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## 15. SUBJECTS OF NOTE

### 15.9 REGIONAL ECONOMIC DEVELOPMENT

#### 15.9.1 Introduction

The proposed Project is subject to the regulatory requirements of the *Mackenzie Valley Resource Management Act*. Guidelines for the preparation of the socio-economic effects assessment are provided in the MVEIRB's *Socio-Economic Impact Assessment Guidelines* (2007). The requirements for the Socio-Economic Impact Assessment (SEIA) are laid out in the MVEIRB's guidelines. Specifically, clause 115 stipulates that "The process established by this part shall be carried out in a timely and expeditious manner and shall have regard to:

- The protection of the environment from the significant adverse effects of proposed developments.
- The protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley.

##### 15.9.1.1 PURPOSE AND SCOPE

Assessment of effects to community socio-economics involves consideration of specific community resources such as road access, availability of business and professional services, local unemployment rates, and individual and community capacity to manage undesirable socio-economic effects and maximize desirable Project effects. This report incorporates, to the extent possible, the knowledge of socio-economic effects as determined by other disciplines. A through pathway analysis determines those effects likely to affect the socio-economic environment.

#### 15.9.2 Spatial Boundaries

The key to determining and measuring effects, and in making extrapolations from other studies to this Project, is in identifying the correct spatial scale of assessment. Individuals, populations, species and communities all perceive and react to the environment (and effects from the Project) at different spatial and temporal scales (Johnson et al. 2005, Weins 1991). The effect assessment would therefore take place at a range of spatial scales. The Local Study Area (LSA) is intended to predict and capture the direct and small-scale indirect effects from the Project. The Regional Study Area (RSA) is intended to predict and capture the larger scale direct and indirect effects from the Project. The LSA and RSA are generally defined as a distance buffer from the Project. Effects may extend beyond the RSA and into a larger area defined not by distances from the Project, but by geographic or biological systems. For example, changes to community income would be felt throughout the region where expenditures are likely to occur. The spatial scales selected for the effect assessment of this Project are as follows:

- The LSA was defined as the entire Project footprint (or area to be disturbed) with a 5,000 m buffer. The LSA was developed to predict the small-scale direct and indirect effects from the Project on the VCs.
- The RSA was defined as the area actively used for traditional and non-traditional resource harvesting and, includes the NWT Treaty 8 Tribal Corporation and NWT Métis Nation residing in Łutsel k'è, Fort Resolution and Fort Smith. The RSA

coincides with the GNWT Bureau of Statistics South Slave region. The RSA would be used to predict the larger-scale direct and indirect effects to VCs. The RSA scale would also include any cumulative effects from activities adjacent to the Project.

- Beyond Regional Study Areas (BRSA) includes, for example, areas where economic effects may be felt such as Hay River and the Hay River Dene Reserve, or where members of other Aboriginal groups such as members of the North Slave Métis Alliance may occasionally harvest resources.

### 15.9.3 Valued Components

A Valued Component (VC) is a component that is considered to be ecologically, culturally, socially, or economically important. The selection of VCs is based on what people (including community members, regulators and other interested parties) find important. These values were largely identified during the scoping process for the Project, but also include consideration of other sources, as discussed in Chapter 4, Community Engagement.

Four VCs have been identified for the socio-economic aspects. These are described in Table 15.9.1, along with the rationale for their selection and monitoring indicators.

**Table 15.9.1 — Valued Components: Socio-Economics**

Selected Valued Component	Rationale	Assessment Endpoint and Monitoring Indicator
Employment of northern residents	The employment and income levels in Łutsel K'e, Fort Resolution and Fort Smith are below those of the NWT. Therefore, increasing employment and income opportunities is valued	Direct and indirect jobs and income created as a result of the Project
Contracting opportunities for northern businesses	Northern businesses and their associated employment depend on a small market for their incomes. Therefore, it is important to capture as much income as possible from every northern project	Change in business income and employment
Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities	The Project uses natural resources in the South Slave region and it is reasonable to expect benefits from use of the resource to flow back into the South Slave region	Change in amount of money in the South Slave region economy, and more economic opportunities
Economic life choices- being free to choose the extent to which one pursues traditional and non-traditional economic activities	People should have the choice to pursue the lifestyle and economic activities and not be constrained to choose one over the other	Diversity of economic and employment opportunities and participation in traditional economic pursuits

### 15.9.3.1 ABORIGINAL PEOPLES AND REGIONAL STUDY AREA COMMUNITY HISTORY

This section begins with an overview of early Chipewyan history, and is followed by an overview of Dene in the twentieth century. It concludes with an historical overview of Łutsel K'e, Fort Resolution, Fort Smith, Hay River and the Hay River Dene Reserve.

#### 15.9.3.1.1 Chipewyan

Most of the Aboriginal residents of Fort Smith, Fort Resolution, and Łutsel K'e are descendants of the Chipewyan. The Chipewyan are part of the broader Dene (Northern Athapaskan) linguistic group.

Before European contact, the Chipewyan occupied the forest-tundra ("edge of the forest") ecotone from Hudson Bay to near the mouth of the Coppermine River. Following their entry into the fur trade, the Chipewyan extended westward to the region between Great Slave Lake and Lake Athabasca, and south of Lake Athabasca to the lakes of the Churchill River watershed, where fur-bearing animals were more plentiful (Smith, 1981).

In the northern transitional zone of the boreal forest and the tundra beyond, the major animal hunted by Chipewyan is the Barren-ground caribou. Barren-ground caribou are of overwhelming importance to the Chipewyan and are the focus of their religious beliefs and oral history (Smith, 1981).

Among Dene, the Chipewyan have had the longest continuous contact with Europeans. In 1715, the Hudson's Bay Company sent William Stuart, guided by the famous Chipewyan woman named then Aldelther, from York Factory to find the Chipewyan and invite them to trade and make peace with the Cree. Prince of Wales Fort was established at the mouth of the Churchill River in 1717, specifically for the Chipewyan trade. In 1769-72, Samuel Hearne was guided by the Chipewyan leader Matonabee from Churchill overland to the lower Coppermine River near the arctic coast. During this early period, the Chipewyan established a monopoly as intermediaries in trade goods with the Yellowknives and Dogrib (Smith, 1981).

As the Northwest Company established posts further inland, the Chipewyan monopoly was broken. During the period of economic rivalry between the Northwest Company and the Hudson's Bay Company between 1763 and 1821, traders encouraged the Chipewyan to move from the forest-tundra ecotone to the full boreal forest, where fur-bearers were more plentiful. However, some Chipewyan, known as the Caribou-Eaters, chose to remain in their traditional territories where they were isolated from most aspects of European culture until the 1960s, when they settled in permanent communities such as Łutsel K'e. Socio-cultural change came earlier to the Chipewyan, who moved into the full boreal forest near trading posts such as Fort Smith and Fort Resolution, where they adapted to hunting moose and woodland caribou (Smith 1981).

In the 1840s the Oblates of Mary Immaculate began the conversion of the Chipewyan from their centre at Ile-a-la-Crosse, a task that was nominally completed by 1905 (Smith, 1981). In 1899, Treaty No. 8 was signed with the Chipewyan at Smith's Landing. In 1900, Chipewyan came from the shores of Great Slave Lake to sign Treaty No. 8 at Fort Resolution (Fumoleau 1973).

#### 15.9.3.1.2 Dene in the Twentieth Century

Between 1915 and 1920, fur prices rose steadily and the first white trappers entered the NWT, putting greater pressure on wildlife populations. In an attempt to prevent over-harvesting, the Federal Government enacted closed seasons, which were the source of a Treaty boycott by Chipewyan at Fort Resolution in 1920 and again in 1937. The collapse of the fur market in 1920 was the beginning of a long period of cultural upheaval for the Dene. By the end of the Second World War, the combined effects of increased competition from white trappers, scarce wildlife, as well as epidemics of influenza and tuberculosis resulted in considerable destitution among Dene (Fumoleau 1973).

Responding to pressure from the Canadian public, the federal government began to extend social service benefits to the North. Beginning in 1955, the residential school system operated by the churches was gradually replaced by community day schools. By extending family allowance payments and housing programs to families that sent their children to school, the Dene were induced to live year-round in permanent communities where health and social services could be provided more efficiently. Although the physical health of Dene improved, the effect of moving to a more sedentary life in larger communities resulted in cultural loss, welfare dependency and substance abuse (Abel 1993).

In 1969, opposition to the Federal government's attempt to abolish Indian status united the Dene in the Indian Brotherhood of the NWT. Following several years of research into the unfulfilled promises of Treaties No. 8 and No. 11, the Dene Chiefs filed a "caveat" in 1973 covering their traditional lands. At trial, Judge Morrow ruled in favour of the Dene Chiefs and the federal government declared its willingness to negotiate land claims in 1973. Between 1975 and 1977, the Indian Brotherhood and Dene communities actively participated in the Mackenzie Valley Pipeline Inquiry, stating that no pipeline should be built until land claims are settled. By 1978, the Indian Brotherhood of the NWT declared itself the "Dene Nation." During this period, the Dene underwent a period of political unity, cultural revival, and recovery from substance abuse (Dene Nation 1984).

Serious claims negotiations did not begin until 1981, when the first federal government negotiator was appointed. In 1983, the Dene and Métis agreed to negotiate together. An Agreement in Principle was initiated jointly by the Dene and Métis in 1988. However, a Dene-Métis assembly rejected this agreement in 1990, since it required the extinguishment and surrender of Aboriginal title. In 1991 and 1992 respectively, the Gwich'in and Sahtu Tribal Councils entered into regional claims settlements modeled after the 1988 Agreement in Principle, finally withdrawing their membership in the Dene Nation along with the Dogrib Tribal Council in 1993 (Abel 1993).

By the mid-1990s the Chipewyan of Fort Smith, Fort Resolution, and Łutsel K'e, as well as the Yellowknives, began to negotiate fulfilment of Treaty No. 8 through Treaty Land Entitlement and self-government. At the same time, the Dogrib of Rae-Edzo (Behchokö), Gamètì, Wekweètì and Whati began to pursue comprehensive land claims and self-government negotiations simultaneously and concluded that process in August 2003.



**15.9.3.1.3    Lutsel K'e**

Lutsel K'e is the most northerly Chipewyan community. The Hudson's Bay Company built a post there in 1925 to intercept furs before they reached the free-traders at Fort Resolution. The Chipewyan started to build houses at Lutsel K'e in 1954, but did not settle permanently in the community until 1960 when a school was established.

**15.9.3.1.4    Fort Resolution**

In 1804, the Northwest Company established Fort Resolution at Moose Deer Island near the mouth of the Slave River, the only supply route into Great Slave Lake. Fort Resolution was to become the largest and most permanent of all the fur-trading settlements on Great Slave Lake. Feeder routes from the North Arm, the East Arm, and the Mackenzie River all converged on Fort Resolution (Rae, 1963).

In the early 1800s, the Hudson's Bay Company tried three times to establish a foothold on Moose Deer Island to compete with the rival Northwest Company. One attempt was particularly humiliating, when the post was abandoned and all personal and company goods had to be exchanged for food with the Northwest Company. The Hudson's Bay Company finally established a permanent post in 1819-20, and the two rival companies traded at either end of Moose Deer Island (Rae, 1963).

Following amalgamation of the two companies in 1821, a new post was built on the mainland because the wood supply on the island had been exhausted. After Old Fort Providence was shut down in 1823, Fort Resolution became the only trading post on Great Slave Lake for 33 years. During this period, Fort Resolution was an important supply base for the Franklin and Back expeditions, as well as the searchers for Franklin's last expedition in the high arctic (Rae, 1963).

The first Roman Catholic missionary arrived in 1852, establishing the Mission of St. Joseph at Moose Deer Island. However, by 1890 the mission was moved to the mainland. At the turn of the century, free-traders including Swiggart, Northwest Trading, Nagle and Hislop arrived at Fort Resolution. With the addition of a convent, residential school, and sawmill run by the mission, Fort Resolution became the largest settlement in the NWT (Rae, 1963).

Between 1900 and 1950, Fort Resolution became the most prosperous town of the Mackenzie River basin. A large tuberculosis hospital was also run by the mission at Fort Resolution between 1939 and 1956, employing many local native people. Sawmills were opened to supply lumber to the gold mines in Yellowknife. The commercial fishery made use of the riverboat traffic to ship their products. Most of the riverboat pilots and deckhands were native people (Macpherson, 1978).

By the 1950s, this period of prosperity came to an end as the residential school, hospital, and sawmills closed and the construction of the Mackenzie Highway in 1948 shifted commercial fishing activity to Hay River. The construction of the Great Slave Lake railway in 1964 then shifted all marine transport to Hay River (Macpherson, 1978).

The economic benefits of the nearby Pine Point Mine bypassed Fort Resolution. The mine was opened in 1964 and linked by a 100 km railway and all-weather road to Hay River. However, the remaining 50 km road to Fort Resolution was not finished until

1970. Indeed, the 200 km road to Fort Smith was given greater priority. This prevented the newly-established sawmill from selling its products to the mine and forced local people to move to the Pine Point new town for employment (Macpherson, 1978).

#### **15.9.3.1.5 Fort Smith**

Fort Smith became the first service centre in the NWT due to its location on the Slave River. Beginning with Alexander Mackenzie's voyage from Fort Chipewyan to the arctic coast in 1789, the Slave River became the major transportation route for explorers, fur-traders, and missionaries entering the western NWT by canoe. Fort Smith is located at the only significant barrier to water transport on this river system, a long set of rapids straddling the 60th parallel that required a 24 km portage.

In the mid-nineteenth century, the portage was upgraded to a wagon trail as heavier scows and York Boats replaced canoes. The Hudson's Bay Company established Fort Smith in 1874. Shortly thereafter, a Roman Catholic mission, school, hospital and a North West Mounted Police post were also established. Many Métis, who worked on the river transportation system, settled at Fort Smith.

At the turn of the century, steamboats came into use on the Athabasca-Slave River systems, substantially increasing the volume of goods and the number of non-native people entering the western NWT. The original portage around the rapids was further upgraded into a tractor road, making access to Great Slave Lake and the Mackenzie River steamboats much easier.

Fort Smith's central role in the western NWT was confirmed in 1921, when the Federal government designated it the administrative centre of the Mackenzie District. That same year, the first Court of Justice in the Mackenzie District convened in Fort Smith. In 1922, Wood Buffalo National Park was created, with Fort Smith designated as its headquarters. Prospectors flooded through Fort Smith when gold was discovered in Yellowknife in 1934, and diesel tugboats and steel barges were introduced by the Northern Transportation Company Ltd. to service the needs of the mining industry. The volume of goods transported through Fort Smith steadily increased during this initial mining boom. Although mining production in Yellowknife declined during the Second World War, Fort Smith's transportation role continued. It became a major base for the United States Army shipping materials to the Canol Pipeline Project at Norman Wells. The United States Army also built a winter tractor road from Fort Smith to Hay River, constructing airports at both communities (McConnel, 1965).

Between 1945 and 1955, the population of Fort Smith quintupled to 1,100; the post-war mining boom in Yellowknife expanded Fort Smith's transportation function, and as the designated administrative centre of the Mackenzie District, government's presence increased. Fort Smith also became the headquarters for the Roman Catholic Episcopal Corporation of the Mackenzie and a residential school, seminary and new cathedral were built (McConnel 1965).

Fort Smith's central role in the western NWT diminished when the Mackenzie Highway was extended to Yellowknife in 1960, making the trucking of light freight economical. The construction of the Great Slave Lake Railway to Hay River in 1964 provided a faster and competitive year-round route for even heavy bulk freight.

Combined with the construction of the all-weather highway between Hay River and Fort Smith, this rendered the seasonal Slave River route obsolete. In 1967, the federal government decided to locate the new territorial capital in Yellowknife. This dashed Fort Smith's hopes for major administrative expansion that would replace its vanished transportation industry. Within a decade, Fort Smith had lost its status as the main administrative and transportation centre of the western NWT (Siemens, 1979).

Fort Smith adapted to its reduced regional administrative function by building on its strengths in the area of education. In 1960, the Oblates of Mary Immaculate started Grandin College, a residential high school for students across the North. An adult vocational training centre that began with the training of heavy equipment operators was established in 1966. The NWT Teacher's College was established in 1970 in one of the former buildings of Grandin College. The spacious Northern Life Museum was built in 1974, primarily to house the artifacts collected over the years by members of the Oblate Mission. In the 1970s, the adult vocational training centre expanded to include a variety of programs (Siemens, 1979). Eventually, the adult vocational training centre was amalgamated with the NWT Teacher's College to become the Thebacha Campus of Arctic College, which offered a wide range of academic and technical programs.

#### **15.9.3.1.6 Hay River**

Hay River was a marginal and peripheral settlement for the first 70 years of existence. However, after the construction of major transportation infrastructure, it established itself as a prominent urban centre in the western NWT.

The Northwest Company built the first trading post in the rich fur country of the upper Hay River valley at the junction of the Meander River in 1806. This location was unusual since it was not on a major tributary and was re-supplied overland from Fort Vermillion on the Peace River. Due to the problems of re-supply and a catastrophic fire, the post closed down in 1820 (Harrison, 1984).

The Hudson's Bay Company built a post at the mouth of the Hay River in 1868 as a strategy to prevent free-traders from accessing the upper Hay River valley. However, this strategy failed since free-traders using the overland route intercepted trappers on the upper Hay River. This post, along with the Roman Catholic mission, was abandoned in 1878 (Harrison, 1984).

Another Hudson's Bay post was opened in 1894 at the mouth of the Hay River to trade with the Buffalo Lake band of the Slavey. Some of the Slavey who had settled permanently at the mouth of the Hay River to raise livestock asked for a Roman Catholic priest to be sent. Instead, the Anglican Church established a mission and school in 1893, which served the whole of the Mackenzie Diocese. A Roman Catholic mission was not established until 1900 (Harrison, 1984).

By the 1920s, an RCMP detachment and several free-traders were added to the settlement. Hay River became a regular stop-off point for the increased steamboat traffic on Great Slave Lake and the associated transportation improvements made the re-supply of settlements farther north less costly. As a result, the Anglican Church was able to move the residential school to Aklavik in 1936 to be nearer to the centre of the native Anglican population (Harrison, 1984). Subsequently, the closing of the

residential school, combined with the closing of the RCMP detachment and the bankruptcy of Northern Traders, sent Hay River into a period of decline where the non-native population numbered no more than 15 or 16 (Rae, 1963).

A winter cat-trail was constructed between Grimshaw, Alberta and Hay River in order to deliver supplies to the mines in Yellowknife in 1938; it had little effect upon Hay River. This trail was re-opened in 1942 by the United States Army to build an airport at Hay River as part of the Canol pipeline staging route to Norman Wells. The construction and operation of the airport doubled the non-native population by 1946, which relocated from the east side of the river to Vale Island where the airport had been constructed (Rae 1963).

Following the re-opening of gold mines in Yellowknife after the end of the Second World War, there was pressure on the federal government to build an all-weather road to Hay River to augment the seasonal water transportation link via Fort Smith. In addition, the Alberta government wanted to open northern Alberta to agricultural development, and the construction of a road to Hay River complemented Alberta's goal of opening up its northern lands. The Mackenzie Highway to Hay River was completed in 1948 as a joint federal-provincial project. The Mackenzie Highway made Hay River a quicker transshipment point to Yellowknife, but the Slave River route via Fort Smith would remain a less expensive route (Rae, 1963).

Concurrent to the opening of the Mackenzie Highway, commercial fishing on Great Slave took hold because the Mackenzie Highway made it possible to ship fresh fish to southern markets. To accommodate the fishing boom that lasted from 1948 to 1955, a separate site was laid out on the West Channel for the fish plants as a means to prevent pollution problems on the main town site on the southern edge of Vale Island (Harrison 1984).

By 1950, Hay River had developed into three distinct and separate settlements forming a fragmented town: the main town on Vale Island, the West Channel fishing village, and the Indian village on the east bank. Due to serious flooding on Vale Island in 1951 and 1963, a fourth "modern" planned community was created on the mainland in 1964 to accommodate a population that had exceeded 1,000 (Wallace 1966).

The Great Slave Lake railway, linking Hay River to Roma, Alberta, was completed in 1964 to serve the Pine Point lead-zinc mine located 100 km east of Hay River. This project also facilitated the economic transport of bulk materials and fuel oil to barges at the harbour in Hay River. As a result, the town's pre-eminence as the transportation centre of the western NWT was assured (Wallace 1966).

In the late 1960s and early 1970s, Hay River experienced rapid growth as a supply centre for the oil and gas exploration boom in the Mackenzie Delta and Beaufort Sea, as well as providing services to Pine Point Mine. A downtown core in the new town was established and included a 17-storey high-rise apartment building built in anticipation of a development boom from the Mackenzie Valley Pipeline. However, by the late 1970s, there was a downturn in the local economy due to the moratorium on the Mackenzie Valley Pipeline and the construction of the Dempster Highway to Inuvik in 1979, which diverted freight from Hay River. The closing of Pine Point

Mine in 1988 came as another blow and the railway link to the harbour in Hay River was almost shut down. However, the “Buy North” policies of the Territorial government stimulated the creation of manufacturing and agricultural sectors in the 1990s. Growth in this sector has contributed to Hay River having the largest percentage of private sector employment of any community in the NWT.

#### **15.9.3.1.7 Hay River Reserve**

Following the end of the Second World War, the Slavey living on the east bank of the Hay River became isolated and marginalized from the growing public services and employment opportunities located on the other side of the river. By the 1970s, the town of Hay River expected that the construction of the Mackenzie Valley Pipeline would create a period of unprecedented growth. To accommodate expanded harbour facilities, the town wished to extend its municipal boundaries to the east bank of the river.

The Slavey decided that the only solution to protecting their village and traditional way of life was to request that Treaty 8 be fulfilled through the creation of a reserve. Following an unsuccessful legal challenge by the town of Hay River, a 25 mile reserve was created in 1974.

Due to flooding, most of the residences at the mouth of the river were gradually relocated two miles upstream. In the 1980s, band members focused on re-establishing a school on the reserve and initiated a movement of widespread recovery from substance abuse. The band’s commitment to education and sobriety culminated with the establishment of the Dene Cultural Institute and a regional residential treatment centre in the early 1990s. Since that time, the reserve has also attracted a helicopter base, as well as the NWT Forest Management Centre and several other enterprising businesses.

### **15.9.3.2 CURRENT SOCIO-ECONOMIC ENVIRONMENT**

#### **15.9.3.2.1 Demographics**

Most of the Aboriginal residents of the South Slave region are descendents from the Chipewyan, part of the broader Dene (Northern Athapaskan) linguistic group. In 2005, the South Slave region had a population of approximately 7,273 persons (Table 15.9.2), of which about 60% were Aboriginal (GNWT, 2007). Age distribution data in Table 15.9.3 shows a large proportion of the population in the South Slave region in the 25- to 59-year-old cohort, indicating that nearly 51% are either already in, or are currently entering, their prime working years (GNWT, 2007).

The population of all South Slave communities except the Hay River Dene Reserve have declined over the last ten years. For example, between 1996 and 2007 Fort Resolution’s population declined by 56 (9.9%) persons, Fort Smith by 128 (5%), Hay River by 143 (3.8%) and Łutsel K’e by 42 (10%) from its peak of 421 in 2004. Meanwhile, between 1996 and 2007, the Hay River Dene Reserve grew by 37 (13.9%) persons (Bureau of Statistics, 2008).

There is a distinct out-migration trend that, if left unchecked, could erode the economic viability and livelihood choices of the South Slave region communities.

Table 15.9.2 — South Slave Population by Community

Community	Total	Aboriginal	Non-Aboriginal	Aboriginal %
Fort Resolution	510	443	67	87
Fort Smith	2,430	1,443	987	59
Hay River	3,651	1,751	1,900	48
Hay River Dene	303	303	X	100
Łutsel K'e	379	360	19	95

Source: GNWT Bureau of Statistics

Table 15.9.3 — South Slave Population Distribution by Age

Community	0 - 4	5 - 9	10 - 14	15 - 24	25 - 44	44 - 59	60 +
Fort Resolution	31	30	44	100	139	88	78
Fort Smith	170	166	154	415	746	480	299
Hay River	247	277	289	590	1058	774	416
Hay River Dene Reserve	11	29	31	58	92	49	33
Łutsel K'e	25	37	29	50	128	68	42

Source: GNWT Bureau of Statistics

### 15.9.3.2.2 Education

The proportion of the South Slave region population holding at least a high school diploma has been trending upward over the past decade. However, the average still lags behind that of the NWT and Canada. Moreover, while growth rates in educational attainment rates across Canada have accelerated sharply since 2001, the rate for the South Slave has failed to keep pace. Table 15.9.4 shows the high school diploma rates across all South Slave communities, across the NWT, and across Canada as a whole. As of 2004, the proportion of South Slave residents who had at least a high school diploma was 55% , compared with a 68% rate for the NWT and 81% across Canada as a whole (GNWT, 2007). If the communities of Łutsel K'e, Fort Resolution and the Hay River Reserve are excluded, the level of educational attainment in Fort Smith and Hay River more closely match the Canadian average (GNWT 2007).

In the South Slave region, about 67% of adults have a high school diploma. This is identical with the overall rate in the Northwest Territories. There is an Aurora College and Research Centre in Fort Smith. Fort Smith and Hay River each have career centers; Fort Resolution and Hay River have community learning centres.



Table 15.9.4 — Proportion of Population Holding a High School Diploma or Higher

Community	YEAR					
	1991 (%)	1994 (%)	1996 (%)	1999 (%)	2001 (%)	2004 (%)
Fort Smith	63.30	61.60	66.00	70.70	69.30	74.40
Lutsel K'e	37.80	32.70	28.60	45.90	40.00	38.30
Fort Resolution	33.80	34.40	45.90	39.30	44.60	46.30
Hay River Reserve	17.90	36.70	30.30	39.00	37.10	44.10
Hay River	61.30	64.30	64.00	71.20	67.30	70.00
South Slave Average	42.82	45.94	46.96	53.22	51.66	54.62
NWT Average	59.90	63.20	63.50	66.10	64.80	67.50
Canadian Average	59.05	62.72	66.26	69.00	71.00	81.00

Source: GNW T Bureau of Statistics

### 15.9.3.3 TRADITIONAL ECONOMY

The traditional economy is a significant component of the South Slave region economy, with nearly 50% of the population hunting or fishing and 20% involved in trapping in 2004 (Table 15.9.5) (GNWT, 2007). There is greater emphasis on traditional livelihood activities in Lutsel K'e and Fort Resolution, possibly because there are few alternative livelihood strategies to pursue.

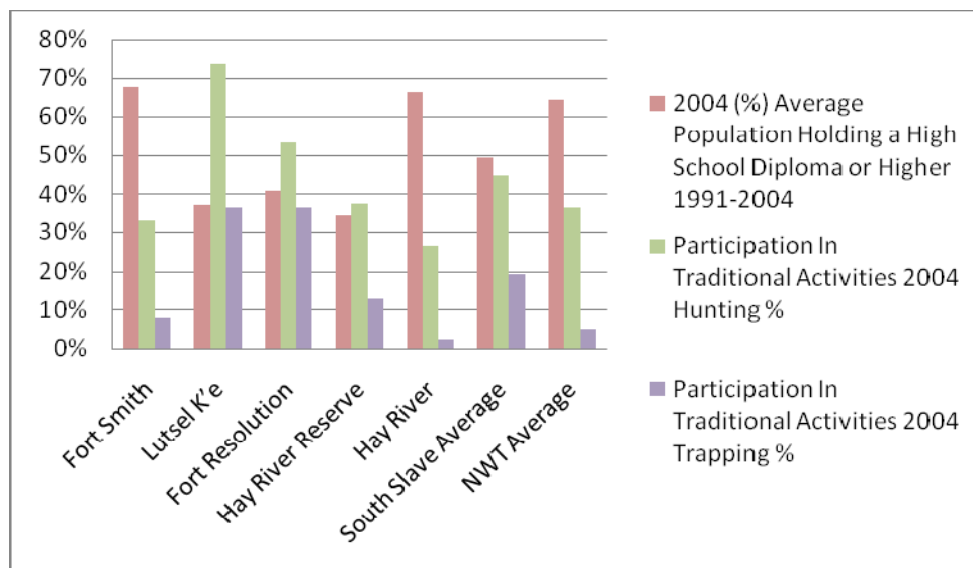
Table 15.9.5 — Participation in Traditional Activities: 2004

Community	Hunting (%)	Trapping (%)
Fort Smith	33.30	8.00
Lutsel K'e	73.60	36.70
Fort Resolution	53.30	36.70
Hay River Reserve	37.70	12.70
Hay River	26.40	2.20
South Slave Average	44.86	19.26
NWT Average	36.70	4.90

Source: GNWT 2007

The combined information of Tables 15.9.4 and 15.9.5 is presented in Figure 15.9.1. It shows Fort Smith and Hay River approximate average NWT educational attainment levels, and that in Lutsel K'e, Fort Resolution and the Hay River Dene Reserve there are more people involved in traditional pursuits than those having obtained a high school diploma or higher, perhaps revealing the socio-cultural value placed on practicing traditional hunting and trapping in these communities.

**Figure 15.9.1 — Average Population Holding a High School Diploma and Participation in Traditional Activities: 2004**



Source: GNWT Bureau of Statistics

### 15.9.3.4 REGIONAL ECONOMY

#### 15.9.3.4.1 Employment

As in the NWT, most employment in the South Slave region is concentrated in public sector services such as government, health, and education. Table 15.9.6 shows this employment pattern is consistent throughout the South Slave region, except in Hay River, where other industries account for 45.5% of employment activity (GNWT 2007).

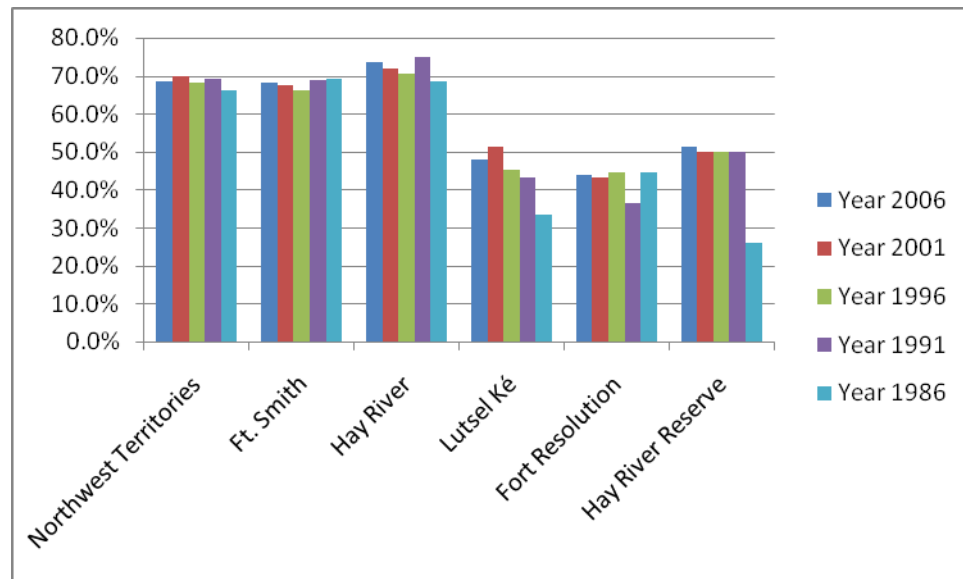
Figure 15.9.2 shows that Fort Resolution, Łutsel K'e and the Hay River Dene Reserve consistently trail Hay River and Fort Smith with respect to employment rates. Study area communities are characterized by small economic markets producing few new employment opportunities.

**Table 15.9.6 — Employment Composition**

Community	Government, Health, Education (%)	Goods Production (%)	Other Industries (%)
Fort Smith	47.80	14.50	35.40
Łutsel K'e	57.90	18.30	16.50
Fort Resolution	50.30	16.80	23.80
Hay River Reserve	46.80	10.60	28.70
Hay River	34.20	15.10	45.50
South Slave Average	47.40	15.06	29.98
NWT	41.70	16.30	37.80



Figure 15.9.2 — Historical Employment Rates NWT: 1986 to 2006

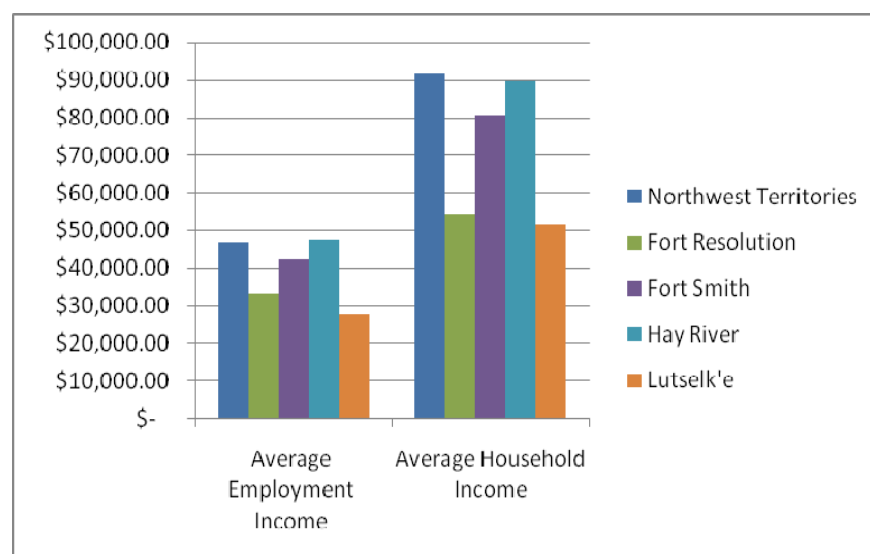


Source: GNWT Bureau of Statistics

#### 15.9.3.4.2 Household Income

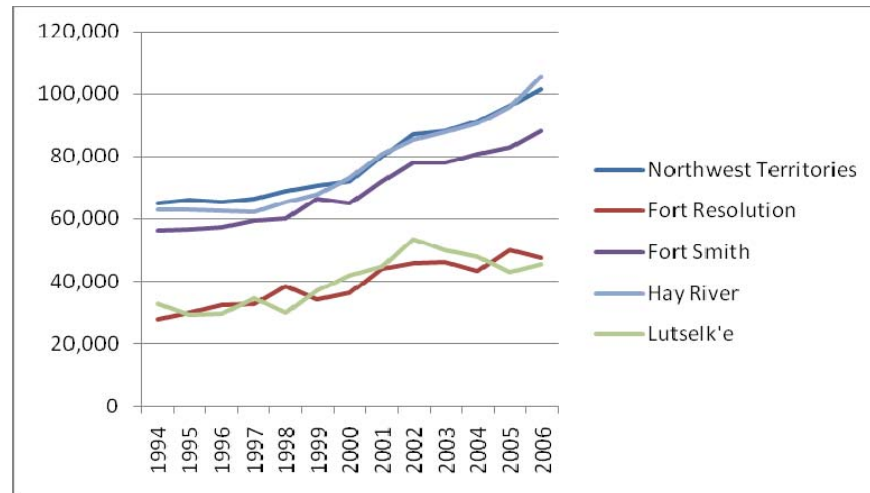
Average employment and average household incomes in Fort Smith, Lutsel K'e and Fort Resolution are below those of the NWT (Figure 15.9.3). This gap likely reflects the lack of private sector employment opportunities, which tend to pay higher than equivalent work in the public sector. And, as shown in Figure 15.9.4, there is a distinct divide in average family incomes between Hay River, Fort Smith and the NWT as a whole, and Fort Resolution and Lutsel K'e. That is, average family income in Fort Resolution and Lutsel K'e is about half of that in Hay River, Fort Smith and the NWT.

Figure 15.9.3 — NWT Average Employment and Household Income: 2006



Source: GNWT Bureau of Statistics

Figure 15.9.4 — Family Income: All Families Average Income: 1994 to 2006



Source: GNWT Bureau of Statistics

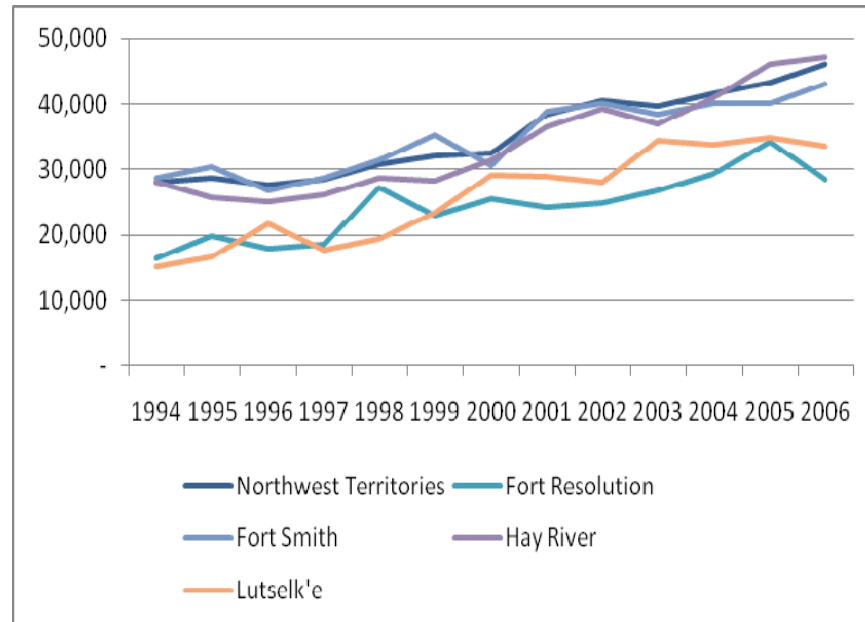
Overall, the data suggests that the South Slave region, with the exception of Hay River, has fewer well-paying jobs and low economic diversity, relying predominantly on government for income and employment.

The South Slave region remains economically isolated with comparatively little private-sector investment as compared to other regions of the NWT. Consequently, the South Slave region has not benefited from increased and diversified employment and income earning opportunities, and associated benefits.

#### 15.9.3.4.2.1 Lone-Parent Family Income

The trend in lone-parent average family incomes mirrors that of average family incomes in the South Slave region with one exception: lone-parent average family incomes are notably lower. Lone-parent average family incomes in Lutsel K'e reached a plateau in 2003 and have declined since, while in Fort Resolution, lone-parent family incomes have been declining since about 2004. Conversely, lone-parents in Fort Smith, Hay River and the NWT have consistently trended upward, as shown in Figure 15.9.5.

Figure 15.9.5 — Family Income: Lone-Parent Families Average Income: 1994 to 2006

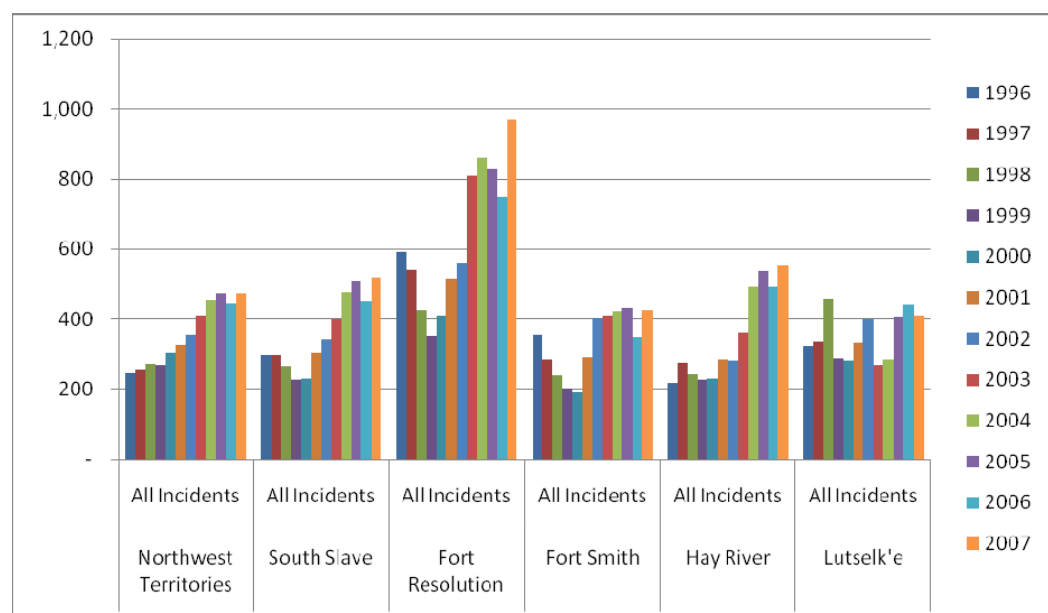


Source: GNWT Bureau of Statistics

### 15.9.3.5 INCIDENTS OF CRIME

Incidents of crime in the South Slave region increased from about 1999 to 2004, and then plateaued. This mirrors the trend in the NWT. Conversely, incidents of crime in Lutsel K'e have remained stable over the same period, while Fort Resolution has the highest rate of all South Slave region communities at nearly 1,000 incidents per 1,000 persons (Figure 15.9.6).

Figure 15.9.6 — Number of Incidents of Crime per 1,000 Persons: by Detachment 1996 to 2007



### 15.9.3.5.1 Labour Force Characteristics

Labour force participation rates in Hay River and Fort Smith mirror those in the NWT, while participation rates in Fort Resolution and Łutsel K'e are significantly lower (Table 15.9.7).

**Table 15.9.7 — Labour Force Characteristics: South Slave region**

Indicator	NWT	Fort Smith	Fort Resolution	Hay River	Łutsel K'e
Population 15 years old and over	31,341	1,898	415	2,694	303
Employed	68%	63%	45%	70%	54%
Unemployed	8%	6%	10%	8%	9%
Not in labour force	24%	32%	45%	23%	37%

Source: Summary of NWT Community Statistics 2007, Bureau of Statistics, Government of the NWT

A total of 383 individuals are identified as unemployed in the South Slave region, with a further 1,515 identified as not in the labour force. Those available to participate in Project employment, if they are qualified and if they wish to do so, include those currently unemployed, which by definition means that they are looking for work; possibly some of those that are categorized as currently not in the labour force. This latter group includes individuals who have ceased to look for work. In many smaller communities, one reason people may be listed as “not in the labour force” is that they have stopped looking for work as there are no jobs to find. Presumably, when Project jobs do become available, some of the persons in this category would once again begin looking for work. The Expansion Project is of a defined length and many of the employment opportunities would be of a seasonal nature.

It should be noted that surveys conducted by the Government of the Northwest Territories' Bureau of Statistics show that interest in rotational work is strongest in communities with the lowest number of employment opportunities. This is demonstrated in Table 15.9.8, wherein 73.8% of the unemployed in Fort Resolution and 60.7% of the unemployed in Łutsel K'e indicate an interest in rotational work.

**Table 15.9.8 — Potential Available Labour Supply (Unemployed Residents)**

Indicator	NWT	Fort Smith	Fort Resolution	Hay River	Łutsel K'e
Number of unemployed	2,454	107	42	206	28
Per cent willing to do rotational work	70.3	44.9	73.8	49.5	60.7
Per cent male	64.4	57.9	73.8	53.9	82.1
Per cent Aboriginal	77.3	83.2	100.0	75.7	100.0
Per cent with less than high school diploma	52.3	33.6	50.0	52.9	85.7

Source: Summary of NWT Community Statistics 2007, Bureau of Statistics, Government of the NWT

It is also important to note that about 50% of the unemployed in the South Slave region have not completed the necessary studies to receive a high school diploma. Limited educational background is a limiting factor for job seekers; the importance of this becomes apparent when one examines the employment rate of residents who do not possess a high school diploma or its equivalent (Table 15.9.9).

Historically, a significant limiting factor in employment and advancement of northern workers within the Northwest Territories' labour force has been educational achievement. This challenge is illustrated by examining the statistics related to the employment rates of individuals with different levels of education. The overall employment rate for the South Slave region is, at 64.2%, only slightly lower than the NWT rate of 67.8%. However, the employment rate for South Slave residents who have not yet received a high school diploma is significantly lower at 40.7%.

**Table 15.9.9 — Employment Rates by Education Level: South Slave**

Indicator	NWT	Fort Smith	Fort Resolution	Hay River	Lutsel K'e
Less than high school diploma (%)	38.8	32.9	30.0	49.0	38.0
High school diploma or greater (%)	81.7	73.1	60.9	78.8	79.3

Source: Summary of NWT Community Statistics 2007, Bureau of Statistics, Government of the NWT

**15.9.3.5.2 Business Activity**

Anticipated private sector investment and business activity in the South Slave region over the next five years is notably lacking when compared to other regions of the NWT as reported in Table 15.9.10; expected private-sector investments in the South Slave region include the Tamerlane Ventures proposed mine at Pine Point and possibly the proposed Taltson Hydroelectric Expansion Project.

Socio-economic factors affecting the level of private sector investment, business activity and employment in the South Slave region include political uncertainty, business climate, availability of jobs, educational levels attained, availability of training, and the level of government financial support. Indirect benefits of private-sector investments include businesses that provide goods and services such as housing, retail and professional services. As the South Slave region develops economically, the diversity of goods and services available should increase.

Lutsel K'e should also benefit economically with the establishment of the East Arm National Park and its associated tourism and recreation opportunities.

The longer-term challenge to businesses and potential investors in the South Slave region is the availability of qualified workers, either from the existing population or from immigration. If from immigration, then the task would be to provide adequate urban infrastructure and services so that worker wages remain in the South Slave region.

Table 15.9.10 — Planned Projects over \$1 Million in the NWT

Economic Activity	Project Purpose	Project Name	Notable Feature	Location	Status
<b>MINING</b>					
North American Tungsten Ltd.	Mining: Tungsten	Cantung Mine	200 Employees	Fort Simpson	Operating
West Hawk Development Corporation and Sasol	Energy (coal to liquid conversion)	West Hawk Tulita Coal Project	Unknown	Tulita	Feasibility
De Beers	Mining: Diamonds	Gahcho Kué	\$1B +	Łutsel K'e	Impact Review
Fortune Minerals NICO Project	Mining: Polymetallic	NICO Project	\$200,000,000	Wha Ti	Advanced
Tyhee Development Corp.	Mining: Gold	Yellowknife Gold Project	\$180,000,000	Yellowknife, Detah/Ndilo	Permitting
Prairie Creek Mine	Mining: Zinc	Prairie Creek Mine	\$ Constructed-needs Refurbishment	Fort Simpson	Advanced
Tamarlane Ventures Inc.	Mining: Zinc and Lead	Pine Point Project	\$10,000,000	Hay River/Fort Resolution	Permitting
North American General Resources Corporation	Mining: Diamonds	Wool Bay Project	\$3,000,000	Detah, Ndilo, Yellowknife	Exploration
Garnet Resources Ltd.	Mining: Diamonds	Drybones Bay-Grow Cap	\$1,000,000	Detah, Ndilo, Yellowknife	Exploration
Snowfield Development Corporation	Mining: Diamonds	Drybones Bay	\$5,000,000	Detah, Ndilo, Yellowknife	Exploration
Seabridge Resources Ltd.	Mining: Gold	Courageous Lake Project	\$7,000,000	Detah, Ndilo, Yellowknife	Exploration
Diamonds North Resources Ltd.	Mining: Diamonds	Carp Lake Project	\$1,000,000	Detah, Ndilo, Yellowknife	Exploration
Peregrine Diamonds	Mining: Diamonds	Lac de Gras	\$5,000,000 +	Detah, Ndilo, Yellowknife	Exploration
SouthernEra Diamonds Inc.	Mining: Diamonds	Glowworm, Tarpon, Savannah Lake Area	\$1,000,000	Detah, Ndilo, Yellowknife	Exploration
Trigon Exploration Canada Ltd.	Mining: Diamonds/ Uranium	Pethie Peninsula	\$1,000,000	Detah, Ndilo, Łutsel K'e	Exploration
Kodiak Exploration Ltd.	Mining: Nickel	Caribou Lake Property	\$1,000,000	Detah, Ndilo, Łutsel K'e	Exploration
Consolidated Global Diamond Corporation	Mining: Diamonds	Courageous Lake Project	\$1,000,000	Detah, Ndilo, Łutsel K'e	Exploration

Economic Activity	Project Purpose	Project Name	Notable Feature	Location	Status
Consolidated Goldwin Ventures Inc.	Mining: Diamonds	Drybones Bay Project	\$1,000,000	Detah, Ndilo, Łutsel K'e	Exploration
Sidon International Resources Corporation	Mining: Diamonds	Drybones Bay Project	\$1,000,000	Detah, Ndilo, Łutsel K'e	Exploration
Tyhee Development Corp.	Mining: Gold	Big Sky Property	\$2,000,000	Detah, Ndilo, Łutsel K'e	Exploration
Kaska Minerals Corporation	Mining: Exploration	Keele River-Tulita District	\$2,000,000	Tulita, Norman Wells	Exploration
Sanatana Diamonds Inc.	Mining : Diamonds	Lac Des Bois / Lac Belot - K'asho Gotine District	\$1,000,000	K'asho Gotine	Exploration
Pure Gold Minerals Inc.	Mining: Gold	Colville Lake area - K'asho Gotine District	\$1,000,000	Colville Lake area - K'asho Gotine District	Exploration
Cooper Minerals Inc.	Mining: Exploration	Contact Lake Property-Deline District	\$1,500,000	Deline	Exploration
Pacifica Resources Ltd.	Mining: Exploration	Selwyn Project - Tulita District	\$1,500,000	Tulita	Exploration
Hunter Bay Resources	Mining: Exploration	Project - Tulita District	\$1,500,000	Great Bear Lake	Unknown
Eagle Plains Resources Ltd.	Mining: Exploration	Project - Tulita District	\$1,500,000	Tulita	Exploration
Alberta Star Development Corporation	Mining: Exploration	McTavish Arm of Great Bear Lake	\$5,000,000	Deline	Exploration
Patrician Diamonds Inc.	Mining: Exploration	Tulita & Deline Districts	\$2,000,000	Tulita, Deline	Exploration
Cameco	Mining: Exploration	Leith Peninsula Project	\$5,000,000	Leith Peninsula	Exploration
Northern Lights Uranium Corp.	Mining: Exploration	Tulita & Deline Districts	\$1,500,000	Selwyn Mountains	Exploration
Diamondex Resources Ltd.	Mining: Exploration	Lac Des Bois	\$1,500,000	K'asho Got'ine/Inuvik	Exploration
<b>OIL AND GAS</b>					
International Frontier Resources Corporation	Oil and Gas	Central Mackenzie Valley Summit-Keele and Colville Lake Projects	\$26,500,000.00	Coleville Lake and Norman Wells	Exploration



Economic Activity	Project Purpose	Project Name	Notable Feature	Location	Status
Northern Canada Exploration and Development Company (Subsidiary of Paramount Resources Ltd.)	Oil and Gas	Cameron Hills	\$10,000,000 +	Kakisa, Hay River, Fort Simpson, Fort Liard	Production and Exploration
MGM Energy Corporation	Oil and Gas	Umiak SDL (Mackenzie Delta)	\$10,000,000 +	Normal Wells, Colville Lake, Inuvik	Exploration
Northrock Resources Ltd.	Oil and Gas	Summit Creek B-44	\$10,000,000	Norman Wells, Tulita	Exploration
Encana	Gas	La Biche Nahanni Prospect	\$1,800,000	Fort Liard, Nahanni Butte	Exploration
Husky Oil Operations Ltd.	Gas	Stewart D-57, Summit Creek K-44	\$50,000,000	Tulita	Exploration/ Seismic
Canadian Natural Resources	Gas	Bovie, Arrowhead, and Netla Prospects	\$30,000,000 +	Fort Liard, Nahanni Butte	Development (pipeline forthcoming)
Shell Canada Ltd.	Gas	Mackenzie Gas project - Imperial is the lead on the project	16,000,000,000	All	Permitting
Pacific Roderia Energy Inc	Gas	Summit Creek, Stewart Lake, Keele River Prospects	\$20,000,000	Tulita, Norman Wells	Exploration
Kodiak Energy Inc.	Oil and Gas	Little Chicago	\$25,000,000 +	Norman Wells, Tulita	Exploration
Talisman Energy Inc.	Oil and Gas	Keele River-Tulita District	\$10,000,000	Norman Wells, Tulita	Seismic
Petro-Canada	Oil and Gas	Kwijika M-59 - Exploratory well within EL433	\$10,000,000	Deline	Exploration
BG International Ltd.	Oil and Gas	Colville Hills-Kasho Gonne District	\$10,000,000	Colville Lake	Seismic
Paramount Resources Ltd.	Oil and Gas	Kelly Lake-Tulita District	\$10,000,000	Tulita, Norman Wells	Exploration
Apache Canada Ltd.	Oil and Gas	Turton Lake A-58	\$10,000,000	K'asho Got'ine	Exploration
Explor Data Ltd.	Seismic	Near Deline-Deline District	\$15,000,000	Deline	Seismic
Devon Energy	Oil and Gas	Tulita/Deline Districts	\$1,000,000	Tulita, Deline	Unknown

Economic Activity	Project Purpose	Project Name	Notable Feature	Location	Status
Cyries Energy Inc.	Oil and Gas	Grandview Area-K'asho Gotine District	\$10,000,000	K'asho Got'ine	Exploration
Imperial Oil and ExxonMobil Canada	Oil and Gas	Beaufort Sea and Mackenzie Delta	\$585,000,000	Inuvik, Tuktoyuktuk	Work bid commitment
ConocoPhillips Canada Resources	Oil and Gas	Beaufort Sea and Mackenzie Delta	\$12,084,131	Inuvik, Tuktoyuktuk	Work bid commitment
Chevron	Oil and Gas	Beaufort Sea and Mackenzie Delta	\$1,010,100	Inuvik, Tuktoyuktuk	Work bid commitment
Encana	Oil and Gas	Beaufort Sea and Mackenzie Delta	\$40,169,000	Inuvik, Tuktoyuktuk	Work bid commitment
Shell Canada Ltd.	Oil and Gas	Beaufort Sea and Mackenzie Delta	\$11,552,332	Inuvik, Tuktoyuktuk	Work bid commitment
Chevron	Oil and Gas	Beaufort Sea and Mackenzie Delta	\$61,883,000	Inuvik, Tuktoyuktuk	Work bid commitment
MGM Energy Corporation	Oil and Gas	Central Mackenzie Valley	\$8,260,000	Norman Wells and Sahtu Communities	Work bid commitment
Husky Oil Operations Ltd.	Oil and Gas	Central Mackenzie Valley	\$4,888,888	Norman Wells and Sahtu Communities	Work bid commitment
BG International Ltd.	Oil and Gas	Central Mackenzie Valley	\$2,200,000	Norman Wells and Sahtu Communities	Work bid commitment
Talisman Energy Inc.	Oil and Gas	Central Mackenzie Valley	\$539,000,000	Norman Wells and Sahtu Communities	Work bid commitment
Paramount Resources Ltd.	Oil and Gas	Central Mackenzie Valley	\$6,300,000	Norman Wells and Sahtu Communities	Work bid commitment
Husky Oil Operations Ltd.	Oil and Gas	Central Mackenzie Valley	\$10,500,000	Norman Wells and Sahtu Communities	Work bid commitment
Paramount Resources Ltd.	Oil and Gas	Central Mackenzie Valley	\$6,710,000	Norman Wells and Sahtu Communities	Work bid commitment
BG International Ltd.	Oil and Gas	Central Mackenzie Valley	\$16,500,000	Norman Wells and Sahtu Communities	Work bid commitment
Apache Canada Ltd.	Oil and Gas	Central Mackenzie Valley	\$3,200,000	Norman Wells and Sahtu Communities	Work bid commitment

Economic Activity	Project Purpose	Project Name	Notable Feature	Location	Status
Petro-Canada	Oil and Gas	Central Mackenzie Valley	\$34,915,837	Norman Wells and Sahtu Communities	Work bid commitment
Northrock Resources Ltd.	Oil and Gas	Central Mackenzie Valley	\$24,800,000	Norman Wells and Sahtu Communities	Work bid commitment
Paramount Resources Ltd.	Oil and Gas	Central Mackenzie Valley	\$16,200,000	Norman Wells and Sahtu Communities	Work bid commitment
Petro-Canada	Oil and Gas	Central Mackenzie Valley	\$22,000,000	Norman Wells and Sahtu Communities	Work bid commitment
<b>HYDRO-ELECTRIC</b>					
Dezé Energy Corporation	Electrical Power Generation	Taltson Expansion	\$350,000,000	Fort Smith, Łutsel K'e	Permitting
Sahdae Energy	Electrical Power Generation	Great Bear River	\$100,000,000	Tulita	Planned
NTPC	Electrical Power Generation	Snare River Site	\$20,000,000 +	Behchoko, Wha Ti	Planned
<b>TRANSPORTATION</b>					
Dehcho Bridge Corporation	Development Corporation	Deh Cho bridge	150,000,000	Fort Providence	Advanced EPCM
GNWT, DOT	GNWT	Mackenzie Valley Highway Extension	\$750,000,000	Several	Preliminary Planning
GNWT, DOT	GNWT	Slave Geologic Province Transportation Corridor	\$650,000,000	Several	Preliminary Planning
GNWT, DOT	GNWT	Inuvik Tuktoyuktuk Road	\$210,000,000	Inuvik, Tuktoyuktuk	Preliminary Planning
Terra Firma Consultants	Private	Joint Venture All Season Road	\$200,000,000	Yellowknife	Feasibility
CN Rail	Private	multi-commodity loading and off loading operation	\$59,000,000	Hay River	In Progress

Source: Westman, D. 2008. GNWT Department of Industry Tourism and Investment. Personal Communication October, 2008

**15.9.3.5.3    Infrastructure**

Communication services are available in all South Slave region communities. This includes postal service, land-line phone coverage, cable and/or satellite television, and internet via cable or satellite. There is cell phone coverage in Fort Smith and Hay River. There is public internet access in Fort Smith and Hay River.

All communities are accessible by road year-round. Roads in Fort Smith and Hay River are paved, and those in the other South Slave communities are chipseal or gravel. The railway terminus in Hay River is the farthest north of any railroad in Canada.

Fort Smith and Hay River are both on conventional piped- and truck-hauled water and sewage services. All other communities truck in fresh water and truck out waste.

All communities have high schools. All communities have ATM services and Fort Smith and Hay River also have banking services. There are Community Futures Centres in Hay River and Fort Smith. All communities have RCMP officers, volunteer fire departments, and emergency medical services. Hay River has a hospital and there are health centres in Fort Smith and Fort Resolution. Gasoline and diesel fuels are available in all communities.

Overnight lodging is available in all communities except the Hay River Reserve. Hay River has the most choices with five hotels or motels. There are restaurants in all communities and all communities except Fort Resolution have public libraries.

Of the 2,458 housing units in the South Slave region, 63.1% are privately owned. This exceeds the NWT rate of 52.7%.

On the southern shore of Great Slave Lake, near Wood Buffalo National Park, the South Slave region offers a variety of recreation opportunities. There are visitor centers in Fort Smith, Hay River and the Hay River Reserve. World-renowned kayaking occurs on the Slave River near Fort Smith. All communities have campgrounds and parks. There are hiking trails in all communities except Fort Resolution. Fort Smith and Hay River have swimming pools. There are lodges and/or outfitters in Fort Smith, Fort Resolution, Hay River, and the Hay River Reserve.

**15.9.3.5.4    Socio-Economic Outlook**

In 2007, the Regional Study Area had a total population of 7,014 persons, making it the third-largest in the NWT. The largest community in the region and the second-largest in the NWT is Hay River with 3,680 persons. All communities except Łutsel K'e are accessible by road year-round. Access to Łutsel K'e is by water on Great Slave Lake, or by air. Air service is available to all communities.

Major employers in the region include those in public administration, trade, transportation, health and education. Within the next five years, employment should increase in the transportation, mining, construction, trade and accommodation industries, in part because the South Slave region also serves the expansion needs of other NWT regions. In the next five years, the South Slave region is expected to develop economically by providing support services to the various projects planned or underway throughout the NWT. A few of the larger projects (over \$1 million) in the

South Slave region include the Pine Point Mine, the CN transfer facility in Hay River, and the proposed Project. Other projects of note in the region include a health centre in Fort Smith and rehabilitation of a runway/taxi apron in Hay River.

The personal incomes in the South Slave region total approximately \$215 million. This is about 17% of total personal income in the Northwest Territories.

The South Slave region's short-term economic outlook is neutral, as the prospects for development of mining and oil and gas projects is limited. The South Slave region is expected to grow slightly between 2007 and 2012, adding about 150 persons during this time. This anticipated growth rate falls below the NWT average. The South Slave region also has the least demand for additional workers in the next five years.

#### 15.9.4 Pathways Analysis

This section reports the socio-economic effects of the proposed Project and covers the 3-year construction period and 20-year operational life. Direct and indirect expenditures on materials, wages and resultant tax revenues to both the Federal and Territorial governments are quantified. The exact amount of these future revenues is uncertain, and is a function of a number of variables including the negotiated price for hydroelectric power, the market value and supply of diamonds, and subsequent customer profitability. Under the most conservative of scenarios, the Project's economic performance in terms of return on investment is positive.

Table 15.9.11 summarizes the potential pathways by which the Project could affect the socio-economic environment of the Regional Study Area communities.

**Table 15.9.11 — Pathways Potentially Leading to Effects to Socio-Economic Environment**

Project Component	Pathway	Pathway Duration	Valued Components
Project employment	Increased employment levels	Construction Operations	Employment of northern residents
Project employment	Temporary in-migration of workers to the Project site	Construction	Employment of northern residents
Project employment	More community capacity through workers with greater skills and education gained through employment and training opportunities	Construction Operations	Employment of northern residents
Project employment	Workplace conflict and discrimination	Construction	Employment of northern residents
Employment income	Increased lifestyle choices (including spending habits, behaviour, participation in community and traditional activities) as a result of engagement in the wage economy	Construction Operations	Economic life choices
Employment income	Direct and indirect Project employment opportunities resulting in increased regional employment, income and expenditures	Construction Operations	Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities

Project Component	Pathway	Pathway Duration	Valued Components
Employment and income	Increased division between those that have employment and income, and those that do not	Construction	Economic life choices
Employment and income	Increased employment and economic activity would help retain population in small communities	Construction Operations	Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities
Income	More money to spend and choices regarding personal and financial management. This can have both positive and negative effects (e.g. a positive effect may be improved hunting and trapping equipment; a negative effect may be increased spending on addictive substances)	Construction Operations	Economic life choices
Income	Increased need for social, financial, and protective services resulting from expenditure of employment income on unhealthy lifestyle choices	Construction	Economic life choices
Use of community and NWT infrastructure (roads)	Increased demand on NWT and community infrastructure (roads) from the transport of material and people to the Project	Construction	Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities
Sale of electricity (reduced diesel consumption)	Less diesel needed by Project customers resulting in reduced demand for transport trucks	Operations	Contracting opportunities for northern businesses
Sale of electricity (reduced diesel consumption)	Less use of diesel by Project customers results in fewer CO <sub>2</sub> emissions in the NWT	Operations	Economic life choices
Sale of electricity (reduced diesel consumption)	Reduced demands placed on the constrained Tibbitt to Contwoyto Winter Road	Operations	Contracting opportunities for northern businesses.
Project upgrade and new transmission line	Improved reliability of power to existing residential customers and new non-diesel source for new industrial customers	Operations	Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities
Project upgrade and new transmission line	Long-term regional development	Operations	Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities

#### 15.9.4.1 SOCIO-ECONOMIC DESIGN FEATURES

The Project must operate within a context of fiscal viability and performance and it has a stated goal of optimizing the benefits of the Project first for Northern Aboriginal peoples, with Akaitcho and Métis members being treated as preferred parties within

this demographic. Proposed Project mitigation/enhancement actions are summarized in Table 15.9.12.

**Table 15.9.12 — Project Design Features**

Pathway	Pathway Duration	Proposed Mitigation/Enhancement
Increased employment levels	Construction Operations	Recruitment and employment strategies
Temporary in-migration of workers to the Project site	Construction	Employment training programs
More community capacity through workers with greater skills gained through employment and training opportunities	Construction Operations	Recruitment and employment strategies
Workplace conflict and discrimination	Construction	Cultural awareness programs and conflict resolution policies
Increased lifestyle choices (including spending habits, behaviour, participation in community and traditional activities) as a result of engagement in a waged economy	Construction Operations	Recruitment, employment strategies, training and education
Direct and indirect Project employment opportunities resulting in increased regional employment, income and expenditures	Construction Operations	Recruitment and employment strategies
Increased division between those that have employment and income, and those that do not	Construction	Recruitment and employment strategies
Increased employment and economic activity would help retain population in small communities	Construction Operations	Recruitment and employment strategies and northern business incentive policy
More money to spend and choices regarding personal financial management. This can have both positive and negative effects (e.g. a positive effect may be improved hunting and trapping equipment; a negative effect may be increased spending on addictive substances)	Construction Operations	Cultural awareness programs Employee assistance programs Support of work and life skills training in advance of Project initiation
Increased need for social, financial and protective services resulting from expenditure of employment income on unhealthy lifestyle choices.	Construction	Cultural awareness training Zero tolerance towards alcohol and substance abuse Health and safety training
Increased demand on NWT and community infrastructure (roads) resulting from the transport of material and personnel to the Project site	Construction	Community and government liaison personnel
Less diesel needed by Project customers resulting in reduced demand for diesel transport trucks	Operations	Development of the Project
Less diesel use by Project customers results in fewer CO <sub>2</sub> emissions in the NWT	Operations	Development of the Project
Reduced demand on the Tibbitt to Contwoyto winter road results in forestalling all-weather road access into the Slave Geological Province, and its associated effects	Operations	Development of the Project



Pathway	Pathway Duration	Proposed Mitigation/Enhancement
Improved reliability of power to existing residential customers	Operations	Development of the Project
Long-term regional economic development potential	Operations	Development of the Project

Based on the identification of Valued Components and the analysis of associated pathways, the Project has developed strategies and associated actions in pursuit of its goals. The strategies relate to education, training and employment.

The Project recognizes its leadership role with respect to advancement of its activities and the securing of suitable and qualified staff for the Project, but it does so within the context of the responsibility it shares with governments, educational institutions, and individuals. For example, governments possess the responsibility for funding and delivery of public education and post-secondary education. Individuals have personal responsibilities for their actions in pursuit of education and employment.

#### 15.9.4.2 EMPLOYMENT

The majority of employment would occur during the construction phase of the Project. In planning its employment strategies, the Project proponents would work collaboratively with existing public and Aboriginal governments to provide employment opportunities for Northern Aboriginal and NWT residents.

Employment actions carried out in cooperation with public and Aboriginal governments or their agencies with respect to employment would include:

- work with public and Aboriginal government employment offices and agencies to identify potential qualified Aboriginal and northern residents for the Project;
- develop information on job opportunities for circulation to all South Slave communities;
- develop, where appropriate, equivalencies for academic and credentials required for Project jobs; and
- post job listings using available employment and career centres and electronic means.

In addition, the Project proponent would establish an employment office for the Project in the South Slave region and implement policies to:

- establish safety as a primary priority on all Project work sites;
- ensure that all Project camps are alcohol and drug free;
- establish conflict-resolution processes that are accessible to all workers;
- recognize and respect workplace diversity;
- provide employment priority for qualified Aboriginal and northern residents;
- require contractors and sub-contractors to establish Aboriginal and northern resident employment plans, policies and practices, as well as monitoring and reporting systems that comply with the proponent's commitments and agreements;



- develop procedures which permit, with the agreement of a job applicant, the proponents to assess the risk to the Project of hiring when the applicant has a criminal record;
- work with Aboriginal and community governments to develop plans to address accommodation needs of temporary workers brought in or through communities to Project work sites;
- minimize, where possible, the accommodation of non-resident temporary workers in South Slave communities;
- work with contractors to reduce the number of students leaving school for short-term work;
- establish mechanisms to transport workers, at the Project's cost, from South Slave communities to remote work sites;
- to the extent possible, establish work rotation practices that permit workers in remote locations to return to their homes on a regular basis;
- establish an employee-assistance program to assist Project employees and their families; and
- provide mechanisms for workers to communicate with their families during the period of time when workers are in remote locations.

Enhancement and refinement of the specific planned actions related to employment, education and training would continue throughout the Project's development and design. This would permit the Proponent to be responsive to changing needs in employment and training and allow the Project to take advantage of emerging technologies and processes related to these particular fields.

The Proponent is planning to work cooperatively with existing organizations and agencies in planning employment support activities. Increasingly, coordination of activities and services between remote work sites and employees' home communities has proven beneficial. The Project would support this model of collaborative effort, while ensuring that employee confidentiality is protected at all times. Such support may take the form of referral to existing government services or the referral of potential employees by community agencies to the Project's human resources offices.

#### **15.9.4.3 EDUCATION AND TRAINING**

In addition to implementing and monitoring a Northern Aboriginal Employment and Procurement Policy, Dézé would work to ensure that benefits associated with Project employment are optimized by collaborating with public and Aboriginal governments, schools and Aurora College in the following ways:

- distribute information on industry and Project job types and promote careers for northerners in Project-related areas,
- provide briefings and presentations on the Project and its employment plans and policies to interested groups,
- participate in local and regional career fairs,
- promote the identification and development of courses and programs at the high school and post-secondary level that prepare Northern Aboriginal persons with the skills and knowledge required for employment on the Project,
- provide advice to educators on potential course and program content,

- participate with education and training planners to identify priorities for training,
- identify opportunities for student work placements or internships on the Project,
- work collaboratively with public and Aboriginal governments to support the efficient use of available training funds in support of the development of potential Project workers,
- meet with interested groups of college students to discuss employment opportunities,
- promote high school completion and the completion of high school equivalency for adult students,
- monitor student progress in related training to identify potential employees,
- collaborate with Aboriginal Human Resource Development Agreement (AHRDA) holders' groups and the governments of NWT and Canada and their agencies to identify available funding to support education and training in advance and during the construction phase of the Project, and
- support government agencies, professional associations and chambers of commerce in the delivery of small business management training for interested individuals and northern small businesses.

As well, the Project would:

- direct the delivery of safety training for all Project workers;
- provide cultural awareness training to all Project supervisory personnel;
- in cooperation with the NWT Trades Qualification and Occupation Certification Board, establish processes and mechanisms for registration, documentation of work experience and monitoring of apprentice performance on the Project;
- ensure, where feasible, that members of disadvantaged groups can access training and educational opportunities in order to prepare for employment opportunities associated with the Project;
- require key contractors to provide access to Aboriginal and northern residents to training and employment opportunities that could lead to sustainable employment in the longer term, would support the development of transferable skills, and/or would offer an opportunity for advancement;
- identify on-the-job training opportunities for Project employees;
- use northern trainers, where feasible, in the delivery of Project training;
- provide ongoing support services at the work site for Project employees with a goal of building life skills; and
- during the operational phase of the Project, establish career development plans with all Project personnel.

The implementation of actions related to education and training would assist in providing mechanisms for those requiring enhanced skills and knowledge to compete for positions on the Project. A number of the identified activities would begin following Project approval, but in advance of the initiation of the construction phase. As well, the developer recognizes the training and educational efforts are a continuing element of Project activity throughout the construction and operational phases. Given the relatively short-term nature of the Project, some education and training efforts, particularly those of a pre-employment nature, would be reduced as the construction

phase advances. Other training activities, such as safety training and training responsibilities associated with apprentices, would continue throughout construction and some may also continue into the operational phase of the Project.

Close cooperation would be required with organizations and agencies that have the mandate and responsibility for the delivery of adult and post-secondary education programming. Aurora College is the primary public adult and post-secondary education institution in the Northwest Territories and, as a result, the Project would need to work closely with the institution to support it in its delivery of programs. The Project would have a direct interest in advising the College and the College's funders regarding specific programs that could be delivered to prepare students for work on the Project. In some cases, the College may already deliver courses that would be suitable to the Project's purposes. Examples of current programs that would support the Project include apprenticeship training, Trades Access, and the Camp Cook Program offered at the Thebacha Campus. As well, pre-employment offerings at the College's campuses and in some courses and programs could be delivered in the communities of the South Slave region should funding be available.

Close cooperation with Aurora College's Community Learning Centres in the South Slave communities would also be important. These centres provide adult basic education and life and work skills programming that can assist residents in improving their academic preparation, thus improving access to available jobs (Table 15.9.13). Ensuring that the College's learning centre staff is well-informed of the Project job opportunities would assist in ensuring that interested adult students are aware of the importance and value of their studies.

**Table 15.9.13 — Northern Adult and Post-secondary Programming Related to Project Employment**

Job Categories	Relevant Northern Training for Employment
Unskilled Jobs	Literacy Adult Basic Education Trades Access Chain Saw Safety Small Engine Repair First Aid / CPR WHMIS Camp Cook Northern Most Host
Semi-skilled Jobs	Heavy Equipment Operator Pre-employment Cooking Pre-employment Carpentry Pre-employment Heavy Duty Mechanic Driver Training (various levels) Apprenticeship Training (various)
Skilled	Pre-technology Diploma Management Studies Diploma

As well, coordination with the governments and organizations that fund adult and post-secondary programs would be necessary. Discussions would be needed with the Aboriginal Human Resource Development Agreement holders; the Department of Education, Culture and Employment; Human Resource and Social Development Canada; and the NWT Mine Training Society. These would be useful in determining how training needs associated with the Project may be worked into the overall plans for the South Slave and NWT training. Collaborative models such as those exhibited by regional training (planning) committees could provide the forum for these discussions.

#### **15.9.4.4 NORTHERN ABORIGINAL EMPLOYMENT AND PROCUREMENT POLICY**

Dezé would develop a Northern Aboriginal Project Procurement Policy that would seek to maximize the recruitment and employment of Northern Aboriginal persons and provide them with the first opportunity to fill any available positions. For the purposes of this policy, Northern Aboriginal persons would be defined as status Indians, Métis, non-status Indians and Inuit normally residing in the Northwest Territories. The Akaithcho Territory Government and its members and the Northwest Territory Métis Nation and its members would be considered on a first-preference basis under this policy. Dézé's Northern Aboriginal Procurement Policy would also provide training and apprentice opportunities to as many Northern Aboriginal persons as is commercially viable, and provide for a management succession plan through which Northern Aboriginal persons would be given the opportunity and training to attain supervisory and managerial positions in the Project.

The Northern Aboriginal Employment and Procurement Policy would also provide a committee of the Dézé board of directors with the authority to assess, implement and monitor business employment and training opportunities offered to Northern Aboriginal persons and preferred parties as it relates to contract and employment targets in the pre-construction, construction and operational phases of the Project, and training and other mechanisms to meet contracting and employment targets.

Assuming appropriate organization and coordination, Project employment, education and training associated with employment would be a direct benefit to Northern Aboriginal persons and northerners. Increased employment would provide increased income to those working and to their families. In addition, increased employment income would result in workers and their families having increased choice with respect to lifestyle. The additional income could be used, by those who wish to do so, for the purchase of equipment (boats, tents, snowmobiles, motors, firearms) and supplies (fuel, groceries) to pursue traditional lifestyles.

#### **15.9.4.5 SUPPORTING SMALL BUSINESS DEVELOPMENT**

The Project developer is committed to providing opportunities for Aboriginal and NWT businesses. The developer's intentions with respect to contracting policies, processes, and procedures are discussed elsewhere in this document. The developer's approach to contracting, education and training is to optimize Northern and Aboriginal involvement in Project activities.

The developer proposes to take a number of actions to build an understanding of potential opportunities for small businesses. These actions would include:

- providing early notification of contract opportunities;
- identifying material, service, and supply contracts that can be sized to meet the capacity of small businesses;
- providing briefings related to contracting opportunities and procedures; and
- ensuring that contract documents are clear and direct in their structure and content.

In addition, the developer proposes to support interested small business owners by referring them to governments and other public agencies that have a mandate for providing technical and financial assistance and advice. The Project would support the existing efforts of the governments of the NWT and Canada in their programming targeted toward small business owners. Assistance by the Project staff would include referring small business owners to the appropriate government economic development staff, the Business Development and Investment Corporation, and other appropriate agencies, as well as the distribution of relevant information and materials. In addition, should a small business owner be interested in adult and post-secondary programming, the Project staff would refer them to Aurora College, which offers a range of credited management studies, financial management, accounting, and related courses through its continuing education program.

#### **15.9.4.6 SUBSTANCE ABUSE PREVENTION AND TREATMENT**

Limitations on the size of the potential labour pool for the Project are also influenced, to some degree, by the prevalence of unhealthy lifestyle choices among the population. Participation in unhealthy lifestyles such as alcohol consumption, illicit drug use, or gambling may not immediately limit access to employment or the advancement or retention potential of an individual. However, excessive unhealthy behaviour or participation in behaviours that are not permitted at a Project worksite may result in an individual not being able to fulfill the work expectations.

The Government of the Northwest Territories has developed extensive data on alcohol, drug and tobacco use by Territorial residents. In addition, information on gambling activities is also available. The data, most recently published in *The 2006 Northwest Territories Addictions Report* (July, 2008), highlights current behaviours and the trends that can be found among the NWT population. The survey conducted in 2006 included 1,235 residents surveyed by telephone or through personal interviews.

Consumption of alcohol in the NWT remains quite high with 78% of the population indicating that they have consumed alcohol at least once in the twelve months prior to the survey. As well, 50% of the Aboriginal drinkers and 24 percent of the non-Aboriginal drinkers have engaged in heavy drinking (consumption of five or more drinks at a single sitting) during the same time period. This information is further documented by the determination that 45% of current drinkers consume five or more drinks on a single occasion at least once per month. Based upon application of the Alcohol Use Disorder Identification Test (AUDIT) which identifies hazardous drinking patterns and provides an indication of alcohol dependency, 37% of current drinkers 15 years of age and older scored at a level where drinking is viewed as harmful/hazardous.

The survey examined the types of harm caused by alcohol consumption. A total of 21% of current drinkers reported experiencing one or more types of harm as a result of their own drinking. Harms identified included harm to friendships, home and marriage or financial position and physical harm. Six per cent of current drinkers reported harm to their work or studies. The study also reported use and harm statistics related to the use of illicit drugs.

In the NWT, 72% of the population reports participating in some form of gambling activity at least once in the past year. However, regular gambling, defined as participating at least once per week, is declining. Among the Aboriginal population, regular gambling has declined from 39% to 29% between 1996 and 2006. Among the non-Aboriginal population, regular gambling has declined from 22% to 16%.

Individuals would come to the Project from a wide variety of backgrounds. The Project expects to assess each person applying for a job on his or her skills, abilities and demonstrated suitability of the position for which they are applying. The Project anticipates that the responsible governments would, at a minimum, continue their current health and social programs for NWT residents to address unhealthy lifestyles. Through these programs and services, individuals and families who have concerns about their personal lifestyle choices should be able to access any required assistance in advance of their application to work on the Project. The Project would be prepared to support these efforts by circulating information produced by governments and their agencies at Project worksites.

In addition, the Project would establish policies to ensure that its camps are free from alcohol and drug usage. As well, it would establish an employee assistance program for its employees. This program would provide support for employees and their families who may require assistance as a result of unhealthy behaviours.

### 15.9.5 Pathway Validation

Examination of the potential pathways and assessment of their validity have been carried out. The results of this work and the rationale behind pathway validations are presented in Table 15.9.14.

**Table 15.9.14 — Pathway Validation for Project Employment and Training**

Project Component	Pathway	Pathway Validation
Project employment	Increased employment levels	Valid: Project would create significant short-term employment and negligible direct long-term employment
Project employment	Temporary in-migration of workers to the Project site	Valid: Specialized skills and trades needed for construction of the Project may not be available in the NWT; there may be insufficient NWT labour in some job categories
Project employment	More community capacity through workers with greater skills and education gained through employment and training opportunities	Valid: Short and long-term employment opportunities should impart workers with greater skills and education



Project Component	Pathway	Pathway Validation
Project employment	Workplace conflict and discrimination	Invalid: Cultural awareness programs and conflict resolution policies and procedures provide mitigation
Employment income	Increased lifestyle choices (including spending habits, behaviour, participation in community and traditional activities) as a result of engagement in the wage economy	Valid: Wage employment, and all it imparts, should provide people with further lifestyle choices
Employment income	Direct and indirect Project employment opportunities resulting in increased regional employment, income, and expenditures	Valid: The Project would provide more disposable income to the individuals
Employment and income	Increased division between those that have employment and income, and those that do not	Invalid: The three-year construction period should preclude the development, or exasperation, of divisions among community residents
Employment and income	Increased employment and economic activity would help retain population in small communities	Invalid: The three-year construction period may forestall population losses in the short-term; but provide a basis for retaining community population
Income	More money to spend and choices regarding personal financial management This can have both positive and negative effects (e.g. a positive effect may be improved hunting and trapping equipment; a negative effect may be increased spending on addictive substances)	Valid: Individuals have discretion about how they choose to spend their income
Income	Increased need for social, financial and protective services resulting from expenditure of employment income on unhealthy lifestyle choices	Valid: An increase in community income during the three-year construction phase makes it possible to spend employment income on unhealthy lifestyle choices
Use of NWT and community infrastructure and services (roads)	Increased demand on NWT and community infrastructure (roads) from the transport of material and people to the Project site	Minor: Transport would occur only once it is safe to cross the Slave River Therefore, all roadbeds would be frozen by the time transport on NWT and community roads occurs
Sale of electricity (reduced diesel consumption)	Less diesel needed by Project customers resulting in reduced demand for diesel transport trucks	Valid: About 30% of all diesel traffic loads on Tibbitt to Contwoyto Winter Road are for stationary power generation
Sale of electricity (reduced diesel consumption)	Less diesel use by Project customers results in fewer CO <sub>2</sub> emissions in the NWT	Valid: Project would reduce NWT CO <sub>2</sub> emissions
Sale of electricity (reduced diesel consumption)	Reduced demand on the Tibbitt to Contwoyto Winter Road results in forestalling any new seasonal all-weather road into the Slave Geological Providence, and its associated effects	Valid: Reduced demand of the Tibbitt to Contwoyto Winter Road could pre-empt other solutions to the Tibbitt to Contwoyto Winter Road capacity constraint

Project Component	Pathway	Pathway Validation
Project upgrade and new transmission line	Improved reliability of power to existing residential customers and a non-diesel energy alternative for new industrial customers	Valid: Existing customers would benefit from the added reliability offered by the Expansion Project and provide an energy alternative to developments in the vicinity of the transmission line with the financial resources to pay for a tie-in
Project upgrade and new transmission line	Long-term regional development	Valid: The Project could contribute to longer-term regional development

#### 15.9.5.1 INVALID PATHWAYS

The following pathways were determined to be invalid:

- Workplace conflict and discrimination. Mitigation practices should be sufficient to address issue of this nature. Conflicts and disputes do occur in the workplace and policies and practices can be established to address and resolve issues as they arise.
- Increased disparity between those that have employment and income and those that do not is a reality in most communities. Based on experiences of recent diamond mine development in the NWT, it is likely that the Project would decrease income disparity at the community level. Also, the effect would be limited by the three-year construction period, thus limiting any long-term increase in income disparity among community residents.
- Increased employment and economic activity would not help retain populations in small communities over the long-term. The three-year construction period may forestall population losses in the short-term and provide a basis for retaining community populations. After the construction phase of the Project, communities are expected to return to the conditions that are present at the current time.

#### 15.9.5.2 MINOR PATHWAYS

The following pathway was identified as Minor:

- There would be a minor increase in the use of NWT and community infrastructure (roads) resulting from the transport of Project materials, equipment, supplies and people to the Project sites. Transport would occur only once it is safe to cross the Slave River. Therefore, all roadbeds would be frozen by the time transport is scheduled to occur. The development of the Project also has the potential to demand more from community infrastructure such as transportation services and hubs and emergency services. These effects would most likely be limited to the construction period. There is a sufficient existing capacity to meet the short-term infrastructure demands created by the proposed Project.



**15.9.5.3 VALID PATHWAYS**

The following pathways were classified as Valid:

- Increased employment levels. The Project would create short-term employment for Aboriginal and northern residents in the South Slave and NWT. Direct, long-term employment would be limited.
- Temporary in-migration of workers to the Project site. Specialized skills and trades needed for construction of the Project may not be available in the NWT, and there may be insufficient NWT labour for some job categories.
- More community capacity. Workers would develop greater skills and education through employment and training opportunities gained on the Project.
- Increased lifestyle choices (including spending habits, behaviour, participation in community and traditional activities). Additional income would result from engagement in the wage economy. Wage employment and all it imparts should provide people with more lifestyle choices. Project partner profit-sharing provides Aboriginal governments with a greater opportunity to pursue their preferred mix of traditional and non-traditional economic initiatives.
- Direct and indirect Project employment and business opportunities. These would result in increased regional employment, disposable income, and expenditures.
- More money for residents to spend. This can have both positive and negative effects. (e.g. a positive effect may be improved hunting and trapping equipment; a negative effect may be increased spending on addictive substances). Individuals have discretion about how they choose to spend their income.
- Increased need for social, financial, and protective services resulting from expenditure of employment income on unhealthy lifestyle choices by some individuals. An increase in employment income makes it possible for individuals to spend income on unhealthy behaviours.
- Less diesel needed by Project customers resulting in reduced demand for diesel transport trucks. About 30% of all diesel traffic loads on the Tibbitt to Contwoyto winter road are currently used for stationary power generation. Concurrently, the capacity-constrained Tibbitt to Contwoyto winter road would continue to operate at the upper end of its capacity but there would likely be fewer diesel transports. Reduced demand on the Tibbitt to Contwoyto winter road may forestall further consideration of a new seasonal all-weather road into the Slave Geological Province and its associated effects. As well, the Project would provide a power source that is not dependent on the seasonal road.
- Less diesel use by Project customers results in fewer CO<sub>2</sub> emissions in the NWT.
- Reduced fuel hauls over the Tibbitt to Contwoyto winter road would reduce the risk associated with accidents and spills, reduce truck-related effects on the terrain and reduce existing wildlife effects associated with the truck traffic. In addition, the reduced truck traffic would be expected to extend the service life of the existing winter road system, negating or delaying the need for alternative goods and material transportation options and their concurrent effects.
- Improved reliability of power to existing residential customers. The Project would provide a back-up power supply to existing residential customers, reducing their reliance on diesel-generated power when the existing Twin Gorges facility is shut down for repairs or maintenance.

- Long-term regional economic development. The Expansion Project could reduce development barriers associated with energy-intensive developments where access to the transmission line is feasible.

### 15.9.6 Effects Analysis

Valid pathways were grouped into three main categories, namely employment, income and well-being. These categories were assessed in the effects analysis.

#### 15.9.6.1 INCOME

The purpose of the Expansion Project is to better utilize the hydrological resource of the Taltson River to supply the diamond mines in the Northwest Territories with hydroelectric power as a replacement for a portion of the diesel fuel that they currently use. This activity would produce sufficient revenue to cover the cost of the facility's expansion and operations, generate a sufficient return for its investors, and result in tax revenue for the Government of the Northwest Territories and the Government of Canada.

It is uncertain exactly how long consumers of this proposed stream of hydroelectricity would be in operation. The most conservative scenario assumes that gross revenues of hydroelectricity sales decline in the tenth year of operation and become negative in the seventeenth year (Dezé, 2008). Using this scenario, estimates about corporate income, distributions to shareholders, and tax revenues to the Federal and Territorial governments are estimated, as shown in Table 15.9.15.

**Table 15.9.15 — Revenue Contribution of the Taltson Expansion Project**

Revenue Stream	Amount
Revenue from sales of hydro-electric power <sup>1</sup>	\$842,292,534
Net income <sup>2</sup>	\$280,525,743
Distributions to shareholders <sup>3</sup>	\$248,348,769
Tax revenue to the GNWT	\$19,758,603
Tax revenue to the Federal government <sup>4</sup>	\$100,819,939

Source: Dézé Energy Corporation

Notes:

<sup>1</sup> Gross revenue before wheeling charge.

<sup>2</sup> Net income after direct and indirect expenses, depreciation, interest, fees and corporate taxes.

<sup>3</sup> Shareholders are Akaitcho Energy Corp, Métis Energy Corp and NWT Energy Corp (03) Ltd.

<sup>4</sup> Tax revenue includes sales taxes paid by electricity users and sales and income taxes from wage income.

Over an operational period of 17 years, the proposed Project's revenue from sales of electrical power could be in the range of \$840 million. This results in net income of \$280 million to the Dézé Energy Corporation and distributions of \$248 million to its shareholders. During this time, the proposed Project generates an additional \$19 million in tax revenue for the GNWT and \$100 million in tax revenue for the Canadian government (EIS, 2008). This example is for illustrative purposes only as final revenues would be subject to the terms and conditions of the PPAs, financing

obligations, and the final capital costs for the would – all of which have yet to be determined.

The long-term economic returns of the Project to the Dézé partnership of about \$248,000,000 would provide considerable opportunity for the Aboriginal communities of the South Slave region to increase employment opportunities, life style choices, sustainable income, community infrastructure, education and training.

Ownership of Dézé would not only result in direct economic benefits from the Project, but the capital asset—the Project infrastructure—can be used to leverage the development of community infrastructure and initiatives that are cornerstones for building and maintaining sustainable communities. This indirect effect has considerable potential to benefit community health and well-being, enable traditional life-style choices, and strengthen community cohesion.

Revenue sharing from Project expansion would result in positive effects. Therefore, mitigation measures would not be required. However, the company may consider implementing enhancement measures to encourage the maximization of benefits.

#### **15.9.6.2 EMPLOYMENT**

The proposed expansion of the Taltson hydroelectric facility is a labour-intensive effort, particularly during its three-year construction period.

The Project developer's preferred approach to construction phase activity is to select two qualified and suitable contractors to organize and deliver the construction of the Project. One contractor would be responsible for the construction of the civil works including the control structures and new generating plant, while the other would construct the transmission system. Contractors would be required to meet standards and conditions established by the developer. Contract(s) for the operation of the generation and control facilities and transmission line would be established once construction is completed. The approach to contracting is set out in the Northern Aboriginal Project Procurement Policy and would compel Dézé to apply the following approaches with preferred parties prior to implementing an open competitive tendering process. Any preferred party that is qualified and capable of completing the work would be approached either through direct negotiation or closed competitive tendering for Project contracts. Dézé would also consider the splitting of contract packages into smaller work packages that enhance opportunities for preferred parties to secure contracts. The waiving of bonding requirements for certain contracts would also be considered on a case-by-case basis. Dézé is committed to implementing the Northern Aboriginal Procurement Policy but recognizes that construction, operation, maintenance and related goods and services must be conducted on a commercially-reasonable basis and must satisfy all requirements that may be imposed by Project lenders or regulatory authorities.

The developer's current estimates indicate that the Project would result in direct employment positions of approximately 500 to 700 construction jobs during the initial phase of Project facilities and transmission line development. Virtually all of these employees would be contractors for the Project, rather than Dézé employees. These estimates are preliminary, but provide a good basis for examining the types of positions and the expectations for employment of northern Aboriginal and NWT

residents as defined in the Project procurement policy. The job figures would be defined with greater certainty as the design for the Project is finalized and would likely be higher when all ancillary and support positions are defined. The length of these jobs is variable, lasting from one or two months to two years. These jobs would result in nearly 4,950 person-months of work or approximately 412 person-years of activity. Job estimates are based on feasibility level studies undertaken for new generation and control facilities as well as transmission line and substation construction. Notional estimates for Project employment activity are shown in Table 15.9.16.

**Table 15.9.16 — Estimated Employment Levels: Project Construction**

Site and Activity	Number of Employees	Duration of Work (Months)	Total Person Months of Work
<b>Twin Gorges Plant</b>			
Camp Logistics and Management	31	24	744
Excavation and Civil Works	258	Variable	800
Specialized Mechanical and Electrical	72	12	864
Mobilization / Demobilization	26	4	96
<b>Subtotal</b>	<b>387</b>	<b>&gt; 40</b>	<b>2504</b>
<b>Nonacho Lake</b>			
Camp Logistics and Management	6	12	72
Excavation and Civil Works	44	Variable	200
Specialized Mechanical and Electrical	10	8	80
<b>Subtotal</b>	<b>60</b>	<b>&gt; 20</b>	<b>352</b>
<b>Transmission Line</b>			
Camps and Logistics	12-17	23	1077
Clearing	14-28	8.5	121
Foundations	6-48	8.5	150
Structure Assembly	18-36	3.5	301
Structure Erection	6-12	3	31
Conductor Stringing	25	6.6	185
<b>Subtotal</b>	<b>81-166</b>	<b>53</b>	<b>1865</b>
<b>Substations</b>			
Clearing and Foundations	12-36	2	96
Installation and Testing of Electrical Equip.	12-48	2	126
<b>Subtotal</b>	<b>24-84</b>	<b>4</b>	<b>222</b>

Site and Activity	Number of Employees	Duration of Work (Months)	Total Person Months of Work
Construction Phase Totals	552-697	> 98	4953

Notably, construction-phase activities would occur over a two- to three-year period. Employment patterns would follow the construction schedule.

Employment during the Project's operational phase would be limited. Modern technology permits the consolidation of plant and transmission line control on a remote basis. It is anticipated that 8 to 10 person-years would be required on an annual basis to operate the Project, and almost all of these would involve skilled positions.

Based on the Project plan, position titles for the available jobs during the Project's construction and operational phases are outlined in Table 15.9.17.

**Table 15.9.17 — Direct Employment Opportunities**

Job Type	Specific Job Titles	
Skilled	Project Manager Foreperson Camp Superintendent Plant Superintendent Human Resource Manager Financial Manager Heavy Equipment Operator Helicopter Pilot Diamond Drill Operator Power System Lineperson Journeyperson Lineman Construction Blaster	Heavy Equipment Mechanic Electrical Control Technician Electrical Engineer Carpenter Engineering Inspector Power System Electrician Power Station Electrician Structural Ironworker Stationary Engineers Surveyor Camp Cook
Semi-skilled	Security Officer Community Liaison Officer First Aid Attendant Apprentice Power System Electrician Apprentice Lineperson Truck Driver Administrative Clerk	Payroll Clerk Cook Helper Heavy Equip Mechanical Assistant Safety Officer Surveyor's Assistant Finance Clerk Human Resource Clerk
Unskilled	Housekeepers Construction Camp Attendant Construction Labourer General Labour	

The jobs outlined in Table 15.9.17 are divided into three general categories: skilled, semi-skilled, and unskilled jobs. Most of the operational phase jobs fall into the skilled job category, with many positions requiring trades certification or completion of post-secondary studies. The construction phase is expected to provide a broader range of employment opportunities.

Skilled positions generally require professional or vocational certification and in some cases, extensive experience. Required credentials may include a university degree or professional or journeyperson certification. With the exception of some specific job areas (e.g. heavy equipment operators) it is generally difficult to fill skilled jobs from the existing labour pool unless they are drawn from other employers. While this might occur in some cases, it is not the intention of the Project developer to source personnel from other regional and territorial employers. Examples of jobs that would be classified as skilled positions include would management positions, equipment operators, certified electricians and linespersons, inspectors, certified cooks, heavy equipment mechanics, surveyors, and pilots.

Semi-skilled jobs may require at least a high school diploma and many would also require a college certificate or diploma. Generally, positions of this nature require some experience working in the field. Jobs in the semi-skilled category include apprentices, safety and security officer, first aid attendant, and surveyor and mechanics assistants.

Unskilled positions have variable academic requirements and include labourers, housekeepers and camp attendants.

Sourcing individuals to fill jobs in all employment categories would require matching skills and knowledge of applicants with the requirements of each position. The Expansion Project intends to do this on a case-by-case basis while ensuring that all employees can meet minimum standards related to job performance and work, as well as worksite and camp safety.

Estimates at this point suggest that about half of the jobs on the Project would be classified as skilled while one-quarter would be semi-skilled and one-quarter would be unskilled. The Project expects to have greater success hiring regional and territorial residents to fill the semi-skilled and unskilled jobs on the Project.

#### **15.9.6.2.1 Input / Output Modelling**

In addition to assessing employment requirements based upon examination of specific position requirements, the developer also assessed the Project based on the NWT Input/Output (IO) Model. The model is based on data collected and analyzed by Statistics Canada. This model can be used to estimate employment and income based on the experience from similar economic activities across Canada. Current data tables supporting the model are from the 2004 calendar year.

Modelling, based on preliminary Project design and costing work and the business experience in the Electric Power Engineering Construction Sector, yields results in employment and labour income outlined in Table 15.9.18.

Table 15.9.18 — Input / Output Modelling for the Expansion Project

Job Type	Employment (Person Years)	Labour Income (\$000)
Direct Jobs	530	76,367
Indirect Jobs	232	16,243
Induced Jobs	253	18,332
<b>Total</b>	<b>1,014</b>	<b>110,943</b>

Based on the available labour force information for the South Slave region, it is estimated that there are 392 unemployed individuals. Of this group, 52% have indicated a willingness to do rotational work. As a result, approximately 205 of these individuals may be considered to be in the labour pool for this Project. Based on typical demographic profiles of past construction projects (i.e. age and gender), the actual labour pool from the unemployed category may be closer to 130 to 140 individuals.

Of the 1,543 South Slave residents not in the workforce, it can be estimated that 12% to 15% would return to the workforce to seek employment. This increases the potential regional labour pool by a further 185 to 230 workers. Including the available unemployed and those returning to the labour force, a total potential labour pool of South Slave residents from which the Project may draw its employees is between 315 and 435 workers. However, it is important to note that an estimated 50% of this group has not completed high school, thus likely limiting their job opportunities to unskilled and possibly semi-skilled jobs.

At the Territorial level, there are approximately 2,500 unemployed people. Of this number, just over 670 are in the Yellowknife area, the closest large centre to the Project. Among this group, 59.4% indicate that they are prepared to do rotational work and just over 30% have less than a high school diploma.

Accessing the unemployed people from outside the South Slave is an option for the Project, should the Project be unable to fill the available positions from the South Slave labour force. The residents of the Dehcho and the Tlicho Regions are in the closest proximity to these opportunities, however, unemployed individuals from other Northwest Territories regions may also decide to pursue employment on the Project. As well, it can also be expected that the Project would access some holding specialized skills from Yellowknife either through the general contractor or through sub-contractors.

Should there be strong public interest in the job opportunities offered by the Project, estimates suggest that Northern Aboriginal and Territorial residents would fill all of the unskilled positions and half of the semi-skilled positions on the Project. As well, Northern Aboriginal and Territorial residents would fill an estimated 10% of the skilled positions.

In addition to direct employment, the Project is also expected to result in indirect and induced employment both in the communities close to the Project activities as well as in the territorial commercial centre of Yellowknife. Types of employment resulting



from subcontracting or increased economic activities associated with income earned by employees on the Project may include work in the following areas:

- accommodation and food services,
- air services,
- banking, communications, and administration services,
- building and industrial supplies,
- camp and catering services,
- cleaning and janitorial services,
- engineering and environmental services,
- fuel, water, sewage, and solid waste services,
- general contracting,
- ground transportation services,
- logistics,
- marine services,
- surveying,
- trades services, and
- travel services.

#### **15.9.6.2.2 Short and Long Term Training and Employment**

The proposed Expansion Project would provide employment opportunities during the construction and operational phases of the Project. Most of the employment opportunities would occur during the two- to three-year construction phase, and there would be a limited number of skilled jobs available once construction is completed and the Project begins the operational phase. Nevertheless, Dezé is a majority-owned Aboriginal partnership that is committed to maximizing opportunities for Northern Aboriginal residents to participate in the Project. Dezé would introduce a Northern Aboriginal Employment and Procurement Policy to build skills and capacity for the future.

Securing personnel for Project activities would be dependent upon identifying and attracting interested and qualified individuals. The availability of labour in the NWT is somewhat limited, given the small and dispersed populations and low unemployment figures in larger communities. These circumstances are expected to continue throughout the planned Project construction period. While the Project emphasizes employment priority for Northern Aboriginal persons, it may be necessary to source non-Aboriginal expertise from within and outside the NWT. This would be particularly true for specialist positions associated with both the construction and the operational phases of the Project.

The first priority is identifying personnel for the Project within the labour force of Northern Aboriginal persons, with Akaitcho and Métis members receiving preference within this demographic. Understanding of the labour force dynamics currently in place in the Northwest Territories is important. Available data for the South Slave region (see Table 15.9.7) suggests that labour force participation rates in Hay River and Fort Smith are generally similar to the NWT, while standard participation rates in smaller communities are significantly lower.



In developing its plans for employment and training, the Project has established several key principles to guide its policies and practices. These are:

- safety and security of Project staff is a primary concern at all times;
- northern Aboriginal persons who are qualified, or who successfully complete actions to become qualified for work on the Project, would receive priority consideration for work during the Project;
- roles and responsibilities of the federal, Aboriginal and territorial governments and their agencies with respect to employment, education and training would be recognized and respected;
- the Project would identify and provide early notification of training and employment opportunities; and,
- skill development of workers would be promoted over the term of the Project.

These principles have been used as the basis for the design of general and specific strategies related to education, training, and employment associated with the Project, and set out in the *Framework for a Northern Aboriginal Employment and Procurement Policy*.

#### 15.9.6.2.3 **Forgone Employment and Income from the Tibbitt to Contwoyto Winter Road**

Trucks supply the diamond mines with all of their diesel fuel. Part of this effort is on all-weather highways from Hay River to Yellowknife, a distance of approximately 496 km. From Yellowknife to the mines, travel is on the Tibbitt to Contwoyto winter road (TCWR), a maximum distance of 600 km, depending to which mine delivery is made.

Approximately 50% of the diesel fuel purchased by the mines is for stationary as opposed to vehicular use (EBA, 2007). The cost to the diamond mines is primarily for fuel and its transportation.

During the 2006-07 winter season, approximately 165,500 tonnes of fuel were delivered to the mines for stationary purposes. The total estimated cost to the mines for hauling this fuel was \$48 million. This was divided between a highway transportation cost of approximately \$12 million and a TCWR cost of approximately \$36 million, as shown in Table 15.9.19 (EBA, 2007).

**Table 15.9.19 — Calculation of Trucking Revenue from Hauling Fuel**

Trucking Revenue	Quantity
Tons of fuel delivered for stationary uses	125,494 tons
Haul rate per tonne per km on highway	\$0.146
Length of highway	496 km
Total income from hauling diesel fuel on highway	\$9,087,758
Haul rate per ton per km on TCWR	\$0.365
Length of TCWR	600 km
Total income from hauling diesel fuel on TCWR	\$27,483,138
Total income from hauling fuel to the diamond mines	\$36,570,895

Over the next 20 years, the fuel volume would vary depending on mining activity. Assuming no additional consumers, the average annual delivery of fuel for stationary purposes is estimated to be 85,600 tonnes. The average annual revenue lost by the trucking industry during this time is \$25 million from the Expansion Project (Terra Firma Consultants 2008).

The actual loss of revenue to the trucking industry from the Taltson Project may be less for the following reasons:

- There may be other items besides fuel that need to be shipped to the mines in the short winter season. Perhaps these are now being shipped by air or deferred to another season. This may now be accomplished with the additional capacity.
- As more economic development occurs in the North, the trucking industry may serve other customers.

Some of this revenue loss may occur anyway because of climate change. It appears that the general consensus is that there would be more fluctuations in weather patterns over the next 20 years (EBA, 2007). Inherent in this is the unpredictable nature of forecasting the weather, which makes the advance planning and logistics of shipping on the winter roads difficult and inefficient.

#### 15.9.6.2.4 **Forward Looking**

The employment overview of the Northwest Territories indicates a tight labour market, with the current unemployment rate (August, 2008) lower than Canada's rate (5.8% vs. 6.5%). Table 15.9.20 shows a 1,412-person supply of available workers in the Northwest Territories, of which 980 live in Yellowknife or the South Slave region.

**Table 15.9.20 — Supply of Workers in the Northwest Territories**

Workers	NWT	Yellowknife	South Slave	All other areas	Aboriginal	Non-Aboriginal
Persons 15 yrs & up	31,710	14,353	5,403	11,954	13,200	17,600
Participating workers	24,353	11,023	4,150	9,181	8,400	15,600
Employed workers	22,941	10,384	3,909	8,648	7,300	15,300
Unemployed	1,412	639	241	532	1,100	300

The labour market may tighten more as other projects, such as the Mackenzie Gas Project, a mine, oil and gas facilities, or new road, vie for the same workforce. The Ekati, Diavik and Snap Lake diamond mines required a significant number of construction workers, and their experience is helpful in determining the origin of labour for the proposed Project. A summary of employee origins for the construction period is shown in Table 15.9.21. The table shows that 42.2% of all workers came from the North, with 48.1% of that group being Aboriginal workers (Ekati, Snap Lake and Diavik Diamond Mines Inc.).

Table 15.9.21 — Existing Diamond Mine Worker Characteristics

Workers	Percent of Totals
Northern	42.2
Non-northern	57.8
<b>Total workers</b>	<b>100.0</b>
Aboriginal	48.1
Non-Aboriginal	51.9
<b>Total northern workers</b>	<b>100.0</b>

Source: Terra Firma Consultants

It is also likely that there would be other projects vying for construction workers at the same time as the Expansion Project. Some of these projects and their worker estimates are shown in Table 15.9.22.

Table 15.9.22 — Possible Competitors of the Taltson Expansion Project for Workers

Project Name	Nearest Community	Company	Construction Expenditure	Employee Years
Gahcho Kué	Lutsel K'e	De Beers	\$1billion	5,200
Mackenzie Gas Project	All NWT	Shell Canada Ltd.	\$16 billion	83,200
Pine Point Project	Hay River/ Fort Resolution	Tamerlane Ventures Inc.	\$90 million	468
Yellowknife Gold Project	Yellowknife Dettah/Ndilo	Tyhee Development Corp.	\$180 million	936

Source: Terra Firma Consultants

Note: All projects are currently in the permitting process.

Estimates of income generation for South Slave and other Territorial residents are dependent upon the Expansion Project attracting and retaining available labour in suitable positions. Expected income benefits outlined in Table 15.9.23 are based on the information from the initial Input/Output modelling and the estimated employment figures for the Project.

Table 15.9.23 — Estimated Construction Income: South Slave and NWT Residents

Job Type	NWT Employment (Person-Years)	NWT Labour Income (\$000)
Direct Jobs	225	32,456
Indirect Jobs	232	16,243
Induced Jobs	253	18,332
<b>Total</b>	<b>710</b>	<b>67,031</b>

Source: Derived from information provided by the Bureau of Statistics, Government of the NWT

Benefits to communities would accrue over the three-year construction period during which employment would occur.

The most recent employment income data for the South Slave region (GNWT Bureau of Statistics, September, 2008) show an annual total of \$201.9 million (2006 calendar year). Income levels for communities for the same year are: Fort Resolution – \$7.2 million; Fort Smith – \$64.4 million; Hay River – \$125.9 million; and Łutsel K'e – \$4.3 million. As a result, particularly for the smaller communities, the increased employment income from the Project would result in a notable change during the period of construction.

In the *Resource Development Impacts: Updated Estimates of the Cumulative Impact of Resource Development on the GNWT Operational Expenditures* (November, 2007) paper, the Government of the Northwest Territories indicated that the labour market in the NWT is currently active and would remain so in the foreseeable future. In all recent major construction projects, proponents had to source some of their employees from outside the NWT. This has resulted in the presence of temporary workers in, or passing through, communities. Depending on the strategies used by employers, the presence of these workers can have a benefit to some sectors of the community and NWT economy. Specifically, the travel industry, commercial accommodations, arts and crafts, and food services industries have seen a benefit from this group of visitors. However, communities are concerned that temporary workers may also have a negative effect on the social climate of communities. As a result, most major construction projects take steps to limit and mitigate the presence of temporary workers in a manner that reduces interaction with community residents.

The direct measurement of benefits associated with additional education and training is difficult. Immediate measures such as enrolment in training programs, student completions, and the linkage between program completion and work can be quantified and described. However, determination of the long-term effect of education, training and additional work experience within the context of the South Slave region or even NWT would be difficult to measure directly. There are some general indicators of earning power for individuals with varying academic backgrounds that can provide a reference point for discussion of the education and training benefits.

While information from the 2006 census has not yet been released, the Government of the Northwest Territories Bureau of Statistics and the Department of Education, Culture and Employment have previously published information from the 2001 census that highlights differences in the earning power resulting from varying educational achievement. This information is outlined in Table 15.9.24.

**Table 15.9.24 — Earnings by Education Level**

Education Level	Average Annual Wages Earned
Less Than High School Diploma	\$37,882
High School Diploma	\$45,058
Trades Certificate	\$52,419
College Certificate or Diploma	\$53,110
University Degree	\$67,283

Source: Department of Education, Culture and Employment, 2004

Enhanced income related to Project employment would result in an additional income for a number of residents in the South Slave region. As a result, these individuals would have choices with respect to the use of this income. Decisions regarding the spending of income are personal by nature. Increases in disposable income are likely to result in a wide range of financial decisions by Project workers. Increased purchases of equipment to support traditional lifestyles, home renovations, vehicle purchases and increased use of retail outlets are all likely decisions. As well, it could be expected that some individuals would choose to use additional income for the purchase of alcohol or illicit substances, or to support other unhealthy lifestyle choices.

Studies in the communities affected by the development of diamond mines in the Slave Geological Province suggest that choices are likely to be both positive and negative. The *Communities and Diamonds 2006 Annual Report* produced by the Government of the Northwest Territories notes that in smaller North Slave communities, as incomes have increased, so have traditional activities such as hunting, fishing and trapping. Income disparity has also decreased in these communities. On the other hand, social changes such as increases in communicable disease rates and the numbers of single-parent families have been noted. The proposed Taltson Hydroelectric Expansion Project is much smaller and more short-term when compared to diamond mining operations, but the information gained in the cases of communities affected by resource development may prove a useful reference.

#### **15.9.6.3 COMMUNITY WELL-BEING**

A number of indirect effects may result from the creation of jobs and income. Evidence from other northern locations indicates that increased income can result in improved access to goods and services and improve quality of life and community well-being. This income increase would be experienced by direct and indirect Project workers and their families in the short-term, since most employment would be generated during this period. Some longer-term (over 20 years) indirect benefits would occur due to the Project support of the industrial developments in the NWT.

Despite the gains and benefits of employment and economic development, evidence from other locations has highlighted associated adverse changes in lifestyle driven by high incomes. For example, increased disposable incomes can change spending habits and increase undesirable activities. Drug and alcohol use and gambling can, in turn, increase associated activities such as violent and criminal behaviour. These changes would be most prominent during the construction period. The extent of the effects to local community members is dependent on the proportion of local workers and the effectiveness of mitigation and enhancement measures.

Given that the majority of direct activity would take place during the Project's short construction phase, the potential effects generated directly by the Project are expected to be limited. However, indirect effects would likely be of a greater magnitude due to associated industrial development that would be sustained in the short term and possibly facilitated in the long term.

Due to the short timeframe within which direct community well-being effects would be experienced, potential mitigation measures would be limited. It is also expected that the revenue-sharing component of the Project would facilitate social investment

in communities and develop social, cultural, health and economic programs to support the community and its members.

**15.9.6.3.1 Community Infrastructure**

The Project would provide additional, secure and sustainable electrical power benefits to public and industrial customers. For existing community customers in Fort Smith, Fort Resolution, Fort Fitzgerald and Hay River, power supply would continue and reliability improve during the life of the Project. For potential industrial customers such as the Ekati, Diavik, Snap Lake, and Gahcho Kué diamond mines, the Project offers an alternative, non-diesel and reliable power source. This would further benefit industry by lowering costs and increasing profit margins.

Community infrastructure may be enhanced through the dividend revenue stream created by Dézé for its Project partners and associated communities. Such benefits would be longer-term and have the potential to be significant and sustainable.

Overall, it is anticipated that potential adverse lifestyle and well-being effects would be low and of short duration during Project construction. The direct long-term economic effects as realized through the income stream to the Project partners through their ownership structure in Dézé is significantly positive.

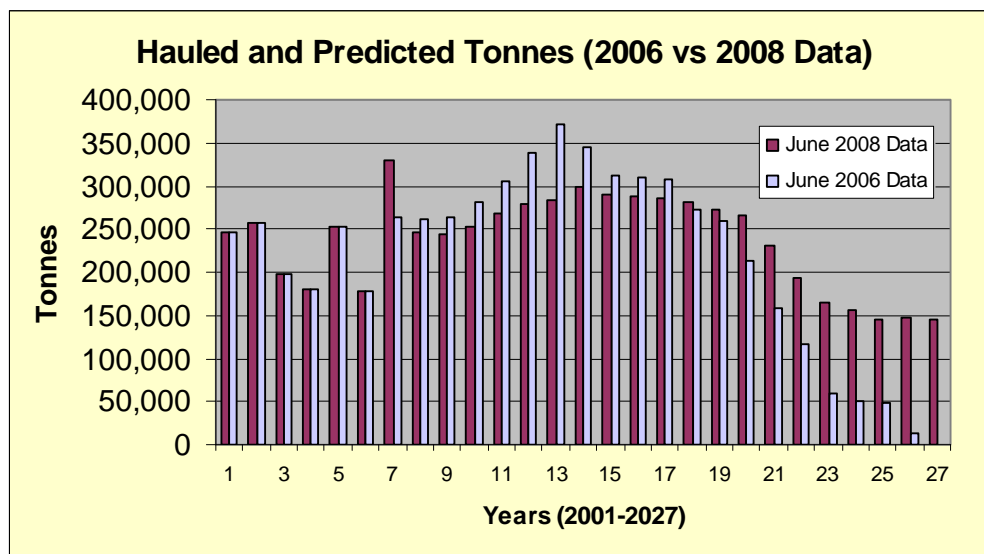
The majority of community infrastructure effects are positive in nature and therefore would not require mitigation measures. The company may, however, consider implementation of enhancement measures to encourage the maximization of benefits.

**15.9.6.3.2 Tibbitt to Contwoyto Winter Road**

The use of hydroelectric power by Dézé's customers would reduce their demand for diesel-fuelled stationary power generation. Section 15.9.3.5 contains calculations of trucking revenue from hauling diesel (Table 15.9.19) and the associated discussion.

Over the next 20 years, the fuel volume would vary depending on mining activity. As shown in Figure 15.9.7, actual vs. projected demand for the winter road can vary depending on any number of factors beyond the scope of this assessment. Assuming no additional consumers, the average annual delivery of fuel for stationary purposes is estimated to be 85,600 tonnes. The average annual revenue lost by the trucking industry at this time would be \$25 million from the Taltson expansion (EBA, 2007).

Figure 15.9.7 — Tibbitt to Contwoyto Winter Road Hauled and Predicted Fuel Weight (2006 vs. 2008 Data)



Source: E. Madsen, Director Winter Road Operations JVC, 2008, Personal Communication.

#### 15.9.6.3.3 Climate Change

Reducing the quantity of green house gases (GHG) deposited into the atmosphere benefits the NWT and responds to the GNWT's "serious concern that [climate change] could in future significantly disrupt the global environment, affecting the ability of northerners to lead healthy and productive lives. This potential disruption of [the] environment compels the Government of the Northwest Territories to support global and local actions to reduce emissions of the greenhouse gases believed to cause enhanced climate change."

Reducing GHG emissions would also contribute to reducing the rate of natural stock depletion. The natural capital is defined by the International Institute for Sustainable Development (2008) as "the land, air, water, living organisms and all formations of the Earth's biosphere that provide us with ecosystem goods and services imperative for survival and well-being." Furthermore, natural capital provides the basis for all human economic activity.

The GNWT prefers that "actions that are taken to control northern greenhouse gas emissions would be developed in cooperation with a broad range of stakeholders. These actions would be implemented in a manner that reduces the adverse effects on our health and environment, minimizes adverse effects to our economy, and takes advantage of the economic opportunities that would result from the use of more efficient equipment and materials." The proposed Project has been developed in true partnership with affected communities, increases societal benefits significantly with comparatively few effects, provides long-term northern economic benefits, and improves the economic prospects of serviceable mineral deposits far into the future.

The typical truckload of diesel weighs about 38.3 tonnes and contains 50,000 litres of fuel (EBA, 2007). In 2007-08, about 3,200 truckloads of diesel were hauled up the Tibbitt to Contwoyto winter road for stationary power generation. The Project has the



potential of reducing the annual diesel fuel haul by about 2,025 Super-B trains. That corresponds to about 101,250,000 litres of potential diesel displacement. With one litre of diesel emitting 2.63 kg of CO<sub>2</sub>, this would result in a conservative reduction of about 0.27 megatonnes (Mt) of green house gas emissions. For comparison purposes, the City of Yellowknife produced 376,017 tonnes of GHG emissions in 2004, and is expected to produce 430,986 tonnes by 2015 (City of Yellowknife, 2006). The NWT produces 1.75 Mt of GHG emissions annually.

Thus, replacing diesel power generation in the region by the Taltson Hydroelectric Expansion Project would lead to the GHG reductions shown in Table 15.9.25.

**Table 15.9.25 — GHG Emission Reductions Due to Taltson Hydroelectric Expansion Project**

Capacity (MW)	EMISSION FACTOR			PROJECT RELATED REDUCTION					
	g CO <sub>2</sub> per litre	g CH <sub>4</sub> per litre	g N <sub>2</sub> O per litre	Tonnes CO <sub>2</sub> per year	CH <sub>4</sub>		N <sub>2</sub> O		Total Tonnes GHGs (CO <sub>2e</sub> ) per year
					Tonnes per year	CO <sub>2e</sub> per year	Tonnes per year	CO <sub>2e</sub> per year	
54	2,633	0.133	0.4	223,378	11	237	34	10,520	234,135
74				266,678	13	283	41	12,559	279,520

Notes: Emission factors were obtained from Environment Canada Report 2008c  
Efficiency for diesel power plant is assumed as 84%.

It can be seen from Table 15.9.25 that there would be a significant reduction of GHG in the Northwest Territories as a result of the Project. Furthermore, there would be an added advantage from elimination of emissions related to transportation of diesel to the sites where diesel power is currently generated.

Table 15.9.26 summarizes the reduction in GHG emissions by the proposed Project for NWT and for Canada (all provinces and territories), as well for Canada's Electricity and Heat Generation Sector.

**Table 15.9.26 — Reduction in NWT & Canada GHG Emissions by Expansion Project**

Region or Sector	Facilities	Total GHG (CO <sub>2e</sub> ) Emissions (2006)	Reduction of GHG (CO <sub>2e</sub> ) Emissions by 54 MW		Reduction of GHG (CO <sub>2e</sub> ) Emissions by 74 MW	
		TONNES	TONNES	%	TONNES	%
NWT (reporting facilities)	2	318, 477	234,135	74	279,520	88
Canada (reporting facilities)	343	269, 244, 306	234,135	0.09	279,520	0.10
NWT (total)	n/a	1,160,000	234,135	20	279,520	0.24
All provinces and territories (total)	n/a	721,000,000	234,135	0.03	279,520	0.04
Electricity and heat generation sector in Canada	n/a	117, 000, 000	234,135	0.20	279,520	0.24



Under the GHG Reduction Plan, the City of Yellowknife plans to reduce its GHG emissions (Terriplan Consultants, 2006). Under this plan, the total estimated CO<sub>2</sub> equivalent (GHG emissions) for 2015 is projected to be 430,986 tonnes per year. Therefore, the GHG emissions reduction from the Expansion Project in relation to Yellowknife's projected 2015 GHG emissions is approximately 54% for the 54 MW and 65% for the 74 MW scenarios. Table 15.9.27 summarizes the per cent reduction of GHG emission by the Project compared to Yellowknife's 2015 projected GHG emissions.

**Table 15.9.27 — Expansion Project GHG Emissions Compared to Yellowknife's 2015 Projected Emissions**

Taltson Hydroelectric Plant Capacity (MW)	Total Tonnes GHGs (CO <sub>2e</sub> ) Reductions Per Year	Yellowknife's Projected GHG Emissions for 2015	% GHG Reduction
54	234,135	430,986	54
74	279,520	430,986	65

The analysis presented in the foregoing section validates the fact that the proposed Taltson Hydroelectric Expansion Project can provide a significant GHG reduction to the NWT.

#### 15.9.7 Residual Effects Classification

The effects classification includes employment and income. Remote pathways could not be classified as the ultimate effect is dependent on the control of others. Climate change has been fully assessed in Chapter 15.6 – Climate and Air Quality, and is not repeated here.

Assessment of the Project employment and income suggests generally beneficial effects on the communities in the South Slave region. These benefits extend beyond the region, particularly with respect to the employment aspects of the Project (Table 15.9.28).

**Table 15.9.28 — Effects Classification**

Valued Component	Pathway	Direction	Magnitude	Geographic Extent	Duration	Likelihood
Employment of northern residents	Increased employment levels	Beneficial	High	Beyond regional	Medium-term	High
	In-migration of temporary workers	Beneficial and/or adverse	Moderate	Regional	Medium-term	Low
	Increased community capacity	Beneficial	Moderate	Beyond regional	Medium-term	Moderate

Valued Component	Pathway	Direction	Magnitude	Geographic Extent	Duration	Likelihood
Contracting opportunities for northern businesses	Less diesel needed by Project customers resulting in reduced demand for diesel transport trucks	Adverse	Moderate	Regional	Medium-term	High
	Reduced demand on the Tibbitt to Contwoyto winter road results in forestalling any new seasonal all-weather road	Adverse	Moderate	Regional	Medium-term	Moderate
Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities	Increased regional employment and income Long-term regional development Improved reliability of power	Beneficial	Moderate	Regional	Medium-term	High
Economic life choices	Less diesel use by Project customers results in fewer CO <sub>2</sub> emissions	Beneficial	Moderate	Regional	Medium-term	Moderate
Increased lifestyle choices	More money for personal financial management	Beneficial and/or adverse	Moderate	Regional	Short-term	Moderate
	Increased need for social, financial and protective services	Adverse	Low to moderate	Regional	Medium-term	Low

Benefits of employment are primarily linked to the length of the construction phase. As indicated earlier, employment would be limited during the operational phase of the Project. However, there would be periodic opportunities for additional employment during maintenance initiatives such as additional clearing, which would be required as re-forestation occurs in proximity to the transmission lines.

There would be an ongoing beneficial effect for residents related to the additional skills, experience and knowledge that they would gain as a result of participation in training and employment associated with the Project. These experiences and newly-

obtained skills and knowledge could be applied to future jobs, which may be created by new resource development projects or work in existing regional jobs.

The Project has a potential to affect a number of socio-economic components both positively and adversely. The extent of these effects is contingent on the stages of development. Effects include overall increased economic stability and growth through increased private-sector employment and business opportunities, community infrastructure, as well as education and training. The Project may also benefit individual and/or community lifestyle in addition to individual health and well-being and community or cultural group cohesion.

#### 15.9.7.1 SIGNIFICANCE RATING

Assessment of significance of Project activities in relation to the Valued Components, assessment endpoints, and pathways is outlined in Table 15.9.29.

**Table 15.9.29 — Summary of Significance Determination**

Valued Component	Assessment Endpoint	Pathways	Overall Significance
Employment of northern residents	Direct and indirect jobs and income created as a result of the Project	Income Employment Well-being	Not significant
Contracting opportunities for northern businesses	Increased business income and employment	Income Employment Well-being	Not significant
Benefits to the economy of the South Slave area including increased revenue flows and economic opportunities	Increased amount of money in the South Slave region economy, and more economic opportunities	Income Employment Well-being	Significant (beneficial)
Economic life choices	Diversity of economic and employment opportunities and participation in traditional economic pursuits	Income Employment Well-being	Significant (beneficial)

#### 15.9.8 Cumulative Effects

Cumulative effects represent the sum of all human-induced influences on the physical, biological, cultural, and economic change within a period of time and space. Where an effect to a VC was identified, overlapping effects from other development and activities were also considered. Effects may overlap spatially and temporally.

The final determination of significance would not be limited to the incremental effects of the proposed Project on the VC, but depend on the cumulative effects of known developments and trends, including the Taltson Project.

The goals of the cumulative socio-economic and cultural effects assessment are to:

- provide an understanding of the proposed Project's incremental effects to the current socio-economic and cultural environment, and
- provide an understanding of the cumulative socio-economic and cultural effects of this Project in addition to other past and reasonably foreseeable projects.

To help communicate the results of the incremental and cumulative effects assessment, Project effects on VCs were presented in light of their contribution to one or more of the five livelihood assets: human, social, physical, natural and financial capital. “Livelihood assets serve as the basis for people’s livelihoods. There are five types of asset that together enable people to pursue sustainable livelihoods:

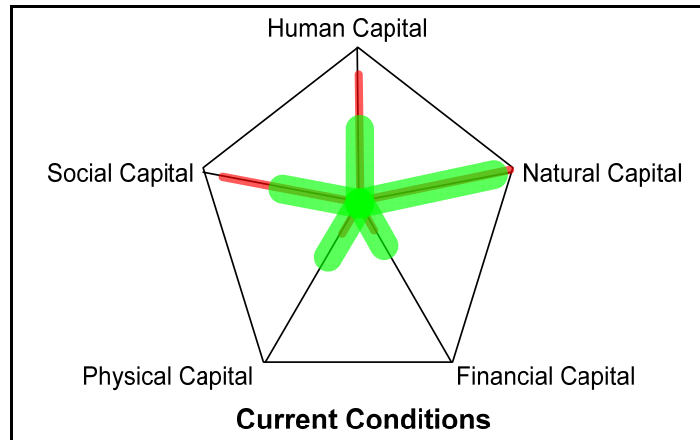
- human: knowledge, skills, ability to labour and good health;
- social: the resources people can draw upon in pursuit of their livelihood objectives, including social networks and relationships of trust and reciprocity;
- natural: the natural resources available;
- physical: basic infrastructure and producer goods available; and
- financial: the financial resources people have available (NZAID 2008).

For assessment purposes, a pristine socio-economic and cultural environment was assumed before extended contact between Aboriginal and non-Aboriginal peoples, and pristine pre-contact Aboriginal livelihood assets are considered from a contemporary context where human, social, and natural assets were dominant and financial and physical assets limited.

In the DAR, the assessment and classification of effects is based on both the incremental and cumulative changes. For example, if there is an increase in incidents of crime from baseline conditions and the Expansion Project causes an increase in crime, then the anticipated gain would contribute to a decrease in human and social capital. This would decrease peoples’ capacity to affect policy and institutional processes that affect their livelihood. Conversely, if there is an increase in human capacity and well-being, and the Expansion Project contributes to the increase, then the gain would increase human, social, and financial capital. Socio-economic effects are cumulative and, once experienced, cannot be eliminated from the socio-cultural context. They can only be modified by future events, which would become part of the effect accumulation on the human environment.

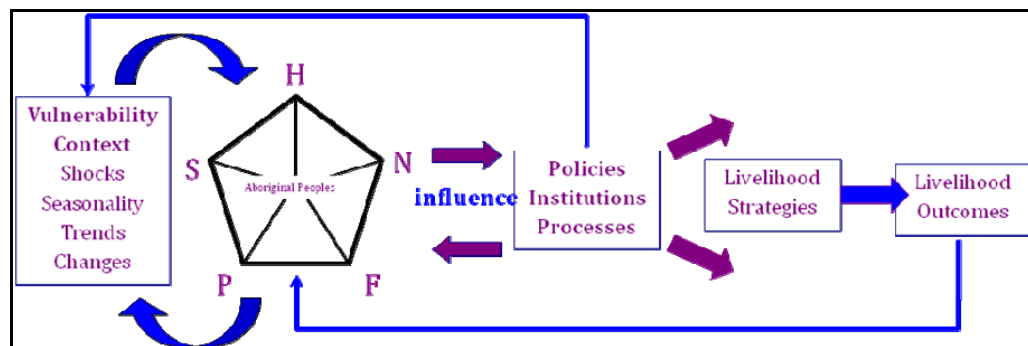
To help communicate this approach, the five-sided Sustainable Livelihoods Framework model in Figure 15.9.8 is used to show the current Aboriginal livelihood assets/capital mix, as compared to baseline conditions. The pentagon enables information about people’s assets to be presented visually, thereby bringing to life important inter-relationships between the various assets. The shape of the pentagon can be used to show the variation in people’s access to assets. The centre point of the pentagon, where the lines meet, represents zero access to assets while the outer perimeter represents maximum access to assets. The red lines represent the baseline sustainable livelihoods asset mix of Aboriginal people, and the green lines on top of the red lines represent current sustainable livelihoods asset mix. The differences in line lengths show the change in the livelihood asset mix of Aboriginal people possibly affected by the Project between baseline conditions and 2008. This same approach is used to illustrate a plausible future sustainable livelihood asset mix influenced by the socio-economic effects of the proposed Project in combination with the socio-economic effects of other projects.

Figure 15.9.8 — Sustainable Livelihoods Asset Mix



The process of asset use is depicted in Figure 15.9.9. It shows how Sustainable Livelihood assets work together to either increase or decrease Aboriginal peoples' capacity to influence their future. The intent of proposed socio-economic mitigation and enhancement is to increase the abundance of assets so that Aboriginal people affected by the Project can exert greater influence over their own lives and those of their families and communities.

Figure 15.9.9 — Sustainable Livelihoods Framework



Source: International Fund for Agricultural Development (IFAD)

#### 15.9.8.1 CUMULATIVE EFFECTS SIGNIFICANCE DETERMINATION

Estimation of the cumulative effects requires some understanding of the socio-economic pristine conditions, historic effects of developments on these conditions, and possible developments that may add to the effects on VCs in the study area. Pristine conditions were presumed to have existed before contact with non-Aboriginal people. The effects of development to date are assumed to be reflected in the current socio-economic status of the study area. The possible future developments that could contribute to cumulative effects to VCs used in the Taltson assessment include:

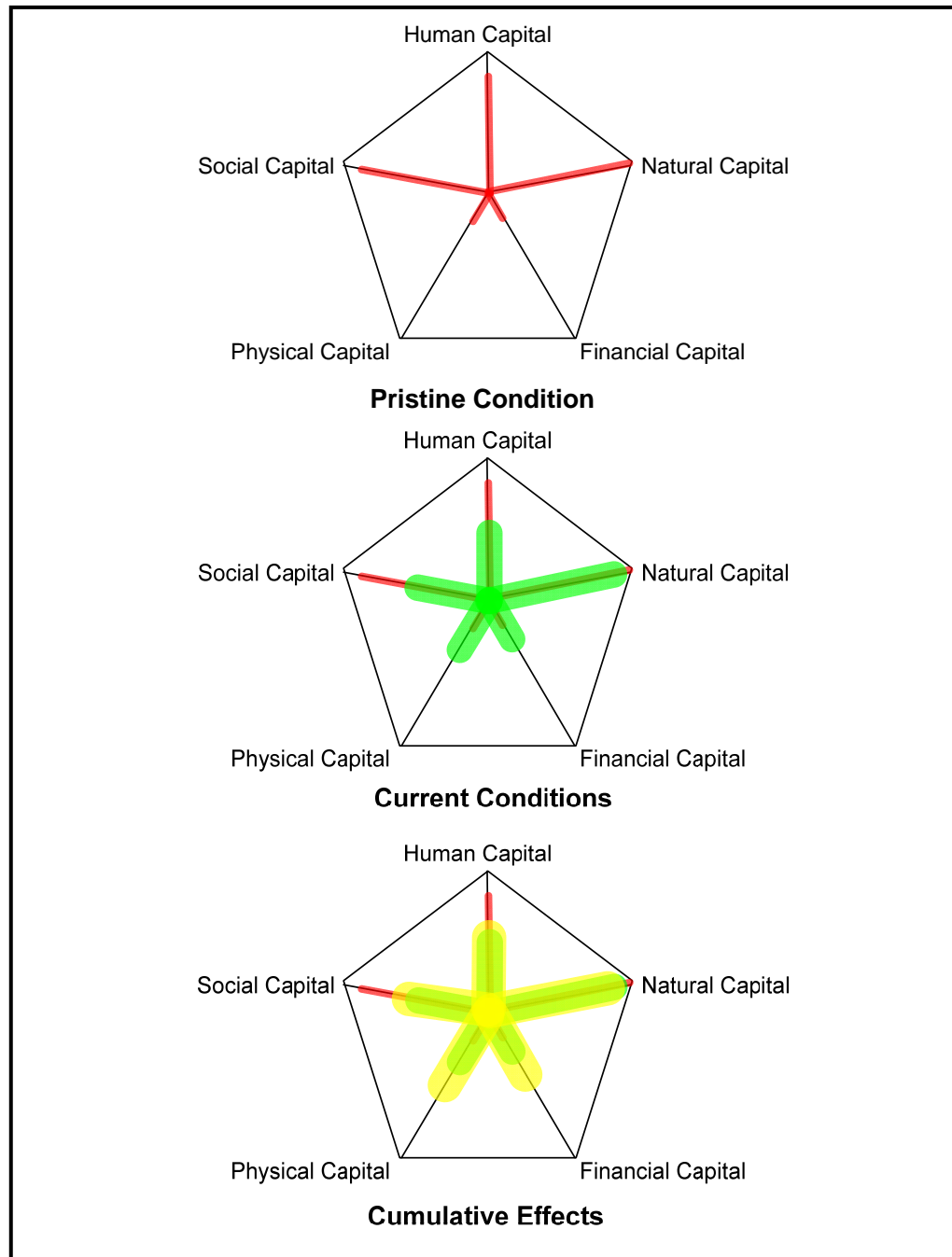
- The Gahcho Kué Project (for the purposes of this DAR it would be considered as an existing project);
- A small mine in the Lac de Gras region, which hauls ore to Ekati for processing;
- The Tyhee Development Corporation Yellowknife Gold Project;

- Bathurst Inland Port and Road Project;
- East Arm National Park; and
- Tamerlane's Pine Point Project.

A cumulative effect could occur if the Project has an incremental effect that would accumulate with past or reasonably foreseeable future developments. If no interaction exists between the Project and other developments, there is no cumulative effect. Figure 15.9.19 shows the cumulative socio-economic effects assessment outcome using the “livelihood pentagon” found in the Sustainable Livelihoods Framework. Each spoke of the pentagon represents one of the five livelihood assets (human, social, physical, financial, natural). The amount of each asset available to communities is depicted by the length of the color bars on each of the spokes. The longer the colour bar, the more of that asset exists.

Pristine assets (*red lines*) in Figure 15.9.10 are characterised by high human, natural and social capital, and minor financial and physical capital. Current conditions (*green lines*) are characterized by a moderate to low human, social, physical and financial capital, and high natural capital. Forecast cumulative effects (*yellow lines*) from this Project on the current conditions would be characterized by high natural capital and moderate social, physical, financial and natural capital.

Figure 15.9.10 — Cumulative Socio-Economic Effects on Study Area Communities





### 15.9.9 Uncertainty

Projections for Project employment are influenced by a number of key variables. These include matters related to available statistical information and the relatively competitive labour market that the NWT currently enjoys, particularly with respect to skilled labour.

The availability of statistical information on the NWT labour market has improved significantly over the past decade. Considerable strides have been made in the development of additional data sets to establish an information base that can demonstrate changes over time. However, the population of the NWT is quite small and collection of information, particularly at the community level, can have limited dependability. As a result, the risk of variance from projected values could be relatively high, such as the risks inherent in projecting the potential numbers of those currently outside the labour force re-entering the labour force when jobs become available.

This also applies to a discussion of employment and income effects on social conditions at the community level. Recent studies of the communities affected by resource development provide useful information on potential trends, but the assessment of long-term effects remains uncertain.

The nature of the labour market in the NWT is competitive at this time. The demand for labour has grown substantially over the past decade, with employment levels and participation rates reaching highest levels in the history of wage economy in the NWT. Based on current projections and anticipated economic development activities, it is expected that this trend would continue over the next 5 to 10 years. This demand provides individuals with employment choices. While local and regional Project activities may be more attractive to persons that do not wish to travel far from their families and home community, this competition for workers may give rise to some uncertainty in employment projections.

A final factor influencing predictability relates to the Project's interest in attracting unemployed individuals and those who are not currently in the labour force to participate in employment. A relatively high percentage of these groups have limited preparedness for employment. For example, weak academic backgrounds of a number of the unemployed suggest that the requirement of education and training in advance of Project is important. This requirement is dependent on a number of factors such as individuals' willingness to participate, funding for programs and students, and program availability. While the developer can promote attention to these matters and work actively with public and Aboriginal governments and educational institutions, it cannot directly control the results of these efforts. This situation of mutual dependence adds an element of uncertainty to the predictability of Project employment levels of Aboriginal and northern residents.

### 15.9.10 Monitoring

Monitoring of employment and associated training would be carried out by the Project developer during the follow-up program. Tracking of information related to employment and training would be useful in determining the effectiveness of Project planning, policies and practices. It would also provide an opportunity for the

developer to make adjustments to its activities during the latter stages of the construction phase of the Project. A follow-up program for employment and training would include the tracking and reporting of several key indicators. Reporting would occur on an annual basis. Reports would include both statistical and narrative information, including:

- description of actions taken to recruit Aboriginal and northern resident employees;
- collaborative efforts with career centres and community agencies to distribute information on training and employment related to the Project;
- number of jobs and length of jobs during the reporting period;
- number of jobs occupied by Aboriginal and northern residents;
- home communities of Aboriginal and northern resident employees (adjusted to ensure that employee privacy is protected);
- types of jobs held by Aboriginal and northern resident employees;
- estimated employment income paid to Aboriginal and northern resident employees;
- employee turnover rates;
- relevant work site safety information;
- number of registered apprentices on the Project, including those of sub-contractors;
- training programs offered by the Project including program title, length and enrolment; and
- collaboration efforts with governments, schools, Aurora College and others with respect to planning and delivery of training.

The Project is committed to supporting the Government of the Northwest Territories in the Government's efforts to monitor economic and social change resulting from the Project. It would do so in a manner that respects the privacy of its employees and proprietary business information of the Project and its contractors.