CUMBERLAND
RESOURCES LTD.

MEADOWBANK GOLD PROJECT

SOCIOECONOMIC & ARCHAEOLOGY IMPACT ASSESSMENT

JANUARY 2005

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DESCRIPTION OF SUPPORTING DOCUMENTATION

Cumberland Resources Ltd. (Cumberland) is proposing to develop a mine on the Meadowbank property. The property is located in the Kivalliq region approximately 70 km north of the Hamlet of Baker Lake on Inuit-owned surface lands. Cumberland has been actively exploring the Meadowbank area since 1995. Engineering, environmental baseline studies, and community consultations have paralleled these exploration programs and have been integrated to form the basis of current project design.

1. The Meadowbank project is subject to the environmental review and related licensing and permitting processes established by Part 5 of the Nunavut Land Claims Agreement. To complete an environmental impact assessment (EIA) for the Meadowbank Gold project, Cumberland followed the steps listed below:

2. Determined the VECs (air quality, noise, water quality, surface water quantity and distribution, permafrost, fish populations, fish habitat, ungulates, predatory mammals, small mammals, raptors, waterbirds, and other breeding birds) and VSECs (employment, training and business opportunities; traditional ways of life; individual and community wellness; infrastructure and social services; and sites of heritage significance) based on discussions with stakeholders, public meetings, traditional knowledge, and the experience of other mines in the north.

3. Conducted baseline studies for each VEC and compared / contrasted the results with the information gained through traditional knowledge studies (see Column 1 on the following page for a list of baseline reports).

4. Used the baseline and traditional knowledge studies to determine the key potential project interactions and impacts for each VEC (see Column 2 for a list of EIA reports).

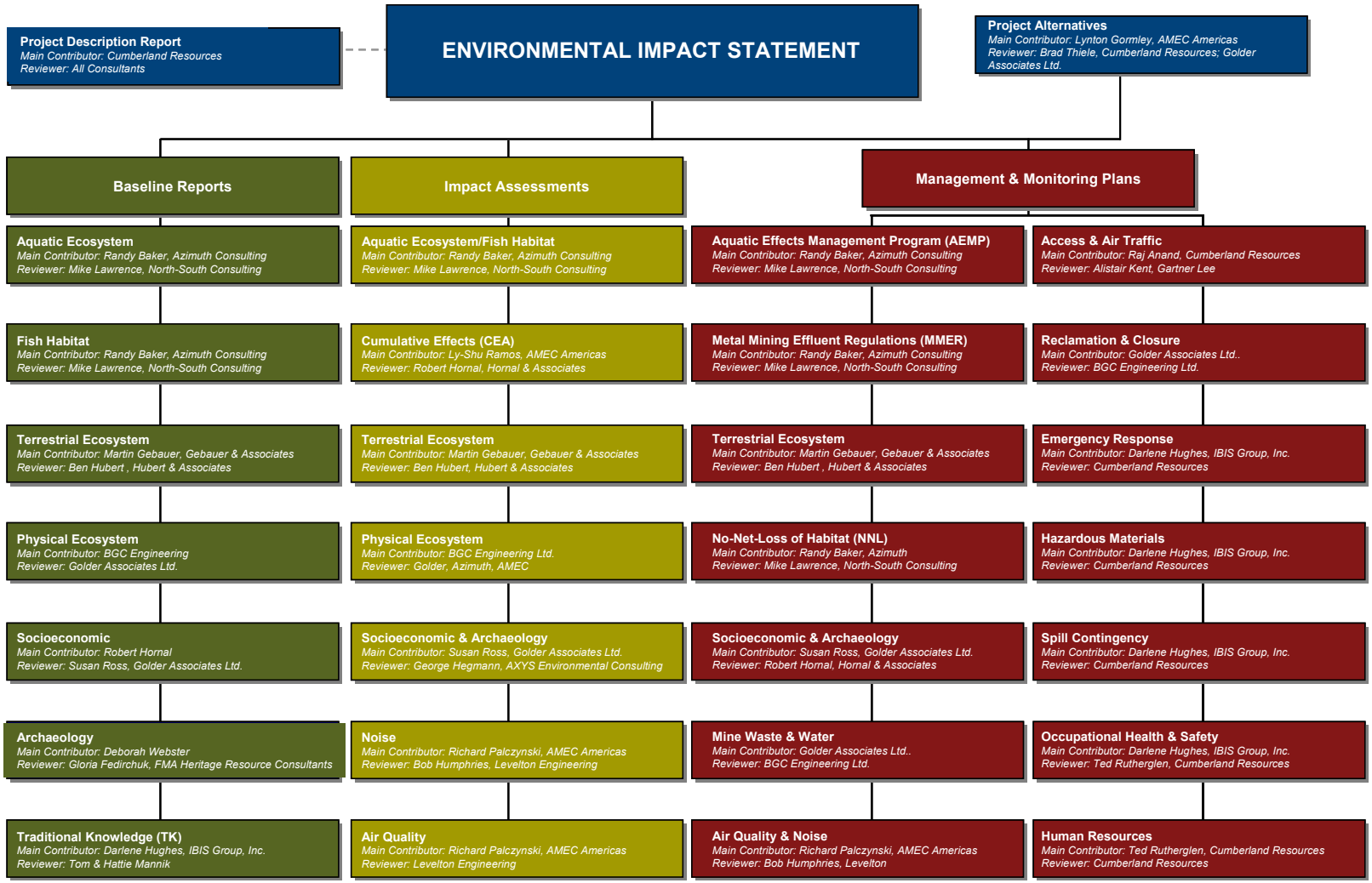
5. Developed preliminary mitigation strategies for key potential interactions and proposed contingency plans to mitigate unforeseen impacts by applying the precautionary principle (see Column 3 for a list of management plans).

6. Developed long-term monitoring programs to identify residual effects and areas in which mitigation measures are non-compliant and require further refinement. These mitigation and monitoring procedures will be integrated into all stages of project development and will assist in identifying how natural changes in the environment can be distinguished from project-related impacts (monitoring plans are also included in Column 3).

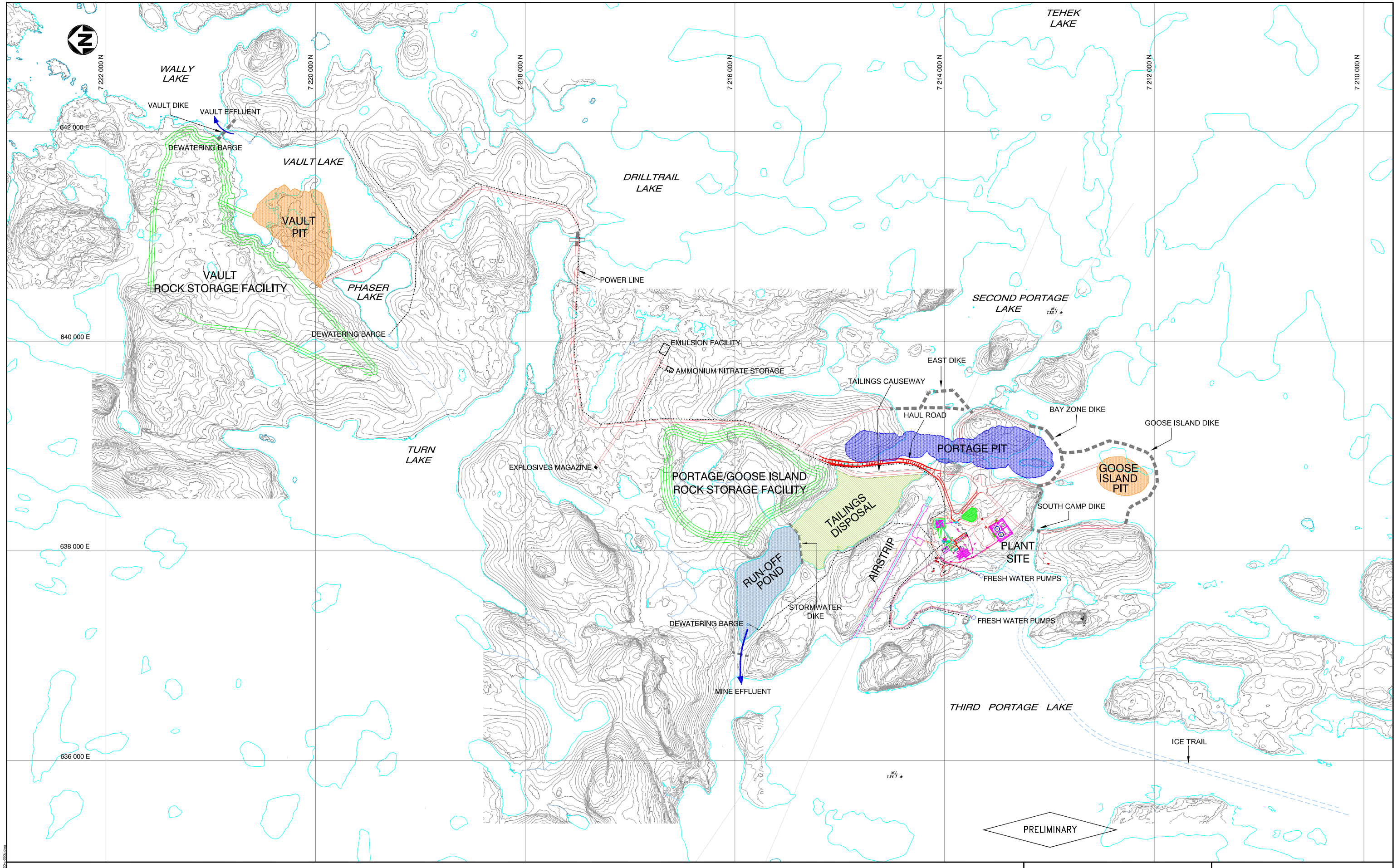
7. Produce and submit an EIS report to NIRB.

As shown on the following page, this report is part of a documentation series that has been produced during this six-stage EIA process.

EIA DOCUMENTATION ORGANIZATION CHART



PROJECT LOCATION MAP



Proposed Mine Site Layout

CUMBERLAND RESOURCES LTD.
Meadowbank Gold Project

SECTION 1 • INTRODUCTION

This report provides an assessment of the socioeconomic impact on the people of Baker Lake and the Kivalliq Region of developing the Meadowbank project. This report is included as part of the EIA documentation for the Meadowbank Gold project. Other relevant studies include:

Baseline Socioeconomic & Land Use report – This report describes the Kivalliq Region and the community of Baker Lake, Nunavut, through detailed profiles (demographic; economic; employment, education and training; community health and wellness; available services and infrastructure) and descriptions (current housing situation and government structures).

Socioeconomic Impact Mitigation & Monitoring report – This report describes the proposed measures that will be undertaken by Cumberland to mitigate and monitor the socioeconomic impacts of the Meadowbank project on the community of Baker Lake and the Kivalliq Region in general.

SECTION 2 • ASSESSMENT METHODOLOGY

2.1 DEFINITION OF KEY ISSUES

Key socioeconomic issues related to the project were determined primarily through public meetings with the residents of Baker Lake and their representatives, and interviews conducted on behalf of Cumberland for the traditional knowledge study. Listed below, these issues guide the baseline data collection programs and the assessment of potential socioeconomic impacts.

- Baker Lake is a remote community with few employment opportunities. The potential for employment with the project and the need for worker qualifications and licenses are of primary interest. There is particular concern to see that youth are employed who often must leave the community to find jobs.

- There is concern that increased income resulting from employment could lead to increased gambling and use of drugs and alcohol, with associated implications for poor parenting, domestic violence, crime, and suicide. Other concerns relate to the ability of individuals to manage their income in terms of budgeting and savings.

- It is hoped that acknowledged constraints to local hiring, such as the generally low educational level of the population, could be addressed through training targeted to skills required by the project.

- The potential for procurement of goods and services in Baker Lake could bring more services to the community at large and generate additional employment beyond that of direct hire by the project.

- The rotation of employees from Baker Lake into a workers' camp at site could be stressful to families and increase the burden on existing social services. A related issue is the potential for sexual abuse of women workers.

- Local health services are ill equipped to deal with any increased demand from out-of-area workers.

- Residents are concerned about health and safety of the workforce and emergency response planning.

- While participation in the formal wage economy is critical to the economic and social well-being of the community, this needs to be combined with the ability to continue subsistence activities. Participation in the wage economy should not be at the expense of retention, at the community level, of traditional skills, values, and language.

- Given that all sites of archaeological or cultural significance may not be identified during the impact assessment, procedures should be put in place to manage any new discoveries over the life of the project.

- Cumberland should manage any potential environmental impacts such that traditional livelihood resources—particularly caribou and fish—are not affected. Specific concerns are water quality, dust generation, fish transfer, and obstacles to the movement of caribou.

- All employment and business interventions must be planned and implemented in a way that takes account of the impacts of mine closure, including, of course, an end to jobs and contracts related to the mine.

- There is community interest in retaining and managing certain project infrastructure at the time of closure. Examples are the airstrip and buildings that could support more tourism in the region.

- There is also interest in Cumberland's plans for reclamation measures to protect the environment and its resources in the long term.

- Community members should be kept well informed about project progress, particularly about job and training opportunities. This implies regular communication through meetings and the distribution of information materials in both English and Inuktitut.

Overall, the community is in favour of the project based on an understanding that it will provide much needed employment and training, particularly for young people, and that environmental impacts will be managed to protect livelihood resources.

In addition to consultations with the people of Baker Lake, Cumberland has held discussions with the Kivalliq Inuit Association (KIA) and representatives of the territorial government, and has been issued guidelines for the preparation of the EIS for the Meadowbank project by the Nunavut Impact Review Board (NIRB). Additional key issues were raised through these mechanisms, as follows:

- the effects on commercial as well as traditional use for livelihood of environmental resources

- the potential impact of the project on the economies of not only Baker Lake and the Kivalliq Region but also of Nunavut

- the anticipated revenues that will be generated for different levels of government together the public sector costs that may be incurred as a result of project activities and impacts

- the results of direct investment in the natural and human capital of the Kivalliq Region.

2.2 VALUED SOCIOECONOMIC ECOSYSTEM COMPONENTS (VSECS)

2.2.1 Definition

VSECs are typically defined as components of the socioeconomic environment, such as economic activity, infrastructure, social service delivery, and cultural activity and resources (traditional or not), that are significant in terms of people's quality of life.

To qualify as a VSEC for a given project, the component must be known or reasonably expected to occur in the project area of influence and to have the potential to be meaningfully affected by project development or operation. Also, the VSEC should be described in sufficient detail that the potential

impact of the project upon it can be reasonably predicted in either qualitative or quantitative terms. However, it should be noted that VSEC description is generally constrained by availability of data and the complexity of interdependence involving multiple pathways of cause and effect. Finally, it is implicit that public input is required for the definition of a VSEC, since its valuation refers to the importance accorded to that VSEC by the stakeholders themselves.

2.2.2 Selected VSECs

VSECs for the Meadowbank project have been derived from the identification of key issues by the community and other project stakeholders and the understanding of socioeconomic status developed from baseline studies (Hornal, 2003). The VSECs are multi-dimensional and inter-related. Elements not selected as VSECs are not unimportant. On the contrary, all elements of economic, social and cultural life integrate and contribute to overall individual and community wellness and quality of life, and most are subsumed with the broader VSEC components listed below.

The following VSECs are related to Baker Lake:

- employment, training, and business opportunities
- traditional ways of life
- individual and community wellness
- infrastructure and social services
- sites of heritage significance.

Two additional VSECs have been identified at the regional/territorial level:

- employment, training, and business opportunities
- fiscal benefits to the territorial government.

2.3 SIGNIFICANCE DETERMINATION FOR SOCIOECONOMIC IMPACTS

The determination of socioeconomic impact significance broadly follows the methodology used for environmental impacts. Both types of assessment are based on four primary attributes. There are however differences.

- *Direction* – indicates whether an impact is considered positive (benefit) or negative.

- *Geographic extent* – for social impacts, is considered in terms of administrative units. Local impacts are experienced by people in the communities closest to the proposed project, in this case Baker Lake. Impacts are experienced to a lesser degree by people at points more distant from the project, in this case the rest of the Kivalliq Region (regional), of Nunavut (territorial), and of Canada (federal). Finally, some impacts are experienced only by specific individuals.

- *Duration* – refers to the length of time over which an impact occurs. Duration is generally a product of the project description. In this case, “short term” refers to the construction phase of the

project (18 months), "medium term" to the full period of operations and closure (9 to10 years), and "long term" to beyond the life of the project.

- *Magnitude* – refers to the degree of change in a socioeconomic parameter that an impact has the potential to produce. Magnitude may be low, medium, or high and is generally qualitatively assigned on the basis of stakeholder values and professional judgement.

There are other important differences in the assessment of environmental and socioeconomic impact significance. First, unlike environmental impacts, socioeconomic impacts are not generally considered to be reversible. Socioeconomic impacts are part of an ongoing process of interdependent social and economic change, extending into the future, and generally cannot be reversed to return to one or all of the pre-project development conditions. Further, since it is presumed that a project will only be permitted if it brings a net benefit to affected populations; a return to pre-project conditions is not in fact desirable.

In addition to the significance criteria listed above, other attributes such as frequency, timing, and probability are commonly used to assess environmental impacts. These criteria can be problematic for socioeconomic impact assessment because socioeconomic impacts are inherently unpredictable, even in their direction. For example, increased employment will certainly bring increased income, but the probability of a net positive or net negative effect on a particular individual's wellness as a result is difficult to predict with certainty.

For both environmental and socioeconomic impacts, significance can be rated as negligible, low, moderate, or high. The significance of socioeconomic impacts is generally determined more intuitively, and a four-level rating system cannot be consistently applied, for example to direction or geographic extent. Therefore, these ratings are used only for the overall context.

It is straightforward to conclude that an impact is of negligible significance if it is very small, is of short duration, and affects few people; or of high significance if it is very large, of long duration, and affects most people. Assigning significance levels in cases that are less well defined necessarily depends on the perceptions of affected people and their governments (as made evident through consultations, data collection, and literature reviews), observations of the economic and social reality of the project area, and professional judgement. The determination ultimately is relative to the implication of the impact for human wellness at all levels. That is, unlike a bio-physical assessment, where a 1% rate of death or loss of habitat may have a "low" impact on the health of a particular faunal population as a whole, socioeconomic assessments consider the significance of an impact in terms of each individual's life and wellness.

In addition, unlike environmental impacts, some socioeconomic impacts may not lend themselves to being assigned attributes or significance except in terms of potential, thus introducing another element of uncertainty in impact assessment. It is, for example, extremely difficult to predict whether social changes that may occur during the course of project development and operation will be positive or negative or both, and in what ways. Socioeconomic impacts result from the interrelationship between project activities, mitigation and/or enhancement measures by the proponent, and decisions made by individuals and communities with regard to events and situations unrelated to the project.

Regardless of any inherent uncertainty, it is incumbent on a project proponent to consider both mitigation for potential negative impacts and enhancement of potential positive benefits. Mitigation can include avoiding a potential negative impact, minimizing the potential for that impact, or compensating for an impact that is not amenable to either avoidance or minimization. With regard to benefit enhancement, a proponent may commit to undertaking measures that create the conditions and opportunities for individuals to improve their lives. A proponent cannot however ensure that people will actually take advantage of those opportunities. Individual and community freedom of choice is an important component of wellness, including participation in and response to assistance programs.

It is also possible that despite the implementation of appropriate mitigation and/or benefit enhancement measures, success can be undermined by other social or economic forces at work outside the responsibility or control of a single project. Pre-existing social trends, evolving government social and economic policy, the pattern of development of the regional, national and global economies and other larger events are examples. Therefore, socioeconomic mitigation needs to include an adaptive management approach, whereby socioeconomic impacts are monitored and regularly discussed with the affected population so that issues can be addressed as they evolve.

SECTION 3 • IMPACT ASSESSMENT

3.1 PROJECT EFFECTS ON THE SOCIOECONOMIC ENVIRONMENT

As part of its commitment to assessing, mitigating, and monitoring socioeconomic impacts, Cumberland plans to negotiate an Inuit Impact Benefits Agreement (IIBA) with the KIA. This agreement will lay down the details of impact mitigation and benefit enhancement measures as well as the means to monitor the results of these measures over the life of the project. Parameters to be monitored over time will likely include employment, goods and services contracts, educational achievement, and indicators of individual and community wellness. This section therefore discusses project effects and the potential for residual impacts in light of the possible IIBA provisions, as described in the accompanying "Socioeconomic Impact Mitigation & Monitoring" document (Cumberland, 2005).

Socioeconomic impacts are less related to specific components of a project than they are to the fact of the project itself, in its location, scale, and operational procedures. In addition, most impacts are not specific to project phase (construction, operations, closure), although there are exceptions. For example, employment impacts will be different during the construction and operations phases, but the challenges of managing new income are similar for both. As such, the following discussion addresses general project effects and differentiates according to project phase only where particularly relevant. For clarity, the socioeconomic summary matrix presented later in Appendix A lists all identified impacts in terms of construction, operations, and closure.

3.2 BAKER LAKE & KIVALLIQ REGION

Baker Lake is the primary area of positive impact. Residents of Baker Lake will be given preference for employment and business opportunities, although people from elsewhere in the Kivalliq Region, and to some degree from the rest of Nunavut, are also likely to find employment. Business opportunities will probably be more widespread than employment opportunities. In particular, Rankin Inlet has a larger, more diversified business community than many other Kivalliq Region communities, including Baker Lake, and as a result may see comparatively more business benefits at least initially.

Residents of Baker Lake will also be subject to the most potential for negative project effects, largely associated with the difficulties of transition into the formal wage economy and cross-cultural contact. To the extent that the greatest number of Northern employees participating in the project will come from Baker Lake, negative individual response to project activities—from potential effects on traditional ways of life to difficulties related to either finding or not finding employment with Cumberland—could spill over as community effects. Although such direct results from the project are unlikely to occur in other Kivalliq Region communities, the project will contribute to any cumulative impacts of this nature across the region.

3.2.1 Employment, Training & Business Opportunities

Consistent with the principles of cost-effective, efficient, and safe operations, Cumberland intends to extend on a priority basis employment and business opportunities to Baker Lake and secondarily to

other communities in the Kivalliq Region. Cumberland will also provide assistance to Baker Lake and the Kivalliq Region to help their residents take advantage of these opportunities. Finally, Cumberland, when evaluating proposals for work on the project, will consider the extent to which its suppliers and subcontractors employ and contract Kivalliq Region labour and businesses. These measures are described more fully in the accompanying "Socioeconomic Impact Mitigation & Monitoring" document.

The eventual impacts of employment and business will depend on the success of these measures. Previous expenditures in the Kivalliq Region through the exploration and feasibility phases of the project, from 1995 to 2003, are summarized in Table 3.1.

Table 3.1: Meadowbank Project Expenditures, 1005-2003

Year	Wages ($)	Goods & Services ($)	Total Kivalliq Region ($)	Total Program ($)	Kivalliq Region as % of Total
2003	262,000	1,786,974	2,048,974	7,400,000	27.7
2002	200,874	1,241,703	1,442,577	6,500,000	22.2
2001	38,204	225,463	263,667	1,285,960	20.5
2000	45,152	307,250	352,402	1,793,922	19.6
1999	66,332	654,119	720,451	3,253,183	22.1
1998	121,933	797,636	919,569	3,969,095	23.2
1997	89,300	492,115	581,415	2,883,792	20.2
1996	63,339	355,400	418,739	2,281,000	18.4
1995	25,499	159,700	185,199	910,420	20.3
Total	**912,633**	**6,020,360**	**6,932,993**	**30,277,372**	**22.9**

Source: Meadowbank Exploration Project Year-End Reports.

Most hiring to date has been in Baker Lake, although some individuals from Chesterfield Inlet have also been employed. Geological and environmental technicians, heavy equipment operators, tradesman, and labourers have found work on the project. Goods and services have been purchased more widely and include fuel, food and accommodations, transport, and drilling services. Almost $7 M has been paid to individuals and businesses in the Kivalliq Region, representing slightly less than 23% of the estimated $30 M in total project expenditures to date. There is some evidence of an overall upward trend in this percentage since 1995.

3.2.1.1 Project Expenditures

Total construction expenditures are expected to reach $303 M from March 2005 to December 2006. If at least 25% of this total is to Kivalliq Region people and businesses, about $76 M would be spent regionally. Total operational expenditures are expected to be in the order of $92 M/a over the period 2007 to 2016. If 25% of these expenditures were spent in the region, this would represent $23 M annually over 10 years. Closure costs are forecast at about $13 M total in 2017 and 2018, notionally representing another $3.3 M to Kivalliq Region workers and businesses. Post-closure activities will also imply some local expenditure, although in comparatively small amounts. Therefore, if recent experience is repeated, the total inflow of expenditures on local wages, goods, and services could be in the order of approximately $310 M between 2005 and 2018.

These calculations are simply an indication of the order of magnitude of potential direct local expenditures that could be anticipated. These could be influenced, upwards and downwards, by many unknown factors. For example, the pattern of expenditure will be somewhat different during construction than it has been during exploration and feasibility, with more large, one-time capital expenditures. Capital equipment for the mining operation will not be sourced locally but from suppliers elsewhere in Canada and the United States. This could put downward pressure on the assumption of 25% of total expenditures being in the Kivalliq Region.

The construction phase will require a labour force of about 350 people and the operations phase about 250 people. Whereas Baker Lake and the Kivalliq Region were able to supply a significant percentage (up to 40%) of the labour required for earlier project work, it is not clear that demand can be met for a much larger and more highly skilled labour force. This could also put downward pressure on the current 25% of total spending in the Kivalliq Region, at least initially. On the other hand, upward pressure on local expenditures could result over time as labour and business become more experienced with the project and training programs are implemented by both Cumberland and government.

It should also be noted that these figures are only disbursements in the region. They will be reflected in such economic statistics as gross domestic product; but, as pointed out by the Conference Board of Canada (CBoC, 2001), “leakage” (the percentage of these dollars that find their way outside the territory through federal taxation and consumer spending patterns) will be high. These figures therefore overstate the real economic boost, which will derive largely from a percentage of wages and business profits. Of a total local wage bill of perhaps $40 M over the life of the project, for example, consumer spending outside the territory would exceed $21 M if the CBoC estimate of leakage (53 cents on the dollar) continues to apply.

Because anticipated project expenditures are comparatively large relative to the size of the regional economy, the impact is considered to be of medium magnitude, positive, long term, and of moderate significance.

3.2.1.2 Employment

The socioeconomic baseline provides some data that underscore the challenges in substantially increasing local employment. These are strongly related to educational achievement. Statistics Canada census data (2001) show that in the 20- to 64-year-old age bracket, 50% of people reported no completion of high school or any other certificate or diploma programs. This rises to 59% in the youngest age group (20 to 34) relative to older age groups (35 to 44 and 45 to 64). Given the considerable evidence that employment rates are correlated with educational achievement (NBS, 1999), most unemployed people in Baker Lake are likely to have low to very low educational levels. A mining operation has skill and health and safety requirements that can make it difficult to employ large numbers of people with limited education.

Labour force requirements for the project will vary over the construction phase but are expected to peak at 350. An estimated 20% to 25% of these jobs, or up to 85 positions, will require unspecialized skills. This estimate for the semi-skilled to unskilled labour requirement is comparatively large relative to the unemployment levels in Baker Lake. Given a combination of unskilled and skilled employment, Cumberland’s previous record in the area, and experience on projects such as the Ekati mine (BHP

Billiton Diamonds Inc., no date), 25% or more of total project hiring during the construction phase could be from Kivalliq Region.

The direct workforce requirement for the operations phase is estimated at 253. The table below presents estimated employment level by job category. Management, professional and supervisor positions are likely to be filled by out-of-area people, at least in the earliest stages of the project. There are few professionals in Baker Lake and limited experience with the mining industry. There is some potential for employment of office workers, technicians, heavy equipment operators and skilled tradespeople, from both Baker Lake and the region. Positions requiring few skills are primarily in the category of maintenance in the table below, although limited skills will also be required for certain office positions, for an estimated an estimated total in the order of 60 jobs. Thus during the operational phase as well, taking into account both skilled and less skilled positions, at least 25% of the total direct project hiring could be from the Kivalliq Region.

Table 3.2: Operational Phase Employment by Job Category

Job Category	Number of Positions
Management	6
Geologists and engineers	11
Supervisors and foremen	25
Office and technicians	29
Process operators	32
Heavy equipment operators	48
Skilled trades	40
Maintenance	62
Total	**253**

Source: Cumberland.

The above table does not include employment that will be created through the subcontracting out of mine services, such as catering.

Taking into consideration that labour force participation rates are likely to rise in the event of improved employment opportunities, Baker Lake should be able to supply workers for most of these jobs. The official unemployment rate of 26.1% for the community in 2001, equal to about 150 people, is probably understated, as people do not actively look for work when they know that no jobs are available. Using the “want a job” criterion, the 1999 Nunavut Community Labour Force Survey (NBS, 1999) reports an unemployment rate of 36.0% for Baker Lake.

Although employment cannot be offered to most of the unemployed people in Baker Lake, the mine nevertheless represents a very significant increase in local employment opportunity. In the 2001 census, about 420 people in Baker Lake reported being employed, although only 215 reported full-time employment during the preceding year. During the operations phase, when full-time employment will be available over a period of 10 years, 60 jobs would thus represent a nearly 30% increase in permanent full-time employment.

The potential impacts of employment may take some time to be fully realized, but overall are considered to be of high magnitude, positive, long term, and of high significance, specifically to those individuals and their families who are able to benefit.

3.2.1.3 Business & Local Economy

The Conference Board of Canada (CBoC, 2001) and the territorial government (SEDS Group, 2003) have noted at length the challenges to businesses in Nunavut. Overall, existing businesses are few, tend to be small, have high costs, and most essentially serve the consumption needs of local residents. Cumberland has worked with businesses in Baker Lake and elsewhere in the Kivalliq Region over the exploration phase of the project, with some success. As project expenditures grow however, there are real limits to the capacity of existing businesses to meet this demand. Similar to employment, local business participation in the project is expected to grow with time, particularly with the implementation of measures to assist that participation.

In addition to direct employment and business opportunities, the project will generate indirect and induced employment and business opportunities. Businesses contracted to supply the project will require new employees, and with increasing direct and indirect local economic activity, individuals and business will spend more on local goods and services. This in turn will induce more employment, and perhaps more small businesses as people in the community organize to provide additional goods and services demanded by others with new disposable income. Additional income could be spent on such items as renovations to housing, travel, new household appliances, and vehicles (with attendant maintenance costs), further stimulating job and business creation.

There is however some potential for attractive employment to put pressures on the local economy and labour force, specifically in Baker Lake. As indicated previously, although unemployment is high (upwards of 26.1%), the absolute number of employable unemployed may not large relative to project requirements, considering the strong correlation between education and employability. To the extent that the project draws labour from other economic activity rather than from the pool of unemployed, there could be negative impacts on local businesses and service delivery. Consultations and observation in Baker Lake suggest that small businesses, many of which fail, struggle to find markets rather than employees and that skill levels are generally low. In an environment of high unemployment and low demand for services, with consequent low labour productivity, replacing employees bears some cost however.

Similar to employment, the potential impacts of business expansion and creation may take some time to gain momentum, but overall are considered to be of high magnitude, positive, long term, and of high significance, particularly to those individuals and their families who are able to benefit. At the community level, impacts of moderate significance are most likely to be seen in Baker Lake, but there will be some stimulus to business across the region.

3.2.1.4 Education & Training

It is Cumberland's policy, and has been practice over the exploration and feasibility phases of the project, to provide on-the-job training to employees. Such training is intended both to improve skills needed for better job performance and promotion and to broaden the skill base of employees so that their enhanced abilities can be applied elsewhere in the economy. Training in heavy equipment

operation and maintenance, accounting and clerical work, construction trades (electrical, plumbing, mechanical, framing, carpentry), catering, environmental studies, health and safety, computers and information technology, is transferable to other employment sectors, even if provided in a mining sector context.

Beyond on-the-job training, the IIBA negotiations between Cumberland and KIA will address the need for a broader-based project education and training strategy to provide assistance to those who wish to develop skills that could position them for project employment at levels beyond those they would otherwise be qualified for. The training strategy could include for example cooperation with Arctic College in the design and delivery of training programs in specific specialized areas.

The education and training strategy will have a second dimension aimed at motivating the youth of Baker Lake to stay in high school. As noted above, the number of high-school graduates has been declining in recent years, although four (female) young people did graduate from high school in 2004. It became clear during the consultation process that even as young people are moving away from interest in traditional ways of life, they are not succeeding at finding a place in the wage economy, leaving them with fewer and fewer livelihood options. Cumberland intends to participate with the KIA to identify means of encouraging young people to commit to completing high school education, and to provide the tools they need to succeed at this commitment.

The potential impacts of education and training to the labour force are considered to be of medium magnitude, positive, long term, and of high significance, specifically to those individuals and their families who are able to benefit.

3.2.1.5 Increased Income

Direct, indirect, and induced employment and business creation associated with the project will increase the income levels of individuals and their families, and of the community as a whole. The community effects are most likely to be experienced in Baker Lake, which will see a more significant percentage of its labour force employed by the project. With the potential to employ at least 60 to 90 individuals directly over the construction and operations phases, direct project wages paid to people in Baker Lake and the rest of the Kivalliq Region could exceed $3 M annually. This figure is based on an average wage of $50,000, which is approximately 20% higher than the 2001 average earnings of Baker Lake residents working full time, year-round, and 250% higher than average earnings for all Baker Lake residents with earnings that year (Statscan, 2001). There will also be additional (indirect) earnings as a result of the business opportunities the project creates.

Increased income is also the stimulus for the induced economic activity, and therefore not only the individual Cumberland employees and the employees of contracted businesses benefit, but others in the community will see earnings rise, further increasing the total wages paid in the community.

Increased income is generally overall associated with increased individual and household wellness. Much of territorial government economic strategy is based on this assumption. Thus, there is potential for improved quality of life for those individuals (and their families) who are able to find employment with the project, with businesses that supply the project, or elsewhere in the growing local economy.

The potential impacts of increased income are considered to be of high magnitude, positive, long term, and of high significance, particularly to those individuals and their families who are able to benefit. Community impacts are considered to be of moderate significance and will be felt primarily in Baker Lake.

3.2.1.6 Closure

The planned closure phase of the project will last for approximately two years as physical plant is removed and reclamation activities are completed. During this phase, expenditures for labour, goods, and services will be much lower than during the operations phase, although reclamation activities may be relatively labour intensive. At the end of the two-year closure period, all expenditures—with the possible exception of very limited employment related to environmental monitoring during post closure—will come to an end. It should be noted that temporary or permanent closure could occur earlier than planned in the project life if gold prices were to drop significantly or other serious, unforeseen events should arise.

Closure has the potential to represent severe economic and associated social dislocation. The closure of a major project inevitably involves unemployment and contraction of business, with consequent social problems at the individual, family, and community levels. Cumberland intends to begin preparing for closure at the earliest stages of project development. Sustainable development principles will be integrated into all mitigation and enhancement measures to be negotiated with the KIA, specifically measures intended to enhance employment and business capacity in the broader economy.

The reversal of economic and social benefits is inherent in the closure of a non-renewable resource extraction project and is considered to be a negative impact of high magnitude, long term and of high significance, particularly in Baker Lake.

3.2.2 Traditional Ways of Life

The social, cultural, and economic importance of traditional ways of life to quality of life in the North is fundamental and as such guides not only the content of government policy, planning and service delivery, but also the mechanisms for developing and implementing government policy. Inuit Qaujimajatuqangit encompasses not only knowledge of the land and its resources, and the passing down of this knowledge through generations, but also skills in applying this knowledge to livelihoods and a value system that rests on respect, sharing, cooperation, group decision-making, healing, and counselling. Traditional ways of life confirm the identity of a people and are increasingly understood as essential for social and emotional wellness.

Maintaining the integrity of traditional ways of life can be challenging in the context of much of the non-Inuit world. Regardless of the degree to which employment, business, education and training initiatives are successful in increasing local participation in the project in culturally appropriate ways, cross-cultural contact will increase as the project moves forward. Employees and businesses will function within Cumberland's corporate culture, policies, language, and operational requirements; transport of people and materials through Baker Lake specifically will increase; and higher incomes will create more opportunities for people to travel beyond their immediate communities.

The extent to which traditional ways of life have and can be maintained over time depends on many variables, few of which can be attributable to any specific project. The erosion of tradition has been observed across the North, largely in response to centralization of settlement, increased communications, general economic transition into the formal wage economy, and the associated cultural and social transition.

It is recognized that the land-based economy cannot alone generate the resources needed to improve health, education, and other socioeconomic indicators, particularly in face of continuing rapid population growth in what is already Canada's youngest population. Nearly 37% of the population of Nunavut is under the age of 15, twice the percentage for Canada as a whole (Statscan, 2001). Movement into a mixed economy is therefore government policy, and was clearly demonstrated to be a priority for Baker Lake during consultations. Elders particularly are concerned to see opportunities created in the formal wage economy for the young. The challenge is to manage this economic shift consistent with maintaining traditional ways of life.

The project has the potential to affect traditional ways of life in both positive and negative ways, which in any case have and will continue to evolve in response to events unrelated to the project. The project will not significantly restrict access to or productivity of lands used for subsistence activity. The environmental and traditional knowledge sections of the EIS conclude that there is little potential for disturbance to wildlife resources moving through the area of the mine, and that the land disturbed by the project is not used, except perhaps opportunistically, for hunting caribou and other animals or for fishing. Tourist resources, generally considered a culturally appropriate source of economic activity, will not be affected. The mine area is remote from parks and other tourist infrastructure. Environmental mitigation measures are expected to prevent any significant impacts to the wider physical or biological resource base in areas far from the mine site used for economic activity related to traditional ways of life, whether subsistence or commercial.

More indirect effects are less clear. There are concerns that formal sector employment is a disincentive to traditional ways of life; that on-the-job, cross-cultural contact may result in the undervaluing of traditional ways of life; and that loss of language will make communication between generations—a critical component of traditional knowledge—difficult. This is particularly important for the youngest members in the local population, who need encouragement and support in integrating the knowledge of elders into their lives.

Cumberland's human resource policies are designed to address these concerns to the extent possible:

- Codes of conduct for workers emphasize zero tolerance for harassment and other inappropriate behaviours between ethnic groups, genders, management and operational personnel, and other employee groups that may be identified.

- Cross-cultural training will be provided to all employees, emphasizing cross-cultural mutual respect, understanding, and trust. Such training should also lend support to the valuing of traditional ways of life as part of corporate culture.

- Fly-in/fly-out arrangements will provide the opportunity for Inuit employees to engage in subsistence activity during their time off. Further, the increased income from mining sector jobs

could provide the financial resources necessary to purchase tools and equipment and therefore encourage more subsistence activity.

- Other workforce management policies will be developed (see Cumberland's "Socioeconomic Impact Mitigation & Monitoring" document) to create a working environment that acknowledges the language and cultural uniqueness of Inuit employees.

With regard to potential effects at the community level, the mine site itself is located far from Baker Lake. Out-of-area workers will be housed in workers' camps and will be rotated into and out of their own communities on various schedules. While this will minimize cross-cultural influence between out-of-area workers and local communities, there will nevertheless be more contact in Baker Lake, largely associated with transportation activities.

In conclusion, despite measures to encourage the continued valorization and practice of tradition, there remains potential for erosion of traditional values owing to the participation of local residents in the formal wage economy and increased contact with non-Northerners and their culture. This in turn has the potential to affect individual and community wellness and the economic well-being of people who must depend on subsistence activity for their livelihoods.

Individuals will make their own livelihood and lifestyle choices. The project only provides opportunity for economic participation in the project. These opportunities are provided not only in a context of best practice with regard to human resource policy, but also of aggressive government programming in support and encouragement of subsistence activity and preservation of traditional knowledge. People have rights to make and be supported in the choices, including between the traditional and formal economies.

There is potential for both negative and positive impacts, of any magnitude, on traditional ways of life, which could be of high significance. Any net impact, since it would be an impact of cultural change, would be long term. The impact would be experienced primarily in Baker Lake.

3.2.3 Individual & Community Wellness

Potential impacts on individual and community wellness are complex, far reaching, and unpredictable. Individual and community wellness is intimately associated with potential impacts on traditional ways of life, as discussed above. Other factors that have the potential to affect individual and community wellness include individual decisions on the use of increased income (capacity for personal financial management), household management in relation to rotational employment, migration, public health and safety, disturbance, particularly during the construction phase, and Cumberland's support for community initiatives as negotiated in the IIBA.

3.2.3.1 Increased Income

There are large anticipated benefits of increasing income, related to improvements in socioeconomic conditions. Poverty is correlated with the full range of social ills. Poverty, in combination with poor personal financial management, is at the root of concerns about occurrences of hunger in Baker Lake. However, income can also cause negative effects at the individual, household, and community levels if that income is not well managed. Income that is not spent wisely will not generate quality-of-

life improvements. Concerns about the association between greater disposable income and poor lifestyle choices include the potential for increased use of drugs and alcohol and for inappropriate sexual activity. Money spent unwisely may not only fail to achieve the potential benefits of increased income, but actually harm individuals and their families and be a source of negative behaviour that may harm the community as a whole.

The actual cause-and-effect relationships between increased incomes and individual wellness parameters have proved extremely difficult to understand in the context of the North. Sly et al (2001), in their Updated State of Knowledge Report on the West Kitikmeot and Slave Geological Province, looked at overall environmental and social trends and experiences and concluded there is little evidence to link drug abuse with either more or less employment. Strenuous efforts at monitoring community wellness as part of the diamond projects in the Northwest Territories have yet to confirm any direct links between wellness indicators and the projects (GNWT, 2002), other than the fact that that incomes do increase.

A further concern relates to increasing inequity in income distribution in the community. This could have the potential to create social conflict and contribute to social problems such as crime. Retention of traditional values such as respect, cooperation, and sharing could also at least theoretically be negatively affected by greater income inequity.

Many of the Baker Lake residents who will be unable to benefit from direct or indirect employment opportunities related to the project are likely to be the least well off and to have educational and/or personal challenges that constrain their capacity for employment. Failure to find employment while many others are more successful creates individual stress. Sly et al (2002) note that suicide rates are correlated with vulnerability created by being caught between the traditional and formal wage economy, which can be interpreted as an inability particularly by young people, who are most prone to suicide, to succeed at either.

To help ensure that the benefits of increased income are maximized and negative impacts are minimized, Cumberland plans to establish an employee assistance program providing a full range of services to its employees and their families. Programs to assist with personal financial management will be implemented. Careful workforce management—specifically zero tolerance for drug and alcohol while on site or in transit to/from site—and implementing measures to support traditional ways of life will also help mitigate potential negative impacts of increased income.

Increased income, when combined with other measures intended to enhance individual and community wellness, as agreed to in the IIBA, is expected to create a net positive impact. There are, however, uncertainties about how each individual will respond to either increased income, or the failure to achieve increased income when others are able to do so. Social monitoring is therefore extremely important to identify impacts as they evolve, such that they can be effectively addressed.

The impacts of increased income at the individual, household, and community level, at any magnitude, are considered to be potentially both positive and negative, medium term, and possibly of high significance.

3.2.3.2 Rotational Employment

Much has been written on the potential impacts of rotational employment on the families and communities of employees. Sly et al (2001) summarize the positive impacts as reduced cross-cultural contact within communities, the availability of time and resources for subsistence activities, and more workforce discipline while on the job. Negative impacts can include family stress, family conflict between generations and between spouses, breakdown of traditional values of sharing and mutual support, undervaluing traditional ways of life, and increased substance abuse. The prevalence of family violence in Baker Lake suggests that a further source of family stress could have serious consequences. Baker Lake residents are also concerned that the housing of workers, including female workers, at a camp creates opportunities for sexual abuse.

Many of these negative impacts are similar in nature to those potentially generated by increased income and depend not only on project organization but also on individual decisions and choices. They will also be influenced by the mitigation measures described above. As well, much has been learned about best practice for workers' camps and rotational employment in the North over the last 20 years. Cumberland will apply this best practice, including protection for female workers, short rotational schedules (two weeks on, two weeks off), and transportation arrangements that return employees directly to their points of hire.

How the potential negative and positive impacts of rotational schedules will eventually balance out at the individual and community levels is uncertain. It is worth noting that Baker Lake residents now have some experience with rotational employment, and they associate potential negative impacts not so much with rotation as with increased income.

The impacts of rotational employment at the individual, household, and community level are unpredictable and of unknown magnitude, but potentially both positive and negative, medium term, and possibly of high significance, particularly for individuals.

3.2.3.3 Migration

Being remote from the community of Baker Lake, and providing accommodation, meals, recreational facilities, social services, and transport to and from their community point of hire for all workers, the project will not involve migration or movement of workers from elsewhere into Baker Lake, with the possible exception of a very few out-of-area employees engaged at transport and storage facilities in the town.

Migration does, however, have some potential to occur if people from families resident in Baker Lake return in the hope of employment at home and/or other people try to move to the area seeking jobs. Most Nunavut communities are experiencing their own economic stresses and comparatively high unemployment rates. Migration into Baker Lake has the potential to generate both negative and positive impacts on families, the local economy, and social organization, depending on the numbers, skill sets, behaviours, employment expectations, and family status of migrants.

The return of family members, particularly those who left only to find employment elsewhere, can be of great benefit to family welfare. These people may, however, compete for and obtain jobs that could otherwise be filled by current residents, place additional demands on social service delivery, and put

pressure on local supplies of goods and services (particularly housing for those without the resources to take advantage of a developing private market for housing). The numbers of such people are not expected to be large however as the mobility of the Nunavut population is comparatively low (Hornal, 2003). As well, the shortage of housing in Baker Lake suggests that people with no existing support systems in the community would be unlikely to migrate.

Migration decisions are individual and reflect what people believe to be in their best interests under specific sets of individual circumstance. Predicting who will migrate, in what numbers, and with what net effect is therefore difficult. As such, the potential impacts of migration are complex and are likely to have both positive and negative components, but to be of low magnitude and low significance, although long term. Significant migration to any community other than Baker Lake is unlikely.

3.2.3.4 Public Health & Safety

The people of Baker Lake are concerned that out-of-area workers are a potential threat to resident health and safety within the community. There is an association between mining camps filled primarily with men on single status and/or having increased income and such public health issues as increased rates of sexual abuse, teenage pregnancy, single parenthood, sexually transmitted disease, substance abuse, and crime. This association guides current best practice in managing the behaviour of workers living in camps near small communities and in limiting the potential for contact between workers and local residents. Although Cumberland will implement such best practice, employees housed at camp, new migrants, and transient workers associated with the project will inevitably interact in unpredictable ways with the people of Baker Lake. Residents of Baker Lake and other parts of the Kivalliq Region employed by the project could also make decisions that represent a threat to public health and safety in their home communities. Social monitoring will be critical to determining the actual effects of the project on such public health and security issues in order to respond to any evolving negative community effects of such interactions.

Increased vehicle traffic, with the consequent potential for more road accidents, also represents a risk to public health. The major traffic risks will come with mobilization during the construction stage as equipment is moved through Baker Lake to site. Barges also present some potential for accidents on waterways. After mobilization, transport of construction supplies, and then operations supplies, will be less frequent. This transport, plus the rotation of project staff, will add some traffic to the river in the summer and to the winter road in the winter. There will also be more flights in and out of Baker Lake. Traffic risks will be minimized with clear, enforced rules for vehicle operators in combination with operator training and public education on traffic risks. Nevertheless, some traffic accidents can be expected to occur over the life of the mine.

Another concern for public health and safety is the potential for project emergencies or accidents to have environmental effects, particularly on water quality. For example, a spill could result in the release of contaminants into the food chain. Catastrophic events such as explosions, while unlikely, could of course result in harm or even death of employees.

The health and safety of workers and the population at large is subject to legislation and to best practice management of hazards. Cumberland seeks not only compliance with legal requirements but also to continually improve its safety records. The provision of safety equipment, dissemination and enforcement of clear workplace health and safety regulations, health and safety training, emergency

response planning, availability of medical and evacuation services for the workforce, and other health and safety measures as appropriate are continually implemented, monitored, and improved upon where possible. Health and safety training also has applications in personal life—workers often apply new health and safety training received on the job to daily tasks conducted at home. As with traffic accidents, however, some workplace accidents are likely to occur.

Irrespective of the rigour with which worker management, operational procedures, traffic, health and safety, public education, and other relevant best practices are implemented and enforced by Cumberland, risks to public health and security remain. The potential impacts of the project in this regard are therefore negative, although of unknown magnitude. Because the impact at the individual level is so high in the event that a risk is realized, any effects must be considered long term and of high significance.

3.2.3.5 Disturbance

Project construction will produce temporary impacts on air quality, insofar as clearing of land, earth movement, transport of equipment and supplies, and building of infrastructure will generate dust and air emissions. Noise associated with transportation, including barges, road traffic during the winter, and airplanes can be a disturbance. Increased traffic represents a source of pollution, a potential source of spills, a health and safety hazard, and an irritant. Large construction sites can be visually unappealing.

Dust, noise, and visual disturbance experienced by residents of Baker Lake will be primarily in relation to construction activities in the community itself rather than at the mine site. Disturbance of anyone occasionally engaging in subsistence activity in the project area would be the rare exception. Disturbance to the community will result from construction of the fuel tank farm, laydown and warehousing facilities, and the barge unloading dock in Baker Lake. Transportation activities, and associated disturbances, will be ongoing throughout the project life.

All construction and transportation activities will be conducted according to best practice to minimize disturbance to the community and individuals. Erosion control, driver training, efficient equipment, good vehicle maintenance, careful waste disposal and spill prevention procedures will be implemented to minimize and mitigate potential disturbance impacts on quality of life.

The project's potential disturbance impacts are considered negative. Most disturbances will be of low magnitude and short term, as they will occur primarily during the construction phase and only intermittently after that. Overall significance is therefore considered low. As indicated, impacts would occur primarily in Baker Lake.

3.2.3.6 Support for Community Initiatives

Given that the largest part of mining project royalties are paid to the federal government rather than directly to the territory, the proponents of projects such as Meadowbank are expected to provide benefits to local residents most immediately affected by the project; these benefits are additional to job creation and business opportunities. The Nunavut Land Claim Agreement and the Terms of Reference for the Meadowbank EIS suggest that project proponents should work with local communities to identify means to contribute to community wellness. Considering that projects will

have potential negative impacts on individuals and communities that can be neither clearly identified nor directly mitigated (such as effects on traditional ways of life or the results of poor choices made by individuals with increased income), support for community initiatives is the accepted means to enhance the net local benefit resulting from project development.

Throughout the exploration and feasibility phase of the project, Cumberland, in consultation with residents of Baker Lake, has contributed funds, goods, and services to meet identified priorities on an ad hoc basis. To the extent that Cumberland and the KIA agree on a more formal program for Cumberland's contributions to community initiatives during IIBA negations, impacts on community wellness will be positive, probably of medium magnitude, but potentially long term and of high significance.

3.2.4 Infrastructure & Social Services

Negative effects to infrastructure are largely related to any project demands on physical infrastructure such as roads, other transportation facilities, telecommunications and utilities. Social services could be affected by increased demands for health, policing, education, and housing by new workers and migrants or as a consequence of impacts on individual and community wellness. Recent population growth has been rapid and has had particularly negative effects on the availability of affordable housing. The inability of social service delivery to meet any increase in demand in the local community could contribute to a dynamic of more social problems and yet greater demand, incurring yet additional costs to social services and governments. For example increased income, aside from any poor choices that are made, results in increased disposable income. This in turn is likely to result in more public activity (recreation, driving of new vehicles) on the part of Baker Lake residents employed by the project, and their families. This will put additional pressure on an already perhaps overstretched RCMP.

Meeting the operational needs of the mine and of a large out-of-area workforce with project rather than community resources will help limit pressures for the delivery of public sector goods and services. To the extent possible, Cumberland will ensure that its power, communications, transport, and other operational needs do not depend on local facilities, and that where such local facilities are used (local roads, the airport) the facilities are paid for and/or maintained as agreed to in the IIBA. Food and accommodation, recreation facilities, physical and mental health services, and other goods and services deemed necessary will be provided to the mining operation independently of what is now available in Baker Lake, which in any case is too far away to be accessed regularly by the mine workforce.

Some infrastructure and social services could potentially benefit from the project:

- Construction of the winter road between Baker Lake and the mine site will increase ease of travel to lands north of the mine site used for subsistence activity.

- Long-term benefits may be realized for the tourist industry through project infrastructure shared with Baker Lake during project implementation or left behind after closure.

- Increased employment, business opportunities, and income will provide a measure of economic security and capacity that will contribute to employability over the long term and improved self-image of employees and their families. Education and training initiatives should have similar effects.

- If the preceding benefits result in less dependence on government resources, from social assistance payments to mental health services to policing of antisocial behaviours, the effect will be to reduce the very real pressures on social service delivery currently being experienced in the community. Reduced dependence on government resources may also free up such resources for other uses.

The balance between negative and positive impacts on social services delivery is therefore difficult to predict (with the possible exception of an additional RCMP officer). Positive impacts however are expected to gain momentum over the project life, particularly as the employment, training, and business initiatives of the project improve individual and community wellness. There is potential for reversing some of this positive impact at the time of closure. Monitoring of social service delivery in relation to demand will be necessary to establish trends that may need to be addressed, when they are fully understood, through additional mitigation and/or enhancement measures.

The impacts on social services and infrastructure are considered to be of low to medium magnitude, largely positive in the medium term, and of moderate significance. There is some potential for negative impacts on social service delivery at closure.

3.2.5 Sites of Heritage Significance

Heritage resources, including graves, camp sites, sites of spiritual significance, and archaeological sites in the project zone of disturbance, have been documented in the traditional knowledge and archaeology reports. In addition, Cumberland has brought elders by helicopter to the area around the mine site to locate heritage sites. To the extent practicable, project design has been adjusted to ensure that planned infrastructure is well away from such sites and will have minimum impact. Presentation of the heritage resource results in Baker Lake and consultations with knowledgeable residents have indicated that the few sites potentially affected by the project are recent and not of high significance. They nevertheless should be protected, as agreed upon between Cumberland, the residents of Baker Lake, and the Government of Nunavut.

Should additional sites be identified during construction, work will be halted and the Department of Culture, Language, Education and Youth will be advised. Construction in the immediate area will be postponed until an evaluation of the site has been completed and the appropriate decisions—avoidance of the site or removal of artefacts—have been implemented.

Potential project impacts on sites of heritage significance are therefore considered to be of low magnitude, but would be long term if they occur, and of low significance.

3.3 NUNAVUT & CANADA

To estimate the economic impacts of the project on Nunavut and Canada as a whole, an input-output simulation was run by Statistics Canada, which has recently been incorporated into its interprovincial

model the territory of Nunavut. The model projects the direct and indirect effects of "shocks" (in this case, the construction and operation phases of the Meadowbank project) on such parameters as gross domestic product, total labour income, employment, and final demand (total output). Summary results for Nunavut and for Canada are presented in Table 3.3. Detailed tables are reproduced in Appendix B.

There are some important limitations to this model. For example, it does not address the ability of the economy to respond to increases in economic activity in the short term. Shocks that are large relative to a given economy can strain limited resources, cause changes in prices, and make economic impacts difficult to predict (Poole, 1999). The construction phase of the Meadowbank project represents a large shock to the economy of Nunavut.

Table 3.3: Summary Results of Input-Output Interprovincial Model

Parameter	Construction $303 M/18 months		Operations $92 M/annum	
	Nunavut	Canada	Nunavut	Canada
Impact on GDP (market prices, $000)	120,333	233,813	35,451	63,780
Total Labour Income ($000)	76,651	149,584	27,010	43,745
Total Employment (person years)	1,008	2,584	303	700
Indirect Taxes on Production & Products minus Subsidies ($000)	2,088	5,688	1,168	2,331
Total Output ($000)	349,377	585,208	102,745	167,635
Output Multiplier	1.15	1.93	1.12	1.82

Source: Statistics Canada (2004).

In addition, the model does not capture externalities such as pollution or the building of labour force capacity. It includes only direct and indirect impacts but not the induced economic activity generated as increased incomes are spent across the economy. The total output figures include a substantial amount of double counting (the output of one supplier becomes an input to another, whose output counts that input again). The model also does not differentiate, in the case of labour income, between income accruing to Northerners themselves and income accruing to workers on rotation in the North who are resident elsewhere in the country. Nor does the model disaggregate its results below the level of the territory as a whole.

Nevertheless, in contrast to the information on direct project expenditures provided in Section 3.2.1, the model does provide some quantitative information on direct plus indirect economic impacts. Using the model also provides a standardized, replicable methodology for determining territorial economic impacts that, if used to analyze different shocks to the economy, permits comparisons between different projects.

According to the model, the GDP of Nunavut, prorated to one year from 18 months, will increase by approximately 7% to 8% during the construction phase of the Meadowbank project. Approximately two jobs would be created in Nunavut for every directly employed construction worker, however it is to be remembered that likely a significant number of these would be filled by out-of-area workers rather than permanent residents of Nunavut. This observation is also relevant to the large increase in

employment income predicted by the model. Fiscal benefits to the Government of Nunavut are also large relative to its tax base.

The model predicts that 80% of the more than 1,000 new jobs created in Nunavut during the construction phase would be in the mining and construction sectors, with other jobs in the following industries, in order of magnitude: (1) finance, insurance, real estate, and renting and leasing; (2) professional, scientific, and technical services; (3) government sector; (4) wholesale trade; and (5) transportation and warehousing (see Appendix B).

The economic impacts of the operations phase would be lower on an annual basis, but would accumulate over a 10-year period. Other than the rate of project expenditures, the most significant difference between construction and operations is that the operations phase would create less direct employment. The total increase in employment would be 303 jobs, representing the creation of only about 0.2 jobs for each directly employed operations worker.

The economic impacts on the economy of Nunavut resulting from project development are concluded to be of high magnitude, positive over the medium term, and of high significance, particularly during the construction phase. Economic impacts on the economy of the rest of Canada, primarily centred in Alberta, Ontario, and Quebec, are of low magnitude relative to the size of the Canadian economy, medium term, and of low significance.

3.4 SUMMARY

The socioeconomic impacts of the project, as described in this section, are summarized in the socioeconomic impact matrix attached as Appendix A. Unlike the narrative, the table differentiates the impacts anticipated during construction, operations, and closure. The table includes an assessment of potential impacts before and after proposed mitigation, and presents alternative scenarios for certain impacts that could eventually be deemed either positive or negative.

3.5 CUMULATIVE EFFECTS

Many of the potential socioeconomic impacts identified in this report have necessarily been discussed in general terms. Extending this assessment to cover cumulative effects must also be a fairly theoretical exercise until the details of the IIBA are established with regard to mitigation and benefit enhancement measures specific to the Meadowbank project and the dynamic of change instigated by the project can be understood. Although there are a number of exploration activities going on around Baker Lake, plans for other industrial projects in the near future are as yet unknown. In addition, public sector initiatives in a territory as new and changing as Nunavut will influence cumulative socioeconomic impacts through public policy and service delivery. The following list of potential cumulative effects is therefore constrained in scope to relatively broad observations.

- The experience of local workers and businesses with meeting requirements for the project will enhance local capacity to realize economic benefits from any new mining sector projects in the area or elsewhere in Nunavut. Much of this enhanced capacity is relevant to participation in other parts of the formal wage economy as well.

- Although there are challenges associated with increased income and the transition from subsistence to alternative livelihoods, employment in the formal economy and the economic opportunities associated with mining and other resource extraction projects are expected to have demonstrable effects on improving quality of life in Nunavut.

- Shortages of qualified labour and of business capacity to supply the project are evident in Nunavut. To prevent competition for the same local resources, any new projects coming on stream should be carefully sequenced. Exceeding Nunavut's capacity to supply goods and services could lead to inflationary pressures and leakage of economic benefits to non-Nunavut labour and business.

- Whereas the project will have negligible effects on traditional land use areas, and impacts on traditional ways of life can be minimized, there are real constraints to how much land can be released to resource extraction development before effects accumulate and become significant.

- Participation by Inuit people in the formal wage economy will have a range of unpredictable effects that could be both positive and negative. As best practice develops and communities gain experience on how to manage participation in such projects to their greatest advantage, the choices made by individuals and local government will be better informed. Increased integration into the formal economy will nevertheless have irreversible effects on the social and cultural fabric of Northern communities.

- In general, economic development in the North is increasingly being planned in a context of improved understanding of impacts, respect for Inuit culture, community self determination, sharing of industry learning and resources, and improvement of government services. The capacity to ensure that non-renewable resource extraction benefits local communities increases with every project proposed and developed.

SECTION 4 • REFERENCES

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APPENDIX A

Socioeconomic Impact Matrix

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
Construction Phase									
Employment, training and business opportunities	Expenditure of $76 M over 19 months	Regional	Short term	+	Low, as expenditures would be less without mitigation	Preferential employment and contracting	+	Moderate, relative to size of regional economy and investment levels	Employment and contracting reporting
	Employment of approximately 87 workers	Individual, in the local area primarily, but also regional	Short term	+	Moderate, as employment might be somewhat less without mitigation	Preferential hiring	+	High, at the individual level and relative to size Baker Lake labour force	Employment reporting, by ethnicity, point of hire, gender, etc.
	Goods and service contracts for local businesses	Regional	Short term	+	Low, as contracting would be less without mitigation	Preferential procurement	+	High for individual businesses, but overall moderate, relative to the size of the regional market	Contract reporting, by type of good and location and status of business
	Overall increased economic activity, including indirect and induced effects	Regional	Short term	+	Low	No direct mitigation, preferential employment and contracting will produce additional effects	+	Moderate, given importance accorded developing and diversifying the economy of the region	Government economic indicators
	Increased capacity of local labour force to participate in project and in formal economy more generally	Individual and in the local area primarily, but also regional	Long term	+	Low	On the job training, employment and contracting experience build capacity in the formal wage economy	+	High at the individual level but overall low, because the construction period is comparatively short; capacity building contributes to life long success in formal wage economy	Government economic and social indicators
	Increased Individual and family wellness	Individual	Short term	+	High at the individual level	No direct mitigation, payment of good wages will increase income	+	Moderate, although income effects are significant at the individual level they will be short term	Government social indicators
Traditional ways of life	Access to traditional lands	Individual	Short term	-	Negligible, as project lands are rarely used for traditional activity	Allowing use of project winter road to traditional land users	+	Moderate, for any specific individual although overall number of users is likely to be limited	None required
	Reduction in traditional activity	Individual	Short term	-	Low, given construction jobs are generally short term	Income and workforce management practices that provide opportunity for and value traditional activity	- or +	Low negative, as less traditional activity is more likely to be choice rather than lack of opportunity and potentially high positive at least for some individuals	Consultation results
	Reduction in harvesting of country foods	Individual and local	Short term	-	Moderate, as foregone traditional activity is shared and can have negative effects on nutrition and economy	Workforce management initiatives in support of traditional activity	- or +	Negligible overall, given short term nature of construction jobs and opportunities to continue traditional activity	Consultation results
	Undervaluing traditional ways of life through cross cultural contact	Individual and local	Long term	-	Low, as shifts in cultural values are rarely the product of a short term occurrence although construction phase could be a contributory factor	Workforce management initiatives in support of traditional ways of life	- or +	Negligible overall, given short term nature of construction jobs and support to traditional activity and knowledge	Government social indicators, consultation results

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
	Loss of traditional knowledge, including language	Individual	Long term	-	Low, as shifts in cultural values are rarely the product of a short term occurrence although construction phase could be a contributory factor	Workforce management initiatives in support of traditional ways of life	- or +	Negligible overall, given short term nature of construction jobs and support to traditional activity and knowledge	Government social indicators, consultation results
	Community effects of effects on traditional ways of life	Local	Long term	-	Low, as low participation over the short term in the project is unlikely to shift community culture	Workforce management initiatives in support of traditional ways of life	- or +	Negligible overall, despite preferential employment and contracting, given short term nature of construction jobs and support to traditional activity and knowledge	Government social indicators, consultation results
Individual and community wellness	Poor choices made in relation to how individual income is spent	Individual	Short term	-	High, for any specific individual so affected	Assistance to individuals experiencing problems and their families, zero tolerance policies	- or +	Low to high negative or positive at the individual level depending on program effectiveness, although overall it is expected that comparatively few will make consistently poor choices; some poor choices can have longer term effects	Government social indicators, consultation results
	Widening of distribution of income in community	Local	Short term	-	Low, with low participation over the short term in the project	None specifically, as this potential impact is an indirect effect of overall increases in economic property at the individual and community levels	-	Low, despite higher participation in the project the employment is short term	Government economic indicators, consultation results
	Public health and safety affects of poor behaviours of either those employed or unemployed	Local	Short to medium term	-	Low, with low participation over the short term in the project	Assistance to individuals experiencing problems and their families, zero tolerance policies,	+	Low as public health and safety is a function of many things out of a single project's control but project effects should produce an overall positive impact on individual behaviour	Government social indicators
	Stress on families from rotational employment	Individual	Short term	-	High	Short rotations, assistance to individuals experiencing problems and their families	-	Low	Government social indicators
	Return of family members to find employment	Individual	Short term	+	Low, given construction jobs are generally short term although construction implies operations	None required	+	Low	Consultation results
	Public health and safety affects of poor behaviours of out of area workers	Local	Short term	-	Low	Workforce management best practice, including codes of conduct, rotation to point of hire, etc.	-	Negligible as out of area workers will not spend much time in Baker Lake or other regional communities	Government social indicators, consultation results
	Traffic accidents	Individual	Short to long term	-	Low to high, depending on the seriousness of the accident; the period over which accidents can incur is short term although the impact of a single serious accident can be long term	Rule enforcement, driver training, public education	-	Low to high at the individual level, depending on the seriousness of the accident however mitigation is expected to keep accidents to a minimum	Project health and safety reporting

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
	Emergencies	Individual and local	Short to long term	-	Low to high, depending on the nature of the emergency	Operations best practice to minimize emergencies, emergency response planning in the event of an emergency	-	Low to high however mitigation is expected to keep serious emergencies to none or very few.	Project health and safety reporting
	Disturbance by project activities	Individual	Short term	-	Moderate	Construction best practice	-	Low, as very little of the project construction will take place in Baker Lake	Consultation results
Infrastructure and social services	Increasing shortage of housing	Individual	Short term	-	Low, immigration is not expected specifically in response to construction, although construction implies operations and migrants may be attracted on that account	None	-	Low	Government social indicators
	Availability of other physical infrastructure	Local	Short term	-	Low	Project largely supplies its own infrastructure (roads, power, telecommunications, water)	+	Low, but positive as project some project infrastructure work (docks, road improvements) will be of use to Baker Lake people and businesses	Government social indicators
	Changes in demand for social services	Local	Short term	- or +	Low	Employment at good wages, assistance to individuals experiencing problems and their families, zero tolerance policies	+	Low but positive overall given existing pressures on social service delivery on assumption that increased income will be of net benefit to local population	Government social indicators and consultation results
	Changes in dependence on government support	Local	Short term	+	Negligible as numbers would be small without mitigation	Employment at good wages	+	Low but positive on assumption that increased income will decrease need for government transfers for some individuals	Government social indicators
Site of heritage significance	Impacts on sites of heritage significance	Local	Short term	-	Low	Avoidance of identified sites of heritage significance, protocol in place in event that new sites are identified	-	Negligible, project as designed avoids all sites and archaeology and traditional knowledge studies indicate little potential for encountering as yet unknown sites	Consultation results
Operations Phase									
Employment, training and business opportunities	Expenditure of $23 million annually over 10 years	Regional	Medium term	+	Low, as total expenditures would be less without mitigation	Preferential employment and contracting	+	Moderate, relative to size of regional economy	Employment and contracting reporting
	Employment of approximately 60 workers	Individual and in the local area primarily, but also regional	Medium term	+	Moderate, as employment might be somewhat less without mitigation	Preferential hiring	+	High, at the individual level and relative to size Baker Lake labour force	Employment reporting, by ethnicity, point of hire, gender etc.
	Goods and service contracts for local businesses	Regional	Medium term	+	Low, as contracting would be less without mitigation	Preferential procurement	+	High for individual businesses, but overall moderate relative to the size of the regional market	Contract reporting, by type of good and location and status of business

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
	Overall increased economic activity, including indirect and induced effects	Regional	Medium term	+	Low	No direct mitigation, preferential employment and contracting will produce additional effects	+	Moderate, given importance accorded to developing and diversifying the economy of the region	Government economic indicators
	Increased capacity of local labour force to participate in project and in formal economy more generally	Individual and in the local area primarily, but also regional	Long term	+	Low	Education and training initiatives, employment and contracting experience also builds capacity in the formal wage economy	+	High, particularly at the individual level and because capacity building contributes to life long success in formal wage economy	Training and human resource reporting, government economic indicators, possibly special purpose studies
	Some increase in interest in school on part of youth	Local	Long term	+	Negligible	Education initiatives directed at specific concern around youth and their future in a mixed economy	+	Moderate, as project initiatives alone will not suffice but will only contribute to other ongoing efforts although for any specific individual the significance could be high	Government social indicators, consultation results, possibly special purpose studies
	Increased Individual and family wellness	Individual	Medium to long term	+	High at the individual level although numbers would be limited without mitigation	No direct mitigation, payment of good wages will increase income	+	High, on the assumption that, overall, increased income is correlated with increased wellness	Government social indicators
	Increased community wellness	Local	Medium term	+	Low, as participation in the project economic benefits would be limited without mitigation	No direct mitigation, employment, contracting and indirect economic effects will increase community welfare	+	Moderate, on the assumption that, overall, growth in the formal wage economy is correlated with increased community wellness	Government social indicators, possibly special purpose studies
Traditional ways of life	Access to traditional lands	Individual	Medium term	-	Negligible, as project lands are rarely used for traditional activity	Allowing use of project winter road to traditional land users	+	Moderate, for any specific individual although overall number of users is likely to be limited	Consultation results
	Reduction in traditional activity	Individual	Medium term	-	High, where reduced use is not due to choice although few individuals would be affected	Income and workforce management practices that value and provide opportunity for traditional activity	- or +	Low negative, as less traditional activity is more likely to be choice rather than lack of opportunity and potentially positive at least for some individuals	Government social indicators, consultation results, possibly special purpose studies
	Reduction in harvesting of country foods	Individual and local	Medium term	-	High, as foregone traditional activity can have negative effects on family nutrition and economy	Workforce management and community initiatives in support of traditional activity	- or +	Low negative, as less traditional activity is more likely to be choice rather than lack of opportunity and potentially positive at least for some individuals	Government social indicators, consultation results, possibly special purpose studies
	Undervaluing traditional ways of life through cross cultural contact	Individual and local	Long term	-	High	Workforce management and community initiatives in support of traditional ways of life	- or +	Low, as project initiatives alone will not suffice but will only contribute to other ongoing efforts in support of traditional ways of life	Government social indicators, consultation results
	Loss of traditional knowledge, including language	Individual	Long term	-	High	Workforce management and community initiatives in support of traditional ways of life	- or +	Low, as project initiatives alone will not suffice but will only contribute to other ongoing efforts in support of traditional ways of life	Government social indicators, consultation results

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
	Community effects of effects on traditional ways of life	Local	Long term	-	High	Workforce management and community initiatives in support of traditional ways of life	- or +	Low, as project initiatives alone will not suffice but will only contribute to other ongoing efforts in support of traditional ways of life	Government social indicators, consultation results, possibly special purpose studies
Individual and community wellness	Poor choices made in relation to how individual income is spent	Individual	Long term	-	High, for any specific individual so affected	Assistance to individuals experiencing problems and their families, zero tolerance policies,	- or +	Low to high negative or positive at the individual level depending on assistance program effectiveness, although overall it is expected that comparatively few will make consistently poor choices	Government social indicators, consultation results, possibly special purpose studies
	Widening of distribution of income in community	Local	Long term	-	Low, due to low participation in the economic benefits of the project	None specifically, as this potential impact is an indirect effect of overall increases in economic property at the individual and community levels; support for community initiatives	-	Moderate, although community initiatives may help to mitigate impact	, possibly special purpose studies
	Public health and safety affects of poor behaviours of either those employed or unemployed	Local	Medium to long term	-	Low, due to low participation in the economic benefits of the project	Assistance to individuals experiencing problems and their families, zero tolerance policies	+	Low as public health and safety is a function of many things out of a single project's control but project effects on community prosperity should produce an overall positive impact on individual behaviour	Government social indicators, consultation results
	Stress on families from rotational employment	Individual	Medium term	-	High	Short rotations, assistance to individuals experiencing problems and their families	-	Low particularly over time as families learn to manage rotations, and benefit from the positive effects of participation in the mixed economy	Government social indicators, consultation results
	Return of family members to find employment	Individual	Medium term	+	Moderate	None required	+	Moderate overall as numbers are not expected to be large, but potentially of high benefit to individual families	Government social indicators, consultation results
	Public health and safety affects of poor behaviours of out of area workers	Local	Medium term	-	Moderate	Workforce management best practice, including codes of conduct, rotation to point of hire, etc.	-	Negligible as out of area workers will not spend much time in Baker Lake or other regional communities	Consultation results
	Traffic accidents	Individual	Medium term	-	Low to high, depending on the seriousness of the accident	Driver training, public education,	-	Low to high at the individual level, depending on the seriousness of the accident however mitigation is expected to keep accidents to a minimum	Project health and safety reporting
	Emergencies	Individual and local	Medium term	-	Low to high, depending on the nature of the emergency	Operations best practice to minimize emergencies, emergency response planning in the event of an emergency	-	Low to high however mitigation is expected to keep emergencies to none or very few.	Project health and safety reporting

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
	Disturbance by project activities	Individual	Medium term but of short duration	-	Low	Operations best practice	-	Negligible, as very little of the project physical activity will take place in Baker Lake	Consultation results
	Increased number of community wellness initiatives	Local	Long term	n/a	n/a	Support for community initiatives	+	Moderate	Government social indicators, consultation results
Infrastructure and social services	Increasing shortage of housing	Individual	Medium term	-	Low	None	-	Low as numbers of in migrants are expected to be low	Consultation results
	Availability of other physical infrastructure	Local	Medium term	-	Low	Project largely supplies its own infrastructure (roads, power, telecommunications, water)	+	Low, but positive as project some project infrastructure work (docks, road improvements) will be of use to Baker Lake people and businesses	Consultation results
	Changes in demand for social services	Local	Medium to long term	-	Low	Employment at good wages, assistance to employees experiencing problems and their families, zero tolerance policies	+	Low but positive given existing pressures on social service delivery on assumption that increased income will be of net benefit to local population	Government social indicators, consultation results
	Changes in dependence on government support	Local	Medium to long term	+	Negligible as numbers would be small without mitigation	Employment at good wages	+	Low but positive on assumption that increased income will decrease need for government transfers for some individuals; potential long term affects would result from capacity building	Government social indicators
Site of heritage significance	Impacts on sites of heritage significance	Local	Medium term	-	Low	Avoidance of sites of heritage significance, protocol in place in event that new sites are identified	-	Negligible, project as designed avoids sites and archaeology and traditional knowledge studies indicate little potential for encountering as yet unknown sites	Consultation results
Closure Phase									
Employment, training and business opportunities	Reduction in expenditures to $13 M over two years	Regional	Long term	-	High	None	-	High	Government economic indicators
	Reduction in employment and contracting	Individual, local and regional	Long term	-	High	Education and training initiatives, employment and contracting experience to build capacity in the formal wage economy, initiatives to assist with re-employment, counseling on re-employment	-	High at the individual level, but moderate overall in the expectation that capacity building and economic growth will facilitate re-employment	Government economic indicators, consultation results
	Reduction in economic activity	Regional	Long term	-	High	None	-	High	Government economic indicators, consultation results

Table A.1 Summary Socioeconomic Impacts

Valued Socio-economic	Residual Impact	Geographic Extent	Duration	Prior to Mitigation		Proposed Mitigation	After Mitigation		Proposed Monitoring
				Direction	Significance		Direction	Significance	
Individual and community wellness	Loss of income	Individual	Long term	-	High	None additional to those above	-	High at the individual level, but moderate overall in the expectation that capacity building and economic growth will facilitate re-employment	Government economic and social indicators
	Public health and safety effects of loss of income	Local	Long term	-	Low as economic participation in the project would be low without mitigation	None additional to those above	-	Moderate	Government social indicators
Infrastructure and social services	Changes in demand for social services	Local	Short term	-	Low	None additional to those above	-	Moderate	Government social indicators
	Changes in dependence on government support	Local	Short term	-	Low	None additional to those above	-	Moderate	Government social indicators

APPENDIX B

Selected Input-Output Interprovincial Model Results

Nunavut Gold Mines (4 Tables) – B.1

Nunavut Gold Mines (10 Tables) – B.2

Nunavut Gold Mines (10 Tables) – B.3

Nunavut Gold Mines (10 Tables) – B.4

Nunavut Engineering/Construction (4 Tables) – B.5

Nunavut Engineering/Construction (10 Tables) – B.6

Nunavut Engineering/Construction (10 Tables) – B.7

Nunavut Engineering/Construction (10 Tables) – B.8