

7.0 HUMAN ENVIRONMENT ASSESSMENT

The following human environment assessment addresses the socio-economic information as requested in the MVEIRB's 2009 Terms of Reference. The geographic scope for assessing effects to the human environment includes the communities of Yellowknife, Dettah, N'Dilo, Behchoko, Gameti, Wekweeti and Whati.

The results of the Traditional Knowledge study and Elders tour conducted in 2005 were considered and incorporated where appropriate throughout this section. The subject matter is presented under the primary headings:

- Economy – Section 7.1
- Society and Culture – Section 7.2
- Heritage Resources - Section 7.3
- Traditional and Contemporary Land Use and Wildlife Harvesting - Section 7.4

Table 7-1 summarizes the key predictions of the human environment assessment for the Yellowknife Gold Project (YGP). The criteria to determine the effects of the impacts were outlined in the MVEIRB Terms of Reference (2009). Discussions of each prediction in Table 7-1 are presented in the following subsections.

The effects presented in Table 7-1 are based on an analysis of Valued Socio-Economic Components (VSC). Most of the socio-economic components impacted by the proposed YGP are expected to benefit from construction and operation of the Project. The human environment assessment identifies managing authorities and the ability of these agencies to influence each effect. Managing authorities includes Tyhee NWT Corp, local governments of communities within the Regional Study Area (RSA), GNWT, and Aboriginal organizations and stakeholders. Employment opportunities, business opportunities, and economic well-being are generally affected positively, while public safety and public infrastructure are predicted to have neutral effects.

TABLE 7.0-1: VALUED SOCIO-ECONOMIC COMPONENTS POTENTIALLY AFFECTED BY THE PROPOSED YELLOWKNIFE GOLD PROJECT					
Valued Socio-economic Component	Affected Communities	Effect	Magnitude	Likelihood	Effects Management (Responsible Authorities)
Employment opportunities	Aboriginal stakeholders Regional Study Area Northwest Territories Canada	Beneficial	Moderate to High	High	Tyhee NWT Corp GNWT
Business opportunities	Aboriginal stakeholders Regional Study Area Northwest Territories Canada	Beneficial	Moderate to High	High	Tyhee NWT Corp GNWT
Education	Aboriginal stakeholders Regional Study Area Northwest Territories	Beneficial	Low to Moderate	Low to Moderate	GNWT
Training	Aboriginal stakeholders Regional Study Area Northwest Territories	Beneficial	Moderate	High	Tyhee NWT Corp GNWT
Traditional economy activities	Aboriginal stakeholders Non-Aboriginal stakeholders	Neutral	Low	Moderate	Aboriginal Stakeholders Tyhee NWT Corp GNWT
Population in-migration	Yellowknife	Adverse	Low	High	Tyhee NWT Corp GNWT
Population out-migration	Regional Study Area	Neutral	Low	High	Tyhee NWT Corp GNWT
Economic well-being	Regional Study Area Aboriginal stakeholders Northwest Territories	Beneficial	Moderate to High	High	Tyhee NWT Corp GNWT Aboriginal Stakeholders
Community health	Regional Study Area	Neutral	Low to Moderate	Moderate to High	Tyhee NWT Corp GNWT
Individual well-being	Tyhee NWT Corp employees Northwest Territories residents	Beneficial	Low to Moderate	Moderate to High	Tyhee NWT Corp GNWT
Public safety	Regional Study Area	Neutral	Low	Moderate to High	Tyhee NWT Corp GNWT
Public infrastructure	Yellowknife	Neutral	Low	Moderate to High	Tyhee NWT Corp GNWT

7.1 ECONOMY

The Guiding Principles of Part 5 of the MVRMA (Section 115) requires the Review Board to have regard for the economic well-being of the residents and communities of the Mackenzie Valley. On this basis, the MVEIRB specified that Tyhee NWT Corp needed to assess the potential effects of the proposed Yellowknife Gold Project on the economy of the North Slave and Tlicho regions, and each potentially-affected community.

Specific consideration was to be given to the effects of the YGP on direct and indirect employment, business opportunities and the distribution of beneficial and adverse economic impacts. In addition, Tyhee NWT Corp was asked to describe the available labour pool.

Tyhee NWT Corp is committed to providing training, employment and business opportunities associated with the development of the YGP. Tyhee NWT Corp's commitment to training will include site-based, on-the-job training and the support for a number of apprenticeships.

7.1.1 Methodology

The six-step methodology used to conduct the socio-economic assessment is consistent with MVEIRB's (2007) *Socio-Economic Impact Assessment Guidelines*. The methodology included scoping, profiling baseline conditions, predicting impacts, identifying mitigation, evaluating significance, and applying mitigation and monitoring. The scoping of required information and considerations for the socio-economic impact assessment occurred in MVEIRB's TOR for the YGP. Baseline conditions of the RSA are located in Section 3.0 of this DAR. The remaining steps are found in section 7.0 of the DAR.

GS Gislason & Associates Consulting Services was retained to conduct the economic and employment analysis of the primary communities, Northwest Territories (NWT), and Canada. The specific methodology used by Gislason (2011) to analyze the economic portion of the socio-economic assessment is described below. A copy of the Gislason report *Yellowknife Gold Project Economic Impacts* is included in Appendix G of this document.

The Regional Study Area (RSA) for the economic and employment analysis is the communities in close proximity to the YGP. The mine site is relatively remote and no communities are located within the vicinity of the mine. Communities described within the Regional Study Area (RSA) include Yellowknife, Dettah, N'Dilo, Behchoko, Gameti, Wekweeti and Whati.

Project financial pro formas (e.g., wages, expenditures on supplies and services, tax and royalty payments) were provided to Gislason by Tyhee NWT Corp to estimate the direct effects for employment, labour income, and Gross Domestic Product (GDP). The direct economic effects of the YGP to the NWT and Canada were then developed (Gislason 2011).

To conduct the economic effects analysis, Gislason (2011) reviewed the financial expenditure flows for the project. Data from the NWT Bureau of Statistics on community

labour force activity for the RSA were also examined. Additionally, the NWT Bureau of Statistics and Statistics Canada data on secondary effects on downstream suppliers and the consumer sector were analyzed through Input-Output economic multipliers analysis results. All financial data provided by Gislason (2011) were provided in 2010 Canadian dollars.

Gislason (2011) also analyzed the financial expenditure flows and performed a detailed analysis of:

- Regional sourcing for supply expenditures;
- Matching between job descriptions and the skills of the present NWT labour force; and
- The results of Tyhee's corporate model that gave anticipated corporate income tax and royalty payments (Gislason 2011).

The subsequent segments of the economic assessment examine the direct and indirect employment, business opportunities, and economic effects forecasted for the YGP. The economic effects specific to Aboriginal stakeholders, communities in the RSA, and the NWT overall are also discussed.

7.1.2 Employment and Business Opportunities

The direct and indirect employment requirements of the YGP per operating phase and skill set are identified in this section. The anticipated employment and potential employment barriers are also discussed. All information in this section (unless otherwise noted) is based on the report prepared by Gislason (2011, Appendix G).

7.1.2.1 Direct and Indirect Employment

It is estimated that the YGP will employ up to 326 people (Section 4.15 of the DAR), although personnel requirements will be dependent on the various mine development phase (e.g. construction, operations, or reclamation) and may change accordingly. During construction, an estimated 145 workers are required based on the projected personnel cost model estimates with a contingency of 15.5%. Gislason estimated that 20% of the workforce during the construction phase will be from the NWT. During operations, average personnel requirements are estimated at 245 people per year with 164 people on-site at any one time. It's estimated that up to 50% of the workforce during the operations phase will be from the NWT. The reclamation phase will require fewer personnel which typically includes environmental, labour, hauling, road maintenance and supervisory services. As preliminary targets for the total workforce, Tyhee NWT Corp will attempt to employ (at a minimum) 30% NWT employees, including a total of 15% Aboriginal employees (see Section 7.1.2.3 for NWT and Aboriginal hiring targets and Appendix G for employment to NWT residents).

Table 7.1-1 summarizes the average number of operations phase personnel (direct or contract employees) and associated likely skill level required during the 7.5 year lifespan of the YGP. . The personnel requirements in Table 7.1-1 reflect a yearly average and do not represent the total personnel requirements for the YGP.

It is estimated that the YGP will employ between 130 to 326 people depending on the mine phase: construction, operations, or reclamation (Section 4.15 of the DAR). During construction, an estimated 145 workers are required, based on the projected personnel cost model estimates for the YGP with an added 15.5% contingency. Gislason (2011) has estimated that 20% of the workforce during the construction phase will be from the NWT. During operations, average personnel requirements are estimated at 245 people per year with 164 people on site at any one time (EBA, 2010). It's estimated that up to 50% of the workforce during the operations phase will be from the NWT (Gislason, 2011). The reclamation phase will require fewer personnel, which typically include environmental, labour, hauling, road maintenance, and supervisory services. As preliminary targets for the total workforce, Tyhee will attempt to employ (at a minimum) 30% NWT employees, including a total of 15% Aboriginal employees (Section 7.1.2.3).

Table 7.1-1 summarizes the number of personnel, direct or contract employment, and skill level required during the operations phase of the mine. The personnel requirements reflect a yearly average for the estimated eight year lifespan of the mine.

TABLE 7.1-1: ESTIMATED YEARLY AVERAGE DIRECT / CONTRACT EMPLOYMENT OPPORTUNITIES DURING THE OPERATIONS PHASE OF THE YGP					
Area of Operation	Direct / Contract Opportunities	Skilled Category			Operations Phase
		Management	Skilled / Experienced Labour	Unskilled	Number of Staff (Average per Year)
Administration	Accountant		•		2
	Administration Director	•			1
	IT Technician		•		1
	Mine Manager	•			1
	Payroll Clerk		•		2
	Secretary		•		2
SUBTOTAL					9
Camp and Facilities	Camp Manager	•			1
	Chef		•		4
	Cleaner			•	6
	Kitchen Hand		•		4
SUBTOTAL					15
Health and Safety	Safety Professional		•		2
	Safety Superintendent	•			1
SUBTOTAL					3
Warehousing	Inventory Control		•		1

TABLE 7.1-1: ESTIMATED YEARLY AVERAGE DIRECT / CONTRACT EMPLOYMENT OPPORTUNITIES DURING THE OPERATIONS PHASE OF THE YGP

Area of Operation	Direct / Contract Opportunities	Skilled Category			Operations Phase
		Management	Skilled / Experienced Labour	Unskilled	Number of Staff (Average per Year)
	Manager				
	Stock Clerk		•		2
	Stock Clerk, Senior		•		2
	Warehouse Administrator	•			1
	Warehouse worker			•	4
SUBTOTAL					10
Environmental	Environmental / Community Superintendent	•			1
	Environmental Professional		•		2
	Environmental Technician		•		2
SUBTOTAL					5
Process Plant	Assayer		•		2
	Chief Assayer		•		1
	Lab Technician		•		2
	Mechanics		•		4
	Metallurgist		•		2
	Millwright		•		12
	Plant Superintendent	•			1
	Senior Metallurgist		•		1
	Shift Supervisor/Control Room		•		4
SUBTOTAL					29
Mine Operations – Open Pit (OP)	Blasting offsider		•		2
	Dewatering Crew		•		4
	Dozer operator		•		12
	Drill offsider		•		8
	Driller		•		8
	Electrical Engineer	•			0.5*
	Electrician		•		2
	Engineering Superintendent -	•			0.5*

TABLE 7.1-1: ESTIMATED YEARLY AVERAGE DIRECT / CONTRACT EMPLOYMENT OPPORTUNITIES DURING THE OPERATIONS PHASE OF THE YGP

Area of Operation	Direct / Contract Opportunities	Skilled Category			Operations Phase
		Management	Skilled / Experienced Labour	Unskilled	Number of Staff (Average per Year)
	APEGGA E				
	Field Mechanic		•		4
	Geotechnical Engineer - APEGGA C		•		0.5*
	Grader Operator		•		4
	Instrumentation Technician		•		2
	Labourer			•	8
	Loader Operator		•		4
	Maintenance Superintendent	•			0.5*
	OP Foreman	•			3
	OP Production Engineer - APEGGA B		•		2
	OP Production Field Technician		•		2
	OP Production Geologist - APEGGA C		•		2
	OP Senior Surveyor		•		1
	OP Survey Offsider		•		3
	Senior Field Technician		•		1
	Senior Production Geologist - APEGGA C		•		0.5*
	Senior Resource Geologist - APEGGA D		•		0.5*
	Shift Supervisor		•		4
	Shop Mechanic		•		4
	Shotfirer		•		2
	Shovel Operator		•		4
	Truck Driver		•		20
	Watercart operator		•		4
	Welder/Machinist		•		2
SUBTOTAL					115
Mine Operations - Underground Operations (UG)	Airleg Miner - Raise		•		2
	Development Miner -		•		4

TABLE 7.1-1: ESTIMATED YEARLY AVERAGE DIRECT / CONTRACT EMPLOYMENT OPPORTUNITIES DURING THE OPERATIONS PHASE OF THE YGP

Area of Operation	Direct / Contract Opportunities	Skilled Category			Operations Phase
		Management	Skilled / Experienced Labour	Unskilled	Number of Staff (Average per Year)
	Jumbo/Faceman				
	Electrical Engineer		•		0.5*
	Electrician		•		2
	Engineering Superintendent - APEGGA E	•			0.5*
	Field Mechanic		•		4
	Geotechnical Engineer - APEGGA C		•		0.5*
	Labourer			•	6
	LHD Operator		•		4
	Maintenance Superintendent	•			0.5*
	Senior Production Geologist - APEGGA C		•		0.5*
	Senior Resource Geologist - APEGGA D		•		0.5*
	Service crew + nipper		•		8
	Shift Supervisor		•		4
	Shop Mechanic		•		2
	Shotfirer		•		4
	Truck Driver		•		4
	UG Production Engineer – APEGGA B		•		2
	UG Production Field Technician		•		2
	UG Production Geologist – APEGGA C		•		2
	UG Senior Surveyor		•		1
	UG Survey Offsider		•		2
	UG Surveyor		•		1
	Welder/Machinist/Bit shop		•		2
SUBTOTAL					59
TOTAL (Yearly Average during the Operations Phase of the YGP)					245

The work schedule will be two-weeks on and two-weeks off, working 12 hour shifts. Crews will operate in two shifts (day and night) to achieve 24-hour operations. The management and technical staff may be on a varied schedule, but will typically be on a two-week rotation. Tyhee NWT Corp will have an operations office in Yellowknife to provide local support for the YGP and the typical point of hire for employees will be from Yellowknife. Additional points of hire in the RSA may also be considered by Tyhee NWT Corp. Maintenance shutdowns may occur from time to time, as needed.

The yearly average operations phase direct and contract positions at the YGP listed in Table 7.1-1 are categorized by skill level, including management, skilled or experienced labour and unskilled labour.

As identified in Table 7.1-2 and Table 7.1-3, the majority of the operations phase positions (based on the yearly average) at the YGP will require skilled or experienced labour. Of these positions, 12.5 positions will require management skills, 208.5 will potentially be in the skilled category, and 24 positions may be required for unskilled workers. There is the potential for some positions at the YGP to be shared amongst employees and this accounts for a half time (0.5) position. It is anticipated that when unskilled workers gain increasing amounts of work experience (if they have a minimum high school diploma or a General Educational Development (GED) program certificate), that they will move to the “skilled worker” category.

TABLE 7.1-2: ESTIMATED YEARLY AVERAGE EMPLOYMENT OPPORTUNITIES BY AREA OF OPERATION AND SKILL CATEGORY DURING THE OPERATIONS PHASE OF THE YGP

Area of Operation	Skills Category	Number of Staff (Average per Year during Operations Phase)
Administration	Management	2
	Skilled	7
	Unskilled	0
Camp and Facilities	Management	1
	Skilled	8
	Unskilled	6
Health and Safety	Management	1
	Skilled	2
	Unskilled	0
Warehousing	Management	1
	Skilled	5
	Unskilled	4
Environmental	Management	1
	Skilled	4
	Unskilled	0
Process Plant	Management	1
	Skilled	28
	Unskilled	0

TABLE 7.1-2: ESTIMATED YEARLY AVERAGE EMPLOYMENT OPPORTUNITIES BY AREA OF OPERATION AND SKILL CATEGORY DURING THE OPERATIONS PHASE OF THE YGP

Area of Operation	Skills Category	Number of Staff (Average per Year during Operations Phase)
Mine Operations – Open Pit	Management	4.5
	Skilled	102.5
	Unskilled	8
Mine Operations - Underground	Management	1
	Skilled	52
	Unskilled	6
Total		245

TABLE 7.1-3: ESTIMATED PROPORTION OF PERSONNEL BY SKILL LEVEL (BASED ON YEARLY AVERAGE DURING THE OPERATIONS PHASE)

	Skills Category			
	Management	Skilled	Unskilled	Total
Number of personnel	12.5	208.5	24	245
% of total personnel	5.0%	85.0%	10.0%	100%

As previously mentioned, the construction phase of the YGP is anticipated to employ approximately 145 people. A summary of the area of operations and personnel required during the construction phase is provided in Table 7.1-4:

TABLE 7.1-4: ESTIMATED CONSTRUCTION PHASE PERSONNEL BY AREA OF OPERATION

Area of Operations	Estimated Personnel Required
Site and Earthworks	13
Access Road	7
Concrete	13
Structural	17
Mechanical	23
Piping	13
Electrical	5
Instrumentation and Controls	2
Insulation and Coating	1
Indirect	33
Indirect Supervision	18
Total	145

Source: Gislason, personal communication (2011).

7.1.2.2 Labour Market

In 2008, the GNWT reported that mining industry salaries in the NWT were the highest in Canada and that the industry is the primary contributor to the territorial economy directly employing approximately 2,500 people. The sector is also a significant contributor influencing indirect employment throughout the NWT.

In the RSA, Yellowknife has the largest population aged 15 years and older (15,513) followed by Behchoko (1,374); Whati (360); Gameti (214); N'Dilo (262) and Wekweeti (81) (NWT Bureau of Statistics 2010). Yellowknife is the largest community in the NWT, comprising approximately 45% of the territorial population and 55% of the NWT employment base.

Table 7.1-5 compares the labour force in the communities of the RSA to the NWT as a whole. Labour force is categorized as employed, unemployed, and not in the labour force. Yellowknife has the highest community participation rate in the labour force of all the communities in the RSA with a rate of 85%. Behchoko has the lowest participation rate in the RSA at 48%. The other communities range in participation rates from 59% to 68%, while the remaining NWT (excluding the RSA) has a participation rate of 69%. The entire NWT (including the RSA) has a participation rate of 75%. The participation rates of Behchoko, Dettah, Gameti, N'Dilo and Whati are lower than Yellowknife and the entire NWT, which may be due to the communities being much smaller and having limited employment opportunities. Gislason (2011, Appendix G) characterizes participation rates of less than 70% as associated with limited employment opportunities.

TABLE 7.1-5: COMPARISON OF LABOUR FORCE ACTIVITY IN THE RSA AND THE NORTHWEST TERRITORIES (2009)

Communities in the RSA	Population (Aged 15 years and older)	Labour Force				Participation Rate	Unemployment Rate
		Employed	Not in labour force	Unemployed	Total – Labour Force		
Yellowknife*	15,513	12,461	2354	698	13,159	85%	5%
N'Dilo	262	115	94	53	168	64%	32%
Dettah	182	89	58	35	124	68%	28%
Behchoko	1,374	515	708	151	666	48%	23%
Gameti	214	104	77	33	137	64%	24%
Wekweeti	81	47	26	8	55	68%	15%
Whati	360	156	146	58	214	59%	27%
TOTAL	17,986	13,487	3463	1,036	14,523	81%	7%
NWT (excluding RSA)	15,744	9,212	4952	1,580	10,792	69%	15%
NWT (including RSA)	33,730	22,699	8415	2,616	25,315	75%	10%

*excluding N'Dilo

Sources: NWT Bureau of Statistics (2010)

Yellowknife has the lowest unemployment rate of all the communities in the RSA at 5% (Table 7.1-5). The highest unemployment rate for the RSA is in N'Dilo (32%), while the unemployment rates in the other communities in the RSA range from 15% to 28%. The total unemployment rate for the RSA is 7%, which is less than the unemployment rate for the NWT (excluding RSA) at 15% and the NWT (including RSA) at 10% (Gislason 2011, Appendix G). Similarly to participation rates, Gislason reports that the communities in the RSA (excluding Yellowknife) likely have limited employment opportunities as evidenced by unemployment rates greater than 25%.

The labour market in Yellowknife can be characterized as strong compared with the labour market in other communities in the RSA. From the data in Table 7.1-5 it appears that there is an available labour pool in the RSA that could potentially supply the YGP.

NWT Labour Pool

Based on the Project life span and the available labour pool for the proposed YGP, the likelihood of direct employment for northern and Aboriginal residents is high. As noted in Table 7.1-1, there are approximately 70 positions required during the mine's operations phase. A breakdown of skill requirements as identified in Table 7.1-2 and 7.1-3 are as follows: 85% for skilled or experienced labour, 10% for management and 5% for unskilled labour

The YGP will attempt to put in place a preferential hiring policy for NWT residents with requisite skill levels. Furthermore, based on an assessment of local practices at other mining operations in the NWT, it is estimated that a minimum of 20% of workers during construction could be from the NWT (Gislason 2011, Appendix G). During the operations phase, up to 50% of the mine's employees are likely to be from the NWT. Furthermore, Gislason estimates that 165 direct positions will be filled by NWT residents during the construction and operations phases. Details on regional sourcing of labour can be found in Appendix G.

The communities in the RSA are likely to provide most or all of the direct employment to the YGP (Gislason 2011, Appendix G). Within the RSA all communities except Yellowknife are considered to have "mostly Aboriginal" populations. The Aboriginal population in Yellowknife is 23.1% (NWT Bureau of Statistics 2010). Considering the direct employment opportunities for this Project and the priority hiring of NWT residents, it is a very likely that a considerable number of Aboriginal people from the RSA will gain employment at the YGP.

As many positions at the mining operation are scheduled for a two-week on and two-week off rotation, it is necessary to consider the likelihood that the available labour pool is willing to work a shift rotation. In 2011, the NWT Bureau of Statistics reported that over 40% of the available labour pool in the RSA is available to work a shift rotation. The highest percentage of residents available to work shift rotations are in Behchoko (77.3%) with the lowest percentage in Dettah (41.3%) (Table 7.1-6).

TABLE 7.1-6: COMMUNITY GROWTH RATE AND AVAILABLE LABOUR SUPPLY IN THE REGIONAL STUDY AREA AS OF 2009

Community	Average Annual Growth Rate Since 1996	Available Labour Supply		
		Potential Available Labour Supply (persons)	Available to Work Rotation	Have a High School Diploma / GED
Yellowknife and N'Dilo	0.6	1,209	46.4%	63.9%
Dettah	2.2	46	41.3%	19.6%
Behchoko	1.1	507	77.3%	24.5%
Gameti	0.9	53	64.2%	17.0%
Wekweeti	-0.5*	20	55.0%	40.0%
Whati	1.0**	85	58.8%	40%

As previously indicated, many workers will require skills and/or a minimum educational level such as a high school diploma or General Education Development (GED) with work experience. Table 7.1-6 shows the percentage of residents in the RSA who have gained a high school diploma or GED and are actively seeking employment in the RSA. Of the potential available labour supply, Yellowknife and N'Dilo have the highest percent of persons with a minimum high school diploma at 63.9% (NWT Bureau of Statistics 2010). Compared to other available labour supplies in communities in the RSA, Gameti has the lowest percent of persons with a high school diploma at 17% (NWT Bureau of Statistics 2010). In all of the RSA communities, the percent of residents achieving a high school diploma has increased since 1986 (see Section 3.0) (NWT Bureau of Statistics 2010).

Tyhee NWT Corp will attempt to put in place a northern hiring strategy that preferentially hires NWT residents (with the same levels of education, skill, and experience) over non-NWT residents (people who do not live in the NWT). This strategy is intended to benefit NWT residents financially through stable employment while also reducing potential effects on housing, families and public services that would arise from an influx of new residents to the region.

Assuming a preferential northern hiring strategy and improving levels of education in the RSA, it is likely that increasing numbers of interested RSA residents will be able to obtain direct employment at the YGP. Furthermore, training and other recruitment strategies can draw and prepare potential workers in the RSA (Gislason 2011, Appendix G).

7.1.2.3 Goal for Northern and Aboriginal Employment

As previously mentioned, Tyhee NWT Corp is considering a preferential hiring policy for local residents and Aboriginal peoples. The company's commitment will be for the duration of the YGP.

Currently, BHP Billiton Ekati, Rio Tinto Diavik and De Beers Snap Lake have Socio-Economic Monitoring Agreements with the GNWT that sets goals for northern and Aboriginal hiring. Diavik has established an employment goal of 66% NWT residents with 40% Aboriginal (Rio Tinto 2010).

For Tyhee NWT Corp to maximize its northern hiring efforts, an available labour supply with the required skills, training and experience are necessary. While Ekati, Diavik, and Snap Lake have set targets of approximately 60% for northern hiring, these mines employ well over 700 people at each facility. In the case of Diavik, the largest group of northern hires is in the lower skills categories, with a large percentage of skilled workers from outside the NWT (Rio Tinto 2010). In comparison, it is projected that the YGP will average approximately 208.5 skilled jobs (85%), 24 unskilled jobs (10%) and 12.5 management jobs (5%) during the operations phase (Table 7.1-2 and Table 7.1-3). Due to the relatively small size of the YGP in comparison to existing diamond mines (i.e., Ekati, Diavik, and Snap Lake) in the NWT, it is difficult to set the same target goals for northern hires at the YGP.

Gislason (2011, Appendix G) estimates that 33% of direct employees in the construction phase and 50% in the operations phase will come from the NWT. Another 50 positions may be created annually in the NWT indirectly in supplier industries and 55 positions in retail stemming from the spending of earned wages from direct and indirect employment. It is further estimated that most direct employment opportunities in the NWT can eventually be filled by persons residing in the RSA.

Tyhee NWT Corp is currently estimating that 30% of its workforce will be from the NWT; approximately 50% of that workforce is targeted as being Aboriginal (resulting in a preliminary goal of 15% of the total workforce being Aboriginal). It is expected that northern and Aboriginal hires will increase over time similarly to the general trend that has occurred at other mines. For example, Diavik initially had a target of 30% NWT resident employment (including contractors), which has since exceeded 60% (Rio Tinto 2010).

Tyhee NWT Corp will monitor its northern and Aboriginal hires to measure the success of its northern hiring strategy. In the event that hiring goals are not met, Tyhee NWT Corp will review human resource policies to ensure that the YGP is doing everything reasonable to attract northern residents to its employment opportunities.

Additionally, all third party contractors will be requested to preferentially hire northern and Aboriginal residents where possible. By extending the northern hiring policy to contractors, Tyhee NWT Corp will maximize northern and Aboriginal hiring for both direct and indirect employment.

7.1.2.4 Barriers to Employment

Tyhee NWT Corp is committed to employing NWT residents, both Aboriginal and non-Aboriginal. However, for certain positions, specific skills, training and experience are required. Barriers to hiring residents from the RSA may include:

- Low levels of education;
- Not available to work on a shift rotation (two-week in, two-week out);
- Limited or no post-secondary training opportunities in small communities;
- Inability to travel to the YGP point of hire (Yellowknife);
- Social challenges;
- Limited access to internet and newspapers to search for employment opportunities.

Employability of Unskilled Workers

Unskilled labourers will constitute a small percentage of workers required during the operations phase of the Project. An unskilled worker is considered one who has a high school diploma / GED with little or no work experience. Since 1986, all communities in the RSA have had an increase in the number of residents achieving a high school diploma/ GED (Table 7.1-5). Many of the proposed positions will require specific skills, therefore posing a challenge to RSA residents with low levels of education or limited work experience.

Training Opportunities and Programs

The minimum level of education required for employment at YGP is a high school diploma or GED. To achieve this level of education, some residents in the RSA must travel to another community to complete high school or complete their education through home based learning.

Tyhee NWT Corp will develop training programs to meet the needs of the operation and the abilities of the workforce including safety and mine orientation programs. When the YGP eventually closes, it is anticipated that these skills will become transferrable so employees can seek employment elsewhere.

Tyhee NWT Corp proposes to hire a full-time Trainer to coordinate activities and modules at the job site (see Section 4.15). The Trainer will be supported by supervisors, human resources staff, and health and safety personnel. Additionally, the suppliers of equipment and materials at the YGP will be encouraged to provide training sessions.

Safety training will be a high priority at the minesite. Safety training is required for all employees and contractors and is expected to include the following:

- Site orientation;
- Mine site general safety rules;
- Reporting of incidents, injuries and near misses;
- Use of personal protective equipment;
- Hazardous materials information system;
- Basic first aid training will be offered to all employees;
- Job specific training;
- Site specific emergency response procedures that will be developed;
- Industrial first aid; and
- Fire fighting.

Tyhee NWT Corp will distribute training programs to the workforce based on position requirements. For example, an apprenticeship program may be established for select trades; similarly, training in Emergency Medical Services may be offered to select personnel (see Section 4.15).

Tyhee NWT Corp will implement a training and mentorship program for all new workers at the YGP prior to operating equipment or performing other job tasks. New workers will be identified from experienced workers with different coloured hardhats to ensure that they are easily identifiable (as is the case in many other industries) (Enform 2011).

To maximize direct employment for residents of the NWT including Aboriginals, Tyhee NWT Corp plans to investigate the potential to partner with a number of organizations. One of these programs, the Aboriginal Skills and Employment Partnership (ASEP), is a federal initiative administered by Human Resources and Skills Canada that was launched to help improve employment opportunities for Aboriginal peoples. ASEP provides valuable skills development and on-the-job work experience that can lead to long-term employment opportunities in the Northwest Territories mining sector (HRSDC 2009).

In the NWT, ASEP is administered through the Mine Training Society. Tyhee NWT Corp plans to explore opportunities to support Aboriginal residents by potentially offering work placements to graduates of programs at the Mine Training Society. Furthermore, depending on training initiatives, Tyhee NWT Corp could receive support from ASEP. Any training initiatives supported by ASEP would only be open to Aboriginals.

Tyhee NWT Corp is also interested in partnering with post-secondary institutions (such as Aurora College) that offer mining-related programs that require work placements. Should Tyhee NWT Corp be able to meet the work placement requirements and have the necessary mentorship capabilities for students/ new graduates, Tyhee NWT Corp could potentially offer placements. As with the northern hiring policy, Tyhee NWT Corp would offer work placements to residents of the NWT first. Work placements could extend to post-secondary institutions outside of the NWT with, again, the priority being on placing residents of the NWT in those positions.

7.1.2.5 Strategies and Commitments to Maximize Direct Employment and Retention

Tyhee NWT Corp is committed to maximizing and retaining employment opportunities for NWT residents by using a variety of recruitment and human resource methods, including, but not limited to:

- Preferential northern and Aboriginal hiring policy;
- Setting targets for hiring northern and Aboriginal residents;
- Tracking targets for hiring northern and Aboriginal residents;
- Reviewing human resource policies to ensure the company is doing everything reasonable that it can to employ northern and Aboriginal residents;
- Providing training opportunities to northern and Aboriginal residents;
- Providing transportation to and from the worksite from Yellowknife; and
- Providing free accommodation and meals while at camp.

Depending on the success of directly employing northern and Aboriginal residents, Tyhee NWT Corp may consider further actions including:

- Reviewing different community pick up points for northern and Aboriginal residents;
- Increasing awareness of employment opportunities at the YGP (especially in more remote communities) by contacting community service agencies, local government officials and community representatives. Information visits to communities would also be considered;
- Attendance at local career events;
- Performance bonuses; and
- Review or flexibility towards the two-weeks on/ two-weeks off rotation schedule (for certain positions).

Hiring and Retention

Tyhee NWT Corp's commitment to maximizing the employment and retention of NWT residents will be extended through the company's human resources policies. The safety of employees and contractors at the YGP will be a primary focus of Tyhee NWT Corp. Safety is not only a responsibility of Tyhee NWT Corp, it is an expectation that every employee and contractor display a "safety first" attitude. Creating a safe, healthy and industrious work environment for all employees, contractors and visitors is important for continuing to attract northern residents to employment opportunities at the YGP.

To assist in creating a safe and healthy work environment for all employees, Tyhee NWT Corp will have a zero tolerance policy for the usage or possession of any illicit drugs or abuse of prescription drugs. Alcohol will not be permitted at the Yellowknife Gold Project camp, minesite or other work locations supported by Tyhee NWT Corp. Employees will be required to pass a drug and alcohol test prior to being employed at YGP. Finally, it is the responsibility of employees to show up fit and ready for work. Employees are expected to work safely throughout their shift and if they cannot do so they are expected to inform their supervisor immediately.

Should an employee notify a supervisor (or other employee) concerning an alcohol or drug issue, Tyhee NWT Corp will adhere to its human resources policies on these matters. Personal information will be treated discretely and with confidentiality.

Tyhee NWT Corp recognizes that there are issues related to alcohol and drug use in many communities in the NWT and that these are treatable conditions that continue to be a source of concern for local communities and government agencies.

A safe working environment also extends beyond physical safety. Tyhee NWT Corp is committed to providing a safe emotional work environment and will have zero tolerance for harassment of any kind. The human resources policies at Tyhee NWT Corp will include information regarding criminal records. Employment in some positions may require a satisfactory criminal record check. This may not be the case for all positions and the

possession of a criminal record will not necessarily disqualify potential employees from positions. Disclosure of a criminal record will be treated with respect and confidentiality.

Tyhee NWT Corp may also review, on a case by case basis, minimum education requirements for certain positions. At this time, it is likely that a high school diploma/GED will be required for most positions at the YGP; however there may be certain cases where this minimum standard can be examined further.

Mine-ready Workforce

To contribute to a mine-ready workforce, Tyhee NWT Corp will employ the following strategies:

- Training and mentorship programs;
- Safe and healthy work environment;
- Offer work placements to graduates of mine-training and technical apprenticeship programs;
- Support career paths in mining for northern and Aboriginal residents; and
- Outsource certain workforce requirements to provide northern firms with direct experience and help encourage northern business growth.

7.1.2.6 Training and Education

There are currently a number of initiatives funded through the territorial and federal governments to increase the training, education and regional business capacity in the NWT. Initiatives include, but are not limited to, the Support to Entrepreneurs and Economic Development (SEED) Policy, Community Futures and the Mine Training Society.

SEED provides borrowing incentives, micro-business loans, business intelligence and networking grants, and financial support for community-based business research (GNWT ND).

The Akaitcho Business Development Corporation represents Community Futures in Yellowknife, N'Dilo and Dettah; while the Dogrib Area Community Futures supports Behchoko, Whati, Gameti and Wekweeti. Community Futures advances community economic development with support for the creation of small and medium sized business with loans, business counselling, and advice (GNWT ND).

Mine related training and education in the NWT is provided by Aurora College and the Mine Training Society. Mining related programs that could lead to business operations include business administration, office administration, environment and natural resources technology program, class 1 driving and trades courses such as heavy equipment operator.

The creation of further mining related programs in the NWT is likely to assist in further job creation for NWT residents. One example would be a camp operations and management program that would give students the necessary and practical skills to build and maintain temporary camps that are used in remote work sites.

7.1.3 Economic Effects

The proposed Yellowknife Gold Project will provide significant contributions to the NWT and Canadian economies. The economic effects of the YGP were assessed by Gislason (2011, Appendix G). Most of the economic impacts predicted to occur from the YGP will occur during the construction and operations phase of the Project. Cash expenditures made during these phases will have a direct effect on the NWT and Canadian economies.

Cash expenditures from the proposed YGP will include direct economic effects such as the wages of the YGP workforce. “Indirect or spinoff economic effects” are created through the re-spending of employment income on consumer goods and services that further the contribution to the local economy. Additional indirect effects can occur with linkages of suppliers of goods and services on downstream industries. In total, the predicted economic effects of the YGP include the direct industry, indirect supplier and induced consumer spending impacts (Gislason 2011, Appendix G).

In reviewing the economic impacts of the YGP wages and benefits, GDP and person-year equivalents are used. Wages and benefits are considered to be the gross return to labour (Gislason 2011, Appendix G);, while GDP is the sum of the return to labour and capital. Person-years are a measurement of employment.

The degree of effect on the economy (NWT and Canada) relies upon the entirety of expenditures including their multiplier effects. The multiplier effects on the region depend on the regional economic structure, specifically the amount of goods and services that arise from imports. Imports are considered to be a “leakage” from the regional economy because the money spent is unavailable for re-spending in the region (Gislason 2011; Appendix G).

Although the YGP will be much more significant in the NWT than the rest of Canada, Gislason estimates that the proposed Project will have an overall greater economic effect on the Canadian economy than that of the NWT as some project expenditures can only be made in southern Canada.

7.1.3.1 Direct Economic Effects

The direct economic effects from the construction and operations phases of the proposed YGP on the NWT economy are:

- 1,110 person-years of employment;
- \$94 million in wages and benefits;
- \$168 million in supply purchases; and
- \$41 million in territorial government revenues.

Revenues to the NWT government are expressed before application of the federal formula financing agreement, as noted in Appendix G. The economic benefits to Canada (including those accruing to the NWT) are:

- 2,105 person-years of employment;
- \$190 million in wages and benefits;

- \$436 million in supply purchases; and
- \$108 million in government tax revenues.

7.1.3.2 Total Economic Effects

Total economic effects arise from the direct effects coupled with indirect supplier purchases and induced spending in the consumer market. For both the NWT and Canada, total economic effects are greater than direct economic effects alone. In some cases, the total economic effect is near double the direct economic effect. For example in the NWT, the direct economic effect on employment is 1,110 person-years while the total economic effect on employment is 2,060 person-years. Further information on economic effects is provided in Appendix G.

The total economic effects for the NWT include:

- 2,060 person-years for employment;
- \$145 million in wages and benefits; and
- \$447 million in GDP.

The total economic effects for Canada are:

- 5,910 person-years in employment;
- \$372 million in wages and benefits; and
- \$673 million in GDP.

As is the case with the direct economic effects, both Canada and the NWT are expected to benefit from the total economic effects associated with the construction and operation of the YGP.

7.1.3.3 Capital Costs

The cost associated with bringing the YGP into operation is an estimated \$173.6 million which includes a contingency allowance of \$19.5 million. A summary overview of the pre-production capital costs by area is presented in Table 7.1-7.

Capital costs are considered to be within a -10% / +30% accuracy range of actual costs. All costs are expressed in first quarter 2010 Canadian dollars with no allowance for escalation, interest during construction or taxes. Allowances have been considered for items such as:

- Cost increases and decreases in the price of materials and freight over the last two years (steel, cement, copper, and all general goods);
- Adequate experienced supervision during construction to supplement contractors;
- Degree of difficulty of the area in which the plant will be constructed, including cold weather productivities and remote location;

Environmental guidelines and restrictions to be built into the construction program.

TABLE 7.1-7: ESTIMATED PRE-PRODUCTION CAPITAL COSTS

Area		Cost (\$ million)
Direct Costs	Mining Pre-production	30.0
	Process Plant	30.2
	Tailings and Water Reclaim	4.8
	Ancillaries	7.3
	Plant Site Infrastructure	9.3
	Power Supply and Distribution	35.7
Total Direct Costs		117.3
Indirect Costs	Owner's Costs	7.5
	EPCM	3.8
	Other Project Indirects	25.6
Total Indirect Costs		36.8
Subtotal		154.1
Contingency		19.5
Total Project Cost		173.6

7.1.3.4 Operating Costs

The projected operating cost of the YGP over the projected 7.5 year mine life is an estimated \$473 million (includes contingency). Table 7.1-8 summarizes the annual operating costs from year one to year seven. Operating costs are projected to be the highest in year four (\$80 million) and the lowest in year seven (\$32 million). The operating costs are expected to diminish over time as Tyhee NWT Corp reduces the mine operation activities towards the end of the Project lifespan.

Table 7.1-9 summarizes the total operations expenditures (\$ millions) and person-years for the YGP. By comparison (see Table 7.1-7), operating cost greatly exceeds capital costs, in part due to most capital costs being associated with the construction phase lasting one-year; while the operating costs are associated with the operations phase lasting 7.5 years.

TABLE 7.1-8: ESTIMATED ANNUAL OPERATING COSTS

Operating Year (millions)*						
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
\$51	\$74	\$82	\$80	\$64	\$43	\$32

*includes contingency

TABLE 7.1-9: ESTIMATED TOTAL OPERATIONS EXPENDITURES

Type of Expenditure	
Direct Employment	1,960 person-years
Wages and benefits	\$170 million
Goods and services	\$303 million
Total	\$473 million*

*includes contingency

Source: Gislason (2011); Appendix G

7.1.3.5 Total Construction and Operation Expenditures

Total construction and operation expenditures over the life of the YGP will be approximately \$651 million. Total expenditures are a result of \$190 million in wages and benefits and \$461 million in goods and services. Goods and services for example could include purchases on items such as equipment, fuel and third party contractors, amongst other things.

The breakdown of total estimated construction and operation expenditures is listed in Table 7.1-10. In total, operation and construction expenditures are expected to generate 2,105 person-years of employment. Further information is provided in Appendix G.

TABLE 7.1-10: ESTIMATED TOTAL CONSTRUCTION AND OPERATION COSTS, BY EXPENDITURE

Type of Expenditure	
Direct Employment	2,105 person-years
Wages and benefits	\$190 million
Goods and services	\$461 million
Total	\$651 million

Source: Gislason (2011); Appendix G

7.1.3.6 Supplier Purchases

Tyhee NWT Corp is committed to using northern suppliers when it is reasonably possible to do so. Table 7.1-11 summarizes the estimated supply purchases for the construction and operations phases of the YGP.

Overall, more supply expenditures will be made during the operations phase than the construction phase. During construction, approximately \$158 million will be spent on purchases, while approximately \$303 million will be spent during operations.

Due to the location and availability of some goods and services, it is anticipated that many of the purchases will occur outside of the NWT. During both phases, Canada will provide approximately 60% of supplies, while the NWT will provide 30% to 40% of supplies during the construction and operations phase. International purchases (outside of Canada) are estimated at 10% during construction (\$16 million) and 3% during operations (\$9 million). The operations phase favours the purchase of supplies in the NWT more than the

construction phase at a comparison of 40% versus 30%, respectively (Gislason 2011, Appendix G).

TABLE 7.1-11: ESTIMATED SUPPLY PURCHASES, CONSTRUCTION AND OPERATIONS PHASES

	Supply Purchases			
	Construction (Total)		Operations (Total)	
NWT	\$47 million	30%	\$121 million	40%
Canada	\$95 million	60%	\$173 million	57%
International	\$16 million	10%	\$9 million	3%
Total	\$158 million		\$303 million	

Source: Gislason (2011); Appendix G

7.1.3.7 Government Revenue

The territorial, provincial and federal governments will receive various forms of direct revenue from the YGP. Table 7.1-12 shows the projected revenues to the NWT and Canadian governments. Revenue includes:

- corporate and personal income tax;
- mining royalties;
- payroll overhead in the form of payroll tax, Employment Insurance (EI) premiums, Canada Pension Plan (CPP) premiums, and Workers Compensation Board (WCB) premiums;
- fuel tax; and
- property tax.

The NWT territorial government will receive most of its revenue during the operations phase of the YGP from corporate income taxes. The rest of Canada (including provincial and federal governments) will receive the most revenue from personal income tax during the construction and operations phase of the Project. However, the corporate income tax revenue (as shown in Table 7.1-12) for all of Canada falls just short of the personal income tax amount at \$37 million (Gislason 2011, Appendix G).

In total, \$108 million in government revenue will be generated for all of Canada, with \$103 million occurring during the operations phase. The territorial government will receive \$41 million from the operations phase of the Project. Less than \$500,000 is estimated to be generated in revenue during the construction phase for the territorial government (Gislason 2011, Appendix G).

TABLE 7.1-12: ESTIMATED NWT AND CANADIAN GOVERNMENT TAX REVENUES (CONSTRUCTION AND OPERATIONS PHASES)

Government Tax Revenues		NWT (\$ million)			Canada (including NWT) (\$ million)		
		Construction	Operations	Total	Construction	Operations	Total
Income tax	Corporate	0	17	17	0	37	37
	Personal	< 0.5	7	7	4	34	38
Mining Royalty		0	7	7	0	7	7
Payroll Burden	Payroll Tax	< 0.5	3	3	< 0.5	3	3
	EI Premiums	0	0	0	< 0.5	4	4
	CPP Premiums	0	0	0	1	8	9
	WCB Premiums	< 0.5	3	3	< 0.5	3	3
Fuel Tax		< 0.5	2	2	< 0.5	5	5
Property Tax*		0	2	2	0	2	2
Total		< 0.5	41	41	5	103	108

*estimated at 2 million

Source: Gislason (2011); Appendix G

7.1.3.8 Total Employment Effect Revenue

In order to maximize employment at the YGP for the residents of the NWT, Tyhee NWT Corp will attempt to put in place a preferential northern hiring policy. This policy will be for direct hires and will include contractors working with or for Tyhee NWT Corp. Initial targets have been set at a minimum of a 30% northern workforce. Due to the technical nature of skills required for many positions at the mine, it is anticipated that many southern Canadians will need to be hired until more northerners acquire those skills.

People relocating to the NWT for employment purposes are known as “in-migrants”. A recent study has shown that 26% of the total NWT mine employees were workers who moved to the NWT (NWT Bureau of Statistics 2009). Table 7.1-13 provides an estimate of the employment and wages to in-migrants, existing NWT residents and non-NWT residents (those who live outside of the NWT).

In total, the proposed YGP will provide direct employment to approximately 145 people during construction and an average of 245 people during the operations phase. Wages and benefits received by NWT and non-NWT residents are estimated at \$20 million during construction and \$21.3 million during each year of operation (Gislason 2011, Appendix G).

TABLE 7.1-13: ESTIMATED PERSON YEARS OF EMPLOYMENT AND WAGES AND BENEFITS FOR DIRECT LABOUR CONSTRUCTION AND OPERATIONS PHASES

		PEOPLE		WAGES AND BENEFITS	
		Construction	Operations (annual)	Construction	Operations (annual)
NWT	Residents	30	100	\$3.6 million	\$8.3 million
	In-migrants	N/A	35	N/A million	\$3.0 million
Non-NWT residents		115	110	\$16.4 million	\$10.0 million
Total		145	245	\$20.0 million	\$21.3 million

Source: Gislason (2011); Appendix G

7.1.3.9 Foreseeable Economic Effects and Mitigation Strategies

Tyhee NWT Corp has assessed the forecasted economic effects that the proposed YGP may have on other forms of economic activity in the NWT such as the traditional economy, public infrastructure, inflation and economic diversification. A brief discussion of those effects is provided below.

Traditional Economy Activities

The proposed YGP will have a positive economic effect on the traditional economy of residents in the RSA. Recent GNWT (2008) studies have indicated that trapping, hunting, and fishing has increased in all communities in the RSA except Yellowknife. Additionally, there has been an increase of households consuming country food in all communities in the RSA except Yellowknife. The increase in traditional activities is potentially linked to the increase in income and rotational work schedule provided by mining projects (GNWT 2008). It is foreseeable that increased participation in trapping, hunting, fishing could contribute to a stronger Traditional Knowledge (TK) base in the NWT.

Furthermore, background research into TK collected from the North Slave Métis Alliance (NSMA) and Yellowknives Dene First Nation (YKDFN) indicated that when the historical Discovery Mine was in operation wildlife harvesting did not change in either quantity or quality (Section 7.4 of the DAR). With the two week rotation schedule for workers, it is anticipated that the proposed YGP will not affect wildlife harvesting activities. This is consistent with the GNWT (2008) summary of findings in the *Communities and Diamonds Socio-economic Impacts in the Communities of Behchokò, Gameti, Whati, Wekweètì, Dettah, Ndilo, Lutselk'e, and Yellowknife* report.

Public Infrastructure

Tyhee NWT Corp is committed to minimizing pressures from the proposed YGP on public infrastructure in the NWT. Potential areas that could be affected by the proposed Project could include transportation infrastructure in the NWT and waste management facilities in Yellowknife.

Tyhee NWT Corp's approach to effective waste management and water resource use is described in Section 6.8. More information on public infrastructure effects can be found in Section 7.2.1.1 (Public Safety).

Population

Gislason has estimated that every direct job acquired by an in-migrant will result in approximately 3.4 people relocating to the NWT (e.g., an in-migrant and their family). Most of the in-migrants will move to Yellowknife due to the availability of housing and other community services and amenities.

Competition for Employees

Although it is likely that some competition for available labour will arise from other mining projects, it is not expected that the YGP will experience significant competition as the other

mines are already operational with relatively steady employment levels (Gislason 2011, Appendix G).

Inflation

It is not anticipated that the YGP will cause additional inflationary pressures. During the past 15 years with the development and operation of the three large diamond mines in the NWT, inflationary pressure caused by mining has not occurred (Gislason 2011, Appendix G), so it is unlikely that the much smaller YGP operation will contribute to inflation.

Economic Diversification

Tyhee NWT Corp plans to outsource certain goods and services to contractors with a strong focus on NWT businesses. The local sourcing of goods and services by the NWT diamond industry has assisted the NWT business community to diversify and build capacity (Gislason 2011, Appendix G). It is expected that by providing contracts for local goods and services, Tyhee NWT Corp can also help contribute to the existing diversification trend.

Future Work Opportunities

Once all ore body extraction and decommissioning activities at the YGP minesite have been completed, it is expected that the former employees of the mine will have transferable skills that will make them employable at other mining and/or industrial operations.

7.2 SOCIETY AND CULTURE

Tyhee NWT Corp understands that society and cultural issues are an integral part of healthy communities and a healthy workforce. In planning the proposed YGP, it has been necessary to systematically analyze the potential beneficial and adverse effects that the Project may have on society and culture. Through careful planning, Tyhee NWT Corp can maximize beneficial effects while preventing or minimizing adverse effects from occurring. Potential effects and mitigation measures will be discussed in this section.

7.2.1 Potential Social Effects

Tyhee NWT Corp recognizes that the Project may potentially cause direct and indirect beneficial and adverse social effects. Potential social impacts associated with the proposed YGP may be characterized as matters of community wellness and population health.

7.2.1.1 Community Wellness and Population Health

Community wellness and population indicators are listed in the MVERIB Terms of Reference (2009) and are assessed in this section. Indicators include:

- Population in- and out-migration;
- Physical, mental, and cultural health of mine workers.
- Access to health care;

- Housing pressures;
- Educational access and completion levels;
- Single parent families;
- Public safety;
- Crime rates;
- Alcohol and drug access and use;
- Communicable diseases; and

Population In- and Out-Migration

Tyhee NWT Corp is committed to attempting to employ northern and Aboriginal residents. This policy extends beyond direct employees to both contractors and supply purchases. Northern hiring is intended to provide opportunities to northern residents while reducing pressures on housing, education and public infrastructure services that in-migrants demand. It is estimated that for each person who moves to the NWT to take a direct job, approximately 3.4 people (includes the in-migrant) will join them (Gislason 2011, Appendix G). Gislason has projected that in-migration during the construction phase of the YGP is unlikely. During the operations phase of the YGP, should employees of the YGP move to the NWT, an associated 120 people could in-migrate. The total in-migration is projected based on an estimated 35 direct employees of the proposed YGP relocating to the NWT. In-migration could potentially affect the City of Yellowknife since the majority of new residents would reside in the City and utilize local services. Appendix G provides information regarding in-migration to the NWT.

It is estimated that the human resource requirements for the YGP is 326 people. Of the direct employment opportunities during the operations phase, approximately half will be filled by NWT residents already residing in the NWT (100 jobs expected). Of these available direct employment opportunities, all jobs will be filled by RSA residents. Approximately 90% of indirect jobs will also be filled by RSA residents resulting in 35 direct operation job vacancies to be filled by in-migrants. The remaining jobs are estimated to be filled by non-NWT residents.

Tyhee NWT Corp recognizes that in-migration for the YGP is a likely reality. To support in-migrants in the NWT, Tyhee NWT Corp will strive to have a positive and healthy work environment that will preserve the established workforce until the operations at the YGP are wound down.

Upon closure of the mine, out-migration may also occur to southern provinces. In a recent study by the GNWT (2008), NWT residents that are not originally from the NWT, who have a university degree and who live in medium sized communities, are more likely to consider a move out of the NWT. The cost of living and distance from family are the primary reasons for considering a move (GNWT 2008).

Alcohol and Drug Use and Access

As previously discussed (Section 7.1.2.6), Tyhee NWT Corp will have a zero tolerance policy for the usage or possession of alcohol or non-prescription drugs. Employee safety and a healthy work environment are paramount concerns for Tyhee NWT Corp. Employees will be required to pass a drug and alcohol test prior to being employed at YGP. Finally, it is the responsibility of employees to show up fit and ready for work activities and able to work safely throughout their shift.

However, Tyhee NWT Corp is aware that there are existing issues related to alcohol and drug use in many communities in the NWT. The GNWT's (2008) *Communities and Diamonds Socio-economic Impacts in the Communities of Behchokò, Gametì, Whatì, Wekweètì, Dettah, Ndilo, Lutselk'e, and Yellowknife* monitoring report, discussed alcohol and drug use. The report noted that alcohol and drug use is an ongoing issue in the NWT and that participation in the wage economy has the potential to affect these issues (GNWT 2008). In the NWT, higher levels of alcohol and drug use have cascading effects on other aspects of the community including family violence and crime (GNWT 2008).

Ultimately, places of employment cannot control individual behaviour off the worksite, but can encourage health and wellness through policies and programs. Tyhee NWT Corp's zero tolerance policy seeks to reinforce the dangers of substance abuse and the benefits of healthy and alcohol-free lifestyles and employment. Tyhee NWT Corp is also aware that individuals with drug and alcohol dependencies experience withdrawal symptoms with the abrupt cessation of their dependency. A health care worker (first aid attendant, paramedic, or nurse) will be on-site and available to assist individuals in emergency situations.

Access to Health Care

Access to health care is not expected to be adversely affected by the YGP. Tyhee NWT Corp is committed to maintaining a safe, healthy and industrious workplace by developing safe work procedures and policies for employees to follow. Furthermore, all employees will be expected to use personal protective equipment (PPE) when required. The prevention of workplace accidents will be a top priority to Tyhee NWT Corp.

The medical personnel (first aid, paramedic, or nurse) at YGP will deal with all workplace injuries that are treatable by their level of training. If further assistance is required, the Stanton Territorial Health Authority (STHA) will be utilized.

It is predicted that the potential in-migration of employees and their families (up to 120 people) to the NWT will not put significant adverse pressure on the health care services in the territory. In Yellowknife the Stanton Territorial Hospital provides the principal medical and health care services for the area (Stanton Territorial Health Authority ND).

Housing Pressures

Key housing indicators associated with resource development impacts include ownership, crowding, core need and vacancies.

It is anticipated that approximately 35 non-resident employees will move to the NWT per year during the operations phase (based on the yearly average), potentially resulting in a total of 120 people relocating to the territory (including the worker's family) (Gislason 2011, Appendix G). It is estimated that most of these people, if not all, will move to Yellowknife. Appendix G provides further information on in-migration to the NWT.

In general, as reported by the GNWT (2008), the mining industry may be causing beneficial and adverse effects to the housing market in the NWT. While crowding has decreased in the NWT, and especially in small communities, it has remained relatively constant in Yellowknife. Core need has gone up in Yellowknife, but decreased in small communities. Tyhee NWT Corp is aware that housing vacancies are a concern, primarily in Yellowknife.

Tyhee NWT Corp believes that the construction, operation and closure of the YGP will not have a significant effect on housing pressures in the region. Further information is provided in the following section discussing ownership, crowding, core need and vacancies.

Ownership

Ownership refers to the number of people who own a home. GNWT (2008) has compiled ownership trends in Yellowknife, including:

- Home ownership has increased in Yellowknife since 1996; however the rate of growth has declined over time;
- No change has been noted for home ownership rates in the remaining RSA communities;
- In 2009, 53% of NWT residents (Aboriginal and Non-Aboriginal) owned a home (NWT Bureau of Statistics 2010).

The slowing trend of home ownership in Yellowknife may be attributed to an increase in housing prices, potentially due to in-migration related to resource development. The GNWT (2008) has reported that higher incomes have not increased rates of home ownership in the NWT.

Tyhee NWT Corp is also considering providing transportation for workers from RSA communities to the proposed YGP so that the Project reduces potential effects on housing pressures related to home ownership. Tyhee NWT Corp does not expect that the proposed YGP will have an adverse effect on home ownership in the NWT.

Crowding

Overcrowding is defined as having more than six residents in one house (GNWT 2006). Decreasing rates of crowding can typically be associated with higher standards of living (GNWT 2006). In the NWT, the rate of crowding in homes has been declining since 1981, but the rate of decline has slowed since 1996, possibly due to limited available housing.

Small communities in the NWT tend to have higher crowding rates than Yellowknife; however, the largest decrease in crowding has occurred in small communities (GNWT 2008).

Tyhee NWT Corp expects that most of the in-migrants that could potentially be associated with the YGP will relocate to Yellowknife. Tyhee NWT Corp does not anticipate that the proposed YGP will significantly affect any pre-existing crowding conditions in Yellowknife due to the relatively few in-migrants anticipated for the Project.

Core Need

Core housing need refers to households that are unable to afford shelter that meets suitability, adequacy or affordability norms (BC Housing ND). For example, a household is in core need if the house needs major repair, does not have enough bedrooms for the size of the family and/or costs more than 30% of a household's total income. High housing prices or lower incomes can contribute to the number of households in core need, particularly as it relates to proportion of household income spent on shelter. Overall, a decrease in core need can be associated with higher standards of living.

Core housing needs have declined in small communities in the RSA since 1996, whereas the trend for Yellowknife has been an increase in core need (GNWT 2008). Factors contributing to a decrease in core needs in the RSA include higher incomes related to the mining industry, a decrease in interest rates and improvements in housing stock (GNWT 2006). The primary reason for the increase in core need in Yellowknife is associated with the affordability of housing.

Opportunities for higher income employment, associated with the proposed YGP could lead to a decrease in core need in Yellowknife and small communities in the RSA. Tyhee NWT Corp is committed to a northern hiring strategy to increase northern employment (thereby reducing in-migration) where possible. Tyhee NWT Corp does not expect the proposed YGP will have an adverse effect on core housing need in Yellowknife or other RSA communities.

Vacancies

The vacancy rate is a measure of all rental units that are unoccupied at a given time. The vacancy rate in Yellowknife has declined for two consecutive years, making it lower than the Canadian rate (GNWT 2008). According to CMHC (2010), as of October 2010 there is a 0.6% vacancy rate in Yellowknife. Yellowknife's current available housing includes rental apartments, bed and breakfast units, and private homes for sale.

As of December 2010, there were approximately 60 apartments and townhouses available for rent ranging in size from bachelor to 4 bedroom units (24/7 Apartments 2010). The vacancy rate in October 2009 was 6.0%, but declined to 0.6% in October 2010 (CMHC 2010).

Rental housing and vacancy is inherently tied to the health of the economy and local industry. During the 2008-2009 recession, industrial activity was less and therefore the vacancy rates were higher. With the increase in industrial activity over the past several months, there is a diminished vacancy rate. Yellowknife's low vacancy rate may also be related to high cost of material, labour shortages and high housing prices (potentially related to in-migration) (GNWT 2008).

Tyhee NWT Corp acknowledges that housing vacancies, especially in Yellowknife, are a concern in the NWT. Due to Tyhee NWT Corp's preferential northern hiring policy and potentially providing pick-up points in RSA communities, Tyhee NWT Corp does not anticipate that the proposed YGP will have a significant effect on vacancy rates in the NWT.

Crime Rates

In its benchmark study on the potential linkages between the diamond mines and NWT crime rates (*The Communities and Diamonds Socio-economic Impacts in the Communities of Behchokò, Gametì, Whatì, Wekweètì, Dettah,, Ndilo, Łutselk'e, and Yellowknife* (2008), the GNWT observed several types of crime including total violent crime, violent, property, federal statute, other Criminal Code, traffic crimes and summarized key trends since 1996 (GNWT 2008). The crime trends for each type of crime will be discussed in the following subsections.

Tyhee NWT Corp is cognizant that crime occurs in the NWT. Furthermore, Tyhee NWT Corp understands that employment results in generation of income and subsequent purchases of goods could potentially, indirectly affect crime rates in the RSA. Tyhee NWT Corp recognizes that crime prevention and enforcement is not the role of the company but of local law enforcement and community service agencies in each community.

Many of the reported crimes in the NWT are related to drug and alcohol abuse. For personal health and well-being issues, Tyhee NWT Corp can offer support according to the company's policies. Tyhee NWT Corp will have a zero tolerance drug and alcohol policy in order to promote health and safety amongst the workforce at the proposed YGP. Tyhee NWT Corp does not anticipate that the proposed YGP will have a direct effect on crime rates in the NWT.

Total Crime

GNWT (2008) data indicate that the total crime rate in Yellowknife has increased since 1996, but the trend is not clear. There have been no observable trends in the remaining RSA. Total crime in the NWT includes violent, property, and other *Criminal Code* offences. The GNWT (2008) reports that much of the increase in total crime was related to a change in RCMP reporting that occurred between 1999 and 2000. The rise in total crime is generally due to other *Criminal Code* offences such as mischief and disturbing the peace. In the past, these offences were recorded as territorial offences and now they are recorded as *Criminal Code* crimes.

Violent Crime

Violent crimes include homicide, attempted murder, assault, sexual assault, other assaults, other sexual offences, abduction and robbery. Since 1996, the violent crime rate has increased in Yellowknife with no observable trend in the RSA (GNWT 2008). In comparison, the Canada-wide trend for violent crime has held steady since 1999 with no observable change (GNWT 2008).

Alcohol and drug use is a factor in many of the NWT's violent crime (GNWT 2008). Greater alcohol and drug use has been observed in the NWT since 1996 and the increase in use could be related to higher incomes from diamond mine employment (GNWT 2008). Violence can also be potentially associated with lack of employment opportunities and low incomes (GNWT 2006). An increase in violent crime could potentially put pressure on protective and social services in Yellowknife.

Tyhee NWT Corp does not anticipate that the proposed YGP will have an effect on the violent crime rate in the NWT. Tyhee NWT Corp encourages a healthy and safe work environment, which includes a zero tolerance drug and alcohol policy. YGP will offer support to its workforce for health and well-being issues according to the company's policies.

Property Crime

Property crime includes non-violent theft, breaking and entering, fraud and possession of stolen goods. Since 1996, property crime rates have been declining in the NWT; although there is no clear trend reported in Yellowknife (GNWT 2008). According to the GNWT (2006), property crime may be committed to support drug use and addictions. The GNWT (2006) has reported that it is unclear whether higher incomes related to resource development and property crime are linked. The declining trend in property crimes in small communities in the RSA is partially attributed to employment at diamonds mines and increased community and police efforts (GNWT 2006).

The rate of property crime in the NWT should not be adversely affected by the proposed YGP.

Federal Statute Crimes

Crimes related to Federal Statutes include drug-related offences under the Controlled Drugs and Substances Act. A rise in federal statute crimes is generally associated with a rise in drug activity. Since 1992, federal statute crime has been increasing in the NWT (GNWT 2008). The increase in these crimes may be due to pro-active police enforcement reporting more crime, a higher incidence of organized crime and opportunistic in-migration related to resource development (GNWT 2006).

Tyhee NWT Corp recognizes that drug crime can be harmful to communities and that drugs are often at the origin of other types of crime. While Tyhee NWT Corp cannot control people from committing federal statute crimes, it can offer support to its workforce that may be dealing with addiction issues.

Traffic Crime

Traffic offences include impaired driving, failure to stay at the scene of an accident and dangerous driving (GNWT 2006). Since 1996, the trend for traffic crime in the NWT has been unclear, however, the data does not report any influence on traffic crime resulting from the mining industry.

All traffic associated with the YGP will comply with NWT traffic laws, Winter Road Regulations and Rules of the Road. The Winter Road Regulations and Rules of the Road are updated annually by Winter Road Joint Venture. Tyhee NWT Corp does not anticipate causing effects related to traffic crimes as the majority of its transportation needs are met through air travel. Transportation of personnel or goods along the winter road will primarily be conducted using professional hauling operators.

Public Safety

Tyhee NWT Corp is committed to ensuring a safe and healthy work environment. Public safety is not expected to be adversely affected by the proposed YGP. Currently, the GNWT (2008) has observed a trend in injury decline in Yellowknife, potentially attributable to injury prevention efforts in the community (GNWT 2008).

Public safety includes traveling on highways. The workforce of the YGP will be transported with charter flights (fixed wing aircraft) year round. YGP, when operational, will utilize the 'Secondary Route' of the Tibbitt to Contwoyto Winter Road (TCWR) for its winter transportation requirements. All traffic associated with the YGP will comply with NWT traffic laws, Winter Road Regulations and Rules of the Road.

The winter road will be used for approximately 8-12 weeks during the winter road season. The winter road is in place for mining operations and is considered to be "use at your own risk" for the public. Should the Secondary Route not be constructed by the TCWR Joint Venture the winter road from Prosperous Lake to the YGP will be utilized and the same protocols, as per the Secondary Route of the TCWR, will be followed.

Committed to protecting the safety of the public, Tyhee NWT Corp fully recognizes its responsibility in ensuring the safety of the general public in relation to any and all of its YGP-related activities. With strict adherence to the company's safety policies, Tyhee NWT Corp is confident that the safety of the general public will be maintained.

Educational Access and Education Completion Levels

As discussed in Section 7.1.2.4, all of the communities in the RSA have access to kindergarten to Grade 12 schooling. However, students in the communities of Wekweeti, Gameti, N'Dilo, and Dettah must travel to neighbouring communities to complete Grade 12 in public school (Tlicho ND). The other option to complete Grade 12 is through home based learning.

In all cases, the percent of residents in the RSA achieving a high school diploma has increased during the years 1996 – 2009 (NWT Bureau of Statistics 2010). In general, the GNWT (2008) reports that more people are completing high school in the NWT. Furthermore, the mining industry in general and the diamond mines in particular are considered to be having a positive effect on high school completion in the NWT.

After high school, Aurora College and the Mine Training Society offer a variety of programs that are applicable to the employment needs of the NWT.

There are no foreseeable adverse effects on educational access and education completion levels in the NWT due to the YGP. As a result of the preferential northern hiring policy and minimum education requirements for employment, residents of the NWT have incentive to complete high school or GED, or continue with training to be eligible for employment at the YGP.

Single Parent Families

Single parent families are parents who have no spouse or common-law partner living with them to help raise children. The GNWT (2006) reports that single parent families tend to have lower social and economic status than families with two parents helping to raise the children. Children from single parent families often have increased levels of stress (GNWT 2006).

The GNWT (2008) has observed an increase in single parent families since 1996. The highest (10%) increase occurred during 1996 to 2001 in small communities in the RSA outside of Yellowknife (GNWT 2008). Larger communities in the NWT and Yellowknife increased by 6.2% and 2%. The increase in single families in the rest of Canada was 1%.

The increase in single parent families reflects a general trend that is occurring in all of Canada; however, the GNWT (2008) reports that the increase coincides with the development of the diamond mines in the NWT. Factors that have potentially attributed to the rise in single parent families in relation to the mining industry include rotation work schedules and a partner living away from home while searching for work (GNWT 2008). Increases in single parent families could increase the need for services such as childcare. Parents that are not able to access childcare may be limited in their ability to find work and contribute to the economy of the NWT.

Tyhee NWT Corp recognizes that rotational work schedules may be a contributing factor to single parent families in the NWT. Tyhee NWT Corp appreciates that families are important and is considering including all the communities in the RSA as pick-up points for the proposed YGP. By covering the travel costs and trip planning with employment at the proposed YGP, Tyhee NWT Corp hopes to reduce both familial and economic stress on single and two parent families.

Communicable Diseases

Communicable diseases can affect the health of people living in the north. The rate of infection of communicable diseases, including sexually transmitted infections (STIs), has increased since 1996.

Youth (aged 15-24) have been primarily affected by the increase in STIs in the RSA and the remaining NWT (not including Yellowknife) (GNWT 2008). Factors that may be contributing to the rise in STIs include: a general disregard for safe sex practices; reduced supervision from parents because of work schedules; and, higher usage of alcohol and drugs potentially due to higher income levels (GNWT 2008).

While the mining industry is not a direct factor for the rise in communicable diseases, indirect factors that may be related to the mining industry could be contributing to the increase. Tyhee NWT Corp recognizes that the health of its workforce and communities where they live is very important. While Tyhee NWT Corp cannot control the sexual behaviour of communities, it does understand that rates of communicable diseases have been increasing. Tyhee NWT Corp will encourage health and wellness of its employees through its policies and programs.

Physical, Mental, and Cultural Health of Mine Workers

The physical, mental, and cultural health of mine workers is a primary concern for the management at Tyhee NWT Corp. Maintaining the well-being of workers who are living at the YGP is a high priority for Tyhee NWT Corp. The goal of Tyhee NWT Corp is to create the best possible “home away from home” that it can to ensure that employees’ physical, mental and cultural health is preserved while on rotation.

Careful consideration will be given to the camp design. Preliminary plans consist of nine 24-person dormitories, a kitchen/diner unit, and a recreation unit comprised of recreation, television, exercise, and laundry facilities connected by an enclosed corridor (Tyhee NWT Corp 2008). Tyhee NWT Corp will provide telephone and internet access for employees to use to communicate with families. Furthermore, a select number of personal toiletry items may be available for sale at the site.

Other potential actions that Tyhee NWT Corp may review to increase the well-being of its staff include:

- Provision of walking trails in the area;
- A meal plan that offers a wide variety of food choices that could include “heart smart,” low sodium, or country food options; and
- Shared computers to access the internet.

Tyhee NWT Corp will provide support, consistent with company policies, to employees and their families in supporting physical, mental and cultural health.

7.2.2 Social Effect Mitigation Plan

Tyhee NWT Corp has identified key social and cultural components of the RSA that may be affected by the proposed YGP. To minimize or prevent potential adverse effects, Tyhee NWT Corp believes that a well-developed human resources management plan is integral for success. Not only will the human resources management plan serve to mitigate potential adverse effects, it will serve to maximize opportunities for residents of the RSA.

7.2.2.1 Human Resources Management Plan

Tyhee NWT Corp is committed to progressive Human Resource (HR) practices that will avoid or reduce potential adverse social effects. All HR practices put in place by Tyhee NWT Corp will be in compliance with governing labour laws and regulations. The human

resources management plan will be administered by the HR staff and will include employment, employee relations, training, and compensation/benefit functions.

Table 7.2-1 outlines Tyhee NWT Corp's potential Human Resources management strategies to help effectively reduce negative impacts on the social environment that could be related to mining projects.

TABLE 7.2-1: POTENTIAL EFFECTS AND MITIGATION MEASURES	
Potential Effects	Mitigation Measures
Population in- migration	Preferential northern hiring strategy for all direct and indirect labour
Population out-migration	Provide transportation for workers from RSA communities to the YGP Support post-secondary training options in the NWT Provide career advancement opportunities On-site training and mentoring initiatives
Alcohol and drug access and use	Drug testing prior to being hired and after any accidents Dry camp Zero tolerance for alcohol and drug use at work Access to health care provider while at work (first aid, paramedic, or nurse) Treat all personal information with discretion Provide benefits that may include counseling Provide links to social services and community wellness programs
Housing pressures	Support northern resident hiring
Crime rates	Provide links to social services and community wellness programs
Public safety	Save driving policies for winter road use (including speed limits, cell phone usage, safe load weights, and driving in convoys)
Families	For some positions, alternatives to the shift rotation may be considered
Communicable diseases	Access to health care provider while at work (first aid, paramedic, or nurse) Provide links to social services and community wellness programs
Physical health of mine workers	Provide an exercise facility Provide healthy food options in kitchen Provide a clean living environment (housekeeping, Etc.) Access to health care provider while at work (first aid, paramedic, or nurse) Provide links to social services and community wellness programs Provision of walking trails
Mental health of mine workers	Access to shared computers, internet, and phone Entertainment area with television, games, gym, and book exchange Private or shared accommodations (cross-shift) Provide work schedules well in advance of shift so that workers can make "plans" while at home Be as flexible as reasonably possible with time off requests Provide health benefits that may include counseling programs Access to health care provider while at work (first aid, paramedic, or nurse) Provide links to social services and community wellness programs
Cultural health of mine workers	Cross-cultural training workshops Recognize and respect Aboriginal traditional land use areas Recognize traditional knowledge and its value for cultural strengthening

7.2.3 Lessons Learned from Previous Mine Developments in the Northwest Territories

In recent years, the mining industry has made significant improvements to increase the beneficial socio-economic impacts associated with the industry while reducing adverse impacts. The recent generation of new mines such as BHP Billiton Ekati, Rio Tinto Diavik and De Beers Snap Lake Mine (the “diamond mines”) have set new standards for social, cultural, and environmental accountability and performance. These standards are set and maintained through comprehensive Social-Economic Monitoring Agreements (SEMA).

In preparation of this DAR, Tyhee NWT Corp reviewed the SEMA reports for these various diamond mines to understand and plan for potential adverse socio-economic impacts. Furthermore, the GNWT’s Community and Diamond Report 2008 reviewed the socio-economic impacts in the RSA of the YGP. Important socio-economic lessons learned from previous mining projects include, but are not limited to:

- Early and ongoing dialogue with Aboriginal stakeholders is imperative;
- Developing relationships with Aboriginal stakeholders is key;
- Recognize traditional knowledge in planning process;
- Recognize and respect Aboriginal treaty claims/rights;
- Adopt environmentally sound practices;
- Provide employees with a healthy and safe work environment;
- Provide employees with a high standard of living while away from home;
- Involve the public stakeholders when public interest is affected;
- Provide opportunities to northern residents first;
- Develop the northern workforce as much as reasonably possible.

Tyhee NWT Corp is fully committed to ensuring that the above lessons are implemented into company policies and commitments for the proposed YGP. Furthermore, Tyhee NWT Corp will have a sustained commitment to ensuring that socio-economic impacts are monitored and adverse impacts mitigated through the application of its human resource management plan, consultation efforts and ongoing dialogue with all communities affected by the proposed YGP.

7.2.4 Human Environment Monitoring

Tyhee NWT Corp’s Human Resources Department will monitor several human environment indicators. Data that will be monitored include:

Employment

- Employee’s location of residence at the time of hiring – which will identify if they are from the region or in-migrants;

- Employee's location of residence, during employment – this will identify if they have moved to the region;
- Employee's ethnicity – if the employee self-identifies as an Aboriginal person, this will be documented;
- Hiring and/or Training Programs that Tyhee NWT Corp is partnering in – and the success of that partnership (i.e., hired long term, completed training, dismissed, etc.); and
- Employee retention – the length of employment and terms of departure will be documented.

Employee Wellness

- HR will document any issues related to employee wellness such as number of sick days, requested short or long term leaves and vacation time.

Procurement

- Subcontractor's location – this will identify if the subcontractor was hired from the primary communities; and
- Location that (key) goods were purchased from - this will include large orders of materials to identify the success of local and regional businesses in providing goods and services.

Tyhee NWT Corp's Operations Manager will Document:

- the number of trips on the winter road to transport fuel and other consumables;
- the number of aircraft flights to/from the site; and
- the number of incidences between vehicles and wildlife.

Other monitoring initiatives are conducted in the region by Government of Northwest Territories under the BHP Billiton, Diavik and De Beers Socio-Economic Agreements. Each of these diamond mines monitors several human environment indicators which the GNWT analyzes and then produces the *Communities and Diamonds Socio-economic Impacts in the Communities of Behchokò, Gamètì, Whàtì, Wèkweètì, Dettah, Ndilo, Łutselk'e, and Yellowknife* reports. These reports provide long term monitoring of the effects of the diamond mines on Yellowknife and small local communities and compares the effects to that of remaining NWT communities. The 2006 report was used to identify potential effects and mitigation measures to implement.

Tyhee NWT Corp will provide data for regional and local level monitoring, where possible, upon request of the GNWT. Tyhee NWT Corp will continue to review available research from the GNWT regarding effects of mining on community wellness.

7.3 HERITAGE RESOURCES

Heritage resource information was collected primarily during the archaeological assessments conducted at the proposed YGP site and the winter road to Yellowknife during 2004 and 2005. The archaeological assessments were conducted by Points West Heritage Consulting Ltd., with assistance from Aboriginal representatives under Northwest Territories archaeologist's permit 2004-961 and 2005-967.

Additional Traditional Land Use information was provided by YKDFN Elders during a tour to the Yellowknife Gold Project on August 11, 2005, and by the NSMA during their elders site tour on August 12, 2005 and supplemented in their document entitled "Land Use Report for the Yellowknife Gold Project" (2005) (Appendix G).

Tyhee NWT Corp considered the data from the archaeological assessment and traditional knowledge/land use discussions during its mine planning. No archaeological or heritage resources were found in the YGP during assessments conducted in 2004 and 2005. Furthermore, traditional knowledge obtained from the YKDFN and the NSMA identified that the region is used for traditional activities, such as hunting, trapping, and fishing; however, no areas of sensitive heritage resources were identified.

The Terms of Reference (MVEIRB 2009) requested that consideration be given to identifying all known archaeological and heritage resources, sites or areas of cultural significance, and areas of high potential for unfound heritage resources in or near the requirement environmental assessment local study area.

No archaeological or heritage resources were found in the YGP during assessments conducted in 2004 and 2005. Furthermore, the archaeological potential of the specific areas that may be affected by the mine and camp facilities is rated low due to the nature of the terrain, soils and vegetation.

Archaeological sites are protected by legislation in the Northwest Territories under the Northwest Territories Archaeological Site Regulations, the Territorial Land Use Regulations and the Mackenzie Valley Land Use Regulations. Under the legislation, removal of artifacts or disturbance of site features is prohibited. No land use activity is permitted within 30 m of a known or suspected historical or archaeological site or burial ground (MVLUR, s.6a). As such, archaeological studies were conducted in advance of activity that might disturb the ground surface.

For the YGP, the developments that will affect the ground surface and, consequently, could affect any archaeological sites that may be present include: processing plant and camp construction; development of a tailings containment area; development of waste rock storage areas; road construction and use (winter and all season roads); and, borrow sources.

Tyhee NWT Corp is committed to educating all personnel working on the YGP of these regulations and the importance of leaving artifacts and site features in place and undisturbed. Although no archaeological sites have been found within the currently proposed development footprint to date, recreational activities during camp residents' off work hours may extend into areas not assessed, that is, outside the development footprint,

or expansion of the footprint may occur at some future time. Although considered unlikely within the currently proposed development footprint, if archaeological sites or human remains are encountered during any development related activity, all work in that area will cease and the Territorial Archaeologist of the Government of the Northwest Territories will be notified.

If an archaeological site is identified, a site assessment will be conducted to determine site size and content and ascertain whether it could be impacted by the development as proposed. Data regarding site size, content and complexity are necessary to estimate significance of each site which provides the basis for recommendations of suitable site specific mitigation measures. Because site assessment can be time consuming and often requires subsurface testing (which is destructive in itself), it is preferable to assess in detail only those sites that cannot be avoided and/or protected.

Identified archaeological resources, if found within proposed development areas, will be assessed for scientific and cultural significance. Mitigation measures for each site can then be developed, based on the individual site content and significance, and the type and proximity of impact anticipated. In general, sites within the development footprint will require some form of data recovery. Sites in close proximity will require monitoring and possible application of protective measures or data recovery, where judged necessary.

Mitigation refers to actions that will ameliorate adverse impacts to archaeological resources. Possible mitigation measures include avoidance through project redesign or relocation (of the entire development or specific components), protection through the erection of physical barriers or capping with protective materials, and scientific investigation and recovery of archaeological data, also known as systematic data recovery. Site avoidance is always the preferred mitigation measure. Systematic data recovery commonly consists of subsurface excavation and/or surface collection. Because this can be destructive, it is only recommended for sites definitely under threat of disturbance. Detailed archaeological analysis and reporting is an integral part of mitigation. Mitigation plans would be prepared in consultation with the Government of the Northwest Territories and local First Nations associations, where appropriate.

As part of a mitigation program, surveillance and/or monitoring may be recommended, especially in areas where sites are to be avoided and/or protected or there is potential for deeply buried archaeological resources. Surveillance is conducted during the construction process to ensure that site protection and avoidance recommendations have been followed and that no unexpected remains are encountered. This is commonly advised in areas of high archaeological potential, particularly in close proximity to sites considered highly significant. Monitoring may be undertaken during the construction phase (where digging may uncover buried sites) and/or during the operations phase to assess indirect and/or long term effects.

The potential cultural effects on traditional land use and wildlife harvesting are discussed in the following section.

7.4 TRADITIONAL AND CONTEMPORARY LAND USE AND WILDLIFE HARVESTING

The Mackenzie Valley Resource Management Act recognizes effects on wildlife harvesting as an impact on the environment, which must be considered by MVEIRB during an environmental assessment.

The North Slave Métis Alliance (NSMA) and the Yellowknives Dene First Nation (YKDFN) provided traditional knowledge related to traditional activities occurring in the region of the YGP. This information was used to inform Tyhee NWT Corp of the historic and current value and use of the region for wildlife harvesters and traditional activities.

The YGP is located within the Akaitcho Dene asserted traditional territory (Figure 3.8-1). The Crown and the Akaitcho Dene, which the YKDFN are part of, are currently in negotiations to resolve land, resource and governance issues related to Treaty 8 (INAC 2009).

In unsettled claims areas, the Mackenzie Valley Land and Water Board is responsible for resource management in those areas. As such, land use is regulated under the *Mackenzie Valley Resource Management Act* and the *Mackenzie Valley Land Use Regulations*. Water use is regulated under the *NWT Waters Act* and *NWT Waters Regulation*. There are no land use plans developed in the area.

According to Figure 3.8-3 the NSMA indicate that the area of the YGP is used for hunting, while the area along the winter road is used for trapping. “There was a lot of trapping along the old Discovery winter road in late sixties early seventies, and also a lot of marten were trapped around Discovery in the thirties to sixties” (NSMA 2005, p. 16). According to a 2002 map of the region, submitted in 2007 in response to other environmental assessments, there were 15 NSMA members currently conducting subsistence harvesting in the area north of Great Slave Lake including the YGP area (NSMA 2007). The decline in harvesting activity may be related to “trapping was good, and lucrative, from 1930s to 1980s...compared to now, it was a much better way to make a living” (NSMA 2005, p. 18).

Specific plant gathering areas were not identified by the NSMA in the regional study area; however, it was stated the historic Discovery Mine site is known as an area with mushrooms (NSMA 2005). According to NSMA (2005, p. 21), “people like to keep their favourite berry picking grounds secret.” Wood is also harvested by the Métis.

NSMA (2005) stated that people fish in Narrow Lake, Thistlewaite, Duncan, Fishing, Barker, Fox, Johnston, Drygeese, Prosperous, River, Walsh Lakes and the Yellowknife River, but not in Giauque (Discovery) Lake. It was also noted that many lakes in the region are “getting fished out” (NSMA 2005, p. 21).

Métis involvement in the 1944-1969 Discovery Mine included construction and freighting along the road. Detailed information on Metis historic and current use of the area is provided in Appendix G.

The Yellowknives Dene identified several trails in the area (Figure 3.8-2), which lead to caribou hunting grounds or fish camps. It is not known how many Yellowknives Dene participate in hunting and fishing in this specific region; however, participation in hunting

and fishing in the primary communities has been increasing over time as described in Section 3.8. The proposed YGP access road from Ormsby to Nicholas Lake crosses over a traditional trail leading to caribou hunting areas. As well, a fish camp is located on Giauque Lake (Figure 3.8-2). Important plant gathering areas were not identified by the Yellowknives Dene.

According to the 2004 and 2005 archaeological reports, there is considerable evidence of the prospecting and previous mining activity in the area, as well as some evidence recent camps (less than 50 years ago) likely related to Aboriginal hunting activities in the RSA. The locations of the five camp remains observed are as follows:

- Camp remains (1) found on the south side of Round Lake;
- Camp remains (2) on the east shore of Winter Lake;
- Camp remains (1) on the island in Winter Lake; and
- Camp remains (1) on Prosperous Lake, east of the road route.

Wildlife species hunted and trapped in the area include: caribou, marten, wolverine, waterfowl and bear. Fish species caught in the region include: whitefish, and pickerel.

Tyhee NWT Corp is aware that traditional harvesting activities such as hunting, trapping, and fishing have occurred within the Local Study Area and Regional Study Area. Similarly, it is understood that there are hunting trails in the RSA.

The area of the proposed YGP is accessible during winter using the winter road. During summer, the YGP is accessible by fixed wing aircraft.

The winter road has been in operation for several decades, used for leisure activities, mining operations and likely trapping activities. The winter road is not anticipated to affect access to harvesting or wildlife harvesting. The Traditional Knowledge collected from the NSMA and the YKDFN did not identify a change in wildlife harvesting, either the quantity or quality of harvest during the period of time that the winter road is in operation; therefore, it is not anticipated that the winter road will affect wildlife harvesting. The wildlife effects section will describe effects of the Project on wildlife.

Transportation via fixed wing aircraft will not affect traditional summer access to the area; however, the noise from the aircraft during takeoff and landing may affect wildlife in the vicinity of the LSA. The wildlife effects section will describe effects of the Project on wildlife. The use of fixed wing aircraft to and from the mine site are not anticipated to affect access to harvesting activities; however, as with the entire mine operation, harvesting activities will likely no longer occur in the mine site area.

The Traditional Knowledge collected from the NSMA and the YKDFN did not identify a change in wildlife harvesting, either the quantity or quality of harvest, during the period of time that the Discovery Mine was in operation; therefore, it is not anticipated that the proposed YGP will affect wildlife harvesting.

Site clearing and construction of the YGP and associated infrastructure may affect small amounts of berries and other culturally important plant species in particular areas. However, since much of the YGP infrastructure will be located on existing brownfield sites, the effect is anticipated to be minimal. The effects of the Project on vegetation are described in Section 2.7. Specific plants and their locations were not identified by the NSMA or the YKDFN. It is anticipated that these plants would return to the area following future reclamation of the site at the end of the Project life. No residual impacts on these plants or the plant gathering activities are expected to occur.

Based on the location of previous hunting camps discovered from the archaeological assessments and the intention to site infrastructure on existing brownfield sites, Tyhee NWT Corp has concluded that no particularly sensitive traditional harvesting sites occur within the proposed YGP footprint or the LSA. Similarly, the NSMA and the YKDFN did not identify potentially sensitive traditional harvesting or cultural sites within the RSA. Furthermore, it is likely that the Project will not affect leisure activities, which have not been observed or described as taking place within the LSA.

There are no areas currently protected or proposed to be protected within the RSA (NWT Protected Areas Strategy 2009). As such, the proposed YGP will not affect these protected areas.

To minimize any potential for direct YGP development-related effects on traditional land use, harvesting activities, and wildlife quality and quantity, the following mitigation measures will be implemented:

- A no hunting policy for all Project employees and contractors while working on or off-site.
- require all Project-related transportation activities to give the right-of-way to any wildlife that such activities may encounter.
- provide employee transportation to and from YGP and to reduce the traffic on the highway while using professional drivers.
- Where possible, utilize brownfield areas for YGP infrastructure.

Tyhee NWT Corp believes that based on the Traditional Knowledge provided by the Metis and YKDFN, and following implementation of mitigation measures, that the YGP will not have any measurable effect on overall harvesting access or success, the quality of harvested wildlife or plants, or use of the RSA for cultural activities.