Hope Bay Mining Limited

DORIS NORTH PROJECT
Screening of Socio-economic Effects for Proposed Doris North Infrastructure Changes

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NORTH AMERICA

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November 2011

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November 2011
Project #1009-007-02

Citation:
Rescan. 2011. *Doris North Project: Screening of Socio-economic Effects for Proposed Doris North Infrastructure Changes*. Prepared for Hope Bay Mining Limited by Rescan Environmental Services Ltd.

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1. Introduction

1. Introduction

This memo focuses on screening of the potential socio-economic effects of the proposed changes to the Doris North Project (the Project).

With respect to the socio-economic effects of the Project, the activities/infrastructure addressed in this memo include:

- Change mining rate from 720 tpd (tonnes per day) to 1,000 tpd and milling rate from 800 tpd to a yearly average of 800 tpd, with the potential to take mining rates to 2,500 tpd and milling rates to 1,600 tpd; and
- Accessing the Doris subdeposits via the Doris North Portal, resulting in a 2-4 year extension of mine life.

The memo provides: 1) information on recent socio-economic baseline conditions and description on changes that have occurred since the 2005 Doris North Final EIS submission (Miramar 2005); 2) information on the expected direct employment and expenditures by the Project; 3) review of the 2005 Doris North Final EIS mitigation and effects assessment conclusions; and 4) a screening of the effects of the proposed changes in the Project in relation to the identified mitigation and effects assessment conclusions.

2. Socio-economic Baseline

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2. Socio-economic Baseline

A description of the socio-economic setting was included in the Doris North Final EIS (Miramar 2005). The following provides information on recent socio-economic baseline conditions and description on changes that have occurred since the 2005 Doris North Final EIS submission. Predominantly, this is related to the current availability of 2006 Census data as opposed to the 2001 Census data that was then available. The information is focused on the Valued Socio-economic Components (VSECs) as presented in Miramar (2005).

2.1 EMPLOYMENT OPPORTUNITIES

According to the 2006 Census, the potential labour force in the five Kitikmeot communities (excluding Bathurst Inlet and Omingmaktok) for the population over 15 years of age, totalled approximately 3,475 people. The collective active labour force was approximately 2,185, indicating an average participation rate of 62.9%. This level of participation is lower than the Nunavut average of 65.3% and the Canadian average of 66.8% (Statistics Canada 2007).

The participation rate ranged from 71% in Cambridge Bay to a low of 58% in Toloyoak and Kugaaruk in 2006 (Table 2.1-1). The unemployment rate in all communities in 2006 was relatively high compared to the national average of 6.6% and it was also higher than the Nunavut average of 13%, except for Cambridge Bay, which reported an unemployment rate of 10%. Participation rates in Kugaaruk decreased from 2001 to 2006 by 9%, while minimal changes were observed in the other communities. Unemployment rates from 2001 to 2006 increased in Gjoa Haven, Taloyoak and Kugaaruk, while decreasing in Cambridge Bay and changing only moderately in Kugluktuk.

Table 2.1-1. Participation and Unemployment Rates for Kitikmeot Communities, 2001 and 2006

	Participation Rate[1]		Unemployment Rate[2]	
Community	2001	2006	2001	2006
Cambridge Bay	71%	71%	15%	10%
Kugluktuk	64%	60%	23%	22%
Gjoa Haven	62%	61%	27%	30%
Taloyoak	60%	58%	26%	28%
Kugaaruk	67%	58%	14%	21%

[1]Participation rate is defined as the share of the potential labour force that is active.
[2]Unemployment rate is defined as the share of the active labour force that is unemployed.
Note: numbers may not sum due to rounding error.
Source: Statistics Canada (2007).

2.2 EDUCATION AND TRAINING

In 2006, approximately 32% of the potential labour force in the Kitikmeot Region (i.e., those aged 15 years and over) had some form of post-secondary education in 2006 (Statistics Canada 2007). Amongst those aged 25 years and over, this proportion increased to 44%.

In general, high school completion rates remain low in all communities and increased from 2001 to 2006. Gjoa Haven residents exhibited the lowest level of educational attainment in the region, with over 59% of residents aged 25 to 64 lacking high school or other certificates or diplomas (Table 2.2-1; Statistics Canada 2007). In contrast, Cambridge Bay residents had the highest level of educational

attainment among the communities, with only 36% of residents aged 25 to 64 with no high school or other certificates or diplomas. However, for all Kitikmeot communities high school incompletion is well above the Canadian proportion of 15.4% (Statistics Canada 2007).

Table 2.2-1. Educational Attainment, 2001 and 2006

	Total Population Aged 25-64 Years									
	Cambridge Bay		Kugluktuk		Gjoa Haven		Taloyoak		Kugaaruk	
Level of Education	2001	2006	2001	2006	2001	2006	2001	2006	2001	2006
No certificate, diploma or degree	32%	36%	42%	48%	48%	59%	41%	54%	48%	52%
High school certificate or equivalent	24%	11%	20%	7%	19%	6%	10%	5%	19%	0%
Apprenticeship or trades certificate or diploma	8%	12%	11%	17%	19%	14%	16%	15%	19%	22%
College, CEGEP, or other non-university certificate or diploma	25%	24%	20%	18%	9%	14%	22%	14%	6%	14%

Source: Statistics Canada (2002, 2007).
Note: numbers may not sum due to rounding error at the source.

The most common reasons for not finishing school reported by young Inuit men included that they wanted to work (18%), they were bored (18%), or they had to work (14%). The most commonly cited reason by Inuit women for not finishing school was pregnancy/taking care of children (24%). Reasons were similar across Inuit regions (Statistics Canada 2008).

The low level of high school completion and pursuit of education continues to be a challenge in the region. Attendance rates of those enrolled in school can be low (e.g., 50 to 70%). In some communities there can be a number of individuals who have never gone to school (P. Cipriano, pers. comm.). Given the size of class cohorts in earlier grades (i.e., 20 to 25 students), the typical number of students graduating with a grade 12 education continues to be low – from approximately two to eight each year from each community (P. Cipriano, pers. comm.; G. Pizzo, pers. comm.). Similar challenges remain for attracting students to post-secondary education.

In the Kitikmeot Region, Cambridge Bay had a relatively high proportion of the population in 2006 with a university certificate or diploma (16%) compared with all the other communities. It also had the highest proportion of residents with a college degree or diploma (24%). However, attainment levels for apprenticeship and trade certifications were approximately equivalent across all communities. The most common field of study reported by all community residents was engineering, architecture, and related technologies. The exception is Cambridge Bay, where the major field of study reported was management and public administration (Statistics Canada 2007).

2.3 CONTRACT AND BUSINESS OPPORTUNITIES

As for the territory as a whole, the Government of Nunavut dominates the service sector and is the major economic driver of the local communities. This heavy dependency on the public sector is the result of circumstances such as a harsh climate, geographic remoteness, small population, and underdeveloped infrastructure systems that have led to constraints for private sector economic development in the territory.

Cambridge Bay is the largest and most diversified economy and is the business hub for the Kitikmeot Region, with an economy that is fairly balanced across the sectors (J. MacEachern, pers. comm.). Other communities have relatively few private sector businesses. These businesses mainly focus on

providing essential services required by the community, which are not provided by government agencies, or on providing goods and services to government programs (e.g., housing). Businesses provide a wide range of services, including those that focus on goods and services to industry and the general public.

Many communities in the Kitikmeot Region do not maintain a registry of businesses. However, a central registry of Inuit-owned businesses is maintained by NTI (NTI 2011; Table 2.3-1). This excludes businesses that do not meet the criteria for being deemed Inuit-owned (e.g., the Northern Store). Further information on community business and services was obtained from field visits and interviews, as presented below. In addition, the Municipality of Cambridge Bay has provided a listing of businesses operating within the community (J. MacEachern, pers. comm.).

Table 2.3-1. Profile of Registered Inuit Firms in the Kitikmeot Region

Community	Type of Business	Number of Firms
Cambridge Bay	• Construction, contracting, and property management	7
	• Accommodation and housing	2
	• Retail	2
	• Air transportation	3
	• Medical, safety, and paramedical	3
	• Logistical services, expediting, and remote site management	3
	• Multiple services to mining sector	1
	• Mine development and training	1
	• Trade and services	3
	• Explosives	1
	• Catering, camp management, and janitorial services	2
	• Taxi	1
	• Translation and language services	1
	• Finance and accounting	1
	• Lodge and guide outfitting	1
Kugluktuk	• Construction, contracting, and property management	2
	• Accommodation	1
	• Retail	2
	• Taxi	1
Gjoa Haven	• Construction, contracting, and property management	3
	• Accommodation	1
	• Retail	1
	• Consulting	1
	• Lodge and guide outfitting	1
Taloyoak	• Construction, contracting, and property management	2
	• Accommodation	1
	• Retail	1
	• Trade and service	1
	• Translation and language services	1
Kugaaruk	• Construction, contracting, and property management	1
	• Accommodation	1
	• Retail	1
	• Fish sales	1

Source: NTI (2011).

Because of the opportunities afforded by government spending on housing and infrastructure, each Kitikmeot community has at least one prominent firm providing construction services. These services can include housing and building construction, heavy equipment operation and excavation, road construction and maintenance, pad construction, and crushing to provide aggregate, as well as the rental of trucks, tools, and equipment (B. Schoenauer, pers. comm.). These businesses provide a relatively large number of private sector jobs, particularly during the summer construction season, and for smaller communities they typically provide the greatest number of jobs outside of government. The construction businesses include Kalvik Enterprises (Cambridge Bay), Kitnuna Projects (Cambridge Bay), Kikiak Contracting (Kugluktuk), CAP Enterprises (Gjoa Haven), Lyall's Construction (Taloyoak), and Koomiut Co-operative Association (Kugaaruk), among others. For example, in Taloyaok the largest private sector employer is Lyall's Construction, with approximately 20 local employees, followed distantly by the Co-op Store and the Northern Store (J. Oleekatalik, pers. comm.).

Co-operatives are a popular business model in Nunavut. Each Kitikmeot community has a co-operative (co-op) retail store that sells food, clothing, and a broad range of household items. With the exception of Kugaaruk, communities also have a competing Northern Store. Co-operatives operate the Inns North hotel chain and also hold a number of other contracts for providing services in the community. For example, in Kugaaruk, the Koomiut Co-op Association Ltd. operates the retail store and hotel; provides accommodation units for rent, heavy equipment services, construction services, and cable television systems; holds the POL (petroleum, oil, and lubricant) service contract for the community; and is the agent for air service (First Air and Canadian North) and ATV and snowmobile sales (Yamaha and Polaris; L. Flynn, pers. comm.).

Mining service businesses have developed in Cambridge Bay, including medical and safety services, expediting and logistical services, site management, catering, and janitorial services (Table 2.3-1 and Table 2.3-2). These companies have benefited from business opportunities associated with the current Doris North exploration and development activities, as well as other mining sector activities in the Kitikmeot Region. In total, there are approximately 100 businesses operating in Cambridge Bay (Table 2.3-2). The recent announcement of the new Canadian High Arctic Research Station (CHARS) in Cambridge Bay, which is to be operational within approximately five years and have a staff of approximately 55 or more, will bring additional business opportunities to the community (J. MacEachern, pers. comm.).

In addition to Cambridge Bay, the mining sector has also had an effect on other Kitikmeot communities, including Kugluktuk (because of the Diavik and EKATI operations in the NWT) and Kugaaruk (because of local exploration activities of companies such as Diamonds North and Indicator Minerals; L. Flynn, pers. comm.).

In smaller communities, businesses and other organizations are involved in providing a wide range of services and providing services outside of their core client group. This is necessarily as a result of servicing relatively small, isolated populations that cannot support a large number of businesses. For example, it is not uncommon for housing associations, which are primarily responsible for the management and maintenance of public housing for the Nunavut Housing Corporation, to contract out maintenance services outside of public housing on an as-required basis (i.e., accept work orders from private home owners; G. Dinney, pers. comm.; H. Tungilik, pers. comm.). Because of the on-hand inventory and ability to source building supplies, private home owners may also purchase construction materials directly from housing associations, which effectively operate as local building supply stores.

Table 2.3-2. Cambridge Bay Businesses

Type of Business	Description	Number of Firms
Consulting Services	• Engineering, environmental, business, management, human resources, language, and culture consulting services	9
Contracting and Mining Services	• Project management, property management, general contracting, construction, renovation, logistics, equipment rental, and mechanical, plumbing, heating, and electrical services	17
Expediting Services	• Expediting services focused on the mining industry	4
Financial, Legal, and Beneficiary	• Finance, banking, legal, insurance, accounting, and bookkeeping services	7
Food and Accommodations	• Hotel accommodations, rental accommodations, restaurant, and catering services	6
Janitorial Services and Supplies	• Cleaning and painting services, and janitorial supplies	4
Other Businesses and Services	• Wide variety of services, including import and export, daycare, dental, petroleum products, carpentry, and medical site services (among others).	13
Property Management	• Property management	7
Retail Sales and Rental Services	• General retail, gifts, art consulting and sales, motor vehicle sales, vehicle rental, retail sewing, meat and fish products, and pharmacy	18
Telecommunication Services	• Cable TV, internet, mobile phone, and telephone services	4
Tourism and Outfitters	• Guide services, sport hunting and fishing, sight-seeing, and other tourism services	11
Transportation Services	• Aviation, helicopter charter, shipping and barging, and taxi services	13

Note: individual businesses may appear in more than one category if providing multiple services.
Source: J. MacEachern, pers. comm.

2.4 COMMUNITY HEALTH

2.4.1 Health Status

Self-reported health status, data that are collected through the national census, provides an overall measure of health. The results for the Kitikmeot Region are shown in Table 2.4-1. Results are fairly consistent across communities, with 43 to 50% of residents reporting excellent or very good health, 33 to 39% reporting good health, and 11 to 19% reporting fair or poor health. These Kitikmeot community self-rated health status scores compare to the Canadian average of 56% excellent or very good, 27% good, and 17% fair or poor (Statistics Canada 2008).

Table 2.4-1. Self-rated Health Status, 2006

	Proportion of Population (% 15 Years and Over)		
Community	Excellent or Very Good	Good	Fair or Poor
Cambridge Bay	43%	38%	19%
Kugluktuk	45%	39%	16%
Gjoa Haven	49%	33%	16%
Taloyoak	43%	39%	16%
Kugaaruk	50%	37%	11%

Note: values for Taloyaok and Kugaaruk are estimated.
Source: Statistics Canada (2008).

Census information also asks individuals to self-report on chronic conditions (Table 2.4-2). The prevalence of chronic conditions in the Kitikmeot are indicated to be generally at the same level as in Canada overall. Cardiovascular problems tended to be higher in Taloyoak than in any other community. For the two communities for which data on chronic communicable disease were available, the rate of incidence was higher than the Canadian average, while the incidence of arthritis and rheumatism are less common in Kitikmeot communities than in Canada overall (Statistics Canada 2008). This is not unexpected given the much younger population in the Kitikmeot.

Table 2.4-2. Prevalence of Selected Chronic Conditions, 2006

Community	Proportion of Population (% 15 years and over)				
	Arthritis or Rheumatism	Digestive Problems	Respiratory Problems	Cardiovascular Problems	Communicable Disease
Cambridge Bay	20%	10%	11%	18%	8%
Kugluktuk	10%	9%	7%	15%	7%
Gjoa Haven	13%	11%	11%	21%	n/a
Taloyoak	12%	12%	n/a	27%	n/a
Kugaaruk	13%	11%	11%	21%	n/a

Notes: n/a = data not available. Communicable diseases include Hepatitis, Tuberculosis, or HIV/AIDS.
Source: Statistics Canada (2008).

In addition to the above overall indicators of health status, there are a number of individual statistics that stand out as distinct for Nunavummiut as compared to the Canadian population as a whole. This includes a lower life expectancy, a higher infant mortality rate, a higher incident of low birth weight, higher smoking rates, higher rates of infant respiratory tract infections, higher rate of tuberculosis, and high rates of sexually transmitted infections (STIs) such as chlamydia and gonorrhoea (NTI 2008).

2.4.2 Health Care Utilization

The level of health care utilization is also an indicator of overall health because it is a measure of the extent to which the population seeks health care services. Community health centre utilization statistics for the Kitikmeot Region are shown in Table 2.4-3.

Table 2.4-3. Community Health Centre Utilization, 2005/2006

Community	Visits to Sick Clinic	Visits to Prenatal Care	Chronic Disease Visits	Well Child Visits	Well Woman Visits	Well Man Visits	Total Visits
Cambridge Bay	6,789	216	1,337	349	185	18	8,911
Kugluktuk	7,051	246	831	454	135	13	8,904
Gjoa Haven	6,456	239	1,571	232	159	8	8,747
Taloyoak	5,067	183	584	330	72	8	6,246
Kugaaruk	5,218	226	541	214	59	0	6,301

Note: At the time of the writing of this report, community information was in the process of being updated by the Nunavut Department of Health and Social Services to include more recent statistics.
Source: Nunavut Department of Health and Social Services (2008).

The vast majority of visits are for primary care due to illness or injury. Other health centre utilization categories, shown in Table 2.4-3, are associated with public health programs. Of these, the most heavily utilized is the chronic disease program. It is also noteworthy that the number of visits for the Well Man

Program is extremely low compared to participation in Well Woman and Well Child. In general, men are more reluctant to access the health services that are available to them (C. Evalik, pers. comm.).

Based on census information, statistics for those who report accessing health care providers sometime over the last year are shown in Table 2.4-4. Visits to a nurse occurred for a substantial proportion of the population, being highest in the smallest communities of Taloyoak and Kugaaruk. Access to the specialized care of a doctor or dentist or orthodontist occurred much less frequently.

Table 2.4-4. Access to Health Care Providers in the Last 12 Months, 2006

Community	Proportion of Population (% 15 years and over)			
	Doctor	Nurse	Dentist / Orthodontist	Other Health Professional
Cambridge Bay	44%	67%	41%	52%
Kugluktuk	40%	72%	48%	45%
Gjoa Haven	29%	71%	49%	52%
Taloyoak	39%	80%	51%	43%
Kugaaruk	37%	84%	58%	50%

Source: Statistics Canada (2008).

2.4.1 Suicide

Suicide has been a prominent social issue in Nunavut communities. The extent to which death by suicide has occurred and the degree of suicide-related trauma is far greater than that experienced by many other jurisdictions (Government of Nunavut et al. 2010). For example, in 2009 across Nunavut the RCMP reportedly responded to a total of 983 calls where persons were threatening to or attempting suicide (Government of Nunavut et al. 2010). Nunavut-wide rates of suicide ideation (thoughts of committing suicide) and suicide attempts are shown in Table 2.4-5.

Table 2.4-5. Nunavut-wide Rates of Suicide Ideation and Attempts

Suicide Ideation (within past week)	Share of Respondents (%)	Suicide Attempt (within last six months)	Share of Respondents (%)
None	56.4%	Never	70%
Sometimes	40.0%	Once	14%
Very often	2.6%	Several	13%
All the time	0.0%	Many	3%

Source: Haggarty et al. (2008)

The recent number of suicides in Kitikmeot communities is shown in Table 2.4-6. The rate has been particularly high in Kugluktuk (average annual rate of 190) followed distantly by the other communities, with Gjoa Haven the lowest at an annual average rate of 52. Young Inuit men typically make up the largest proportion of these deaths (Government of Nunavut et al. 2010).

The high suicide rates in Nunavut have been attributed to the rapid social change that has occurred and the sense of discontinuity and loss of self-reliance that this has caused. Governments are undertaking initiatives to improve mental wellness and address some of the causes of social discontinuity at the community level. Factors that have been identified to reduce the likelihood that an individual will consider suicide include having a stable home life, being educated, being employed, and the receipt of mental health care as required (Government of Nunavut et al. 2010).

Table 2.4-6. Suicides in Kitikmeot Communities, 1999-2008

Community	Total Number of Suicides	Average Annual Rate (per 100,000 population)
Kugluktuk	22	190
Cambridge Bay	7	65
Gjoa Haven	5	52
Kugaaruk	5	80
Taloyoak	5	70

Source: Hicks (2009).

2.5 CRIME

From 2001 to 2009 across the Kitikmeot Region, violent and non-violent crime rates increased (tables 2.5-1 and 2.5-2). Notable are the 2008 and 2009 increases in violent crime and the persistence of a relatively high rate of non-violent crime in Cambridge Bay, the 2009 sharp increase in violent crime in Gjoa Haven, and the increase in the non-violent crime rate in Gjoa Haven and Taloyoak. Over time, Kugarruk stands out as persistently having the lowest rates of violent and non-violent crimes.

Table 2.5-1. Rate of Police-reported Violent Crimes, 2001 to 2009

Community	2001	2006	2009
Cambridge Bay	143	146	169
Kugluktuk	109	169	128
Gjoa Haven	56	45	162
Taloyoak	56	125	66
Kugaaruk	16	31	23
Kitikmeot Region	88	113	123
Nunavut	88	85	94

Notes: rate is the number of offences per 1,000 people, based on 2009 population estimates of police jurisdictions. Violent crime involves the use or threatened use of violence against a person, including homicide, attempted murder, assault, sexual assault, robbery, and abduction
Source: Nunavut Bureau of Statistics (2010b).

Table 2.5-2. Rate of Police-reported Non-violent Crimes, 2001 to 2009

Community	2001	2006	2009
Cambridge Bay	283	398	382
Kugluktuk	141	339	213
Gjoa Haven	101	58	191
Taloyoak	40	75	101
Kugaaruk	20	19	23
Kitikmeot Region	141	217	214
Nunavut	117	138	168

Notes: rate is the number of offences per 1,000 people, based on 2009 population estimates of police jurisdictions. Non-violent crime includes unlawful acts against property such as breaking and entering, possession of stolen property, theft, and fraud.
Source: Nunavut Bureau of Statistics (2010b).

For other violations (i.e., mischief, bail violations, disturbing the peace, arson, and offensive weapons) and federal statute violations (including drug-related offenses) Cambridge Bay again stands out as having the highest crime rates from 2001 to 2009 (tables 2.5-3 and 2.5-4). Kugluktuk, in particular, had relatively high rates of other violations from 2003 through 2006, which has since decreased substantially. In other communities, crime patterns are less evident and have, in many instances, shown substantial fluctuations.

Table 2.5-3. Rate of Police-reported Other Violations, 2001 to 2009

Community	2001	2006	2009
Cambridge Bay	59	204	177
Kugluktuk	90	142	80
Gjoa Haven	23	22	57
Taloyoak	27	72	29
Kugaaruk	2	15	6
Kitikmeot Region	47	108	85
Nunavut	272	331	399

Notes: rate is the number of offences per 1,000 people, based on 2009 population estimates of police jurisdictions. Other violations include mischief, bail violations, disturbing the peace, arson, prostitution, and offensive weapons.
Source: Nunavut Bureau of Statistics (2010b).

Table 2.5-4. Rate of Police-reported Federal Statute Violations, 2001 to 2009

Community	2001	2006	2009
Cambridge Bay	7	10	22
Kugluktuk	1	0	0
Gjoa Haven	16	3	6
Taloyoak	4	8	5
Kugaaruk	2	0	0
Kitikmeot Region	8	9	13
Nunavut	12	8	10

Notes: rate is the number of offences per 1,000 people, based on 2009 population estimates of police jurisdictions. Federal statues include drug-related offences.
Source: Nunavut Bureau of Statistics (2010b).

Crime in the Kitikmeot communities was described as primarily consisting of family violence or domestic assaults, sexual assaults, thefts (mainly of ATVs and snowmobiles), B&Es, liquor and drug violations, and mischief (i.e., disturbing the peace, property damage; J. Atkinson, pers. comm.; P. Bouchard, pers. comm.; C. Gauthier, pers. comm.; D. Malakhov, pers. comm.; L. Sharbell, pers. comm.). Bullying, as well as physical and sexual abuse, are issues faced by youth, while drug and alcohol abuse and family violence cross all age groups (L. Sharbell, pers. comm.). Women can be the target of abuse by men (C. Gauthier, pers. comm.). Abuse of the elderly was also reported as being an issue in some communities (D. Malakhov, pers. comm.).

There are a number of underlying issues that are believed to attribute to crime in the Kitikmeot communities. The overcrowding of houses places stress on individuals and families, leading to family violence and substance abuse issues (L. Sharbell, pers. comm.). Much of the crime has been related to the abuse of alcohol and drugs (J. Atkinson, pers. comm.; P. Bouchard, pers. comm.; C. Gauthier, pers. comm.; D. Malakhov, pers. comm.; L. Sharbell, pers. comm.). Marijuana is the main drug that is

available within Kitikmeot communities, but there are indications that this may be changing, particularly for the larger communities such as Cambridge Bay where cocaine and crack cocaine are appearing (C. Gauthier, pers. comm.). In terms of crimes committed by youth, boredom is believed to be the main reason there is a prevalence of ATV and snowmobile thefts, damage of property, B&Es, and mischief calls (J. Atkinson, pers. comm.; P. Bouchard, pers. comm.; L. Sharbell, pers. comm.). There is typically an increase in crime during the winter months when individuals are confined within the community and within homes, particularly during the holiday season (L. Sharbell, pers. comm.).

2.6 DEMOGRAPHIC CHANGE

2.6.1 Population

The population of the Kitikmeot Region is estimated to have grown to 5,361 persons in 2006, up 11.3% from 4,816 persons in 2001, which is much higher than the 3.7% growth rate observed between 1996 and 2001 (Statistics Canada 2002). The population has continued to increase in recent years, but it remains as the region with the lowest population in Nunavut. With a recently-estimated total population of 5,974, it represents approximately 18% of the Nunavut Territory's population (Nunavut Bureau of Statistics 2011a).

The 2006 Census of Canada reported the population of Cambridge Bay to be 1,477, an increase of 13% from 1,309 in 2001 (Statistics Canada 2007). Cambridge Bay is the largest community in the Kitikmeot Region, followed by Kugluktuk and Gjoa Haven, with estimated populations of 1,302 and 1,064, respectively. Kugaaruk is the smallest community, with only 688 inhabitants, followed by Taloyoak, which has a reported population of 809.

In 2010, the population was estimated to have grown in all the communities, although at a different pace. The largest communities, Cambridge Bay and Kugluktuk, had the highest population growth from 2006 to 2010 (9% and 8%, respectively), while the lowest population growth was estimated for the small community of Kugaaruk (3%; Nunavut Bureau of Statistics 2011a). As for the whole of Nunavut, strong natural increases (birth rate minus death rate) and a net in-migration from other areas of Canada are the main factors that contributed to the population growth in the communities (Statistics Canada 2010).

For all communities a high proportion of the population is Aboriginal, primarily Inuit. For the Kitikmeot Region as a whole, in 2006, the population was estimated to be 89.7% Aboriginal, totalling approximately 4,800 individuals, of who 4,725 were Inuit (Statistics Canada 2007). For Cambridge Bay, 83% of residents self-identified as Aboriginal. This proportion was higher in all the other Kitikmeot communities, with more than 92% of residents identifying as Aboriginal. This rate is higher than the Nunavut average of 85%, and much higher than the national average of 4% (Statistics Canada 2007). The breakdown of each community's 2006 Census population and estimates for 2010 are shown in Table 2.6-1.

Population projections over the next 25 years predict that the population of the Kitikmeot Region will experience a net increase of approximately 19%, reaching a total of 6,913 residents by 2036.The fastest growing communities are expected to be Kugaaruk, Kugluktuk, and Taloyoak, with accumulated growths of 29%, 25%, and 20%, respectively (reaching 946, 1,694, and 1,102 inhabitants by 2036). Cambridge Bay and Gjoa Haven are expected to have populations of 1,845 and 1,302, respectively, by 2036 (with 14% and 15% of accumulated growth; (Nunavut Bureau of Statistics 2010c).

2.6.2 Age Distribution

All communities have a young population, with a median age ranging from 26.3 years in Cambridge Bay to only 18 years in Kugaaruk (Table 2.6-1). The entire Kitikmeot Region was reported to have a median age of 22.1 years, making it slightly younger than Nunavut's median of 23.1 years and much younger than the Canadian median of 39.5 years (Statistics Canada 2007).

Table 2.6-1. Kitikmeot Community Populations

Community[1]	2006 Population			Population Estimates 2010[2]	Estimated Growth 2006-2010[3] (%)
	Total Population 2006	Aboriginal Population (%)	Median Age (years)		
Cambridge Bay	1,477	83%	26.3	1,676	9%
Kugluktuk	1,302	92%	23.8	1,458	8%
Gjoa Haven	1,064	93%	19.9	1,184	7%
Taloyoak	809	92%	19.6	895	6%
Kugaaruk	688	92%	18.0	736	3%

[1]Because of the seasonal and/or low number of permanent residents in the communities of Omingmaktok and Bathurst Inlet, reliable statistics for these communities are not available and thus omitted from the table.
[2]Estimates as of July 1, 2010. Estimates are based on the 2006 Census counts adjusted for net census under-coverage and for the estimated population growth that occurred since the census. Population estimates are not official and should be used with caution.
[3]To get a better comparator, the growth rate was calculated using the July 1, 2006 post-census population estimate adjusted for net census under-coverage provided for the same source.
Source: Statistics Canada (2007), Nunavut Bureau of Statistics (2011a).

In 2006, about 30% of the population in Cambridge Bay and Kugluktuk were under the age of 15. Similarly, Gjoa Haven and Taloyoak each had approximately 38% of their population under the age of 15. In Kugaaruk, 43% of the population was under the age of 15, compared to the Nunavut average of 34%. These proportions were substantially higher than the 18% for Canada overall. Kugaaruk had the youngest population among the Kitikmeot communities (Statistics Canada 2007).

Estimates from 2010 show a similar age distribution among hamlets, although it reveals a larger concentration of people in the 15 to 64 age group for all communities (Nunavut Bureau of Statistics 2011b). While no detailed information was available to calculate the median age by community in 2010, it was estimated to have increased in all communities since 2006. Overall, in July 2010, an estimated total of 1,917 people in the Kitikmeot Region were under the age of 15, representing 32% of the region's population (Table 2.6-2). Government projections predict that the population will age slightly by 2036, although it is still expected to remain substantially younger than the Canadian average (Nunavut Bureau of Statistics 2010a).

Table 2.6-2. Age Distribution by Community

Community or Region	2006 Population			2010 Population Estimates		
	Under 15	15-64	65+	Under 15	15-64	65+
Cambridge Bay	450	955	55	485	1,126	65
Kugluktuk	395	850	55	407	982	69
Gjoa Haven	410	625	30	420	733	31
Taloyoak	310	460	20	319	540	36
Kugaaruk	295	390	10	282	446	8
Kitikmeot Region	1,860	3,320	185	1,917	3,848	209
Nunavut Territory	9,995	18,660	815	10,470	21,738	1,012

Notes: 2010 estimates are as of July 1, 2010. Community population estimates are not official and should be used with caution.
Source: Statistics Canada (2007); Nunavut Bureau of Statistics (2011b).

2.7 OTHER MAJOR RESOURCE PROJECTS

2.7.1 Mine Development and Mineral Exploration

The potential for mine development in the West Kitikmeot region is recognized to be high, and current mining and mineral exploration activities contribute substantially to local and regional economies and employment (NPC 2004).

In 2010, there were 35 active mineral explorations in the Kitikmeot Region for base metals (10), gold (18), diamonds (4), platinum group metals (2), and uranium (1) (Table 2.7-1; Nunavut Geoscience 2011). In addition, there were approximately 30 exploration projects that were inactive (INAC 2010). The main mineral resources that are the focus of exploration activities are base metals, gold, diamonds, nickel-copper-platinum group metals, lithium, and uranium (INAC 2010).

Table 2.7-1. Active Exploration Projects in the Kitikmeot Region, 2010

Closest Community	Project Name	Commodity	Operator
Bathurst Inlet	Blue Caribou	Base Metals	Skybridge Development Corp.
	Contwoyto IOL Concession	Gold	Golden River Resources Corporation
	Gondor	Base Metals	MMG Resources Inc. (Minmetals)
	Hackett River	Base Metals	Sabina Gold & Silver Corp.
	Hood River IOL Concession	Gold	Golden River Resources Corporation
Cambridge Bay	Boston (Hope Bay Belt Project)	Gold	Hope Bay Mining Ltd.
	Doris (Hope Bay Belt Project)	Gold	Hope Bay Mining Ltd.
	George Lake (Back River Project)	Gold	Sabina Gold & Silver Corp.
	Goose Lake (Back River Project)	Gold	Sabina Gold & Silver Corp.
	Madrid (Hope Bay Belt Project)	Gold	Hope Bay Mining Ltd.
Kugaaruk	Amaruk Diamonds	Diamonds	Diamonds North Resources Ltd.
	Amaruk Gold	Gold	Diamonds North Resources Ltd.
	Amaruk Nickel	Nickel-copper PGEs	Diamonds North Resources Ltd.
	Anuri	Gold	North Country Gold Corp.
	Arcadia Bay	Gold	Alix Resources Corp.
	Halkett Inlet	Gold	Diamonds North Resources Ltd.
	Inuk (Committee Bay Gold Project)	Gold	North Country Gold Corp.
	Raven (Committee Bay Gold Project)	Gold	North Country Gold Corp.
	Three Bluffs (Committee Bay Gold Project)	Gold	North Country Gold Corp.
Baker Lake	West Plains (Committee Bay Gold Project)	Gold	North Country Gold Corp.
Kugluktuk	Coppermine Project	Uranium	Hornby Bay Mineral Exploration Ltd.
	Hammer	Diamonds	Stornoway Diamond Corporation
	Hepburn Base Metals	Base Metals	Diamonds North Resources Ltd.
	Hepburn Diamonds	Diamonds	Diamonds North Resources Ltd.
	High Lake	Base Metals	MMG Resources Inc. (Minmetals)
	High Lake East	Base Metals	MMG Resources Inc. (Minmetals)
	Hood	Base Metals	MMG Resources Inc. (Minmetals)

(continued)

Table 2.7-1. Active Exploration Projects in the Kitikmeot Region, 2010 (completed)

Closest Community	Project Name	Commodity	Operator
Kugluktuk	Izok Lake	Base Metals	MMG Resources Inc. (Minmetals)
	Jericho Mine	Diamonds	Shear Diamonds Ltd.
	Lupin Mine	Gold	MMG Resources Inc. (Minmetals)
	MIE	Nickel-copper PGEs	MIE Metals Corp.
	Rockinghorse IOL Concession	Gold	Golden River Resources Corporation
	Ulu	Gold	MMG Resources Inc. (Minmetals)
	Wishbone	Base Metals	Sabina Gold & Silver Corp.
	Yava	Base Metals	Savant Explorations Ltd.

Source: Nunavut Geoscience (2011).

Advanced explorations in the region include Gondor, High Lake, Hood, and Izok Lake deposits and the Ulu gold deposit, all of which are held by MMG Resources, Inc. (INAC 2009b). In 2010, Sabina Gold and Silver Corporation made significant advancement at its Back River Gold Project and the Hackett River base metals property (INAC 2010).

As of early 2011, one mine was operating in Nunavut (Meadowbank Gold). Other projects advanced in the environmental review process include Areva Resources Canada's Kiggavik Uranium Project and Baffinland Iron Mines Corporation's Mary River Iron Project (INAC 2010). Of operating mines or those advanced in development, only the Doris North Project is located in the Kitikmeot Region. The Jericho Diamond Mine property, in the southwest Kitikmeot Region, was under production from 2006 to 2008, and the owner is currently working on plans to re-open the mine (Shear Diamonds 2011).

Also in the Kitikmeot, the Lupin gold deposit was in production from 1982 to 1998 and again from 2000 to 2005. At the time of closure, 400,000 ounces of gold were estimated to remain. As of 2009, Lupin was owned by MMG Resources Inc. The Lupin property remained in its care and maintenance in 2010. Nearby deposits such as Ulu, Izok, High Lake, and Gondor are viewed as possible sources of additional mill-feed for potential use at the existing Lupin mill (INAC 2010).

2.7.2 Oil and Gas Exploration and Development

Oil and gas related exploration and licenses in Nunavut are concentrated in the Eastern Arctic (northern Hudson Bay and around Baffin Island), the Arctic Islands, and Sverdrup Basin (INAC 2011a, 2011b). A number of exploratory and delineation wells are concentrated in the northwest of Qikiqtani Region (NPC 2008). Two of the largest undeveloped gas fields in Canada are in the Arctic Islands (INAC 2000).

As of 2008, the only oil and gas infrastructure in the Kitikmeot region was an exploratory well in northern Kitikmeot, on Prince of Wales Island. The majority of the southern Kitikmeot region is not recognized as having oil and gas potential (NPC 2008). Discovered oil and gas supplies in Nunavut and offshore in the Arctic are described in Table 2.7-2. The discovered gas supplies in the Arctic Islands are comparable to those in the Beaufort Sea-Mackenzie Delta Region; however, industry has not shown a strong interest in the exploration and development of reserves in the Arctic Islands (INAC 2009a).

Table 2.7-2. Oil and Gas Resources in Nunavut and Arctic Offshore

	Discovered Resources		Undiscovered Resources		Ultimate Potential	
Resources	10^6m^3	MMbbls	10^6m^3	MMbbls	10^6m^3	MMbbls
Oil Resources	51.3	322.9	371.8	2339.4	423.1	2662.3
Gas Resources	449.7	16.0	1191.9	42.3	1641.6	58.3

Source: INAC (2009a).

3. Employment and Expenditures by the Project

3. Employment and Expenditures by the Project

As part of the proposed Doris North Project (the Project) changes, HBML would like to access the Doris subdeposits via the Doris North Portal. This would result in a 2 to 4 year extension of the Doris North Project mine life. Associated with this is an increase in the mining rate from 720 tons/day to 1,000 tons/day and change in the milling rate from 800 tons/day to a yearly average of 800 tons/day. This will result in a change in the direct employment and expenditures by the Doris North Project (the Project) compared to the information presented in the 2005 Doris North Final EIS submission (Miramar 2005). An examination of how employment and expenditures are predicted to change with the proposed Project amendment serves as a basis from which to screen potential changes in the predicted socio-economic effects.

3.1 PROJECT EMPLOYMENT

Employment attributed directly to the Project has two main components – HBML employees and contractors. Recent information is available on the levels of employment realized during the preparation and construction of the Project (tables 3.1-1 and 3.1-2).

Table 3.1-1. Doris North HBML Employment, 2010

	Jan	Feb	Mar	Apr	May	Jun
Non-Inuit Employees	58	66	65	64	65	67
Inuit Employees	10	14	13	15	16	26
Total	***68***	***80***	***78***	***79***	***81***	***93***
Inuit Share (%)	14.7%	17.5%	16.7%	19.0%	19.8%	28.0%
	Jul	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Non-Inuit Employees	67	66	64	64	57	56
Inuit Employees	31	29	25	23	14	14
Total	***98***	***95***	***89***	***87***	***71***	***70***
Inuit Share (%)	31.6%	30.5%	28.1%	26.4%	19.7%	20.0%

Table 3.1-2. Doris North Contractor Employment, 2010

	Jan	Feb	Mar	Apr	May	Jun
Non-Inuit Employees						
Inuit Employees	12	14	33	56	43	52
Total	***127***	***156***	***220***	***309***	***338***	***383***
Inuit Share (%)	9.5%	9.0%	15.0%	18.1%	12.7%	13.6%
	Jul	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Non-Inuit Employees						
Inuit Employees	60	70	62	51	26	27
Total	***453***	***489***	***492***	***435***	***300***	***278***
Inuit Share (%)	13.3%	14.3%	12.6%	11.7%	8.7%	9.7%

For 2010, total direct HBML employment averaged approximately 82 persons, of which approximately 23% were Inuit; the number of Inuit employees in 2010 increased during the summer months to a high

of approximately 32% in July (Table 3.1-1). In 2010, Inuit employees of HBML came predominantly from the communities of Cambridge Bay, Gjoa Haven, and Kugluktuk.

With respect to contractors in 2010, an average of approximately 330 workers spent at least one day on-site in any given month, with an estimated 13% of contractor workers being Inuit (Table 3.1-2). Total contractor employment on-site peaked at approximately 490 for the months of August and September; during this time, Inuit employment reached a high of 70 individuals, or approximately 14% of the contractor total. As a share of total contractor employment, Inuit employment actually peaked in the month of April with 56 individuals or approximately 18% of the total (Table 3.1-2).

Including both HBML and on-site contractor employees, total Project employment reached a monthly peak of approximately 584 in 2010 of which 99 individuals or 17% were Inuit.

During operation, Doris North employment opportunities are predicted to be longer-term, with an increasing Inuit share. Based on the previous mine design (Miramar 2005), employment was estimated to average approximately 165 persons and total about 370 person-years during the 27 months of operation. It was also estimated approximately 155 person-years of this would consist of Nunavummiut, representing about 42% of the total mine workforce.

With accessing the Doris subdeposits via the Doris North Portal, total employment during operation is predicted to increase to an average of approximately 230 persons over seven years, or approximately 1,610 person-years.

3.2 PROJECT EXPENDITURES

A summary of Project expenditures for 2008, 2009 and 2010 is shown in Table 3.2-1. The share of contracts to the Kitikmeot Corporation and affiliated businesses has increased from approximately 27% of annual Canadian spending on Doris North in 2008 to approximately 51% in 2010; from 2008 to 2010, this spending totaled approximately $150 million. The project's use of Kitikmeot Corporation and affiliated businesses, as well as other Kitikmeot-based businesses, will continue. This includes business opportunities for the provision of air transportation, logistical services, camp supplies, medical and safety supplies, and catering, as well as other goods and services.

Table 3.2-1. Doris North Direct Expenditures, 2008 to 2010

	2008		2009		2010	
Contractor	Value (million $)	Share of Total (%)	Value (million $)	Share of Total (%)	Value (million $)	Share of Total (%)
Kitikmeot Corporation and Affiliated	$14.2	26.7%	$31.0	39.3%	$104.6	50.6%
Other Kitikmeot-based Businesses	$0.2	0.3%	$6.8	8.6%	$10.6	5.1%
Non-Inuit Businesses	$38.8	73.0%	$41.2	52.1%	$91.6	44.3%
Total	***$53.2***	***100.0%***	***$79.0***	***100.0%***	***$206.8***	***100.0%***

As with employment, the proposed amendment to the Project will result in the prolonging of contract and business opportunities. This will be directly associated with extension of mine life. The total annual value of contracts is also expected to increase in magnitude with an increase in the mining rate.

4. Mitigation and Screening of Socio-economic Effects

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4. Mitigation and Screening of Socio-economic Effects

This section provides a review of the 2005 Doris North Final EIS mitigation and effects assessment conclusions, and a screening of the effects of the proposed changes in the Project in relation to the identified mitigation and effects assessment conclusions.

4.1 2005 SOCIO-ECONOMIC MITIGATION AND EFFECTS ASSESSMENT CONCLUSIONS

A summary of the identified potential socio-economic effects of the Doris North Project (the Project), as well as described mitigation, as specified in Miramar (2005) is provided in Table 4.1-1.

Table 4.1-1. 2005 Socio-economic Effects and Mitigation Summary

Valued Socio-economic Component (VSEC)	Potential Effects	Mitigation
Employment and Economy		
Employment Opportunities and the Economy	• Increased employment opportunities and income • Loss of employees from other industries to the Project • Increased demands on community services • Cost of living increases • Amplified social problems related to increased income • Unemployment following mine closure	• Adhering to the principles of IQ as much as possible • Hire Inuit to facilitate work force transition • Build cultural awareness and enforce harassment policies • Inuit will be given preferential treatment for employment • Promote awareness of employment and service procurement opportunities within Kitikmeot communities • Collaborate with training institutions • Develop and implement a Recruitment Strategy • Provide annual business opportunities forecasts • Host annual Summer Camp for students to get exposure to trades and technology options • Facilitate workshops for family financial management
Education and Training	• Increased training opportunities • Increased educational attainment within the region • Increased skill-base within the region	• Collaborate and partner with relevant agencies and contractors to ensure skill requirements are being met • Education and training providers develop training programs geared toward the long-term employment of women in non-traditional occupations
Contracting and Business Opportunities	• Increased contract and business opportunities • Increased capacity for business within the region	• Provide assistance, feedback, information and lead time to contractors from the Kitikmeot communities on bids and bidding policies • Require and monitor local content plans on major bids • Waive bond provisions at tender for Inuit-owned businesses

(continued)

Table 4.1-1. 2005 Socio-economic Effects and Mitigation Summary (completed)

Valued Socio-economic Component (VSEC)	Potential Effects	Mitigation
Community Services and Infrastructure		
Health Services	• Project-induced/related exposures to disease causing contagion conditions • Project-related unsafe working practices causing injury • Project-induced or related changes in income levels and associated spending patterns, causing stress or substance and/or family abuse • Physical risk levels • Job-related stress levels, which might increase emotional or mental health disorders	• Provision of qualified medical personnel and pre-employment medicals • Develop emergency response and contingency plans • Provision of alcohol and drug education and enforcement of alcohol and drug free site policies • Collaboration with regional health services • Enforcement of safety policies
Social Services	• Job-related issues, such as worksite harassment, safety, undervalued work • Mental or emotional disorders induced by various conditions, including family separation, costs and inaccessibility of child care, substance abuse, stress associated with work, and spousal stress associated with lone household management	• Orientation programs • Facilitating and promoting fairness in the workplace • Provide formal processes for issue resolution • Keeping family groups or community groups of workers together for support while away from home • Provision of free and confidential Employee and Family Assistance Program (EFAP) for support on a wide range of issues
Safety and Protection Services	• Increased alcohol abuse, or deliberate acts or incidents might increase the number of occasions requiring response from the RCMP • Reduced level of service due to increased turnover of RCMP officers in response to elevated on-the-job demands	• Enforcement of alcohol and drug free site • Liaise and collaboration with local protective services • Conduct pre-employment criminal record checks

After mitigation, the residual socio-economic effects identified in the Doris North Final EIS (Miramar 2005) can be summarized as follows:

- Increased expense to the hamlets for recruitment and retraining of workers providing services in the community because workers decide to work at the mine site;
- Increased personal income with the increase in employment and business opportunities;
- Increased cost of living in the communities;
- Increased demands on community services by the individual or family members due to time away from the community and increased personal income;
- Increased demands on housing and other community infrastructure due to immigration of workers; and
- Benefits to quality of life due to increased individual and family income.

The Doris North Final EIS (Miramar 2005) concluded that all residual adverse environmental effects on community services and infrastructure were negligible to minor, and not significant. The Project was predicted to result in benefits in terms of employment, skills development, and the economy.

4.2 SCREENING OF CHANGES TO SOCIO-ECONOMIC EFFECTS

The proposed amendments to the Project as they potentially affect Valued Socio-economic Components (VSECs) are not anticipated to result in any new effects. Thus, the potential effects as identified in Miramar (2005) remain valid. The VSECs were selected based on both western scientific data and *Inuit Qaujimajatuqangit*.

The following sections revisit the potential socio-economic effects in light of the proposed amendments, including an evaluation of the identified mitigation, monitoring, and management procedures.

4.2.1 Mitigation

With respect to employment and business opportunities, HBML will continue with mitigation initiatives as outlined in Table 4.1-1. This includes continuing to work with stakeholders and suppliers from the communities to facilitate the direct and indirect hiring of Nunavummiut throughout operation. The HBML employment strategy includes entry-level employment skills training, employee development, and an employee retention strategy, among others.

Education and training initiatives in the Kitikmeot Region will be continued so that a greater proportion of Nunavummiut meet the requirements for employment with the Project. Current initiatives around the partnerships for training, such as with the Arctic College and the Kitikmeot Economic Development Commission, will continue to be pursued and developed. It is predicted that with the longer duration of mine operation a greater number of Inuit will be able to take advantage of education and training opportunities. This will result in an increase in the human capital available within Kitikmeot communities, thus supporting continued economic development across the region.

With respect to health services, social services, and safety and protection services, current and planned mitigation will be developed to accommodate the Project changes associated with the proposed amendment. Key mitigation will be as described in Table 4.1-1 (Miramar 2005).

4.2.2 Residual Socio-economic Effects

Extension of the mine life and increase in the mining rate will result in a change on employment and the economy due to additional economic production, value-added (Gross Domestic Product, or GDP) employment, personal income, and government revenue. The economic benefits of a mine life extension are predicted to occur across Canada, Nunavut and, more specifically, within the Kitikmeot Region. The effects of the additional business activity, employment, and income on communities are expected to change from that assessed in the 2005 EIS. Specifically, there is expected to be an increase in the total economic benefits of the Project to Nunavut with the increase in the mining rate and mine life, and the increase in the number of workers on-site.

The increase in the size of the workforce and the extension of the mine life will increase the employment benefits to Kitikmeot residents. With achievement of existing objectives, Inuit employment is expected to increase to an average of approximately 95 persons or 675 person-years.

With respect to community services and infrastructure, minimal adverse effects are predicted on health care services, community well-being and delivery of social services, and public safety and protection services. As reported in the Doris North Final EIS (Miramar 2005), the Project is predicted to have a negligible effect on in-migration. This is primarily because of the adoption of a fly-in/fly-out arrangement with well-equipped camp facilities, as well as the high unemployment rates within Kitikmeot communities, that will discourage people from moving to the Kitikmeot Region for mine-related employment. In-migration that does occur will be primarily associated with indirect and induced business growth, mainly in Cambridge Bay, when qualified local workers are not available. This will minimize any additional demand on community services and infrastructure because of an increase in the local population due to the Project.

The expected increase in personal incomes, business incomes, and government revenues that are realized over the extended life of the mine is predicted to result in an increase in the benefits to community services and infrastructure. This is because of the overall positive effects of increases in employment and income on human health and well-being. There may be some increases in socially-damaging behaviour (e.g., gambling, substance abuse), as well as family stress and dysfunction, associated with increases in disposable incomes within communities. Levels of participation in traditional land-based activities may also decline with mine-related employment. However, positive effects on personal financial resources will increase the options available for individuals and increase government revenues to allow for an enhancement of supporting public infrastructure and services.

4.2.3 Cumulative Effects

The likely development of other mine projects in the Kitikmeot region and elsewhere in Nunavut was anticipated and included as part of the cumulative effects assessment presented in the Doris North Final EIS. The updated list of likely projects as described in Section 2.7 of this memo is consistent with the project list that served as the basis for the earlier cumulative effects assessment (Miramar 2005). It is predicted that the proposed amendments to the Project will not substantially change the characteristics of the potential interactions with other projects that may act cumulatively on either employment and economy or community services and infrastructure. Thus, the cumulative effects assessment conclusions as described in Miramar (2005) are predicted to remain valid.

4.2.4 Monitoring and Management

The Project has an existing Socio-economic Monitoring Program that will accommodate the proposed amendment activities.

The Socio-economic Monitoring Program for Doris North defines a number of indicators that have been selected based on the impact predictions and mitigation measures in the FEIS. For each social and economic indicator, specific measures, data requirements, and data sources have been identified, and data collection and reporting is on-going. The Socio-economic Monitoring Program allows for both early detection of adverse effects on valued socio-economic components (VSECs) and reporting of impact and benefit objectives for the Project. Extension of the Doris North mine life is not expected to result in the need to change the monitoring program given that there are no material differences in the nature of the predicted residual effects. The Socio-economic Monitoring Committee (SEMC), which includes members from key government and stakeholder agencies, provides additional oversight to help ensure that on an on-going basis the monitoring program meets its objectives.

5. Conclusions

5. Conclusions

For employment and economy, the proposed amendment to extend the mine life does change the predicted environmental impacts of the undertaking in that the total benefits are predicted to increase. There does remain the potential for there to be an adverse effect on other community employers, such as local government, if the labour demands of the Project result in a shortage of skilled workers resulting in an inability to fill certain positions; however, the effect is predicted to remain minor and be increasingly alleviated over the longer term. The mitigation measures in place for the Doris North Project remain appropriate to address adverse effects and enhance the positive effects on employment and income, education and training, and business opportunities. The residual effects assessment conclusions remain valid.

With respect to community services and infrastructure, minimal adverse effects are predicted on health care services, community well-being and delivery of social services, and public safety and protection services. The mitigation measures in place for the Doris North Project are appropriate to address the predicted adverse effects on health services, social services, and safety and protection services. The residual effects assessment conclusions remain valid.

In sum, it is predicted that the adverse socio-economic effects based on the revised Project plan, as addressed in the amendment package, will be able to be managed with the mitigation and monitoring as previously identified (Miramar 2005). The extension of the mine life and mining rate are predicted to increase the socio-economic benefits of the project because of the increase in employment, income, and business activity.

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