Hill copper/gold property near Babine Lake, about 35 km. from the Village of Granisle.¹³ The Morrison/Hearne Hill property was discovered in 1962 and the deposit is geologically similar to the nearby-depleted Bell mine (which operated 1972-1982 and 1985-1992) and Granisle mine (operated 1966 to 1982). It is anticipated the mine would be an open-pit operation, with production in the order 25,000 tonnes per day. Project developers mention the nearby town site of Granisle, but provide no information on work force requirements.

2.3 HAZELTON AREA

Located to the northwest of Smithers are the Hazelton's, Old Hazelton, New Hazelton, South Hazelton, and Kispiox area as well as Gitksan and Wet'suwet'en communities.¹⁴ The Hazelton area is centrally located within the Gitksan and Wet'suweten land claims area. The District of New Hazelton is the principal commercial, administrative and retail centre for the area.

Table 2-6
Hazelton Area Population Trends¹⁵

Community	1996	1997	1998	1999	2000	2001	2002	2003	2004
Hazelton	363	361	370	368	362	360	362	352	354
New Hazelton	857	857	822	795	809	783	789	768	763
Other	1,996	1,997	1,998	1,999	2,000	2,001	2,002	2,003	2,004
Total	3,216	3,215	3,190	3,162	3,171	3,144	3,153	3,123	3,121

¹² Blue Pearl Mining, 6 Adelaide Street East, Suite 500, Toronto, ONT. M5C 1H6 (416) 860-1438

¹³ http://www.pacificbooker.com/pdf/Company_Update_Sep04_low.pdf

¹⁴ Kitwanga, Moricetown, Kitwancool, Kispiox, Gitanmaax, are some of the other communities in the Gitksan Wet'suwet'en area.

¹⁵ For consistency, all population estimates are quoted from BC Stat unless otherwise noted. The estimates may differ somewhat from Census counts because of subsequent for adjustment for under-count as estimated by BC Stats.

Northwest BC Mining Impacts

The population of New Hazelton declined over the period of 1996 to 2001, however the other communities, which are mostly First Nations, declined less or remained about the same. Unlike the other communities along Highway 16, the population of the other Hazelton area communities has been remarkably stable. There is heavy reliance on the public sector and logging for employment as indicated by the labour force information shown in Table 2-7.

**Table 2-7
Hazelton Area Labour Force by Industry: 2001 Census**

	Logging	Agric.	Mining	Cons.	Utilities/ Mfg.	Trade	Private Services	Public Services	Total
BC	1.7%	2.3%	0.7%	5.9%	10.2%	15.7%	41.0%	22.4%	100%
Hazelton Total	15%	4.1%	0.0%	5.1%	12.2%	9.2%	17.3%	36.7%	100%
Number of Persons									
Hazelton	25	10	0	10	20	10	20	65	160
New Hazelton	50	10	0	15	40	35	65	115	330
Total	75	20	-	25	60	45	85	180	490

Table 2-8 reflects the decline in the forestry industry, a relative increase in the public sector and increased reliance on transfer income into the Hazelton area. Mining represents a very small contribution to basic income, reflected by the extremely low labour force involvement in this industry. In 2001, Hazelton had an average household income of \$58,400 and for Hazelton it was \$41,000. These compare to the provincial average household income of \$54,840. The 2001 unemployment rate for Hazelton was 15.2 percent and for New Hazelton it was 22 percent, compared to 8.5 percent for BC overall.

**Table 2-8
Hazelton Area Basic Income by Sector¹⁶**

	Forestry	Mining	Agriculture	Tourism	Public	Transfers	Other
2001	29	3	1	3	32	24	9
1996	36	2	1	7	35	10	10
1991	39	0	2	3	20	13	22

To the west is Kitwanga, a small village located on Highway 37 near the turnoff from Highway 16. Kitwanga is important because it is close to the railhead, which connects to the continental rail system and to smelters in eastern BC, Canada and the US.

¹⁶ BC Stats (2001). *British Columbia Local Area Economic Dependencies- 2001*

Table 2-9
Index of Social Conditions for the Hazelton Area (LHA): 2004¹⁷
 (Comparative LHA Rankings out 78, provincial average is 39)

	Overall Rank	Economic Hardship	Crime	Health	Education	Children	Youth
Upper Skeena LHA	3	1	23	34	2	2	1

Table 2-9 indicates that the Hazelton area is ranked low across most categories, indicating difficult economic and social conditions for its residence.

2.4 TERRACE AREA

Terrace is located in the Skeena Valley about 90 km. to the west from Kitwanga on Highway 16. Terrace had a 2004 population of 12,565 (down from 13,298 in 1996) making it the largest community in the impact area. Terrace is also the service center for Kitimat, a community of 10,500 people.¹⁸

Table 2-10
Terrace Population Trends¹⁹

Community	1996	1997	1998	1999	2000	2001	2002	2003	2004
Terrace	13,298	13,417	13,266	13,060	12,849	12,639	12,520	12,524	12,565

Historically, the forest industry was Terrace's primary employer, however the community has continued to evolve into a service center for the area. As shown in Table 2-11, the highest proportion of jobs is now provided by the service sector (department stores, grocery stores, hotels etc.). Other important employers include the provincial and federal governments, the school district, the hospital, Northwest Community College, Telus, and the City of Terrace.

Table 2-11
Terrace Labour Force by Industry: 2001 Census

	Logging	Agric.	Mining	Cons.	Utilities/ Mfg.	Trade	Private Services	Public Services	Total
BC	1.7%	2.3%	0.7%	5.9%	10.2%	15.7%	41.0%	22.4%	100%
Terrace	5.0%	0.3%	0.2%	5.4%	9.9%	17.7%	34.9%	26.6%	100%
Number of Persons									
Terrace	310	20	15	335	615	1100	2175	1660	6230

¹⁷ Upper Skeena LHA.

¹⁸ Kitimat is the site of LNG facility by Galveston LNG. These are two of several dozen LNG plants under development in North America, aiming to fill the growing gap between rising demand and declining production from maturing fields.

¹⁹ For consistency, all population estimates are quoted from BC Stat unless otherwise noted. The estimates may differ somewhat from Census counts because of adjustments by BC Stats.

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Basic income in Terrace is primarily resource dependant as shown below in Table 2-12. In 2001, Terrace had an average household income of \$59,539, which compares to provincial average household income of \$54,840. In 2001, the unemployment rate was 13.5 percent, compared to 8.5 percent for BC overall.

Table 2-12
Terrace Basic Income by Sector²⁰

	Forestry	Mining	Agriculture	Tourism	Public	Transfers	Other
2001	19	20	0	5	26	13	17
1996	24	17	1	5	22	11	18
1991	21	14	1	4	21	15	25

Table 2-13 shows the index for social conditions for the Terrace LHA, indicating rankings below the provincial average in all but two categories.

Table 2-13
Index of Social Conditions for the Terrace Area (LHA): 2004
(Comparative LHA Rankings out 78, provincial average is 39)

	Overall Rank	Economic Hardship	Crime	Health	Education	Children	Youth
Terrace LHA	14	6	40	53	24	6	5

Prince Rupert

Prince Rupert is located on the Coast and is an important port community (near Ridley Terminals, a large federally-operated coal port). The population of Prince Rupert in 2001 was 14,643, which has declined by over 12 percent from 1996 population of 17,397. The community has suffered major economic declines from the closure of the pulp and sawmills and from the decline in the fishery industry.

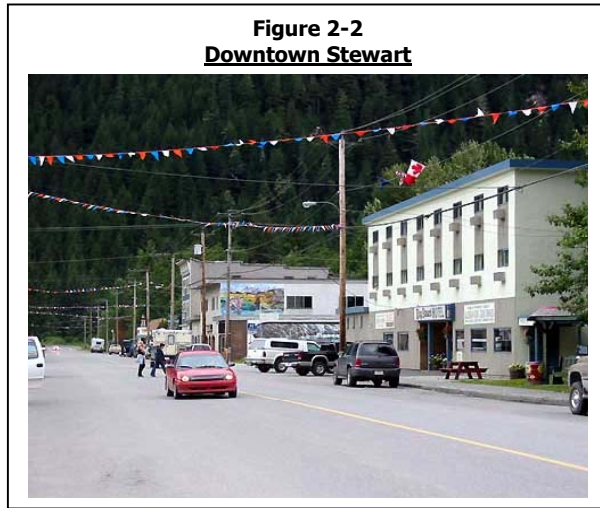
The community is optimistic about the new \$120 million container port, which should have the first phase completed by December 2006. Also, WestPac Terminals Inc. is proposing a \$500 million Liquefied Natural Gas (LNG) import facility, which would use the existing dock at Ridley Terminal, with one storage tank and regasification plant. Other projects are listed in Appendix G.

²⁰ BC Stats (2001) *British Columbia Local Area Economic Dependencies- 2001*

2.5 STEWART

Stewart is 60 km. west of Meziadin junction from Highway 37, at the end of Highway 37A. From Stewart, Dease Lake is 390 km. to the north and Kitwanga is 230 km. to the south. Mining development has played a prominent role throughout the history of Stewart.

North of Stewart, the Granduc/Newmont copper mine operated between 1971 and 1984. During this period Stewart’s population reached a peak of 1,500. Following closure of the Granduc mine the population declined to about 900. In 1987, the Premier gold and silver mine was reactivated and assisted in the extension of BC Hydro grid power to the community 1989. By 1991 the population of Stewart had increased to about 1,200. As shown in Table 2-14, by 1996 the population had declined to about 900 and has been around 700 since 1999.



**Table 2-14
Stewart Population Trends²¹**

Community	1996	1997	1998	1999	2000	2001	2002	2003	2004
Stewart	893	829	732	698	692	690	698	709	715

Given that Stewart’s population has been much larger in the past, the community has the capacity to accommodate a larger population.

**Table 2-15
Stewart Labour Force by Industry: 2001 Census**

	Logging	Agric.	Mining	Cons.	Utilities/ Mfg.	Trade	Private Services	Public Services	Total
BC	1.7%	2.3%	0.7%	5.9%	10.2%	15.7%	41.0%	22.4%	100%
Stewart	13%	0%	8%	4%	0%	3%	41%	32%	100%
Number of Persons									
Stewart	50	0	30	15	0	10	160	125	390

At present, the mining and forestry industries are primarily responsible for the development of support services such as heavy-duty mechanics, welding shops, and transportation-related businesses, which provide services to all the basic resource industries (see Table 2-15). Employment in the community

²¹ For consistency, all population estimates are quoted from BC Stat unless otherwise noted. The estimates may differ somewhat from Census counts because of subsequent for adjustment for under-count as estimated by BC Stats.

now is broadly based and includes the transportation, mining, logging, retail and hospitality sector, and public administration sectors, as reflected in Table 2-16.

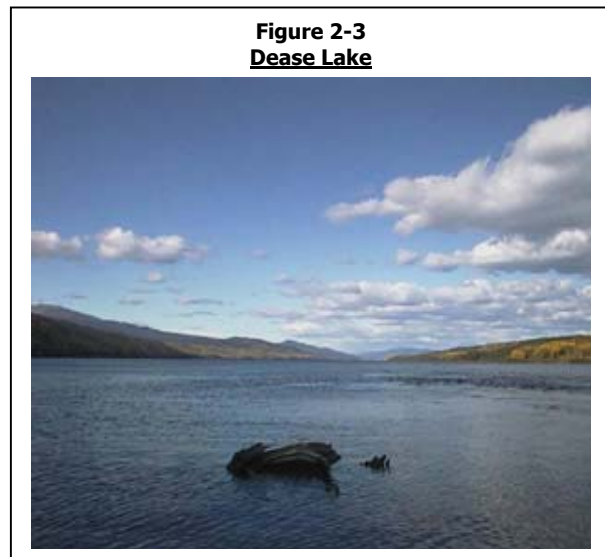
Table 2-16
Stewart Percent of Basic Income by Sector²²

	Forestry	Mining	Agriculture	Tourism	Public	Transfers	Other
2001	9	7	0	5	41	22	16
1996	25	9	0	7	37	5	17
1991	18	20	0	8	22	9	25

Stewart has developed as an important transshipment centre for resource companies (mining and timber) that operate throughout the Northwest. The community is endeavouring to promote the use of its port facilities, shipping mining and timber products, as well as its tourism business. In 2001, Stewart's average household income was \$53,723, which compares to provincial average household income of \$54,840. In 2001, the unemployment rate was 21.4 percent, compared to 8.5 percent for BC overall. Other social indices are not available for Stewart and the other smaller Highway 37 communities.

2.6 DEASE LAKE

Dease Lake is located 83 km. north of Iskut, 236 km. south of the Alaska Highway, and is the service center of the area. The town of Dease Lake was established as a Hudson's Bay trading post in 1838. It is a regional centre for some government services including health, police, and Northern Lights College.



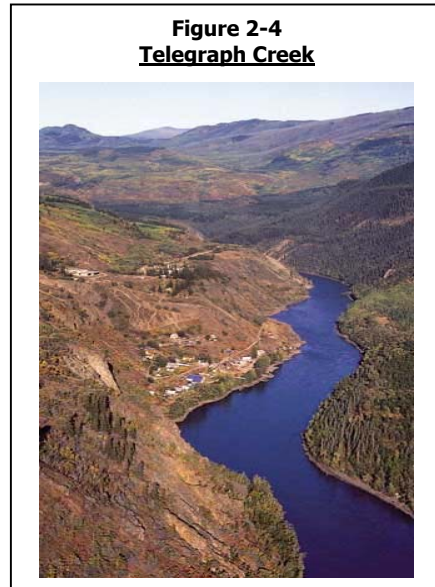
In 2001, the Dease Lake area had a population of approximately 492, including 66 living on the nearby Tahltan reserve. The Tahltan reserve of Dease Lake No. 9 is located near the south end of Dease Lake, opposite the non-native community of Dease Lake on Highway 37. The Tahltan Nation Development Corporation (TNDC) is headquartered in Dease Lake and has employees in Dease Lake, Telegraph Creek and Iskut. Due to a high number of people employed in seasonal work, the population of Dease Lake fluctuates during the year. The population has declined significantly since the 1990's as government services were centralized in Smithers.

²² Includes Stewart, Iskut and Telegraph Creek

2.7 TELEGRAPH CREEK

This Tahltan community of Telegraph Creek is situated beside the Stikine River at the foot of the Stikine River Canyon. Telegraph Creek is a remote community, located 112 km. from Dease Lake. Most of the Tahltan reserves are located around Telegraph Creek (north and east toward Dease Lake). The population of Telegraph Creek is about 350. Telegraph Creek has a Nursing Station, while the nearest doctor is in Dease Lake. The nearest full service hospital is in Terrace, over 700 km. south by road.

The Tahltan Nation Development Corporation (TNDC) employs people from Telegraph Creek, as well as from Dease Lake and Iskut. In Telegraph Creek there were 97 people employed out of a work force of 171 in 2003.²³ The unemployment rate was 44 percent in 2003. About 50 percent of the employed workforce is in the public sector, followed by 35 percent in mining and 9 percent listed as 'other'.



2.8 ISKUT

Iskut is located 83 km. south of Dease Lake and 163 km. from Eskay Creek mine and 20 km. from the proposed Red Chris mine site. The majority of the approximate 310 population of Iskut are members of the Iskut First Nation. In 2003, there were 105 people employed out of a work force of 152.²⁴ The unemployment rate was 31 percent in 2003. About 62 percent of the employed workforce is in the public



sector, followed by 30 percent in mining and 8 percent listed as 'other'. A number of Iskut residents work at the nearby Eskay Creek mine, on a two-week, rotating shift basis. Iskut has a post office, a gas station grocery store, a Band office and serves as a staging area for the Mount Edziza, and Spatsizi Plateau wilderness parks. Eddontennajon is a small non-native community adjacent to Iskut.

2.9 GOOD HOPE LAKE

Good Hope Lake is a small community located 137 km. north of Dease Lake, adjacent to Highway 37, about 22 km. past the turn-off to the abandoned Cassiar mine and town site. Good Hope Lake is

²³ Skeena Native Development Society (2003) **2003 Labour Market Survey**, Table D, page 12 , Table Q2 page 26

²⁴ Skeena Native Development Society (2003) **2003 Labour Market Survey**, Table D, page 12, Table Q2 page 26.

home to a small population of the Dease River Band from the Kaska Dene Band, which have four reserves on 80 hectares. Some Eskay Creek mine workers live in Good Hope Lake.

Information indicates that about 75 people live in the community of Good Hope Lake. In 2003, the Kaska Dene community at Good Hope Lake had 23 people employed out of a work force of 38, including those that at work at the Eskay Creek mine. The unemployment rate on the Dease River Reserve was 40 percent in 2003.²⁵

Table 2-17
Tahltan, Iskut, and Kaska Membership²⁶

Community/Band	Total Membership	First Nations Residency	Non-First Nations	Total Community Population
Iskut	608	309	13	322
Telegraph Creek ²⁷	1,621	325	18	343
Dease River ²⁸	158	60	4	64

Information on the membership of Iskut, Telegraph Creek and Dease River bands, including non-First Nation residents and total community populations is shown in Table 2-17. As indicated, about 80 percent of the Tahltan Band (Telegraph Creek) does not live on their reserves.

2.10 TAHLTAN RESOURCE DEVELOPMENT

The main sources of employment for First Nations in the Iskut-Stikine area are public sector, mining, construction, transportation, commercial fishing and guide outfitting. The Tahltan Nation Development Corporation (TNDC), representing the Iskut and Tahltan First Nations and the Tahltan Central Council, employs over 80 persons in road and other construction contracts, catering, and other activities.

The TNDC was involved in the Eskay Creek road completed in 1994. The Tahltans make up a sizable portion of the Eskay Creek mine work force.²⁹ The TNDC has a \$1.0 million annual contract to maintain the (59 kilometer) private Eskay Creek road from Highway 37 to the mine. Road construction, maintenance and snow-clearing services are provided by TNDC through a Life of Mine contract. The Tahltans were also involved in the former Golden Bear Mine.

Following the first three-year contract, the Tahltans formed their own contracting company, Spatsizi Remote Services Corporation, to provide catering and janitorial services to the mine. Galore is planning a 180-person camp this season and about 25 Tahltans should be employed at the Galore Creek camp (see section 3.2). Between Eskay and Galore it is estimated about 50 Tahltans will be employed in 2005 in these services. They have also set-up a joint venture with the environmental

²⁵ Skeena Native Development Society (2003) *2003 Labour Market Survey*, Table D.

²⁶ Skeena Native Development Society (2003) *2003 Labour Market Survey*.

²⁷ Various reserves located at Telegraph Creek and at Dease Lake (not Dease River).

²⁸ Located at Good Hope Lake, 137 km. north of Dease Lake.

²⁹ Pers. Comm. Gerry Asp (May, 2005). <http://srmwww.gov.bc.ca/ske/lrmp/cassiar/>. See also Shirley Collingridge, Sasktel "Barrick Gold Corporation and Tahltan Nation: Eskay Creek Mine" www.shirleycollingridge.com/barrickapr2003.htm

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company (Rescan) undertaking environmental work. According to the TNDC representative, last year there were about 14-16 working in this area, and a larger number this year working at Mount Klappan, Galore and for Shell (cold-bed methane exploration).

There is also a joint venture between Arrow trucking and the TNDC for ore hauling. As of May 2005, there are about 29 persons (not all Tahltans) on the Arrow Trucking joint venture payroll hauling for the Eskay mine. This qualified TNDC for bonding and TNDC can now bid on government road maintenance contracts.³⁰ The Tahltans also have a joint venture with the Frog Lake Band in Lloydminster (oil sands), providing equipment and management expertise.

³⁰ http://www.nrcan.gc.ca/mms/sociprac/barrick_e.htm

3.0 MINING DEVELOPMENTS

The section describes the new mining developments proposed for the Northwest region and their timing relative to the closure of the existing mines. The existing mines are described in Appendix B (Eskay Creek), Appendix C (Huckleberry) and Appendix D (Kemess).

The closure of the existing mines is addressed first as these impacts influence the net impacts of the new mining development.

3.1 MINE CLOSURE AND START-UP PHASING

The timing, capacities and estimated employment of the existing and new mines used in this study as working assumptions are summarized in Table 3-1. Kemess is excluded from Table 3-1 because with the onset of Kemess North there will be a transition to the new operations with little change in operating employment according to the mine operator (i.e. no incremental labour/population impact expected).³¹ The Galore mine will be considerably larger than Huckleberry and Eskay if the mill capacity is 60,000 tonnes per day. Initial plans for Galore were for a 30,000 tonnes per day mill, however our employment impacts are based on the larger capacity.

**Table 3-1
Existing Mine Closures and New Mine Start-ups**

	Eskay	Huckleberry	Red Chris	Mt. Klappan	Galore
Owner	Barrick Gold	Huckleberry	BC Metals	Fortune Min.	Nova Gold
Location	Eskay Creek	Houston	Iskut	Mt. Klappan	Scud River
Start-up date	1993	1997	2007	2008	2010
Closure date (last operating yr.)	2006	2007	2032	2028	2030
Ore tonnes/day	1,000	40,000	100,000	6,000	126,000
Mill tonnes/day	400	21,000	30,000	0	60,000
Power MW	10	30	50	7	100
Mine life Years	2	3	18	21	20
Mining Jobs	278	214	256	247	486
Contractor Jobs	90	69	132	81	220
Total	368	283	388	328	706

In terms of timing, Table 3-1 indicates that the Red Chris development may act to replace many of the Eskay Creek jobs. If on the other hand, Red Chris were delayed, there could be an abrupt loss of employment as explained in subsequent sections. Although with Huckleberry closing it appears there will be a mining employment fall-down, just prior to Galore coming on-stream in 2010.³²

³¹ Incremental construction impacts are included.

³² Some local jobs (road construction/maintenance) could be retained if construction on the Galore Creek access road were to begin in 2008.

Employment Reductions

The base case employment reductions assume Eskay’s last year of operation is 2006 and Huckleberry’s last year is 2007. Kemess is assumed to close in 2012. Kemess North will begin ramping up operations in 2007 and essentially ‘replace’ the existing Kemess operations by 2012.

Table 3-2 provides preliminary estimates of the annual reduction in the Northwest’s existing operating mines’ work force as compared to its 2005 employment levels. That is, the annual values are not cumulative.

For instance, in 2005 it is estimated that 35 persons residing in Iskut work at Eskay Creek. When the mine closes at the end of 2006 the 35 jobs would be permanently lost as indicated by the –35.



Table 3-2³³
Existing Mine Closures Employment Impacts
(Jobs per Year or Person-Years)

Community	2005	2006	2007	2008	2009	2010	2015
Highway 37							
Iskut	0	0	-35	-35	-35	-35	-35
Dease Lake*	0	0	-51	-51	-51	-51	-51
Telegraph Creek	0	0	-12	-12	-12	-12	-12
Stewart	0	0	-36	-40	-40	-40	-40
Total (Highway 37)	0	0	-134	-138	-138	-138	-138
* Includes Good Hope Lake							
Terrace	0	0	-42	-52	-52	-52	-52
Hazelton	0	0	-6	-16	-16	-16	-16
Smithers	0	0	-74	-173	-173	-173	-173
Telkwa	0	0	-10	-30	-30	-30	-30
Houston	0	0	-7	-79	-79	-79	-79
Prince Rupert	0	0	-3	-5	-5	-5	-5
Total (Highway 16)	0	0	-142	-355	-355	-355	-355
Total Northwest	0	0	-276	-493	-493	-493	-493

³³Employment impacts are based on company interviews, reporting number of workers and indicated residence. In Chapter 2, for some communities, the labour force by industry was reported from the 2001 Census. The two data sets are not comparable because of significant methodological differences. For instance, the company response did not adopt a strict North American Industry Classification System (NAICS). The Census corresponds to a different point in time and is based on a sample of households. For the purposes of this chapter, the industry response provides a better basis for estimating potential employment impacts

Under current assumptions, job losses commence in 2007 with the closure of Eskay Creek. The job loss in the study area increases to about 500 in total beginning in 2008 with the Huckleberry mine closing. Thus without new mining development to replace the depleted mines, there will a significant loss of mining employment in the Northwest region.

Red Chris

Red Chris is an advanced porphyry copper-gold exploration property, located 20 km. south of Iskut, and south of Ealue Lake. Red Chris is accessible by a rough access road off the Ealue Lake Road, just west of Ealue Lake. The road was used by American Bullion in the 1990's, the previous owner. The primary developer is the Vancouver-based company bcMetals.³⁴ The property is 80 percent owned by bcMetals, 20 percent by Teck Cominco (operates the Red Dog Mine in Alaska).



The Red Chris deposit has an estimated 74 million tonnes of ore at a 0.5 percent copper cutoff grade. The capital costs for Red Chris are estimated at \$263 million, which involves an open pit mine, flotation mill, tailings pond, waste rock stockpile, low grade stockpile, work camp, access road, maintenance shop and grid extension. The planned mill throughput is about 30,000 tonnes per day, which is expected to produce 100 million pounds of copper and 62,000 ounces of gold per year. The mine will produce about 175,000 tonnes of concentrate per year, which will be shipped through Stewart.³⁵

Plant construction and mine are scheduled to start in 2005 and pre-stripping and production by late-2006 and mill start-up in 2007. With strong smelter demand for concentrates, the company expects to ship concentrates to Japan, Korea, China, India and rest of the world. The property is about 305 km. by Highway 37 north of Stewart, the closest deep-sea Pacific port.

3.2 GALORE CREEK

Located 65 km. south of Telegraph Creek, the Galore Creek copper and gold deposit was originally discovered in 1960. Remote access and lack of grid power have been obstacles to its development. SpectrumGold Inc. (55 percent owned by NovaGold Resources Inc. and based in



³⁴ <http://www.bcmetalcorp.com/>

³⁵ Letter June 30, 2004 to EAO from J. Peter Campbell, VP Red Chris's Development Corporation.

Vancouver) is carrying out feasibility studies to develop Galore Creek, at the headwaters of the Scud River, a tributary of the Stikine River. SpectrumGold has an option from QIT-Fer et Titane Inc., Quebec (a subsidiary of Rio Tinto plc) and Hudson Bay Mining and Smelting Co. Ltd. (a subsidiary of Anglo American plc) to develop and acquire the Galore property.

As of April 2005, the project contains measured, indicated and inferred in situ resources of 13.7 million ounces of gold, 156 million ounces of silver and 12 billion pounds of copper within 1.1 billion tonnes of ore based on a 0.35 percent copper cut-off. This is higher than last year's estimate of 8 million ounces of gold and 7.4 billion pounds of copper, and integrates new resources identified from the West Fork, Junction, and Copper Canyon deposits along with the updated resource at the Central/Southwest deposit.³⁶ If Galore were to proceed at the 60,000 tonne per day mill rate, copper concentrate production would about 410,000 tonnes per year.

Modified Northern Access Route

NovaGold's original access plan was to build a road by tunneling back through the mountain over toward the More Creek drainage and down More Creek over to Highway 37 near Bob Quinn lake. An alternative southern route was under consideration in early 2005 (up the Iskut River) but as of mid-June 2005 NovaGold is now pursuing a "modified northern route". The modified northern route generally follows the previous northern route, but continues down Sphaler Creek from the Round Table Lake area, rather than constructing the long tunnels as originally proposed (see Figure 2-1.)³⁷ Although this route would involve steep grades for the concentrate trucks this could be dealt with by transporting the concentrate in a 120 km. long 6" pipeline slurry. This would eliminate the steep truck grades, but would require a dewatering plant and concentrate load out facility near the Iskut River from which point the concentrate would be hauled to Highway 37.³⁸

The Galore Creek project would require a grid extension and at least 100 MWs for its milling operation. Some limited information on the costs and employment for the grid extension has been received from the mining companies.³⁹

3.3 MOUNT KLAPPAN

Mount Klappan is a well know site of four large undeveloped anthracite coal deposits. Through the 1980's, extensive exploration was conducted on these deposits, which included test shipments to Britain, Belgium, Bulgaria, and 60,000 tonnes to Korea. In 1987 there was a 20,000 tonne shipment to Quebec Iron & Titanium, in Sorel, QC. All test shipments were sent via Stewart, where the coal was trucked northwest along the rail bed to the Ealue Lake Road then south on Highway 37 to Stewart, a distance of 422 kilometers.

³⁶<http://www.resourceinvestor.com/pebble.asp?relid=9468>

³⁷ NovaGold Canada Inc. (2005) Letter to Anne Currie of the BC Environmental Assessment Office from Susan P. Craig (Land and Environmental Manager) dated June 16, 2005.

³⁸ We have assumed that all access options have reasonably comparable costs over the mine's life.

³⁹ However the accuracy of this information cannot be assured, as we did not receive any other information (e.g. reinforcement costs, etc.).

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In 2002, Fortune Minerals of London, Ontario (Fortune) purchased 100 percent interest in the Mount Klappan coal project from Conoco Canada Resources.⁴⁰ Our understanding is that Fortune intends to mine at a rate of 3 million tonnes per year. The coal reserves in the Mount Klappan, Groundhog, Jackson Flats and Sustut deposits have been estimated at more than 10 billion tonnes.⁴¹ Conoco's measured economic reserves at Mount Klappan are 64 million tonnes and total reserves are estimated at 630 million tonnes.⁴²

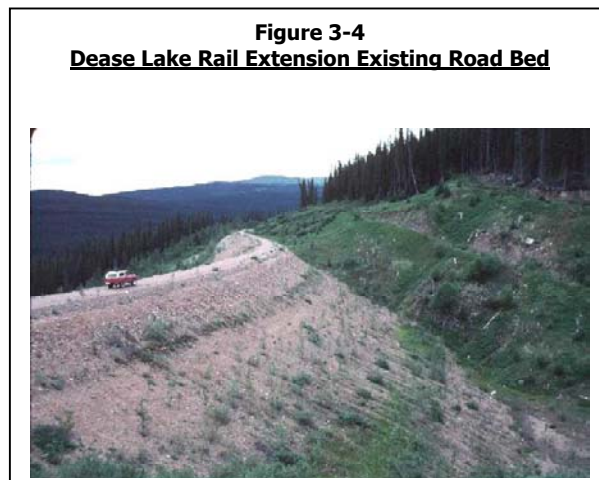
Fortune expects the coal would be sold offshore and in the North American markets.⁴³ The company is proposing to restart trial shipments to customers in Asia, Europe and North America. Studies are underway to refine the preliminary costs of transport options for several levels of production. These options include using the existing roads or construction of the Bell Irving cut-off road (100 km. extension) and shipping through the Port of Stewart.

One option is to truck the coal 70 km. to the CN Rail line terminus at Chipmunk station and ship through Prince Rupert by rail.⁴⁴ An issue with this option is that the rail line is presently operational only nine months of the year. However, if coal production were expanded the cost of upgrading the rail bed could be economically justified.

However, Fortune's plans are not yet finalized and whether coal is shipped through Stewart or Prince Rupert depends on a number of factors, such as the cost of the Bell Irving road, the cost of the rail upgrade, scale of operation, and the size of the shipments required by its customers. Recognizing these uncertainties, our employment impacts are based on using the lower cost rail option.

3.4 WORK FORCE RESIDENCE

The current work force commuting patterns provide existing mine operators with a way to retain skilled workers, who wish to live in larger communities. We have assumed that similar



⁴⁰ Fortune Minerals Limited (2003). *The Mount Klappan Coal Project – Project Description*. See <http://www.fortuneminerals.com/projectsfs.html>

⁴¹ BC Ministry Energy and Mines (2000) *Coal Resources of Northwest BC and the Queen Charlotte Islands*, 2000. Barry Ryan.

⁴² Gulf Canada Ltd., *Annual Report*, 1986.

⁴³ Pers. Comm. Robin Goad, M.Sc. P.Geo. President, Fortune Minerals Limited, London Ontario, March 2, 2003.

⁴⁴ Construction of the Dease Lake rail extension began in 1967 from O'Dell station, just north of Prince George and was completed to Fort St. James in 1968. The province then decided to extend the rail line to Dease Lake, which became known as the Dease Lake extension. The long-term political intention was to eventually interconnect to the Alaska rail system. Construction proceeded from Fort St. James along Takla Lake and the right-of-way and rail grading was completed all the way to Dease Lake. Although, the project was not completed, tracks were installed as far as Chipmunk Station, which is approximately 70 km. miles south of Mount Klappan. Currently, seasonal rail service is provided to Minaret Station, south of Chipmunk Station, which is used to haul timber to Prince George mills. http://www.repjames.org/Transport_Canada.pdf.

arrangements would be provided for the new mine work force. To this extent, the existing commuting patterns provide a market-tested arrangement. However, this is a working assumption and the new mines may adopt other arrangements.

Air Transport/Shift Rotations

For the remote mining operations (e.g. Eskay Creek and Kemess) the mining companies transport most of their workers by air. Kemess operates three flights a week between Vancouver, Kelowna, Kamloops, Prince George, and 5 flights a week from Smithers. At Kemess, the airport is adjacent to the mine site. The Eskay Creek charter plane provides weekly air service between Vancouver, Penticton, Kelowna, Kamloops, Prince George, and Smithers to the Bob Quinn airstrip. The Eskay employees work a staggered two-week shift rotation. After disembarking at Bob Quinn airstrip, the workers are driven 59 km. to the mine-site. Locally based workers (e.g. living at Iskut, Dease Lake Telegraph Creek, Stewart and Good Hope Lake) drive to Bob Quinn and are then transported to the mine site.

At the existing mines, hourly employees generally work 14 days straight, 12-hour shifts, and then have 14 days off. Management and technical staff work 4 days, 12 hours per shifts and then have 4 days off. It is assumed that the new mines would adopt similar shift arrangements.

Red Chris proposes to use the Dease Lake airport as its air terminus, which has regular scheduled air service, located 103 km. north of the mine site. From Dease Lake, Red Chris proposes to operate a bus shuttle to the mine site. Galore mine workers would be expected to fly to Bob Quinn and bussed to the mine site. Mount Klappan workers would likely fly directly to the mine site.⁴⁵

Worker turnover at the three existing mines has been generally low, averaging between 2 to 4 percent annually. However, turnover in the last year has increased at Huckleberry and Kemess (Kemess had 10 percent last year). Apparently, people are leaving for Mount Polley⁴⁶ and the reactivated Gibraltar Mine (start October 2004), both near Williams Lake, a new coalmine near Hinton, Alberta, and the Green Hills' coalmine expansion near Elkford.

Figure 3-5
Bob Quinn Airstrip



⁴⁵ Since Mount Klappan is closer to Red Chris, than Dease Lake, Red Chris may explore the option of using Mount Klappan's airstrip for its workers.

⁴⁶ Mount Polley is located 56 kilometers northeast of Williams Lake.

3.5 INFRASTRUCTURE ISSUES

Power⁴⁷

Red Chris' owner bcMetals estimates the cost of a privately built 244 km. power line along Highway 37 to connect the Red Chris project to the Meziadin substation would cost about \$30 million. However costs may be less if Coast Mountain Hydro's proposed 177 km. transmission line connecting its power plant near Bob Quinn to BC Hydro's grid at Meziadin gets underway as planned. If the Red Chris connection could be made at Bob Quinn, the line would be only 114 km. along a fairly straight highway. The power line from Meziadin to Bob Quinn is an important factor in the timing of development for Red Chris. If BC Hydro system reinforcement is required to support the mining loads, costs would be considerably higher than estimated.

Road and Rail Issues

The TNDC has a joint venture with Arrow Transportation for hauling ore and concentrate from the Eskay Creek mine site. For the Kemess mine, Lomak Trucking has found 46 tonne concentrate loads were most economic to truck haul to Mackenzie. The trucks are designed to allow backhauls of fuel oil and grinding balls. The Galore Creek feasibility study proposes 65 tonne truck and trailer combinations from Arrow Transportation. Red Chris is proposing to load concentrate at Stewart. The local view is that the trucking employees would be based in Stewart hauling concentrates from the mine for shipment offshore. However, this depends on the location of the mines' customers and the shipment routes selected.

If the CN Rail is extended to Mount Klappan it is conceivable the line might be further extended and Red Chris could load concentrate onto rail cars. The Mount Polley and Gibraltar mines near Williams Lake both load concentrate into rail cars and load ships at Vancouver Wharves. It may be economically more efficient to ship Red Chris concentrate by rail.⁴⁸ Mount Klappan had reportedly indicated that the rail and Bell Irving road options would be about \$50 million each.⁴⁹

3.6 PORT IMPLICATIONS

Port of Stewart

Stewart Bulk Terminals Ltd. has a ship loader in the Port of Stewart that is used for loading concentrates onto 45,000 DWT.⁵⁰ Stewart Bulk Terminals Ltd. is privately owned and operated. The facility employs about 6 full-time and 2 extra people when ship loading. The terminal at Stewart is designed for loading mineral concentrates and is capable of loading ships up to about 60,000 DWT vessels (Panamax sized ships).

⁴⁷ In lieu of information from MEM or BCTC we relied on information from the mining companies.

⁴⁸ At present copper concentrate from the Huckleberry mine is loaded in 12,500 tonne parcels for shipment to Japan. Some gold ore has been shipped from Stewart but usually Eskay Creek ore is loaded at Kitwanga and shipped by CN Rail to Rouyn, QC, which is the same destination as for Kemess concentrate.

⁴⁹ Pers. Com. (May, 2005) Al Soucie, Stewart Bulk Terminals Ltd.

⁵⁰ DWT stands for Deadweight Tonnes, which is the weight of cargo, fuel, stores, passengers and crew carried by a ship when loaded to her maximum loadline.

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The facility has been upgraded to provide additional concentrate storage and faster loading rates. The port has a good reputation with ship owners for its fast two-day turn-around.⁵¹ There are two concentrate sheds at the port and approvals have been obtained to expand the wharf area and to construct a third shed that could store coal from Mount Klappan (or for some other mine).

Fortune says they will be shipping coal by October 2007. If Fortune hauls to Stewart there will be a concern over the volume of truck traffic, which is currently going through the middle of town to the bulk material loading facility. This may require the construction of the 'bypass road' along the waterfront. Plans for the 'bypass' have been in the Stewart Official Community Plan since 1967.

Huckleberry hauls 12 concentrate truckloads per day to Stewart, which is stored under a 100' by 186' shelter capable of storing 16,000 tonnes on concentrate. Eskay is presently shipping through the rail load-out at Kitwanga, since the smelter in Japan is having technical problems.

The present facility could handle Red Chris in the smaller shed and Galore in the bigger shed (100' by 300'). The port facilities could be expanded, but talks are still at the preliminary stage. There is the possibility of construction of another berth (cost \$10-\$12 million) with a storage area behind, which could more than double concentrate storage. For Mount Klappan a new shed and loader would be built on a new filled area at a cost of \$1.0 to \$2.0 million (as well as the truck 'bypass' may need to be constructed).

Ridley Terminals

Ridley Island Inc. (Federal Crown Corporation) operates the Ridley Island coal port near Prince Rupert, built for the BC Northeast coal development. The terminal has a storage capacity of 1.2 million tonnes, a loading capacity of up 9,000 tonnes per hour and a total annual shipping capacity of 16 million tonnes, which can be expanded to 24 million tonnes.⁵² The maximum ship that can be loaded at Ridley Island is 250,000 DWT. If Fortune produces at a large scale

Figure 3-6
Bulk Terminal Loader Stewart, BC



Figure 3-7
Ridley Coal Terminals



⁵¹ Simpson Spence & Young, Shipbrokers, Vancouver, 2001.

⁵² http://www.rti.ca/terminal_profile.htm

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(e.g. 3.0 million tonnes per year), its customers may prefer the larger 200,000 DWT Cape Size vessels, which could only be accommodated at Ridley terminals. Stewart can presently handle vessels only up to 60,000 DWT.

4.0 MINE DEVELOPMENT IMPACTS

4.1 MINE CONSTRUCTION

Construction employment is a function of the capital cost of the mining developments and labour intensity of the activity. The total investment in the three new mines is estimated to be about \$970 million (\$2005) shown in Table 4-1.

Table 4-1
Preliminary Estimated Mine Development Investment Costs
 (\$millions, \$2005)

	2007	2008	2009	2010	Total
Mine	Red Chris ⁵³	Mt. Klappan ⁵⁴	Galore	Galore ⁵⁵	
Cost on site	228	100	218	218	764
Access Road	5	0	51	51	107
Rail Upgrade	0	10	0	0	10
Power Supply	30	20	18	18	86
Port Improvements	0	0	2	2	4
Total	263	130	289	289	971

Companies have not yet finalized design or obtained bids from construction contractors therefore the construction costs should be considered *preliminary*. For example the Mount Klappan rail cost estimate could be higher for rail upgrades for full-scale operation, or the power line costs may be substantially higher if major transmission reinforcement is required.

Construction Employment

The construction work force estimates in Table 4-2, assumes the oil sands construction in Alberta will continue, and therefore major contractors would be more likely to recruit local subcontractors from BC and the Northwest. Following from discussions with engineers working on these projects, we estimate that about half of the construction work force would come from large centers, such as Vancouver and Edmonton. The remainder would be subcontractors from Northwest communities. Local construction employment in such remote locations can often involve the mining companies providing direction in the selection of local subcontractors (e.g. local hire preference).

Estimates of construction jobs are based on company reports and discussions with mining industry project engineers and project managers. The distribution of workers is based on the location of companies, indicated by the engineers working on the mining development projects.

⁵³ Power supply costs for transmission line extension only. Source bcMetals.

⁵⁴ Power supply costs for on-site generation. Source: Fortune Minerals.

⁵⁵ Line extension costs only, no reinforcement. Source: Paul Hosford, Hatch Associates, Vancouver, BC Preliminary Economic Assessment, August 5, 2004 <http://sec.edgar-online.com/2004/08/16/0001062993-04-001257/section4.asp> . Galore costs arbitrarily split 50:50 over 2009 and 2010

Table 4-2
Estimated New Mine Construction Employment by Origin
(Persons)

	2006	2007	2008	2009	Total
Dease Lake area	40	45	50	55	190
Prince George and Quesnel	60	30	50	50	190
Terrace and Kitimat	40	10	30	30	110
Smithers	20	20	20	20	80
Kelowna and Penticton	20	10	20	20	70
Kamloops	30	10	20	20	80
Fort St. John and Dawson Ck.	10	10	10	5	35
Vancouver area	40	45	80	100	265
Edmonton	80	20	60	40	200
Calgary	10	0	10	10	30
Total	350	200	350	350	1,250

It is estimated that there would be about 50 construction jobs for Dease Lake area residents until the Galore mine starts in 2010. There would be a similar number of construction jobs in Prince George for about four years. The Terrace area would see about 30 construction jobs and Smithers about 20. Our assessment of the regional supply of the construction labour force indicates these needs could be met, assuming the 2004 labour market conditions generally apply (see Appendix E).

4.2 MINE EMPLOYMENT

Table 4-3 below shows the additional operating work force requirements for the three new mines.

Table 4-3
Mining Work Force: Three New Mines Alone
(Operational, jobs per year or Person-Years)

Community	2005	2006	2007	2008	2009	2010	2011
Highway 37							
Iskut	0	0	35	53	53	53	53
Dease Lake*	0	0	51	77	77	77	77
Telegraph Creek	0	0	12	18	18	18	18
Stewart	0	0	36	67	67	133	133
Total (Highway 37)	0	0	134	215	215	281	281
* Includes Good Hope Lake							
Terrace	0	0	42	87	87	209	209
Hazelton	0	0	6	11	11	22	22
Smithers	0	0	75	150	150	349	349
Telkwa	0	0	10	19	19	37	37
Houston	0	0	7	13	13	26	26
Prince Rupert	0	0	3	6	6	11	11
Total (Highway 16)	0	0	143	286	286	654	654
Total Northwest	0	0	277	501	501	935	935

The new mining work force assumes Red Chris opens in 2007, Mount Klappan opens in 2008 and Galore Creek opens in 2010. The new mine work force by residence is primarily based upon the distribution of Eskay Creek’s work force, recognizing there will be limitations in terms of the smallest communities supplying qualified workers. Based on discussions with community representatives, new mining employment in Dease Lake, Iskut and Telegraph Creek has been capped at a 50 percent increase above the current levels of about 100 persons.

4.3 NET EMPLOYMENT IMPACTS

Table 4-4 below is the sum of Tables 3-2 and Table 4-3, which is the net mining impact of the new mining work force, with the reduction of the current mining work force. Beyond 2010 annual impacts are assumed to continue as the earliest mine closure is expected to be 2028 (see Table 3-1).

Table 4-4
Operating Mine Work Force: Net Impacts Relative to 2005 Employment
 (Person-Years)

Community	2005	2006	2007	2008	2009	2010	2015
Highway 37							
Iskut	0	0	0	18	18	18	18
Dease Lake*	0	0	0	26	26	26	26
Telegraph Creek	0	0	0	6	6	6	6
Stewart	0	0	0	27	27	93	93
Total (Highway 37)	0	0	0	77	77	143	143
* Includes Good Hope Lake							
Terrace	0	0	0	35	35	157	157
Hazelton	0	0	0	-5	-5	6	6
Smithers	0	0	1	-23	-23	176	176
Telkwa	0	0	0	-11	-11	7	7
Houston	0	0	0	-66	-66	-53	-53
Prince Rupert	0	0	0	1	1	6	6
Total (Highway 16)		0	1	-69	-69	299	299
Total Northwest	0	0	1	8	8	442	442

Preliminary results show that Red Chris, commencing operations in 2007 offsets the impact of Eskay Creek closing. Mount Klappan begins operation in 2008, which increases the mining work force for the Highway 37 communities, but does not offset the loss in the Highway 16 communities with the closure of the Huckleberry Mine.

When Galore Creek begins operations, there would be a net increase in mining employment work force relative to the size of its 2005 work force. Some communities, such as Houston, are indicated in the table as losing some of its work force. In reality, persons may elect to commute rather than move. For instance, miners in Houston may take jobs thus reducing the indicated increase in work force in Smithers and Telkwa for example. This simple analysis does not capture this dynamic.

4.4 POPULATION IMPACTS

The demand for public services is affected by changes in population, which includes the mineworkers, their spouses and children. Based upon 2001 Census information we estimated population impacts by scaling up the number of mine workers to include their direct family (average marriage rate and the average number of children per married couple).⁵⁶ The population estimates include the direct and indirect work force, spousal and under-age dependants and the induced workers⁵⁷ and their spouses and dependants, excluding the construction work force, who are assumed to be housed in work camps on-site (i.e. in the region, but not residing in the communities).

Table 4-5 shows the forecast population for the Highway 37 and Highway 16 communities.

Table 4-5
Population Impacts based upon the Net Work Force Impacts (with Induced)
 (Assumes new incremental jobs filled by in-migration and induced impacts, excluding construction people)

Community	2005	2006	2007	2008	2009	2010	2015
Highway 37							
Iskut	0	0	0	49	49	49	49
Dease Lake*	0	0	1	71	71	71	71
Telegraph Creek	0	0	0	17	17	17	17
Stewart	0	0	1	72	72	247	247
Total (Highway 37)			3	209	209	384	384
* 2001 with Good Hope Lake							
Terrace	0	0	1	93	93	417	417
Hazelton	0	0	0	-13	-13	16	16
Smithers	0	0	2	61	61	466	466
Telkwa	0	0	0	-30	-30	18	18
Houston	0	0	0	-175	-175	-141	-141
Prince Rupert	0	0	0	2	2	16	16
Total (Highway 16)	0	0	3	-184	-184	792	792
Total Northwest	0	0	6	25	25	1,176	1,176

Population impacts are based on net mining workers, which means that current mine workers continue working at the new mines or some leave and in-migration make up the balance, including the need for additional new workers at the new mines. Results show that with Red Chris and Mount Klappan mines operating, there maybe a population fall-down in some Highway 16 communities prior

⁵⁶ Embedded in the population forecast are assumptions regarding the number of married persons and the number of children per family. Census data is not publicly available to indicate the proportion of the mining work force may form a family household and the average family size. For those working (direct and contracted) at the mine site, we assumed that 60 percent would be living in a household with the average number of children indicated for the region (i.e. 1.3 children). The ratios for induced employment were set at lower rates on the assumption the positions are temporary in the work force. That is, 30% of the induced employment is married with an average of 0.66 children per household.

⁵⁷ Induced impacts are incurred when the suppliers of incremental materials pay out additional wages to their own employees. In this case, the extra wages are spent on consumer goods and services (restaurants, food and beverage, amusement, goods and services), which, in turn generate additional economic activity in the Northwest region.

to the Galore project coming on-line. Houston may lose mine related population, however the new Blue Pearl and Morrison/Hearne Hill mines may mitigate this impact (see section 2.2). It should be noted that the population change might not be as abrupt as indicated as some workers may choose not to relocate out of the community.

Relative Population Impacts

To provide an indication of the ability of the host communities to absorb the population changes, impacts are compared to BC Stats population forecasts.⁵⁸ By comparing the mine development impacts against the forecast population in 2010, we get a sense of both the relative and absolute change in community population.

Table 4-6
Relative Population Impacts: Base vs. 2010 Mining Population Impacts

(Population forecasts only available by LHA)

Local Health Area	Base Population Forecast		Mine Population Impacts	
	2005	2010	Increase	Percent
Highway 16			(In 2010)	
Smithers (Smithers, Telkwa, Houston)	17,724	18,603	343	1.8
Upper Skeena (Hazelton, New Hazelton,	5,712	5,926	16	0.3
Terrace (Terrace, Kitwanga)	22,246	23,164	417	1.8
Highway 37				
Snow Country (Stewart)	802	840	247	29
Telegraph Creek (Telegraph Creek, Iskut)	659	776	66	8.5
Stikine (North of Iskut)	1,263	1,407	71	5.0

Table 4-6 compares the mine development population impacts to the LHA population forecast for the year 2010, which indicates the increase to be between 5 to 29 percent for the Highway 37 areas and 0.3 to 2 percent for Highway 16 areas. These results indicate that the Highway 37 communities will experience the *most significant relative impacts*, with the largest population change likely occurring in Stewart.⁵⁹

⁵⁸ According to BC Stats the forecasting method they use does not explicitly incorporate project start-ups or closures in its local area population forecasts. Rather a general tendency in growth and migration is adopted. For the purposes of this study, it is assumed that the three proposed mines are incremental to LHA population forecasts. Pers. Comm. Warren Munroe, Population Analyst, BC Stats, Ministry of Management Services.

⁵⁹ Depends upon the transport options chosen by Mount Klappan and Red Chris (explained earlier).

5.0 SOCIAL AND COMMUNITY IMPACTS

This section presents our findings with respect to the potential cumulative impacts of the new mine developments.

The following includes comments recorded during personal and telephone interviews conducted during the course of the study (May-June, 2005). It is noted that in some cases these issues are *personal comments and perceptions*, and as such may not be accurate or represent the views of all of the communities. Where possible the validity of statements were examined, but that was not always possible.⁶⁰

5.1 HIGHWAY 37 ISSUES

First Nations: General Perceptions

- According to Indian and Northern Affairs Canada (INAC), there are 1,559 registered Tahltans, with about 300 living on the reserves in Telegraph Creek and Dease Lake – thus most Tahltans live off-reserve in Whitehorse, Terrace, Smithers, Prince George and other communities.
- The Iskut Band is comprised of about 600 persons, with about 310 living on reserves – the Kaska Dene Band at Good Hope Lake (Dease River) has about 158 members and 60 living on reserves.⁶¹
- The lack of employment opportunities is not presently a major problem (it was indicated that anyone that wants a job could get a job).
- With respect to housing for both the Tahltan and Iskut Bands, there is a chronic shortage of housing -- apparently about 30 Iskut Band members are 'homeless' (living with relatives), waiting for housing.
- The Iskut Band is in discussions with INAC for another 52 housing units; perhaps 3 or 4 will be built in 2005. The Tahltan Band has been involved in obtaining more developable land since the early 1990's.
- Drug and alcohol abuse is a problem throughout the North — for the Iskut/Dease Lake/ Telegraph Creek communities, the 5 suicides and recent accidental death of a 17-year old were reportedly all substance-abuse related.
- In small communities, the 2 week mining shift rotations can lead to "non-stop party" environment, which leads to personal, social and community problems.
- There is a need to better coordinate existing programs in dealing with these problems within a more comprehensive framework for delivery.⁶² Mining companies need to be more effectively engaged to help address these problems.

⁶⁰ Given that our findings indicate that the potential impacts are more significant for the Highway 37 communities, we have allocated most of our scarce study resources on these communities.

⁶¹ Skeena Native Development Society (2003) **2003 Labour Market Survey**.

⁶² For example, NADAAP (National Native Drug and Alcohol Abuse Program), RCMP, Health Canada and Northern Health Area of

- Consideration should be given to development of a mining pre-employment program, covering basic personal skills, lifestyle hazards and individual, family, community and financial responsibilities.

Tahltan and Iskut Bands: Red Chris

- Iskut is a small community that has experienced relatively high rates of accidental death and suicide (three in the last 2-years in a population of about 300) – this is leading to growing apprehension regarding the social impacts of a mine development so close to their vulnerable community.
- There is a concern that the close proximity of the mine site will result in increased frequency of relationships with non-status persons, and the resulting offspring losing their 'status' and benefits under the *Indian Act*.⁶³
- Red Chris would overwhelm Iskut, similar to the effect that the Cassiar asbestos mine⁶⁴ had on Good Hope Lake -- according to the Iskut representative, the Cassiar mine and town site disrupted the Good Hope Lake First Nation community over several generations.
- Health concerns in Iskut are centred on potential for increased alcohol, cocaine and especially 'crystal meth' abuse (i.e., methamphetamines) -- drug problems and the associated social problems in the Iskut community started about the time Golden Bear began operations (1990- to 1994).⁶⁵
- Another concern relates to bcMetals' financial strength and the possibility the mine may operate for a short time then close down, leaving an environmental impact, lost jobs and no long-term benefits as originally promised.
- Red Chris work force may take up residence on nearby lakes (in cabins or trailers) and commute to the mine site -- this may lead Tahltans to become a minority in their own traditional territory.
- A potential beneficial attribute of Red Chris for Iskut, but not indicated by the community, is band employees could commute daily to the mine, thus avoiding the two week shift rotation that is perceived as contributing to community disruption.⁶⁶

Tahltan and Iskut Bands: Mount Klappan

- With respect to Mount Klappan, the mine site occupies a traditional hunting territory and their concern is that renewed project mining activity will drive away their game.

the BC Ministry of Health all have various programs.

⁶³ This refers the 1985 Federal Bill C-31, amendment to the *Indian Act*, which addressed the problem that when Native women "married out" they lost their status (and benefits), but men did not. Although Bill C-31 extended this right to women, Section 6-2 causes the grandchildren of the marriages between a status Native and non-status person to lose their Indian status. *Windspeaker*, Volume 23, No. 2 May 2005, page 9.

⁶⁴ The concern arises from the experience of Cassiar, which was an asbestos mine and town site (north of Dease Lake), which operated from 1951 to 1989.

⁶⁵ Methamphetamine is an addictive stimulant drug, which is cheaper than cocaine and can be made from legally obtainable, but hazardous chemical manufactured in 'home labs'.

⁶⁶ May require changes to the standard shift arrangements (12 hours/day).

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- According to the TNDC, Mount Klappan does not need the expensive power line and has job/skill requirements, which better match those of TNDC's work force (e.g. construction/excavation/loading).
- Hence, Mount Klappan could be a big employer of the Tahltans, since the operation is relatively more straightforward than the metal mining operations (possibly up to 150 to 200 employed).

Tahltan and Iskut Bands: Galore

- With respect to the Galore mine, the Iskut Band is "assuming the project is going ahead" and do not have the same level of concerns as with Red Chris and Mount Klappan.
- Galore and Red Chris will require higher skilled jobs -- jobs that local persons will require more education and training to fulfill and so a higher likelihood they are filled by out-of-region workers.
- The number of new employed people will depend on their job skills and the individual's willingness to become qualified.
- Galore has established good relations with the Tahltan Band and there is growing confidence that the company will work with the Band to address the social problems that accompany mining development.
- The TNDC is concerned about the timing of Eskay's closure and the need for new mining projects to keep the people working – exploring opportunities with Shell (coal-bed methane exploration near Mount Klappan), and Iskut Hydro (supply small-hydro to BC hydro local distribution system).
- An increase in an employed population would be good, as the only income is from TNDC and Indian Affairs - Dease Lake has lost many government offices, which has depressed the economy.

Dease Lake Settlement

- There are about 100 to 150 houses in Dease Lake – about 6 to 10 are for sale and 2 or 3 for rent – developers are reluctant to bring on more serviced lands, as the economic base of the area is so fragile (note Eskay closing), so the real estate market is very volatile.
- In addition to the housing shortage there is a shortage of developable land around Dease Lake (all public land) – takes up to 3 years to purchase Crown Land for private use.
- Dease Lake community not incorporated – no local tax base and no community planning.
- Golden Bear mine was active in sponsoring community events in Dease Lake – although, Eskay has not played a prominent role in the community, the shut down of the mine will have a major impact on employment.

Stewart

- Stewart has ample capacity in infrastructure, housing stock, water and sewage capacity and developable land to accommodate the anticipated population increase from the new mining developments.

- If Mount Klappan coal is trucked to Stewart, a road by-pass will likely be required to prevent heavy truck traffic through the main street (some community interests in Stewart, do not want the by-pass or the increase in truck traffic).

Skeena Native Development Society (SNDS)⁶⁷

- It can be inferred from the *2003 Labour Market Census* published by the SNDS, that there is enough excess capacity in the labour force (unemployed labour force) in the Tahltan communities to potentially increase employment by up to 50 percent over existing mining employment.
- The Census also shows that apart from the public sector, the Tahltan communities labour force is heavily reliant on the mining industry (e.g., 30 percent of employed labour force)
- Alcohol and substance is a common problem in northern communities, not specifically related to mining development or higher incomes -- higher educated/skill level and more mature employees are less inclined to abuse.
- It was mentioned that unemployment could lead to boredom, despair, and low self-esteem, which may create susceptibility toward drug and alcohol abuse and family breakdown.⁶⁸
- The SNDS fund apprenticeship programs for First Nations individuals who make application -- currently supporting 12 apprenticeship positions, including one at the Eskay mine.
- The mining industry has not shown very much interest in assisting SNDS in expanding the number of apprenticeship positions at mines.

5.2 HIGHWAY 16 ISSUES

Smithers

- Given the size of the community and large service sector, there is little awareness in Smithers of the Eskay mine shutting down.
- The community is more aware of the proposed Blue Pearl molybdenum project (located 10 km. from Smithers), which the proponent expects to be in operation by 2007.
- The new mining companies have provided information on their projects to the community -- local economy is on an upswing -- community and services appear well positioned to accommodate the population increased predicted for the community.
- The community is optimistic regarding its economic prospects -- the airport is being expanded to accommodate bigger jet aircraft -- the ski-hill is being expanded -- community generally expects continued growth in tourism and 'amenity migrants'.

Terrace

- Terrace's (forest-based) economy has been depressed and population has declined since the late 1990's.

⁶⁷ SNDS Office is located in Terrace. Pers. Comm. Skeena Native Development Corporation (2005), Geri Budden, Greg Smith, Lisa Dignard and Clarence Nyce (former coroner).

⁶⁸ Comment: relatively high number of Tahltans working at the Eskay mine, which is soon closing and without new employment opportunities, will lead to increased unemployment.

- The decline in population over the past several years has meant there is excess capacity in many public and community services (i.e. one new constructed elementary school has never opened, the hospital has closed “beds”).
- The business community in Terrace would welcome any new mining development that potentially would help the community.

5.3 HEALTH SERVICES

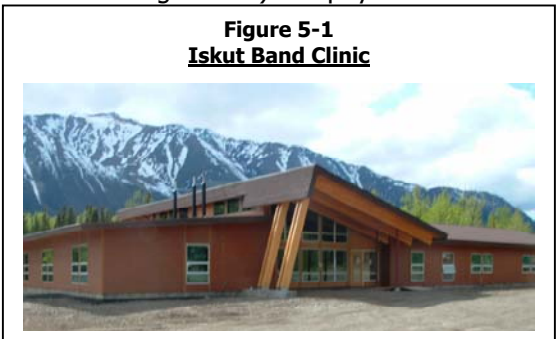
Comments from the Northern Health Authority, based on the new mine-related population forecasts (Table 4-5), include the following:⁶⁹

- A population increase of 250 in Stewart can be accommodated, as presently there is excess capacity in some areas. Presently they treat thousands of patients, mostly the summer tourism traffic, so the forecast population can be accommodated.
- In Smithers and for larger Highway 16 communities, there is an adequate number of doctors and hospital capacity, thus the population increase appears to be easily accommodated.
- Dease Lake has a day emergency hospital, no beds, 1 nurse and 2 physicians and can add another nurse – an increase of 70 more people to the population should be accommodated.
- Overall, there appears to be no major problems with the indicated increase in population for the communities.

With respect to provision of health care, Indian reserves are under federal jurisdiction.

Iskut Band

Iskut Band health services are housed in a new health clinic. The clinic has an emergency holding room, a treatment room and examination rooms (there are no overnight beds). A physician visits the clinic 1 day per week and 2 nurse practitioners are funded (only one position is filled at this time). The facility is designed to provide “first responders” treatment capability. Cases that require more attention are transported to Dease Lake, Terrace, Smithers, Vancouver, and Prince Rupert, depending on the severity of the patient’s needs.



Health Canada provides funds to the Band according to a formula based on population, among other factors.⁷⁰ The Iskut Band is responsible for running its health programs. In 2004 and based on a population in the order of 310 persons, total funding from Health Canada was \$1.3 million, distributed as follows.

⁶⁹ Ms. Suzanne Johnston, COO of the Northern Health Authority.

⁷⁰ There is a range of other health related programs that are *not* funded by Health Canada. These include, for example, the youth program, elders program, and e-health program. Funding from other federal sources is relied on to support these

**Table 5-1
Iskut Band: 2003 Health Canada Funding⁷¹**

Program	Funding
Diabetes	\$ 13,500
Head Start	\$ 128,700
Community Health Services	\$ 899,300
Non-Insured Health Benefits	\$ 302,500
Total	\$1,344,000

Management of the current health service programs is described as “crises management”. Current resources are not sufficient to fully meet the full range of the Iskut Band’s health needs. Scarce resources are focused on dealing with acute problems, such as alcohol and drug addiction, mental health, and health problems stemming from social breakdown. Preventative health programs, which are badly needed, are consequently under-resourced.

The Iskut population could increase by about 50 persons as early as 2008. Since the community’s health system is reportedly in a “crisis mode”, any increase in demand from the forecast population increase will further stress the system. New funding only becomes available following a three-year lag, which is part of the health care funding formula.

The current situation suggests the following question -- is the incremental health care funding available through the administered formula sufficient to offset the added costs brought by the new residents and borne by the community? Although, we cannot answer this question, an informed view is that the higher incomes earned by the mine employees appears to be correlated with increased substance abuse, deterioration of mental health, and social problems, which in turn puts a disproportionate demand on such a small health care facility.

To the extent the surrounding mine developments increase Iskut and surrounding areas population, there will be a need to address these issues, not the least being the funding lag in the administered health care funding formula.

Telegraph Creek⁷²

The health clinic and health programs centered in Telegraph Creek meet band members’ health needs that are resident in Telegraph Creek and Dease Lake. The Band population is 300-400 persons in Telegraph Creek and about 80 persons in the Dease Lake Reserve No.9 (located opposite the non-native community of Dease Lake).⁷³

programs.

⁷¹ Source: Auditor’s Report on Supplementary Information, Iskut Band

⁷² Source: Mr. Adrian Carlick, Health Director, Tahltan Band

⁷³ Not to be confused with the Dease River reserve at Good Hope Lake (Kaska Dene Band), located 137 km. north of Dease Lake

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The health clinic facility consists of several offices, two exam rooms, a dentist room and an emergency holding room. Two nurses that are Health Canada employees staff the facility. A doctor visits one day per week. The band employs a health director, and specialists responsible for specific programs such as community health care, alcohol and drug addition, mental health, youth programs and the like. Total staffing in the facility is about 10 persons. Two persons work in Dease Lake providing limited health services to Band members.

It would appear from this initial assessment that the challenges and problems facing the delivery of health care services in Telegraph Creek and Iskut are similar. Both are small communities with reportedly significant issues with respect to substance abuse, mental health, and attendant social/community problems. It was noted that Iskut has full control of its health programs, which may give the Band some flexibility to tailor its programs to the needs of a small isolated aboriginal community. In Telegraph Creek, the nurses' duties are stipulated by the policies of Health Canada.

Health Canada funding for the fiscal year ending March 2004 total \$ 863,200 and was distributed to the following programs:

Table 5-2
Tahltan Band: 2003 Health Canada Funding⁷⁴

Program	Funding
Diabetes	\$ 20,000
Head Start	\$ 123,570
Brighter Futures	\$ 67,849
Prenatal	\$ 15,941
Community Health	\$ 177,761
Home & Community Care	\$ 103,160
NNADAP ⁷⁵	\$ 65,904
Non-Insured Health Benefits	\$ 289,020
Total	\$863,205

The Brighter Futures program follows the Head Start program, for youths six to twenty four. A full time youth care worker administers the program. The NNADAP deals with substance abuse. The issue is also addressed in the Community Health program. The non-insured health benefits covers the cost of travel to specialists. In emergency cases, the patient is transported by helicopter weather permitting, or by ambulance to Dease Lake provided the road is open.

The increase in band population is contained in the population forecasts for the communities of Dease Lake (some portion is Tahltan) and Telegraph Creek (almost entirely Tahltan persons). The increase in Band members may be similar in magnitude to Iskut Band, perhaps some 50 persons. Any increase will impact the delivery of health care services and put added stress on the programs. The

⁷⁴ Source: Auditor's Report on Supplementary Information, Tahltan Indian Band

⁷⁵ Health Canada's National Native Alcohol and Drug Abuse Program (NNADAP) <http://www.hc-sc.gc.ca/fnihb-dgspni/fnihb/cp/nnadap/>.

experience with the Golden Bear and Eskay is there is a high correlation between Band employment at the mines and substance abuse and community problems. It is recognized that the mines did not create the problems, but their presence made the existing problems worse.⁷⁶

It was reported on several occasions there is a clear need for *effective* preventative health programs to deal with these problems.

5.4 SCHOOL CAPACITY

The increase in population will increase the number of students attending the local elementary and secondary schools.⁷⁷ Appendix F lists the public schools in the study area and capacity utilization rates for 2004/05. There is considerable variance in the utilization rate among schools. Capacity utilization is a measure of physical space per pupil divided into enrollment. If capacity utilization rate is not expected to be a long-term characteristic, the need may be satisfied with the use of portable classrooms.

In communities with a number of schools, it is not possible to predict the potential impact on specific schools. Also, the forecast is not age specific, so it is not possible to relate the increase in school aged children to primary or secondary schooling. For this initial view, enrollment and school capacity is considered at the community level.

Table 5-3 summarizes the impact of the incremental school population (i.e. children of mine workers) for the year 2010, the first year all three mines are operational.

**Table 5-3
Base vs. Mining Population Impact on Utilization of Public Schools**

	2010 capacity	Forecast Utilization	Mining Children	Adjusted Utilization
Houston	939	63%	(46)	
Smithers	1,486	100%	152	110%
Telkwa	211	90%	6	92%
Hazelton Area	1,128	76%	5	76%
Terrace	3557	81%	136	85%
Stewart	250	25%	80	57%
Dease Lake	144	115%	22	131%
Telegraph Creek	119	39%	5	44%

For most communities, the impact would appear to be within the projected capacity in 2010. For Smithers, which was projected to be at capacity, the "mining children" result in aggregate capacity

⁷⁶ A person earning \$500-\$800/ month might do a lot of partying. However, when the individual is earning \$5,000-\$6,000 month the partying becomes more intense, younger persons become involved as well impacted (i.e. left at home).

⁷⁷ Concerns about band school capacity were not raised in preliminary discussions. The impact will depend on number of school age children new band residents bring to the community, which for the small population involved is subject to large forecasting error, and the intended education program. It is noted that the public system provides a backstop for addressing gaps in the band-operated program. The matter should be re-visited when mine operating data is firmed up.

being exceeded. Dease Lake is expected to be overcapacity in 2010, and the incremental 22 children exacerbate the condition. The table also illustrates a more general point, in that the smaller northern communities on Highway 37 are more sensitive to population changes because the existing programs/facilities are not large.

Highway 37 Situation

In the small communities, school populations fluctuate considerably, however the trend maybe characterized by high dropout rates and below-average attendance. Mining jobs are perceived as drawing students out of school and into relatively high-paying entry-level mining jobs. This result is low levels of educational attainment and hindering these individuals from advancing in the industry to higher-skilled technical jobs.

In an effort to better support it students, School District 87 (Dease Lake and Telegraph Creek) has partnered with Northern Lights College to tailor programs that provide training for opportunities specific to the region.⁷⁸ In the past year, accomplishments include:

- Welding program: five students from Dease Lake (3 high school graduates, 2 grade 10) are successfully working in the program.
- Teacher Assistant Training: providing college level certification for individuals working with students who have individualized challenges.
- Food Safe: level I, leading to developing a catering service to the community and increase employment skills.

The School District intends to expand the range of dual credit courses over the next 3-5 years to cover the following areas: welding, carpentry, mechanics, automotive repair, electrical, machinist, small engine repair, flagging course, accounting/bookkeeping, travel and tourism, camp cook, computer technician. A number of these courses have direct relevance to skills required in mine development and operations. To support these courses, the School District and College will seek funding from a variety of sources, including developing partnerships with the mines in the region for training, apprenticeship and work experience programs.

Expansion of the Dease Lake facility may be required, such a shop facilities, which may be facilitated with a private sector partner. When the company work force plans become better defined, the implications to the school systems should be addressed in more detail.

5.5 POLICING

The major policing issues related to the mining development will be on the Highway 37 corridor and communities.

The RCMP Dease Lake Detachment provides policing services for a large area, including the communities of Dease Lake, Telegraph Creek, Iskut and Good Hope Lake. There are seven officers

⁷⁸ From discussions and material received from Ms. D. Perry, District Principal, Student Support Services, Stikine School District.

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posted at the detachment: one sergeant, one Corporal and five constables, two of which are posted at the Telegraph Creek sub-detachment. Two of the constables are First Nations Community policing positions.

Since the onset of resource development projects (e.g. Golden Bear in 1990) and related social concerns associated with such developments in the north, there has been an increasing need for coordinating Tahltan communities and policing in the Northwest. Tripartite agreements were signed in Dease Lake in 1996, between Canada, BC and the Tahltan Indian Band (including the Iskut First Nation and the Dease Lake River Band Council) to improve coordination of community-based public safety program and relations. For example, the RCMP regularly attends First Nations Band Council meetings to present the monthly Aboriginal Policing Report and to discuss issues of mutual concern.

Located 85 km. south of Dease Lake, the Iskut First Nations Community Policing Office was opened on January 2003. The office is open every Wednesday, during regular business hours, in addition to other times when members are on patrol.

Some of the policing and public safety programs include the following:

- **Community-Based Programs:** includes the Peoples Haven Family Service Centre, provides victim and crisis intervention services to the communities of Dease Lake, Telegraph Creek, Good Hope Lake and Iskut, and specializes in services such as a residential style safe house, transportation, counseling, crisis line and referral service. Another organization, called the Northwest Inter-nation Community and Family Services, provides services for First Nations Children and Family protection issues. RCPM officers work with both of these organizations.
- **Operation Zero Thirty Seven:** is a traffic interdiction program designed to address the large amount of illegal contraband, specifically drugs and alcohol being transported along Highway 37 from southern Canada and the USA destined for the Yukon and Alaska. Several members of this detachment conduct regular traffic enforcement and check stops at pre-determined locations along Highway 37. Zero tolerance for unlawful activity on Highway 37 is the objective of this program.
- **Crime Prevention;** includes Community and School Liaison services; Police Alcohol Incident Reporting (designed to address the increase in occurrences of alcohol-related damage to community public housing and provide reporting to community leaders); Safe Home and Communities Elders Home Visitation Program (home visitation to elders at risk to check on safety allows RCMP members pre-authorization to enter elders homes and remove those persons interfering with the elders' security); Drug and Alcohol Education and Enforcement Program (maintenance of intelligence files of known individuals involved in drug trafficking and illegal alcohol sales); Annual Community policing Initiatives (community educational initiatives providing information on school safety, family violence, youth drinking and driving).
- **Inter-agency Committee:** Members of this detachment sit on the inter-agency committee which meets quarterly and consists of representatives from all the social agencies, government agencies, First Nations communities and leaders, schools, youth committee representatives, health facilities to share information and discuss mutual concerns.

- **First Nations Healthy Living and Stay Safe Program:** RCMP members attend regular meetings and various aspects of the Stay Safe program. This program, run by the Federal Ministry of Health, promotes healthy living within First Nations communities. Detachment officers recently attended workshop, and assisted health staff making presentations in the schools.

With increased mining development in the Highway 37 area, there are concerns that current policing and community resources maybe inadequate to address the additional social pressures these developments may bring. These social impacts are not unique to mining; rather they are characteristic of certain individuals pursuing irresponsible behavior, which tends to negatively affect the community at large.

There is compelling evidence that further *relevant* education can help young people avoid these pitfalls.⁷⁹ Mining companies and Tahltan representatives have opportunities to encourage young people to stay in school enabling them to qualify for the better paying technical positions, while acquiring additional maturity to help them successfully negotiate the high risk years of the late teens and early twenties.

5.6 SOCIAL/COUNSELING ISSUES

One issue raised by several interviewees during the study was the abnormal number of premature deaths in the Highway 37 corridor communities, associated with onset of mining development.

In order to investigate this issue, we obtained community specific data from the BC Coroners Service (BCCS). Table 5-4 is a two-period 5-yr. period summary of deaths investigated by the BCCS, which would cover all causes, *excluding* expected deaths, such as terminally ill in hospitals. Although, the overall number of deaths had declined over the two 5-yr. periods, both Iskut and Telegraph Creek appears to have experienced an increase in deaths, while Good Hope Lake and Stewart had fewer deaths.

Table 5-4
Highway 37 Community Deaths Investigated by BC Coroners Office 1994 to 2003⁸⁰
(Deaths by all causes by community investigated by BCCS)

Community	1998 - 1994	2003 - 1999
Iskut	3	5
Telegraph Creek	5	8
Dease Lake	13	12
Good Hope Lake	3	1
Stewart	22	15
Total	46	41

⁷⁹ 'Relevant' referring to relevant to the student, such as more emphasis on applied work-skill related curriculum leading to students *staying in school longer*.

⁸⁰ Pers. Comm. (May 27, 2005). Ron Kelly, Ph. D., Office of the Chief Coroner, Ministry of Public Safety and Solicitor General, Burnaby, BC. (604 660-3298).

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It should be appreciated that since population and the cause of death are not included in table, the data is inconclusive with respect to the rate of premature deaths (e.g. due to unnatural causes).

Additional information was obtained from the BC Vital Statistics Agency.⁸¹ The data is for the Northwest Health Service Delivery Area, which approximately corresponds to the overall study area.⁸²

To put this information into perspective, it should be noted that:

- The Northwest Health Region Status Indian population was 23,914 in 2002, in addition to other resident population of 60,568, for a total Health Region population of 84,482. Status Indians in the Northwest Health Region represents 28 percent of the total population.
- Total Status Indian population for BC in 2002 was 151,783; in addition to other residents of 3.9 million for a combined total BC population of 4.1 million. Status Indians represent 3.7 percent of the total BC population in 2002.

Table 5-5 presents information comparing selected mortality indicators, which are interpreted as indicators of premature death for First Nations peoples in the Northwest Health region compared to other Northwest residents and to the BC baseline rates (all First Nations and all other BC Residents).

Table 5-5
Northwest Region Selected Mortality Rates 1992-2002 Averages⁸³
(Deaths by all external causes by community investigated by BCCS)

Causes of Death	Northwest		British Columbia	
	Status Indian	Other Residents	Status Indian	Other Residents
Motor Vehicle Accidents	2.0	1.8	3.8	1.0
Accidental Poisoning	1.4	0.5	3.6	0.8
Accidental Falls	1.6	0.8	1.9	0.7
Suicide	2.1	1.3	2.9	1.1
Homicide	0.4	0.2	1.0	0.2
Fire and Flames	0.4	0.2	0.6	0.1
Alcohol-Related Death	15.5	4.7	21.7	3.5
Drug-Induced Death	1.6	0.3	3.8	1.1
Smoking Related Death	12.7	14.9	15.9	12.4

Mortality rates for external causes of death provide an indication of life threatening and risky behaviors, related to the operation of motor vehicles, substance abuse related to alcohol, drugs and

⁸¹ BC Vital Statistics (2004). *Regional Analysis of Health Statistics for Status Indians in British Columbia 1992-2002*. April 2004.

⁸² Equivalent to the Regional Districts of Stikine, which includes Dease Lake, Good Hope Lake, Lower Post and Atlin and the Kitimat Stikine, which includes Iskut, Telegraph Creek and First Nations to the south (Highway 16 First Nations and around Kitimat), excluding Nisga'a Lands.

⁸³ Age Standardized Mortality rate (ASMR) is the age adjusted death rate and gender, which has been standardized for the purposes of rate comparisons, which is the theoretical number of deaths per 10,000 population, if the specific population had the same age structure as the standard population. Information from BC Vital Statistics Agency (2004) entitled *Regional Analysis of Health Statistics for Status Indians in British Columbia 1992-2002*.

tobacco, hopelessness and despair (suicide) and other mortal accidents related to fire, falls and poisonings.

Key points from the health study shown in Table 5-5 suggest that:

- Compared to the Northwest other resident population, Status Indians in the Northwest have much *higher* mortality rates due to external causes (premature death), with the exception of smoking-attributable mortality.
- Compared to the BC Status Indian population as a whole, Northwest Status Indians displayed *lower* mortality rates in all the external mortality categories shown in Table 5-5.
- Status Indians in the Northwest Health region had the highest life expectancy of all Status Indians in the province (78 years versus 74 years)

However, since the population of Status Indians for the Northwest Health region is relatively large, it masks any anomalies that could exist in small area data such for the Highway 37 communities. Not to prejudice any view as to the severity of the problem in the Highway 37 communities, the data suggests that Northwest Status Indians appear to engage in less risky behavior and exhibit better coping skills than the average Status Indian in BC.

Nevertheless, the data still indicates a wide disparity in the mortality rates of premature death of Status Indians in the Northwest compared to the general population, which tends to substantiate the views of the health care providers in the small communities along Highway 37 discussed earlier.

6.0 CONCLUSIONS

There are several conclusions that are offered as a result of this study, which should be considered as a strategic overview of the expected impacts from the mining development projects.

6.1 LIMITATIONS

- It should be appreciated that final engineering and transportation studies have not been completed. As a consequence, the information in this study is *preliminary*, which means the work force and the population estimates could change, in some cases dramatically.
- Second, the dates of mine closures of existing mines are subject to change as new geological and engineering information and higher commodity prices could extend mine life. Similarly, the start dates for new mines are uncertain. The timing of mine closures relative to mine openings have important implications with respect to population, labour force and use of social and public infrastructure.
- Third, it should be appreciated that many of the comments noted in this report are *personal comments and perceptions*, and as such may not be accurate or representative of all of views of the community. Where possible the validity of statements were examined, but that was not always possible.
- Fourth, some of the social issues and concerns identified in some communities are complex, and involve personal and sociological issues, which are beyond the scope of this report.
- Lastly, in order to adhere to project timing and budget constraints, the study focused on identifying the communities to be most likely impacted, and the nature of the impact. In this large region with a large number of diverse communities, it was not feasible to complete a more comprehensive assessment.

6.2 SOME CONCLUSIONS

Most of the social concerns related to the new developments in the most effected communities, exist presently and in general, are not specific to mining development. Rather they are characteristic of economic development problems experienced in many communities in the North.

Nevertheless, in spite of the uncertainties and limitation noted above, we feel some firm conclusions are evident, and would remain valid over a wide range of alternative project configurations.

- In the *absence* of new mining development, Highway 37 communities will be severely impacted in terms of lost mining jobs, lost trucking jobs and reduced port-shipping business, leading to population declines (e.g. Stewart). Stewart Bulk terminals will lose Eskay and Huckleberry's shipping business, presently their main customers -- Eskay closing will put about 100 Tahltan people out of work.
- With respect to mine development impacts, communities along the Highway 16 corridor that would likely be affected by the mines, have adequate capacity to address the incremental needs. The region is recovering from the economic downturn of the 1990's and has excess

capacity with respect to social service infrastructure. Also, the respective communities are incorporated, providing them a framework and capacity to plan for, finance and deliver services that might be required, and to meet the incremental growth from the new mine development.

- It is reported that the Iskut and Tahltan communities are having difficulty coping with the problems that bear some association with existing mine operations. There is evidence to suggest (e.g. mortality data) that existing education, social and health programs and capacities are not adequate to meet present demands. The closure of Eskay mine, and the opening of one or more of the proposed mines, may increase the stress on the present communities. Either future poses challenges to these vulnerable communities.
- The potential socio-economic impacts of a large, long lived mine, such as Galore Creek (e.g. 2010 to 2030), could provide stable employment, training and apprenticeship openings, and business supplier opportunities that would provide economic stability to a region that is otherwise prone to shorter-term 'boom to bust' cycles.
- The Tahltan and Iskut communities are small and their ability to participate in the mines is limited. Hence, the effect of one mine proceeding may be significant, while the impact of a second or third mine proceeding would be less so. Nevertheless, for the community of Iskut, the Red Chris mine poses the more significant range of challenges because of its proximity.
- As a result of this situation there was little benefit in formulating "scenarios", because the outcome for most of the plausible scenarios would be about the same, in terms of the major finds from this study.

APPENDIX A – LIST OF CONTACTS

(Persons Contacted)

Company/Agency	Name	Position	Phone
Kemess Mine	Dave Greenley	Recruiting	(604) 639-8540
Kemess Mine	Jackie Johnson	Human Resources Coordinator	(604) 639-8500
Kemess Mine	David Hendricks	Project Manager, Kemess North	416-602-3283
Eskay Creek	Sharon June	Receptionist	(604) 522-9877
Huckleberry	Jim O'Rourke	President	(604) 685-8299
Huckleberry	Peter O' Grissel	Geologist	(604) 517-4708
Huckleberry	Wensy Curtis	Human Resources	(604) 517-4716
Huckleberry	Brian Kynoch,	N/A	(604) 488-2659
Huckleberry	Imperial Metals	President	604) 488-2659
Huckleberry	Steve Robertson	Geologist	(604) 488-2659
Galore Creek	Carl Gagnier	Project Manager	(604)-669-6227
Galore Creek	Peter Campbell	N/A	(604) 683-0140
Galore Creek Hatch Associates	Paul Hosford,	Project Engineer	(604) 689-5767
Galore Creek Hatch Associates.	Dave Murray,	Project Engineer	(604) 689-5767
Mount Klappan	Robin Goad	President	(519) 858-8188
Mount Klappan	Jim Excell	Project Manager	(250)-215-1058
	Derrick Mulligan	N/A	(604) 683-0140
Red Chris	Peter Campbell	N/A	(604) 683-0140
	Jay Collins Merritt Consultants	Project Manager	(604) 669-8444
Newcastle Minerals	Kevin Whelan	President	(250)474-7999
Dease Lake	Curtis Rattray	Tribal Chairperson	(250)-771-3274
Dease Lake	Jerry Asp	Tahltan Band Chief Councilor	(250)-771-5482
Iskut Band	Feddie Louie	Health Director	(250)-234-3511
Iskut Band	Sally Haverd	Resource Officer	(250) 234-3331
Government Agent	Amada Jacobs	Acting Gov't Agent	(250) 771-3700
HRDC, Terrace	Patrick McIntyre	Prgm Officer, Labour Mkt. Info.	(250) 635-7134
Community Futures, Terrace	Roger Leclerc	General Manager	(250) 635-5449
Smithers	Mark Allen	Director, Development Services	(250) 847-1600
Smithers	Carlos Felip	Deputy, Chief Administration Officer	(250) 847-1600
Stewart	Angela Danuser	Mayor	(250) 636-2251
Stewart	John Holland	Chief Administrative Officer	(250) 636-2251
Northwest Community College, Terrace -	Denine Milner	Dean of Instruction	(250) 638-5402
RCMP, Prince George	Barry Clark,	Superintendent, North District Officer	(250) 561-3101
Northern Health Authority	Suzanne Johnston	Northwest Service Delivery Area -	(250) 624-0227
Northern Health Authority Prince George	Dr. David Bowering	Medical health Officer	(250) 565-7464
Health Canada	Dr. Jay Wortman	Regional Director – First Nations & Inuit Health Branch	(604) 666-3235
BC Ambulance Service	Jody Holmes	Superintendent, Skeena	(250) 847-7802
MOT, Smithers	Steve Uyesugi	District Manager, Bulkley Stikine District	(250)-847-7400
Nadina Community Futures	Brandy	N/A	(250) 845-2522
Amec, Vancouver	Steve Fleck	Business Development	(604) 664-4221

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Company/Agency	Name	Position	Telephone
Parwest Mining, West Vancouver	David Parkes	President	(604) 926-5221
Scouten Associates, Prince George	Susan	N/A	(250) 562-7050
Stewart Bulk Terminals	Al Soucie	President	(250) 636-2215
Stewart Bulk Terminals	Jack Elsworth	Vice President	(250) 636-2215
Pacific Northern Gas	John Craig	Vice President Engineering	(604) 691-5678
Pacific Northern Gas	Roy Dyce	President	(604) 691-5678
Tahltan Nation Development Corp	Jerry Asp	Tahltan Band Chief Councilor	(250) 771-5482
Tahltan Nation Development Corp	Pat Thompson		(250) 771-5482
Coast Mountain Hydro Power Corp.	Cliff Grandeson	President	(604) 929-3961
Lomak Trucking, Prince George	David Livingston	President	(250) 561-1000
Coast Mountain Air	Bill Hess	N/A	(888) 865-8585
Ministry of Education	John Woycheshin	Planning Officer, Capital Funding Unit, Funding Department	
Ministry of Management Services	Warren Munroe	Populations Analyst, Populations Statistics Unit.	
Skeena Native Development Corporation	Gri Budden	Business Agent.	(250) 636-2251
Skeena Native Development Corporation	Greg Smith,	Manager, Business Development.	(250) 636-2251
Skeena Native Development Corporation	Lisa Dignard,	Contract Administrator.	(250) 636-2251
Skeena Native Development Corporation	Clarence Nyce.	Chief Administration Officer.	(250) 636-2251
Tahltan Band	Mr. Adrian Carlick	Health Director.	(250) 636-2251
Northwest Community College, Terrace	Denine Milner	Dean of Instruction.	(205) 638-5402
Stikine School District 87	Ms. D. Perry,	District Principal, Student Support Services.	(250) 771-4440
Office of the Chief Coroner, Ministry of Public Safety and Solicitor General	Ron Kelly, Ph. D,	Data Analyst/ Statistician	(604 660-3298).
Ministry of Education, Capital Planning Unit	John Woycheshin	Planning Officer	(250) 356-5067
Ministry of Health	Jim Cawsey	Director, Northern and Provincial Health Services	(250) 952-1599
Health Authorities Branch	Jim Cawsey, Director	Northern & Provincial Services Health Authorities	(250) 561-3101

APPENDIX B – ESKAY CREEK MINE

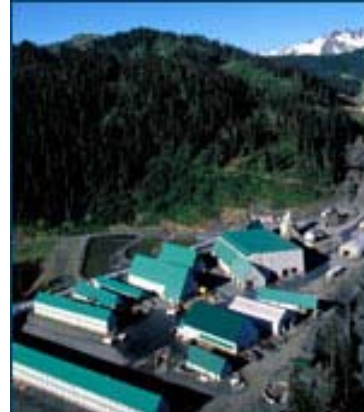
Discovered in 1988, the Eskay Creek Mine is the only operating mine along the Highway 37 corridor. The mine is located in Unuk River basin, south of the Iskut River. Headquartered in Toronto, Barrick Gold is a major global gold producer and is the owner of the Eskay Creek gold mine located 50 miles northwest of Stewart.⁸⁴ Prime Resources (Homestake) built the 30-kilometer Eskay Creek Road between 1991 and 1994 from Highway 37 along the Iskut River to Volcano Creek and up to the Eskay Creek mine. The Eskay Creek Road is a restricted private road with access authorized to others under the BC *Mining Rights of Way Act*. Barrick also owns the former Snip gold properties and mine, which is located 30 kilometers west of the Volcano Creek junction.

Operation

The Eskay Creek mine started in 1995 and is currently the fifth largest silver producer in the world and one of the richest grading gold mines in the world. Barrick presently ships 135,000 tonnes/yr. gold ore and 25,000 tonnes/yr of lead zinc concentrate from their mine at Eskay Creek. The mine is an underground operation, which is accessible through three surface portals and utilizes a drift-and-fill mining method with cemented rock backfill. Eskay Creek is one of Barrick Gold's most profitable mines.

Barrick ships 85,000 tonnes/yr of raw ore to Noranda's smelter in Rouyn, QC and 50,000 tonnes/yr of ore to Dowa Mining's smelter in Akita-ken, on the northwest coast of the island of Honshu in Japan. The ore for Noranda is loaded at the Kitwanga railhead and takes about 12 days to reach Rouyn. The ore destined for Japan is loaded at Stewart in 5,000 tonnes shipments, (single hold lots) in a 30,000 DWT handy size ship. The lead zinc concentrate is loaded at Kitwanga and shipped by rail to Cominco's Trail smelter. Concentrate shipments will decline to 12,000 tonnes/yr for 2006 then stop in 2007.

Figure B-1
Eskay Creek Gold Mine Site



Source: Barrick Gold Corp.
<http://www.barrick.com/>

Figure B-2
Underground Operations



Source:
http://www.bcminerals.ca/files/bc_mine_information

⁸⁴ Barrick Gold, 3rd Quarter Report, 2003.

Employment

Presently about 368 people are employed by the Eskay Creek mine operation including contractors. The largest underground mining contractor is Procon who have a work force of about 128 people. Another contractor is Advance Drilling that has about 4 people. Of the overall work force, 150 people are engaged in operating the processing plant, maintenance, and engineering services, while the others provide support services.

The Eskay Creek camp is a fly-in/fly-out style camp in which most employees work 2 weeks, with 2 weeks off. While in camp, they work 12 hours a day every day. Underground miners, however, work 10 hours a day for four straight weeks, then take two weeks off. Each employee has their own room with a telephone and cable TV. All meals are served in a dining hall. There is also a weight room, sauna, and games room for fitness and relaxation, and a small store.

Many employees live in the nearby communities of Dease Lake, Terrace, Stewart and Smithers. The company flies other employees to their homes elsewhere in BC, such as in the Lower Mainland, the Okanagan and Vancouver Island. A number of miners come from Newfoundland and are flown there for their 2 weeks off.

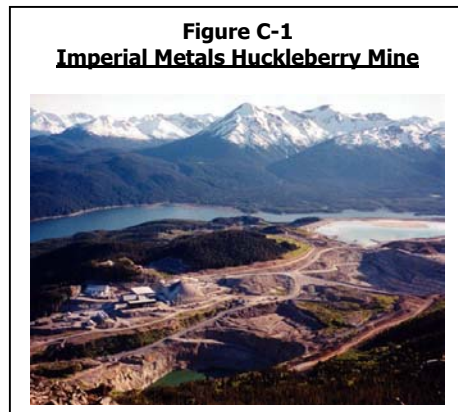
The Tahltan Nation's Tahltan Nation Development Corporation (TNDC) has a \$1.0 million annual contract to maintain the 59-kilometer private Eskay Creek road from Highway 37 to the gold mine. The TNDC contracts services to the Eskay Creek mining operation. Road construction, maintenance and snow-clearing services are provided by TNDC through a Life of Mine contract. TNDC employs 31 people for the roadwork. Another Tahltan company Sidexco Tahtan, provides the camp services (e.g. catering). They have a staff of two people and organize the Spatsizi Remote Services Corporation (SRSC), site services and catering staff of 30 people.

The Tahltan have recently set up an environmental consulting group in association with Rescan Environmental Consultants, an environmental firm based in Vancouver who specialize in the mining industry. Several Tahltan people who contract for the Eskay Creek are starting to work on the Galore Creek Project. Eskay sees this new Galore mine as the next place for local employees to work after the mine closure.

APPENDIX C – HUCKLEBERRY MINE

The Huckleberry copper deposit was discovered in 1962, but the mine did not start production until 1996. The Huckleberry Mine is owned 50 percent by private BC investors and 50 percent by Mitsubishi Materials, Marubeni, Dowa Mining, and the Furukawa Company of Japan. In January 2005 Huckleberry reported they have estimated remaining mine life, excluding the newly discovered area, at 3.5 years or until mid-2008

Whether there will be new pit that would extend the mine life is still uncertain. The January 2005 News Release summarized the results of 5 test holes in the new area, which indicated the same average grades (0.5% copper, 0.014% molybdenum) as the present pit. This discovery was over a wide area suitable for surface mining. Although one hole had a relatively high average molybdenum concentration 0.043%, the others were lower. More drilling is being undertaken during the summer of 2005 to better identify the ore body.⁸⁵ The



The copper concentrate is trucked to Stewart for storage, and then shipped to smelters and refineries in Japan. The molybdenum produced at the mine is trucked to Vancouver where it is sold to a broker and shipped to Europe through the Port of Vancouver.

Employment

Most employees live in the Bulkley Valley, in communities such as Houston, Smithers, and Telkwa. When the mine was built, the access road from Houston was upgraded and extended to allow for the increased construction and mining traffic to the area. Huckleberry operates a bus shuttle for its workers from Houston that takes workers 123 km. to the mine site. The last 70 km. of this road is only a single lane with pullouts, and is radio controlled.

The typical work cycle is an eight-day rotation (four 12 hour shifts and four days off). The other personnel work Monday to Thursday, 40 hours a week. While the workers are at camp, they are housed in the 270 room mining camp. Arrow Transport hauls concentrate to Houston and to Stewart. All operations personnel and most maintenance staff work four days on, four days off, an average of 42 hours a week. Although employee turnover has been low, there have been some losses of people to the Imperial Metals' new Mount Polley Mine and the revived Gibraltar mines near Williams Lake. Mining employees are mobile and aware of other mining projects throughout BC and will go where there is better pay and security.

⁸⁵ Imperial Metals Inc., Material Change Report, Jan. 5, 2005 <http://www.sedar.com>

APPENDIX D – KEMESS SOUTH MINE

The Kemess mineral deposits were discovered in 1983 and open pit mining operations began in 1998. Currently owned by Northgate Minerals Corporation, this mine has processed 85.6 million tonnes of ore through the mill and has produced 1.4 million ounces of gold, 339 million pounds of copper, and 1.9 million ounces of silver. Kemess South has reserves to continue operation until 2008.

Kemess has been shipping concentrate to Noranda, Rouyn, Quebec. But with the sale of Noranda to Brascan, Northgate is no longer connected to Noranda and may switch back to selling concentrate in Japan. Currently, the mine produces about 130,000 tonnes/yr of concentrate containing 26 percent copper and 2.2 ounces of gold per tonne. Exploratory drilling has identified another ore deposit located near the existing mine called Kemess North, which is undergoing an environmental assessment.

Employment

Approximately 350 people work at the Kemess mine site. There are 85 staff employees and 265 hourly employees. With contract employees the mine has a total of about 558 employees. Lomak Transportation hauls concentrate to Mackenzie using 46 tonne trucks, BC Rail takes the concentrate to Prince George and CN Rail takes it to Rouyn, Quebec.

Figure D-1
Northgate Minerals, Kemess Mine



Source: <http://mining.ubc.ca/images/>

Figure D-2
Kemess Con Truck Mine



Source http://www.bcminerals.ca/files/bc_mine_information/000129.php

APPENDIX E – LABOUR FORCE REQUIREMENTS

The likelihood of hiring unemployed area residents depends on the labour requirements of the mines, timing of demand, and the general availability of the required skills at the time they are required. The supply of labour is relatively dynamic, with persons moving to the area when the economy is expanding, and departing when the economy contracts. Since the mid-1990's the regional labour force has been losing about 600 persons per year.⁸⁶

The shut down of Skeena Cellulose operations specifically, and general lack of activity in the resource industries contributed to this out-migration. It was reported that in most communities, those that want to work can either find a job, or they move away. This dynamic tends to mask the impact of an economic slow down on the region's unemployment rate.

With respect to the three mining projects, the mobility of labour is an important consideration. For instance, if a mine is starting up at approximately the same time another is winding down, the labour force for the new mine is at hand. The winding down of Eskay Creek and the assumed start-up of Red Chris corresponds to this circumstance. However, a delay or uncertainty about the new mine start-up will at some point result in out-migration of the skilled mining labour force.

It is not possible at this time to predict that state of the region's labour market at the time the three mines commence construction and begin operations. There is optimism with a number of major projects proposed for the region (pipeline construction projects, other mines already cited) as well as provincially (e.g. 2010 Olympics). See Appendix G.

Table D-1 compares the availability of selected regional skills in 2004 to the number of positions required for mine construction and operations. The available labour is indicated by the average number of persons per month applying for Employment Insurance benefits. Persons making application have worked at least three months to qualify. This is taken as an indicator of under-utilized, or available persons in those skill categories.

Broadly, the table indicates that if the 2004 labour market conditions prevail during the period the mines are being developed, it appears there is a good supply of construction related skills available for employment. However, for operating phase, there is generally insufficient numbers of the requisite skills. This excess demand may be satisfied by a combination of training area residents, and hiring persons not presently resident (i.e. new in-migrants and fly-in/fly-out).

⁸⁶ Pers. Comm. Patrick McIntyre, Labour Market Information Analyst, Human Resources Centre of Canada, Terrace

Table D-1
Indication of the Regional Availability and Mine Requirements for Selected Occupations

Construction Phase	Regional Supply (2004)⁸⁷	Construction 2007/2010⁸⁸	Operating Phase (2010)
Truck Drivers	113	14-24	200
Construction Trades	119	24-42	-
Millwrights	6	23-40	-
Heavy Equipment Ops.	100	17-30	150
Carpenters	62	11-20	-
Other Laborers	19	11-20	-
Drillers/Blasters	8	11-20	66
Cooks	58		25
Electricians	14	6-18	33
Janitors/ Security	17	2-4	-
Welders	9	14-24	113
HD Mechanics	8	3-6	150

⁸⁷ 2004 Average Monthly Active Claim Load (as sampled on a single day of each month). Sum of Terrace, Kitimat and Smithers. HRDC

⁸⁸ From industry interviews

APPENDIX F – PUBLIC SCHOOL CAPACITY RATES

Town/School	Grade	Student Capacity (2004/05)	Capacity Utilization
Houston			
Silverthorne	K-7	232	62%
Twain Sullivan	K-7	232	68%
Houston Secondary	8-12	475	60%
Smithers			
Lake Kathlyn	K-6	161	71%
Muheim Memorial	K-6	253	98%
Walnut Park	K-6	322	102%
Smithers Secondary	8-12	750	129%
Telkwa			
Quick	K-6	69	58%
Telkwa	K-6	161	104%
Hazelton Area			
John Field Elementary	K-7	224	84%
New Hazelton Elementary	K-7	200	72%
South Hazelton Elementary	K-7	131	96%
Kitwanga J.-Sec	K-12	325	33%
Hazelton Secondary	K-12	525	90%
Terrace			
Cassie Hall	3-7	314	71%
Clarence Michiel	3-7	338	64%
E T Kenny	K-3	244	70%
Kitikshan	K-3	324	82%
Thornhill	4-7	300	109%
Thornhill	K-4	296	96%
Thornhill	8-10	350	64%
Uplands	K-7	270	130%
Caledonia	11-12	550	98%
Parkside	8-12	175	57%
Skeena	8-10	650	94%
Stewart			
Bear Valley	K-12	250	30%
Dease Lake Area			
Talhtan (Telegraph Cr.)	K-12	134	43%
Dease Lake	K-12	182	89%

Source: Ministry of Education, CP-5B Capacity Utilization Analysis

APPENDIX G - OTHER PROPOSED PROJECTS

Based on the British Columbia Major Projects Inventory, March 2005, the following is a list of projects in the area

Stewart Region

Long Lake Electricity Project

Regional Power/Summit Power: Proposed 16 MW electricity project to generate 83.2 GWh/yr using an upper elevation reservoir and pipeline. Currently in environmental reviews.

Status: Proposed Start: Summer 2005

Est. Cost (\$ million): 24 Finish: Fall 2006

First Entry: Dec 2004 Last Update: Dec 2004

Kitsault River Homestake Creek Hydro Project

Proposed 14.5 MW hydro facility on the Kitsault River and Homestake Creek. Preliminary design completed and access road construction underway.

Status: Proposed Start: Summer 2006

Est. Cost (\$21 million): Finish: Fall 2007

First Entry: Mar 2005 Last Update: Mar 2005

Telegraph Creek/Dease Lake

Schaft Creek Porphyry Copper-Gold Mine

Project covers the Schaft Creek area and is located 25 km. northeast of the Galore Creek mine proposal (see separate entry). Early feasibility assessments are underway. Property is optioned from Teck Cominco Limited. BC Environmental Assessment Act review likely to be required.

Status: Proposed Start: Late 2006

Est. Cost (\$100 million): Finish: Spring 2008

First Entry: Mar 2004 Last Update: Dec 2004

Western Keltic Mines Inc.

Western Keltic Mines Inc. (Western Keltic) is proposing to develop an open pit and underground mine located 100 kilometres east of Dease Lake and 390 km. north of Smithers. Anticipated production is 3,000 to 4,000 tonnes per day with a mine life of approximately 11 years. It is anticipated the project would be a "fly-in, fly-out" camp. Western Keltic is proposing to reactivate an 8 km. road from the mine site to the Kutcho airstrip and upgrade an existing 124-kilometre road from the airstrip to Dease Lake. Concentrate would be trucked to the Port of Stewart. Power would be supplied by diesel generation or from the BC grid if the province decides to extend the power line from Meziadin to Dease Lake. The project is situated in the asserted traditional territories of the Tahltan and Good Hope Lake First Nations.

Prince Rupert

Prince Rupert LNG Terminal:

Prince Rupert Port Authority and Westpac Terminals Inc. Westpac has agreed to build and operate a 160,000 to 180,000 dm storage facility and move 300 mcf/d of liquefied natural gas (LNG) through existing pipelines on Ridley Island near Prince Rupert.

Northwest BC Mining Impacts

Environmental and regulatory approvals process to commence in early 2005.

Status: Proposed Start: Summer 2006

Est. Cost (\$300 million): Finish: 2009

First Entry: Dec 2004 Last Update: March 2005

Prince Rupert Port Expansion

Prince Rupert Port Authority/CN Rail Ph: Proposed expansion of the existing port into a state-of-the-art terminal in two phases. The new terminal, upon full build-out, will occupy 150 acres and be able to handle 1.2 million TEUs. The first phase, which will contain three 120 m high cranes, is expected to be operational by 2006, and the second by 2009. The second phase involves converting the existing Fairview Terminal from bulk, break-bulk and general cargo to containers. It includes installation of container cranes and upgrades to CN's North Main Line to allow double-stack containers. A feasibility study is complete and a formal request for private sector proposals resulted in Maher Terminals (New Jersey) being selected as the operator in summer 2004.

Status: Proposed Start: Sept 2005

Est. Cost (\$500 million): Finish: 2009

Tsimshian Access Project

Prince Rupert City: Original proposal was to construct bridges to link Kaien Island, Digby Island and the Tsimshian Peninsula, to connect the City of Prince Rupert with the airport and several native villages. Bridge user-fees were expected to recover partial costs of the project. A Memorandum of Understanding was completed by the provincial and federal governments, the City of Prince Rupert and two native bands. A phased approach to route selection and design will occur. A feasibility study was completed in Apr 2004, and the City is received a final report.

Status: Proposed Start: Summer 2005

Est. Cost (\$72 million): Finish: Fall 2006

Kitimat

Galveston Liquid Natural Gas (LNG) Terminal

Galveston LNG Inc. A proposed liquid natural gas terminal at Emsley Cove, 18 km. south of Kitimat, to include facilities for marine offloading, LNG storage, natural gas liquids recovery, re-gasification, and send-out facilities to deliver natural gas into the Pacific Natural Gas (PNG) pipeline. A new 14 km., 30 in pipeline would connect from the facilities to the PNG line. Send out capacity is proposed at 610 MMcf/day. In the pre-application process for BC Environmental Assessment Act review. Status:

Proposed Start: Early 2006

Est. Cost (\$500 million): Finish: Nov 2008

Eurocan Power Project

Eurocan Pulp and Paper New generation of 160 GWh of electricity at the pulp and paper mill using primarily letdown steam supplemented by wood residue and natural gas. The project was selected in Apr 2003 as one of five successful bidders under the BC Hydro customer generation call for proposals, however it was withdrawn from that program and is reconfiguring the project under new BC Hydro rate structures. Currently seeking funding.

Status: Proposed Start: Early 2005

Est. Cost (\$25 million): Finish: Summer 2005

Gateway Pipeline Project

Enbridge Pipelines Inc. Proposed 76 cm diameter, 1,255 km. pipeline from Fort McMurray, Alberta oil sands to deliver crude oil to the deep-water port at either Prince Rupert or Kitimat. The pipeline would deliver 400,000 barrels/day to a tank farm for storage prior to shipping to California and the Far East. Preliminary engineering and environmental overviews are completed.

Northwest BC Mining Impacts

Currently seeking customers and is expecting to sign memorandums of understanding in early 2005 with one or two major Chinese customers.

Project cost is estimated for BC portion.

Status: Proposed Start: 2007

Est. BC Cost (\$1,900 million): Finish: Late 2009

Kispiox

Stewart - Omineca Resource Road

Tercon Construction Ltd/Consortium : A private consortium including Tercon Construction Ltd, McElhanney Consulting Services Ltd, and Allcon Consultants Ltd is proposing to build and fund the majority of costs for a 145 km. new road connecting the Kemess mine northwest of Prince George with a road north of Hazelton to allow connection to ports and highways for resource goods movement. Some government assistance being sought. Very preliminary.

Status: Proposed Start: ?

Est. Cost (\$40 million):

Smithers Area

Sustut Copper Project

Northgate Minerals Corporation : A proposed open pit copper mine with a 10 km. haul road to be located 193 km. NE of Smithers. Currently doing exploration work, and is in the pre-application stage of the Environmental Assessment process.

Status: Proposed Start: ?

Est. Cost (\$ million): 32 Finish: ?

Morrison/Hearne Hill Copper-Gold Mine

Pacific Bookers Minerals Inc. Proposed 25,000 tonnes/day open pit copper/gold mine 65 km. northeast of Smithers and 35 km. north of Granisle. Project requires 20 km. powerline, access along existing forestry roads and all-season barge across Babine Lake to Highway 16.

Status: Proposed Start: Summer 2006

Est. Cost (\$200 million): Finish: late 2007