

REPORT FOR

# SOCIO-ECONOMIC BASELINE REPORT KUDZ ZE KAYAH, YUKON



OCTOBER 13, 2016  
ISSUED FOR USE



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## APPENDICES

Appendix A Tetra Tech’s General Conditions

## ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
ADT	Average Daily Traffic Count
CDMA	Code Division Multiple Access
CRA	Canada Revenue Agency
GDP	Gross Domestic Product
GSM	Global System for Mobile
GST	Goods and Services Tax
HSPA+	High Speed Packet Access
LFN	Liard First Nation
LSA	Local Study Area
NHS	National Household Survey
RRDC	Ross River Dena Council
RSA	Regional Study Area
RTC	Registered Trapping Concession
VC	Valued Component
WAF	Whitehorse-Aishihik-Faro grid
YBS	Yukon Bureau of Statistics
YEMR	Government of Yukon Energy Mines and Resources
YESAB	Yukon Environmental and Socio-Economic Assessment Board
YHPW	Government of Yukon Highways and Public Works
YHSS	Government of Yukon Health and Social Services
YWCHSB	Yukon Workers' Compensation Health and Safety Board

## **LIMITATIONS OF REPORT**

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## 1.0 INTRODUCTION

In an effects assessment, the baseline provides the necessary indicators for answering the question: what effects will the project have on the community? The baseline indicators are what anticipated changes are measured against. Yukon Environmental and Socio-economic Assessment Board's (YESAB's) *Guide to Socio-economic Effects Assessments* gives the following direction on selecting baseline indicators:

The social and economic assessment indicators are derived from the [valued components or VCs] and point to measurable change in human population, communities and social and economic relationships resulting from a proposed project. The delineation of socio-economic assessment indicators defines categories of social and economic change and selects the most suitable measures from which to describe current conditions and predict change. It achieves the goals of scoping by focusing on the most important categories of change and on useful and meaningful indicators.<sup>1</sup>

All of the data on the communities, and for the Yukon, that make up this baseline have been selected to provide useful indicators for measuring the anticipated effects on each of the identified VCs for the proposed development, operation and closure of Kudz Ze Kayah Project (the Project). The baseline indicators will also provide the means for monitoring longer term socio-economic effects as the Project proceeds. It is important to note that the anticipated effects of the Project on the baseline indicators assist in devising effective mitigation and enhancement measures during the effects assessment itself.

There is not always a clear and direct indicator for each VC. Where this is the case, indicators have been selected that, singly or together, provide indirect or proxy means of measurement. Where there is no value in doing so, a quantifiable indicator has not been provided. Instead, a qualitative description of the VC and any indirect or anecdotal evidence for how the Project will likely affect it are offered instead. This is to ensure that valued things that cannot be quantified are at least acknowledged in the assessment. Providing an indicator that has only a tenuous or tangential relationship to the VC at best will not assist in the assessment and may distract from what is actually valued.

### 1.1 COMMUNITIES AND FIRST NATIONS

The Project is located in the traditional territory of both the Ross River Dena Council (RRDC) and the Liard First Nation (LFN). The two Kaska nations have 100% overlapping traditional territories.

The baseline indicators focus on the rural communities of Ross River (home community of the RRDC), Watson Lake (home community of the LFN) and Faro where the effects of the Project are expected to be largest. Some indicators have also been extended to Whitehorse where that community is expected to be affected, at least to some extent, by the Project.

For the socio-economic effects assessment, the regional study area (RSA) is the Yukon as a whole and the communities of Ross River, Watson Lake, Faro and Whitehorse are the local study areas (LSA).

<sup>1</sup> YESAB. June 2006. Guide to Socio-economic Effects Assessments.p.49

## 1.2 DATA SOURCES

The socio-economic baseline relies almost entirely on published data. Sources of data include:

- Statistics Canada 2006 and 2011 National Household Survey (NHS): A large number of the indicators come from Census data. Unfortunately, much of the data from the 2011 NHS is of poor quality or unavailable due to the voluntary nature of the survey;
- Yukon Bureau of Statistics (YBS) data on population, some economic variables, and societal data;
- Canada Revenue Agency (CRA) for data on income and GST; and,
- Town of Watson Lake, Town of Faro, various Yukon government departments and other agencies.

## 1.3 INDICATORS: LINKAGES AND RATIONALE

Each of the broad VCs initially identified has a number of more concrete sub-components that have been identified by different interests. It is these sub-components that are much more likely to have quantifiable indicators. Table 1 shows the linkages among the VCs, their sub-components, and the interests that have demonstrated they value those sub-components. Finally, each is linked to the indicators that have been selected to represent the sub-components and, by extension, the broader VCs of which they form part.

**Table 1: Indicators: Linkages to VSECs and Interests**

Valued Component	Sub-Component	Interest	Indicator
<b>Economy and Sustainable Livelihood</b>	Traditional economic activities — hunting, fishing, trapping, food gathering	Ross River Dena Council Liard First Nation Traditional land stewards Area trappers Yukon Environment	Harvest data (Source: Yukon Environment) Description
	Economic growth	Yukon Economic Development Ross River Dena Council Liard First Nation Town of Watson Lake Town of Faro	Yukon GDP (Source: YBS and Statistics Canada) Personal income by community (Source: CRA)
	Diverse & stable economy — discouraging boom & bust	Ross River Dena Council Liard First Nation Town of Watson Lake Town of Faro Yukon Tourism Outfitter	Employment by industry (Source: 2006 Census & 2011 NHS) Population fluctuations over time (Source: YBS)
	Employment	Yukon Economic Development Ross River Dena Council Liard First Nation Town of Watson Lake Town of Faro	Employment, unemployment & participation rates (Source: 2006 Census & 2011 NHS)
	Employability — education, training & experience	Yukon Education Ross River Dena Council	Highest level of education

**Table 1: Indicators: Linkages to VSECs and Interests**

Valued Component	Sub-Component	Interest	Indicator
		Liard First Nation Yukon College Yukon Mine Training Association	(Source: 2006 Census & 2011 NHS) Occupational breakdown (Source: 2006 Census & 2011 NHS)
	Broad participation in economic development	Ross River Dena Council Dena Nezziddi Corporation Liard First Nation LFN Development Corporation Yukon Economic Development Yukon Women's Directorate	First Nation's participation and employment rates Women's participation and employment rates (Source: 2006 Census & 2011 NHS)
	Business opportunities	Ross River businesses Watson Lake businesses Faro businesses	Description (see also Healthy business sector sub-component below)
	Government revenues	Town of Watson Lake Town of Faro Yukon government Federal government	Municipal taxes (Source: Town of Watson Lake and Town of Faro) Yukon & federal income taxes by community (Source: CRA)
<b>Human Health and Well-Being</b>	Individual health	Yukon Health & Social Services Ross River Dena Council Liard First Nation	Selected Health Survey statistics (Source: Statistics Canada)
	Family stress	Ross River Dena Council Liard First Nation Yukon Women's Directorate	Description, percentage of people divorced or separated (Source: 2006 Census and 2011 NHS)
	Reducing alcohol & drug abuse	Yukon Health & Social Services Ross River Dena Council Liard First Nation	Alcohol sales data (Source: Yukon Liquor Corporation) Number of heavy drinkers from Canadian Health Survey
	Gathering traditional medicine	Ross River Dena Council Liard First Nation	Description
	Public health & safety — increased traffic, hazardous material transport	Yukon Highways & Public Works Yukon Environmental Health Yukon Energy Mines & Resources	Traffic count data (Source: YHPW) Description
	Workplace health & safety	Yukon Workers Compensation Health and Safety Board (YWCHSB)	Mining accident rate and average days lost to injury (Source: WorkSafeBC)

**Table 1: Indicators: Linkages to VSECs and Interests**

<b>Valued Component</b>	<b>Sub-Component</b>	<b>Interest</b>	<b>Indicator</b>
<b>Community Vitality</b>	Population — number of children	Ross River Town of Watson Lake Town of Faro City of Whitehorse	Community population, growth pattern and number of children (Source: YBS) School enrolment data (Source: Yukon Education)
	Healthy local business sector — reducing the cost of living	Ross River Ross River Dena Council Watson Lake Town of Watson Lake Town of Faro	Number of businesses & employees (Source: YBS) Cost of living differential (Source: YBS)
	Reducing crime	Ross River Watson Lake Faro	Community crime data (Source: YBS)
	Reducing discrimination & racism	Ross River Dena Council Liard First Nation	Income differentials between First Nations and others (Source: 2011 NHS)
	Political structure	Ross River Dena Council Liard First Nation Town of Watson Lake Town of Faro	Description
	Community events & volunteerism	Ross River Watson Lake Faro	Description
	Recreational facilities & opportunities	Ross River Watson Lake Faro	Description
<b>Infrastructure and Services</b>	Housing & land availability	Ross River Watson Lake Faro Whitehorse Yukon Energy Mines & Resources (YEMR)	Available lots (Source: YEMR) Residential rents and vacancy rates (Source: YBS)
	Transportation infrastructure — roads and airports	Yukon Highways & Public Works (YHPW)	Description Traffic count data (Source: YHPW)
	Municipal services — water, sewer, solid waste	Town of Watson Lake Town of Faro	Description
	Healthcare services	Yukon Health & Social Services (YHSS)	Description
	Police services	Yukon Justice	Description

**Table 1: Indicators: Linkages to VSECs and Interests**

Valued Component	Sub-Component	Interest	Indicator
	Child care	Ross River Watson Lake Faro	Number of child care spaces available (Source: YHSS)
<b>Culture, History and Heritage</b>	Language preservation & restoration	Ross River Dena Council Liard First Nation	Speakers of aboriginal language (Source: Census 2006 and 2011 NHS) Description
	Traditional knowledge and practice preservation & restoration	Ross River Dena Council Liard First Nation	Description
	Heritage & historic sites	Ross River Dena Council Liard First Nation Yukon Heritage Branch	Description

## 2.0 ECONOMY AND SUSTAINABLE LIVELIHOOD

The affected communities and First Nations place a high value on a sustainable, diverse, and stable community economy that provides local employment and business opportunities, and helps to support local government. Promoting the self-sufficiency of community members and avoiding the excesses of a boom and bust economy are also valued.

### 2.1 TRADITIONAL ECONOMIC ACTIVITIES — HUNTING, FISHING, TRAPPING, FOOD GATHERING

Traditional economic activities, hunting, fishing, gathering and trapping, form an important part of life for both First Nation and non-First Nation Yukoners. Data on most of these activities is sparse. Trapping data and reported big game harvest numbers normally provide useful baseline indicators, however, only the big game harvest data is available for the area around the Project.

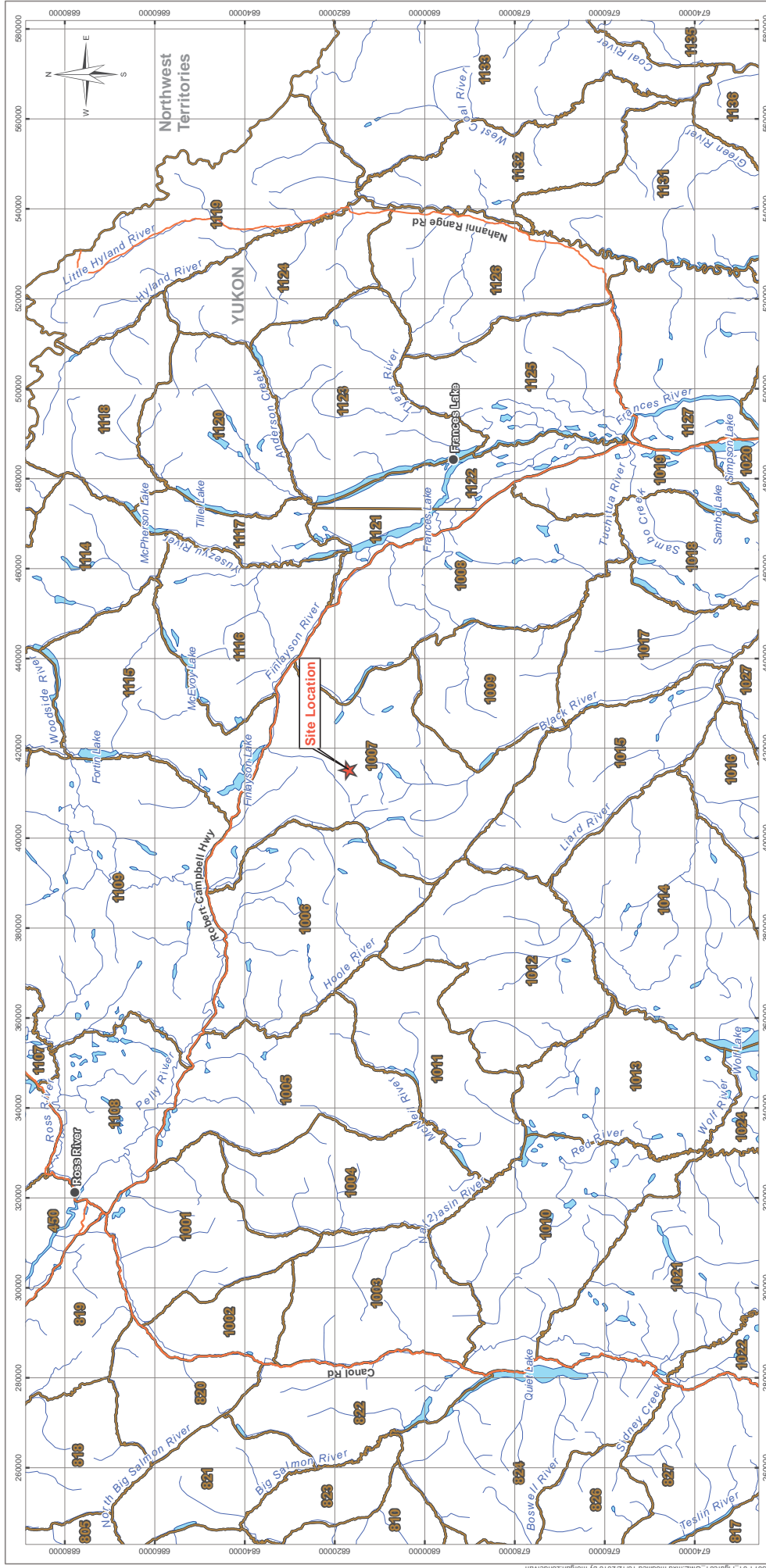
Table 2 summarizes the average annual number of big game animals harvested by non-First Nation hunters, including those guided by the area's outfitter in the Project region (First Nation hunters, unless they choose to take out hunting licenses, are not required to report their harvest). The Project region for this purpose is defined as the area covered by game management sub-zones 1006, 1007, 1008, 1009, 1115 and 1116.

**Table 2: Area Average Annual Harvest, 2006 through 2015**

<b>Species</b>	<b>Average Annual Harvest</b>
Grizzly bear	1.6
Black bear	0.8
Moose	13.4
Caribou	6.7
Sheep	0.8

Source: Yukon Environment special data request

The Project is located in the southeastern corner of the very large Ross River group trapline, Registered Trapping Concession (RTC) 405 managed by the Ross River Dena Council. Some of the Project's claims also overlap with RTC 250. Harvest data for RTC 405 is not publicly available and its size means that data for the entire trapline would not be a useful indicator even if it were. Yukon Environment can provide trapping harvest data for a minimum of 10 individual traplines (not including RTC 405) grouped together to protect confidentiality. The 10 individual traplines closest to the Project are mostly well to the south of the Project and, taken together, would not provide a useful baseline.



**ENVIRONMENTAL BASELINE AND PERMITTING**  
**KUDZ ZE KAYAH, YUKON**

**Game Management Areas**

PROJECTION	DATUM
UTM Zone 9	NAD83
Scale: 1:850,000	
10 5 0 10	
Kilometres	
FILE NO.	DWN   CWD   APD   REV
MN03071-01_Figure01_GMZ.mxd	MEZ   SL   KG   0
OFFICE	PROJECT NO.
TI-VANC	ENVMN03071-01.2.002
DATE	ISSUED FOR REVIEW
October 12, 2016	

**NOTES**  
 Basemap source:  
 Government of Yukon  
 (GMA shapefile accessed April 2016)

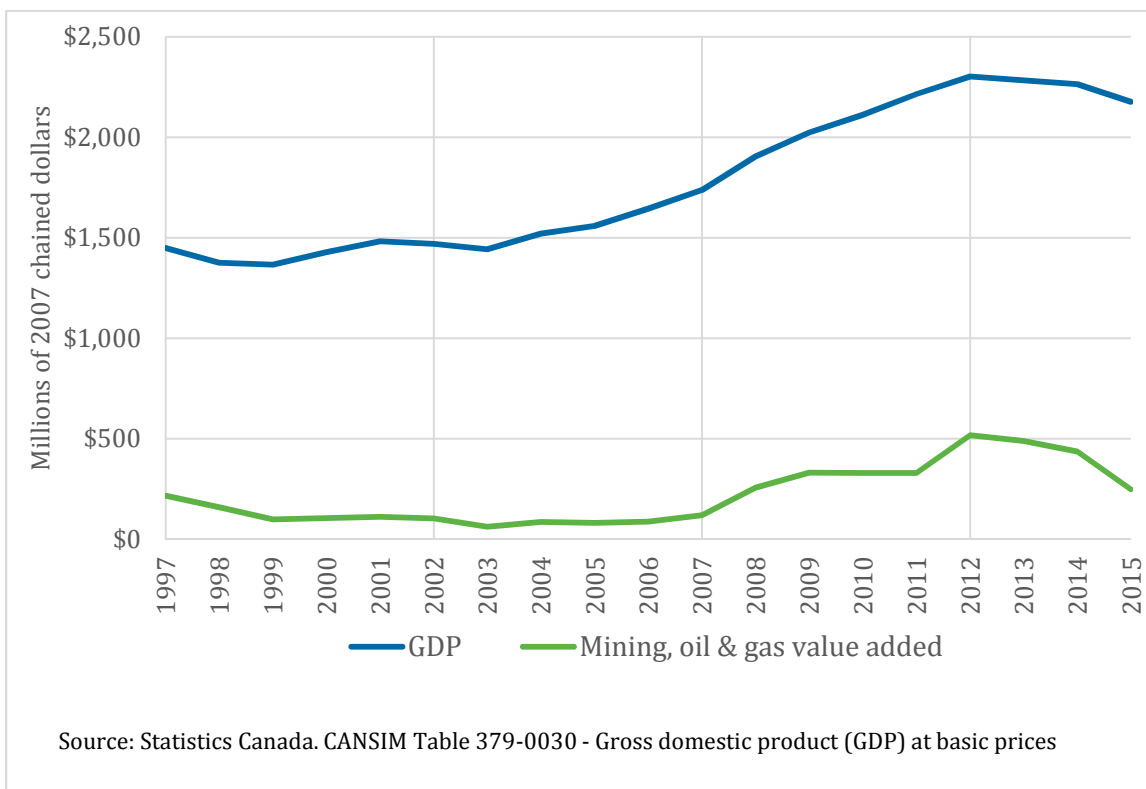
**LEGEND**

- Kudz Ze Kayah Site Location
- Populated Place
- Game Management Area
- Major Road
- Watercourse
- Waterbody



## 2.2 ECONOMIC GROWTH

Economic growth and the size of the economy are measured by Gross Domestic Product (GDP)<sup>2</sup>. Territorial GDP is calculated annually by Statistics Canada and is republished by the Yukon Bureau of Statistics. Figure 2 shows the Yukon’s GDP and value added by the mining and oil and gas sectors from 1997 through 2015. The effect of inflation has been removed by using 2007 chained dollars. Chained dollars is a method of adjusting real dollar amounts for inflation over time, to allow comparison of figures from different years, with the cited year as the base year.



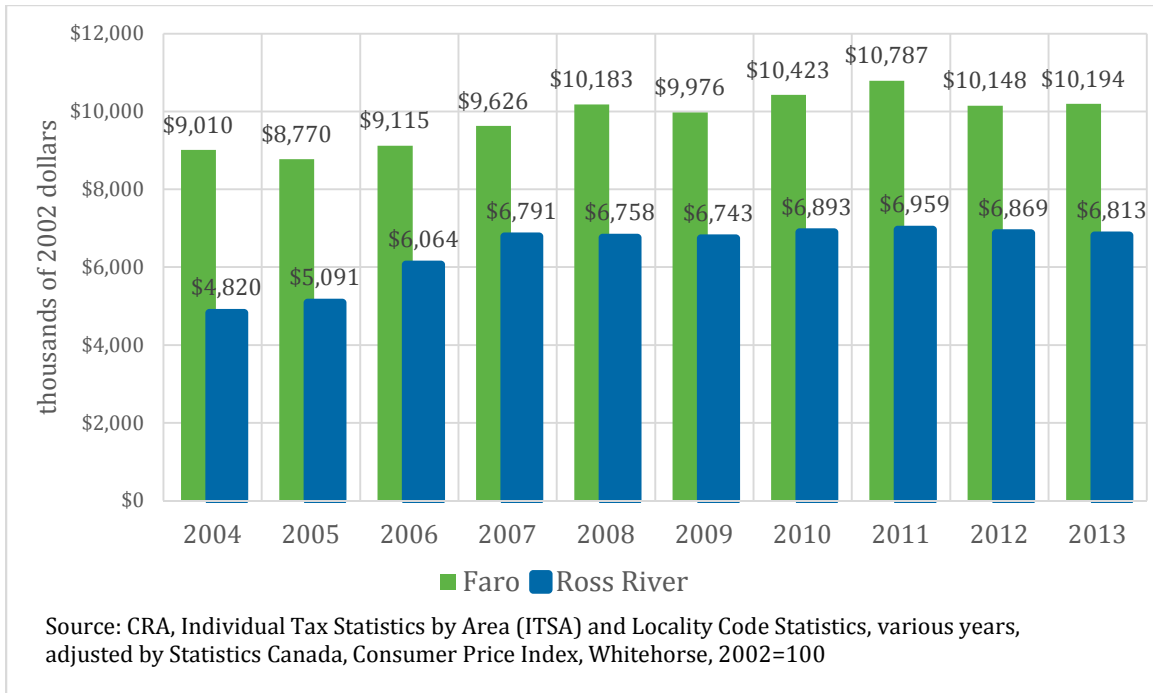
**Figure 2: Yukon GDP and Mining, Oil & Gas Value Added, 1997 through 2015**

Statistics on the GDP of individual Yukon communities are not calculated, but a good indicator of the size of the local money economy is the aggregate personal income obtainable from income tax statistics published by the Canada Revenue Agency.<sup>3</sup> There are no data relating specifically to the Ross River Dena Council or the Liard First Nation. Data for Faro and Ross River are shown in Figure 3.

<sup>2</sup> See for example, Yukon Bureau of Statistics. [www.eco.gov.yk.ca/stats/pdf/economic\\_accounts\\_2008.pdf](http://www.eco.gov.yk.ca/stats/pdf/economic_accounts_2008.pdf). “Gross Domestic Product (GDP) is a measure of the value of the Yukon’s total production of goods and services. These are goods and services which are exchanged for money in the market economy... GDP provides a tool for monitoring trends in economic production, forecasting economic activity, assessing the sources of economic growth or decline, and for econometric model-building.”

<sup>3</sup> Income-based GDP is one way of measuring the size of an economy. See for example [www.eco.gov.yk.ca/stats/pdf/economic\\_accounts\\_2008.pdf](http://www.eco.gov.yk.ca/stats/pdf/economic_accounts_2008.pdf). “Income-based GDP consists of the sum of all incomes from productive activity from land, labour, capital and entrepreneurship. These earnings primarily include: (a) wages, salaries and supplementary labour income; (b) capital consumption allowances; (c) taxes; (d) corporation profits before taxes; (e) interest and miscellaneous investment income; and, (f) net income of unincorporated business.” The aggregate personal income declared to Revenue Canada includes the entire list except the profits and capital consumption allowances for corporations owned by community members.

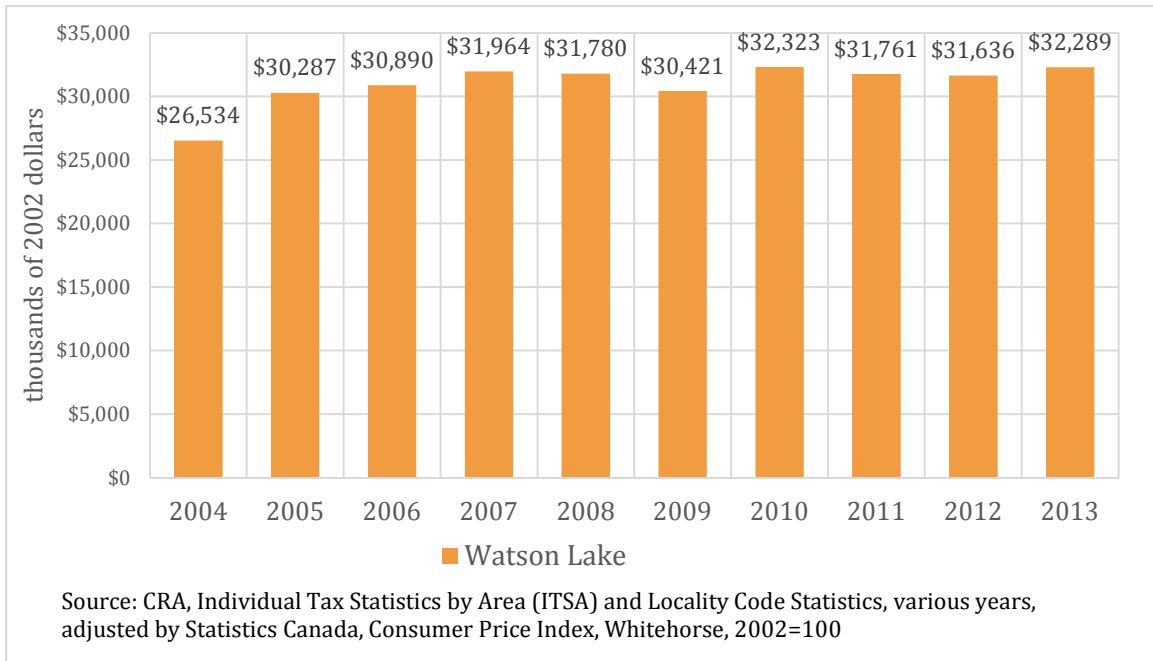




**Figure 3: Real Aggregate Personal Income, Faro & Ross River, 2004 through 2013**

Ross River saw significant growth in real (after inflation) aggregate income from 2004 through 2007 and then leveled off through 2013. Faro also saw growth from 2004 through 2008 and then a leveled off.

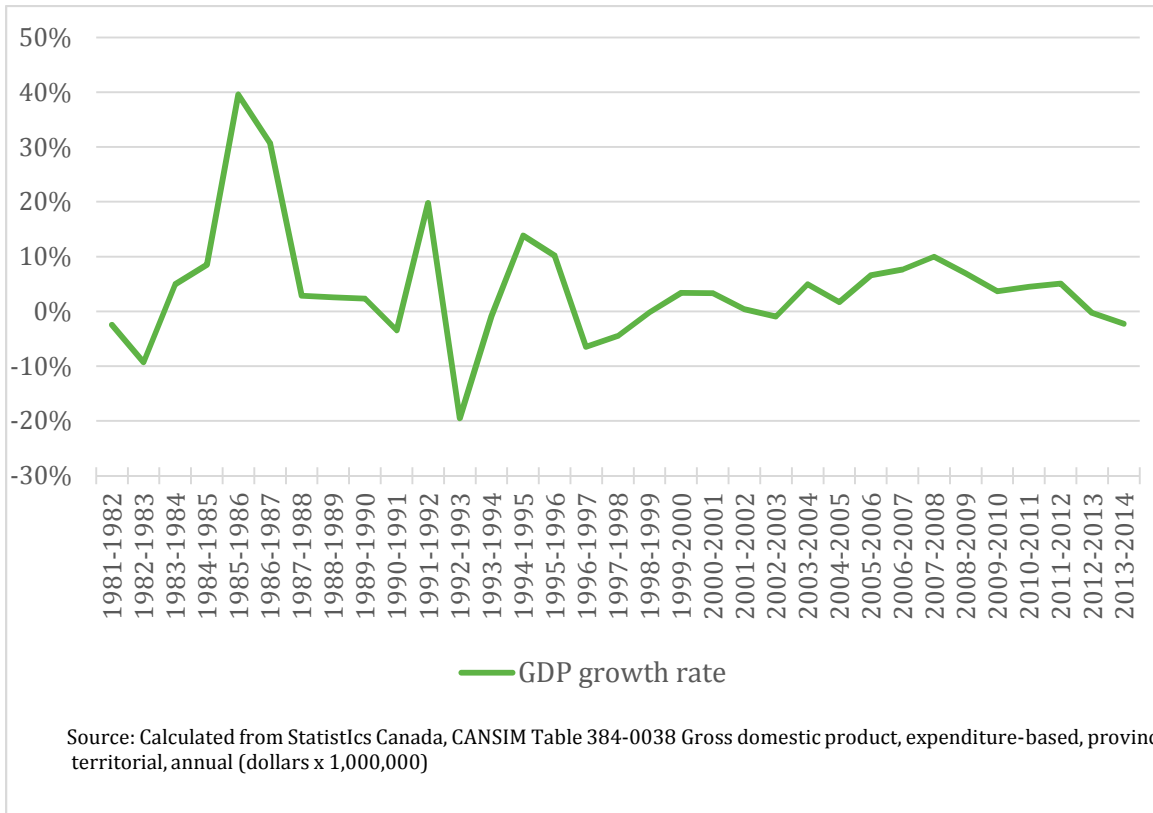
The aggregate personal income data for Watson Lake is shown separately in Figure 4. Watson Lake shows a similar pattern to Ross River and Faro, with aggregate real income growing significantly from 2004 through 2007 before largely leveling off through 2013 (with the exception of a significant drop in 2009).



**Figure 4: Real Aggregate Personal Income, Watson Lake, 2004 through 2013**

## 2.3 DIVERSE AND STABLE ECONOMY — DISCOURAGING BOOM AND BUST

The Yukon has a history of significant swings in GDP growth, mainly related to the opening and closing of different mines. Figure 5 shows the annual rate of growth (and decline) in GDP since 1981 in the Yukon. The extremely volatile pattern seen until the late 1990s was a result of the various closings and openings of the Faro mine that produced annual changes of up to 20% of Yukon’s GDP. The growth rates have stabilized in the last 15 years as increases in federal transfers have become more important. However, the decline in exploration spending and closure of mines after 2011 has resulted in negative GDP growth rates since 2012.



**Figure 5: Annual Growth Rate, Yukon Expenditure-based Real GDP, 1981 through 2014**

The level of diversity and stability in an economy has two components: the array of industries present in the area and the lack of dependence of the local economy on any one industry. In Yukon there are no direct indicators of dependence on one industry; however, the 2006 Census and 2011 NHS provide some information on the industrial distribution of employment, albeit at a fairly aggregated level. Table 3 and Table 4 present employment by industry for Faro, Ross River and Watson Lake in 2006 and 2011. The 2006 data includes Upper Liard and other Liard First Nation settlements.

All three communities have a much greater proportion of employment in mining than Yukon as a whole, both in 2006 when the industry was at a low point and during the 2011 exploration boom. However, the 2011 boom does not seem to have increased the mining employment in the three communities, although this might just be an artifact of the much lower response rates to the voluntary 2011 NHS compared to the mandatory 2006 Census.

**Table 3: Employment by Industry: Faro, Ross River, and Watson Lake, 2006**

	Faro		Ross River		Watson Lake Area <sup>1</sup>		Yukon
	No.	%	No.	%	No.	%	%
Renewable Resources	0	0.0%	10	5.7%	10	1.4%	1.00%
Mining & Oil & Gas	25	14.7%	30	17.1%	70	10.1%	3.60%
Constr, Util. & Manufacturing	10	5.9%	15	8.6%	60	8.6%	9.50%
Wholesale & Retail Trade	15	8.8%	0	0.0%	60	8.6%	11.90%
Transportation & Warehousing	15	8.8%	0	0.0%	40	5.8%	4.50%
Finance, Insure. & Real Estate	0	0.0%	10	5.7%	10	1.4%	2.90%
Education	15	8.8%	20	11.4%	60	8.6%	6.80%
Health Care & Social Services	15	8.8%	15	8.6%	75	10.8%	9.10%
Accommodation & Food Services	10	5.9%	10	5.7%	90	12.9%	8.90%
Public Administration	45	26.5%	55	31.4%	155	22.3%	24.00%
Other Services	20	11.8%	10	5.7%	65	9.4%	17.60%
Total Labour Force by Industry	170	100.0%	175	100.0%	695	100.0%	100.00%

<sup>1</sup> Includes Town of Watson Lake, Upper Liard, Two-Mile-Village and Two-And-One-Half-Mile-Village

Source: Statistics Canada, 2006 Census, Community profiles and Special request (Watson Lake area)

The random rounding process used in Census data combined with the small numbers in a community such as Ross River and Faro makes the employment indicator somewhat unreliable. For example, there were more than zero people employed retail trade in Ross River in 2006, but random rounding means that any number between zero and ten may end up being reported as zero.

Further, low response rates for the 2011 NHS, especially in Watson Lake and Faro, also raise the question of potential bias in the responses.

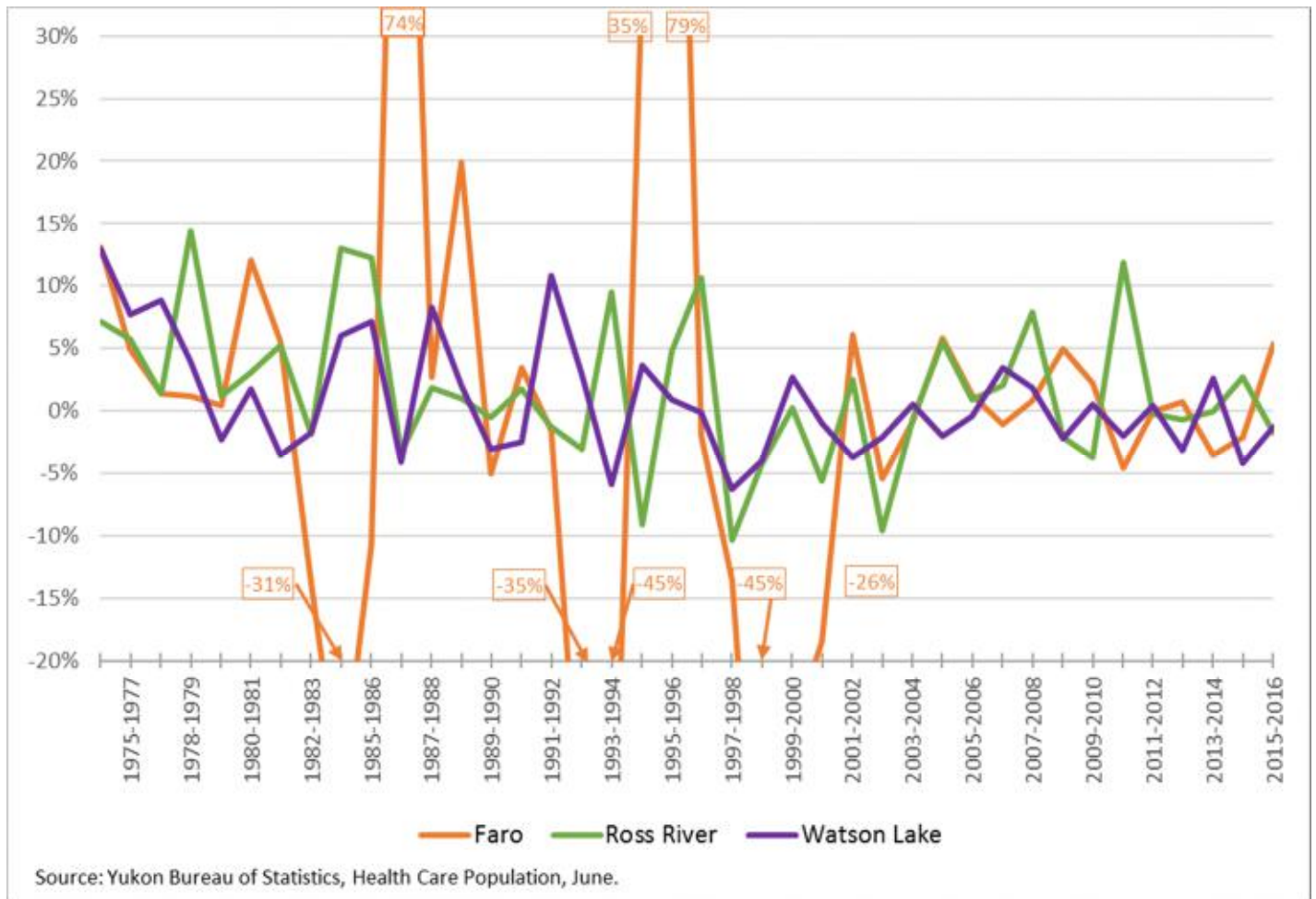
**Table 4: Employment by Industry: Faro, Ross River, and Watson Lake, 2011**

	Faro		Ross River		Watson Lake Area <sup>1</sup>		Yukon
	No.	%	No.	%	No.	%	%
Renewable Resources	0	0.0%	0	0.0%	0	0.0%	0.7%
Mining & Oil & Gas	20	10.3%	15	7.9%	35	6.4%	3.4%
Constr, Util. & Manufacturing	25	12.8%	20	10.5%	50	9.2%	11.8%
Wholesale & Retail Trade	10	5.1%	10	5.3%	60	11.0%	12.0%
Transportation & Warehousing	10	5.1%	10	5.3%	30	5.5%	4.0%
Finance, Insure. & Real Estate	0	0.0%	0	0.0%	0	0.0%	1.2%
Education	15	7.7%	15	7.9%	25	4.6%	5.7%
Health Care & Social Services	10	5.1%	10	5.3%	55	10.1%	6.6%
Accommodation & Food Services	15	7.7%	10	5.3%	55	10.1%	7.0%
Public Administration	55	28.2%	75	39.5%	155	28.4%	28.9%
Other Services	35	17.9%	25	13.2%	80	14.7%	18.7%
Total Labour Force by Industry	195	100.0%	190	100.0%	545	100.0%	100.0%

<sup>1</sup> Includes Town of Watson Lake, Upper Liard, Two-Mile-Village and Two-And-One-Half-Mile-Village

Source: Statistics Canada, 2006 Census, Community profiles and Special request (Watson Lake area)

Boom and bust economies tend to be marked by significant swings in either average income per person or community population or both. Figure 6 shows the population swings in percentage terms for Ross River, Watson Lake and Faro from the 1970s to 2015. Although Faro's population has had the greatest swings with the closing and re-opening of the mine in the 1980s and 1990s, both Watson Lake and Ross River have also shown significant volatility in their populations.

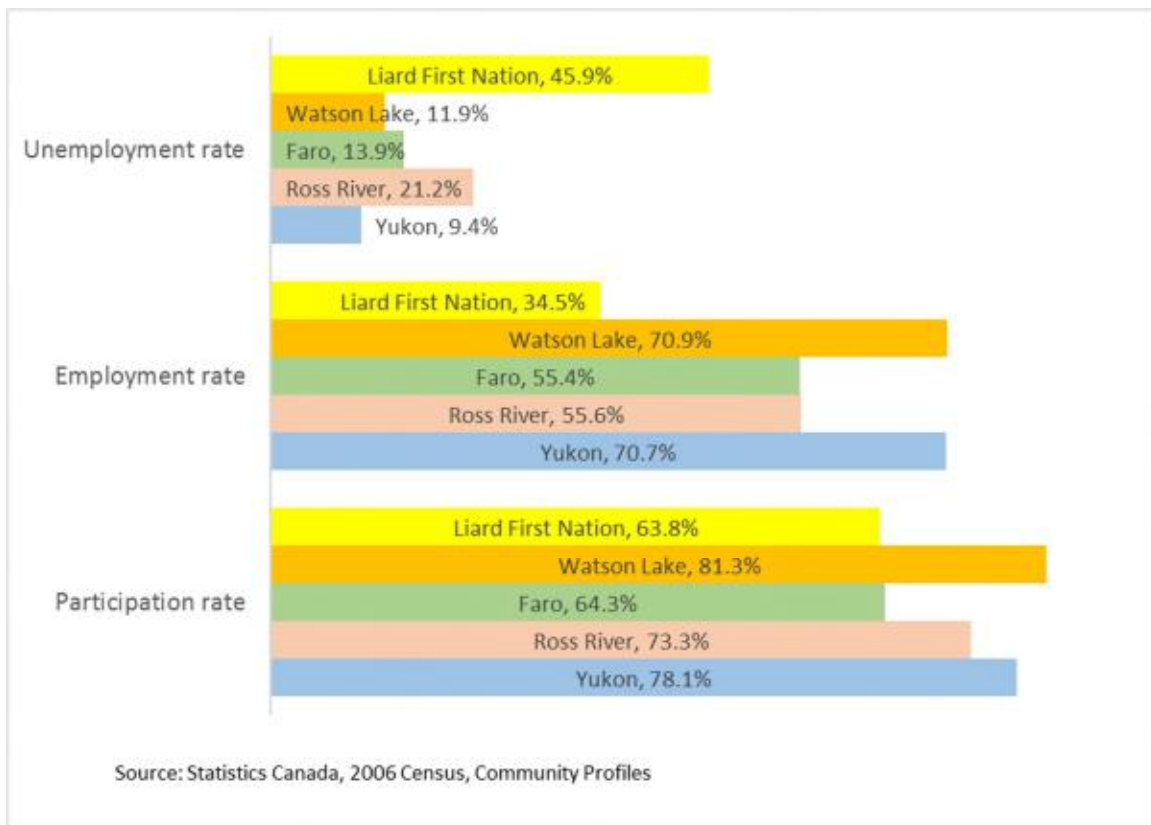


**Figure 6: Annual Percentage Changes in Population: Ross River, Watson Lake and Faro: 1974 through 2015**

## 2.4 EMPLOYMENT

Employment indicators include total employment, employment rate, unemployment rate, and labour force participation rate (Figure 7). At the community level, the only available labour force data are from the long form of the national Census that was carried out every five years by the federal government. The 2011 NHS also reports this community level data, but is much less reliable due to low response rates.

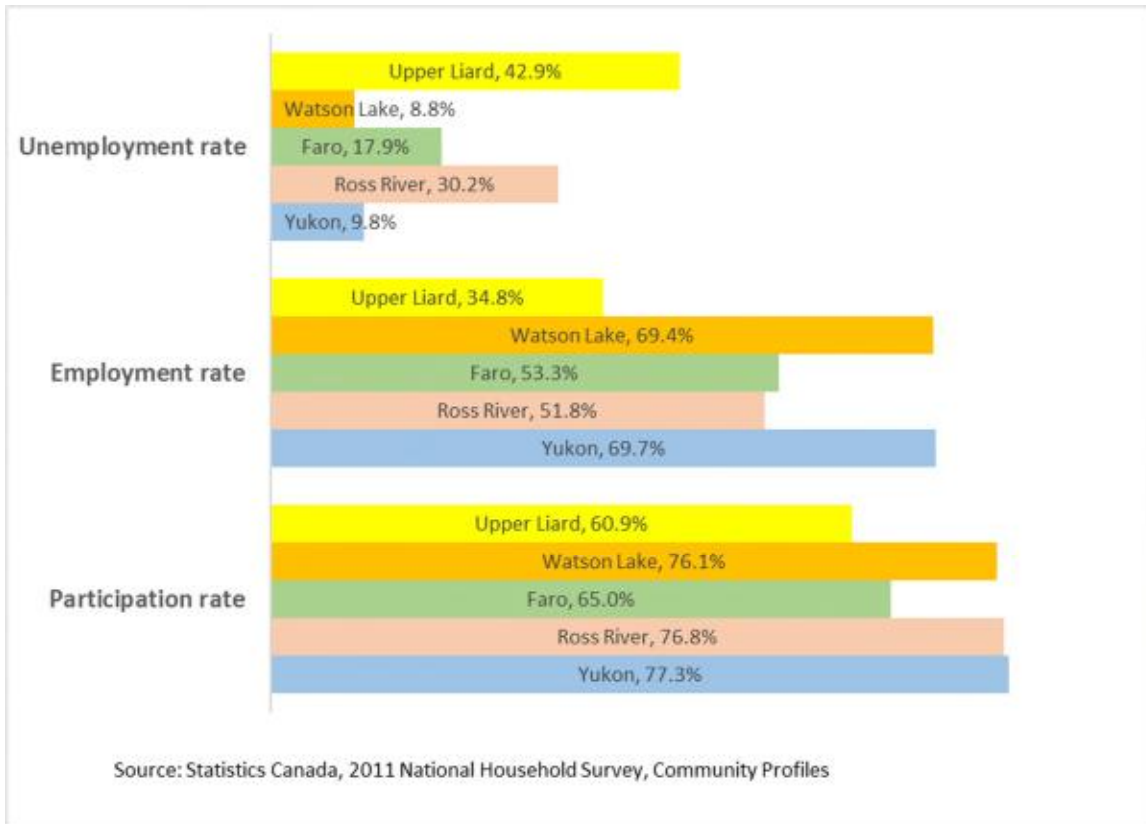
The participation rate is the proportion of residents aged 15 through 64 years who worked for pay in the year prior to the Census. The employment rate is the proportion of residents aged 15 through 64 years who were working for pay at the time of the Census. The unemployment rate is the proportion of residents aged 15 through 64 years who were not working for pay at the time of the Census, but were actively looking for work.



**Figure 7: Unemployment, Employment and Participation Rates: Communities and the Yukon, 2006**

The “Liard First Nation” in Figure 6 only includes people living on land controlled by the Liard First Nation (Upper Liard, Two-Mile-Village and Two-and-a-Half-Mile Village) and does not include Liard First Nation citizens living in Watson Lake. For 2011, the data for Two-Mile-Village and Two-and-a-Half-Mile Village has been suppressed for confidentiality or data quality reasons, so only Upper Liard is available. In any case, the Census population counts show only 10 people living in Two-Mile-Village and none in Two-and-a-Half-Mile Village.

Rural communities have higher unemployment rates, lower participation rates and lower employment rates than Yukon as a whole, which is dominated by Whitehorse numbers. In 2011, it seems that the Town of Watson Lake and Ross River had participation rates close to the Yukon average, while Faro and Upper Liard had much lower participation in the labour force (Figure 8). For Faro, this may be explained by the town’s strategy to attract retirees, while for Upper Liard it is more likely the result of dire economic circumstances and discouraged workers who have given up looking for work. Further evidence for this is the exceptionally high unemployment rates (46% in 2006 and 43% in 2011—note that this only counts workers actively looking for work) in that community. Ross River also has a very high unemployment rate at 20% of the labour force in 2006 and 30% on 2011. These numbers were collected at the beginning of June, when seasonal unemployment should be fairly low and 2011 was a boom year for mineral production and exploration.



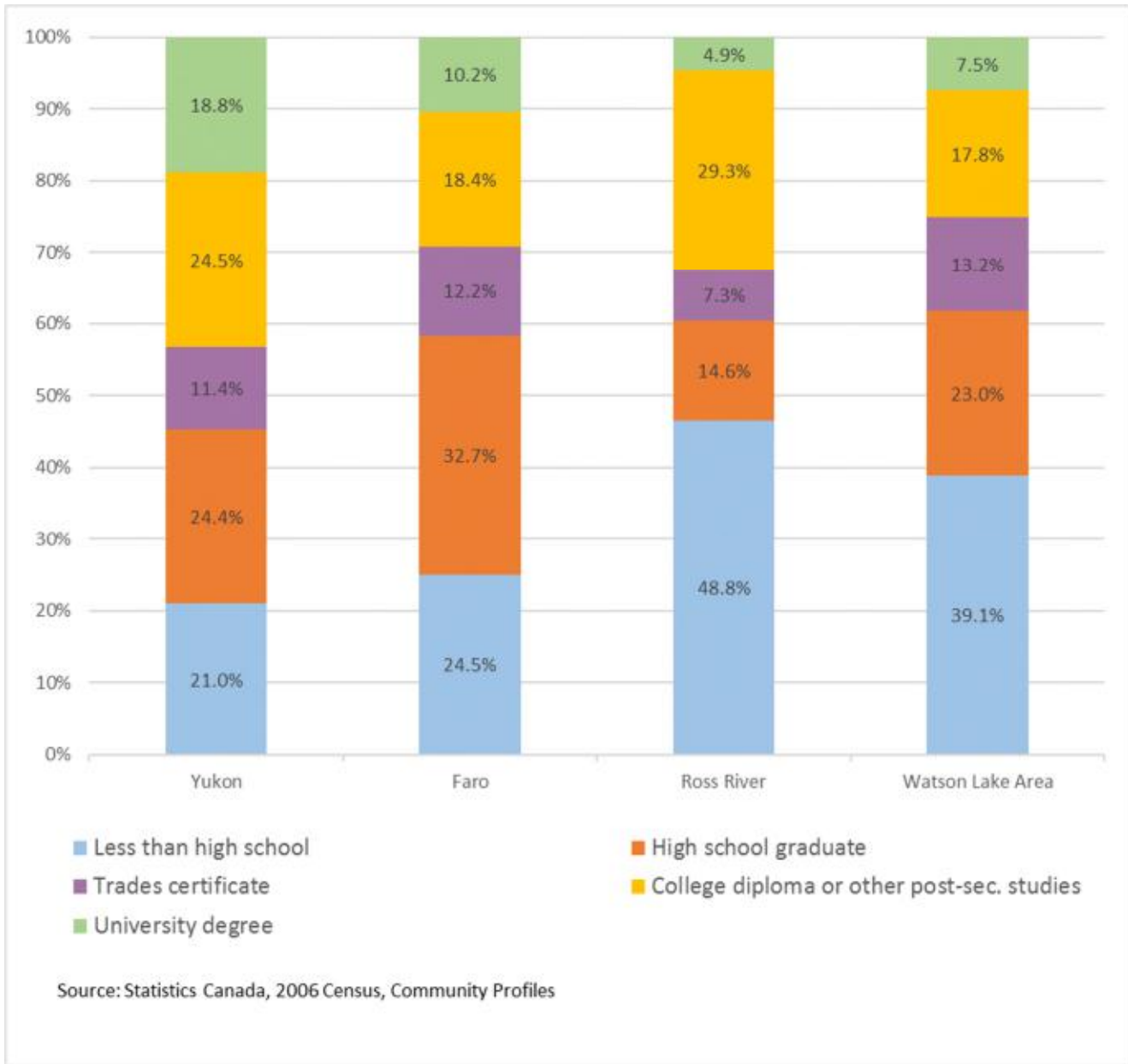
**Figure 8: Unemployment, Employment and Participation Rates: Communities and the Yukon, 2011**

## 2.5 EMPLOYABILITY — EDUCATION, TRAINING AND EXPERIENCE

Employability can be measured by the level of training and education, as well as the work experience of the population.

The highest level of education held by 15 through 64-year-olds in the communities is shown in comparison with Yukon’s numbers in Figure 9 and Figure 10 for 2006 and 2011, respectively. Rural communities tend to have many more people with less than high school and also relatively more people with trade qualifications. On the other hand, people with university educations tend to be urban dwellers.



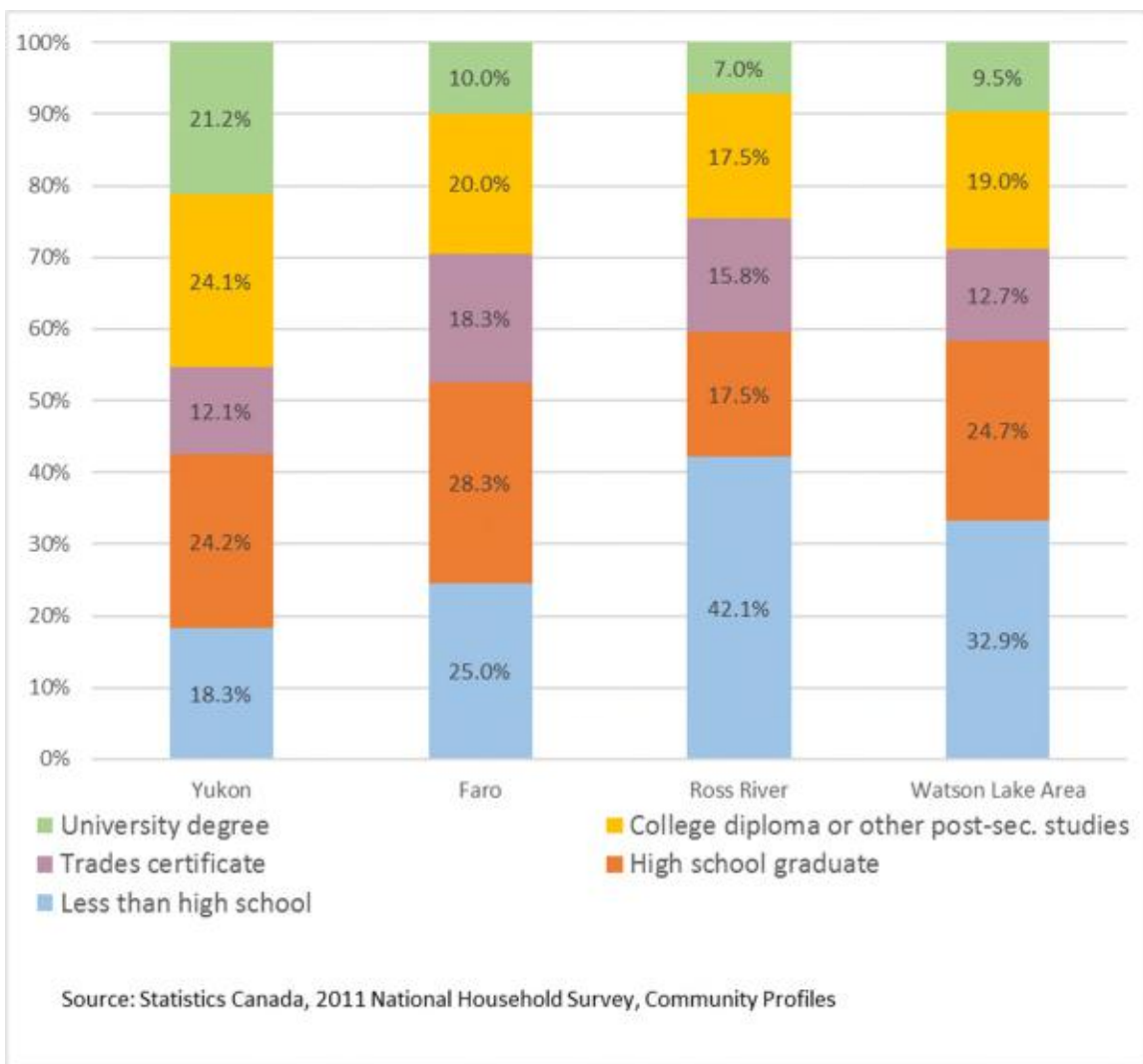


**Figure 9: Highest Level of Education Attained: Yukon, Faro, Ross River and Watson Lake, 2006**

In 2013, plans for a new Centre for Northern Innovation in Mining at Yukon College were announced and courses focused on training a skilled local mining workforce began. The full two-year program had its first graduates in the spring of 2015. As of June 2015, Yukon College reported an enrollment total of 154 participants with 82 completing to date (some of these participants may be enrolled in more than one course offering).

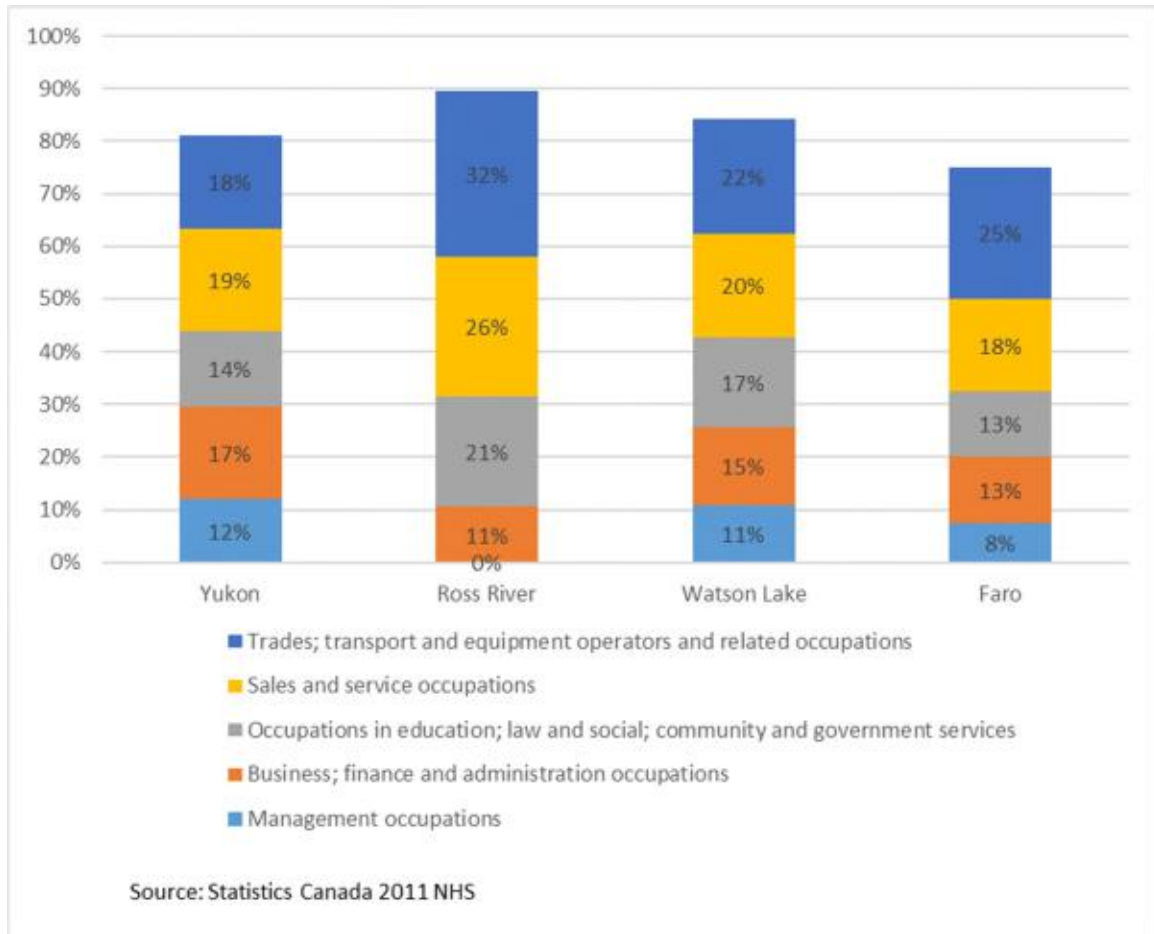
In January 2014, Yukon College launched the mobile trades training lab and supply trailer as part of the programming for the Centre for Innovation in Mining. The 53-foot training lab has been used to teach Pre-

Apprenticeship/Dual Credit Welding in Dawson City, Heavy Equipment Technician Skills for Employment in Pelly Crossing and Pre-Apprenticeship Heavy Equipment Technician/Dual Credit in Ross River. The training trailer, which is the result of an investment of \$1.8 million, also gives students access to a mobile training facility that can be outfitted with electrical, millwright and piping training aids. The trailer also has an onboard diesel generator providing power for heating, lighting, equipment and wireless internet, and expands to provide an additional 1,048 square feet of instructional space.



**Figure 10: Highest Level of Education Attained: Yukon, Faro, Ross River and Watson Lake, 2011**

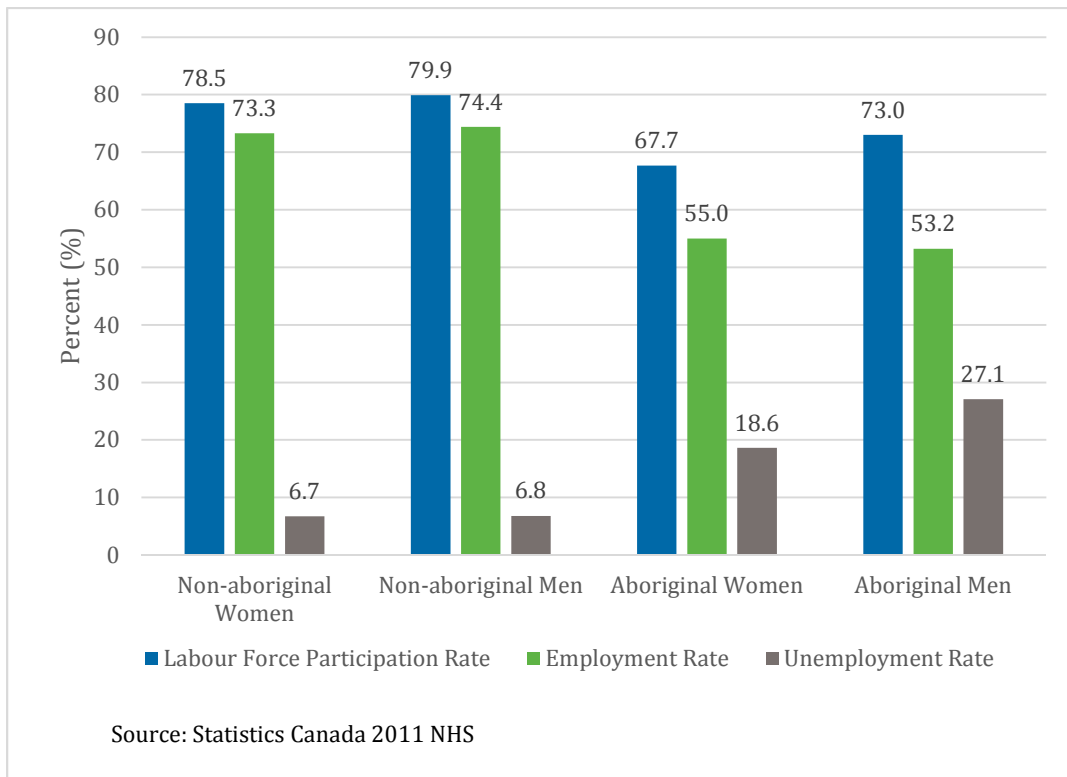
Figure 11 shows the occupational breakdown of the labour force in the communities compared to Yukon. The rural communities all have a greater proportion of the population who work in the trades and transportation occupations.



**Figure 11: Occupational Breakdown, Selected Occupations: Ross River, Watson Lake, Faro and Yukon, 2011**

## 2.6 BROAD PARTICIPATION IN ECONOMIC DEVELOPMENT

The economic participation of women and of aboriginal people of both sexes can be measured by comparisons of labour force participation, employment and unemployment rates of men versus women, and of aboriginal people versus all Yukoners (Figure 12). Separate labour force status data the affected communities are not available.



**Figure 12: Labour Force Status, Yukon, 2010**

Aboriginal people, both men and women, continue to have lower labour force participation and employment rates and higher unemployment rates than non-aboriginal Yukoners. Aboriginal men have particularly high unemployment rates. Non-aboriginal Yukon women have an overall labour force status that is very comparable to that of non-aboriginal Yukon men.

## 2.7 BUSINESS OPPORTUNITIES

There are a number of Ross River, Watson Lake businesses that have the ability to offer goods and services to development projects and could benefit from business opportunities arising from the construction and operation of the Kudz Ze Kayah Project. Although Faro has an active business community, it appears to be largely focussed on the arts and the tourism sector rather than on mining and construction.

A partial list, including many already doing business with the Project, are shown in the Table 5. The list was gathered from various business listings and from BMC's list of current contractors.

**Table 5: Partial List of Ross River and Watson Lake Businesses**

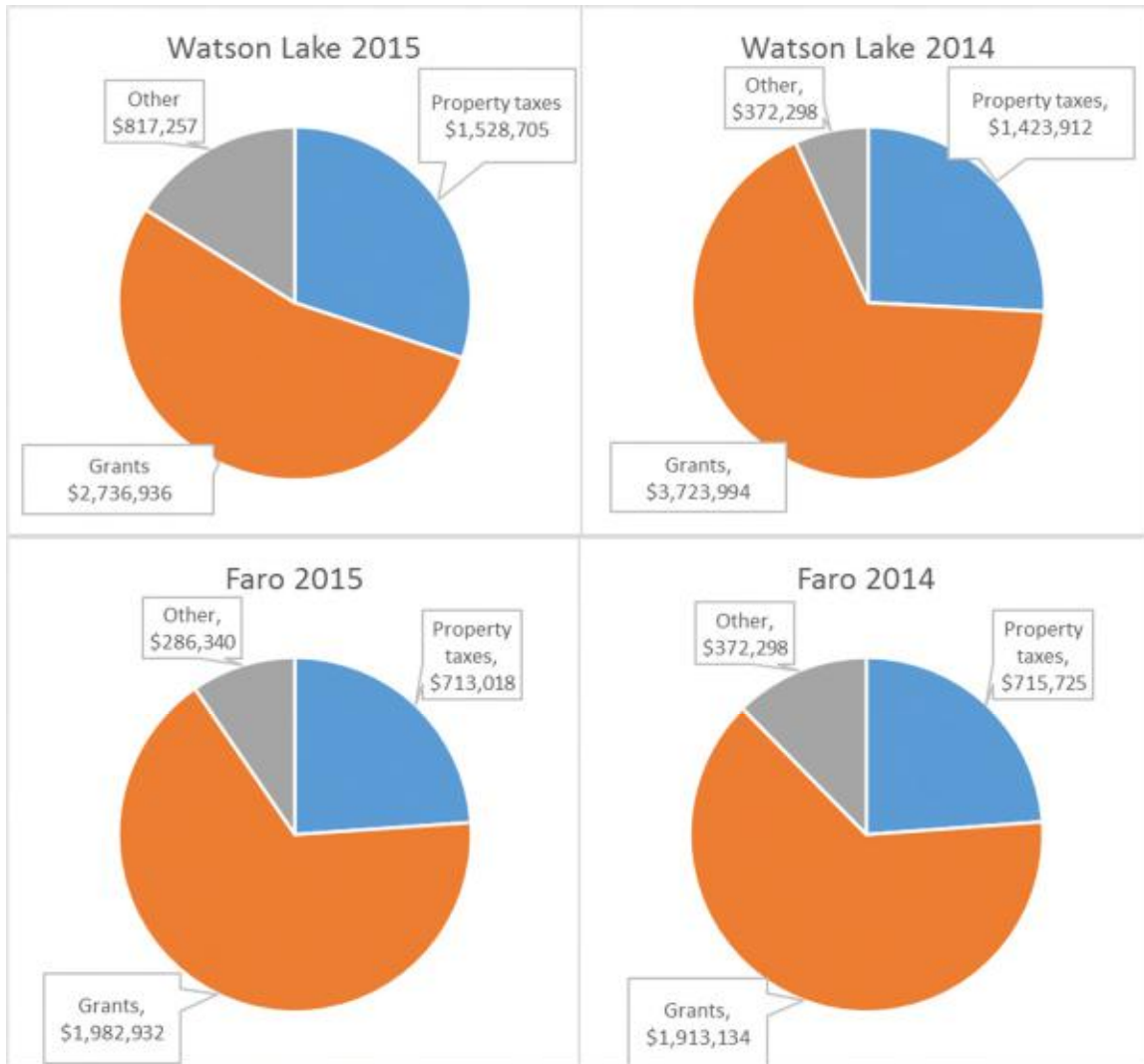
Ross River Dena General Store	LA Transport and Logistics
Tu-lidini Petroleum	James Magun Contracting
Dena Nezziddi Corporation	Paul Amann Excavating
T. Moon Construction	Watson Lake Ironworks
C. McLeod Contracting	Geo-Graphics Mining and Forestry
Jedway Enterprises	Liard Basin Environmental Services
All-Yukon Pilot Car	Liard Engineering and Management
Al Glogia Trucking	Northwind Drilling

## 2.8 GOVERNMENT REVENUES

Relevant government revenues include municipal property taxes, federal and territorial income taxes paid by residents in each community and indirect taxes collected in each community. The GST is the main indirect tax, but others include federal and territorial excise taxes on fuel, tobacco and alcohol, and royalties on natural resource products. More specifically, government revenues collected in the communities include:

- Municipal taxes collected by the Town of Watson Lake and the Town of Faro;
- Federal income tax collected by the federal government in all of the communities;
- Yukon income tax collected for the Yukon government by the federal government in all of the communities; and
- Goods and Services Tax (GST) collected on transactions in all of the communities by the federal government.

Property taxes collected in Watson Lake and Faro in 2014 and 2015 are shown in Figure 13 Government grants are a more important part of municipal revenues than property taxes.



**Figure 13: Municipal Government Revenues, Watson Lake and Faro, 2014 and 2015**

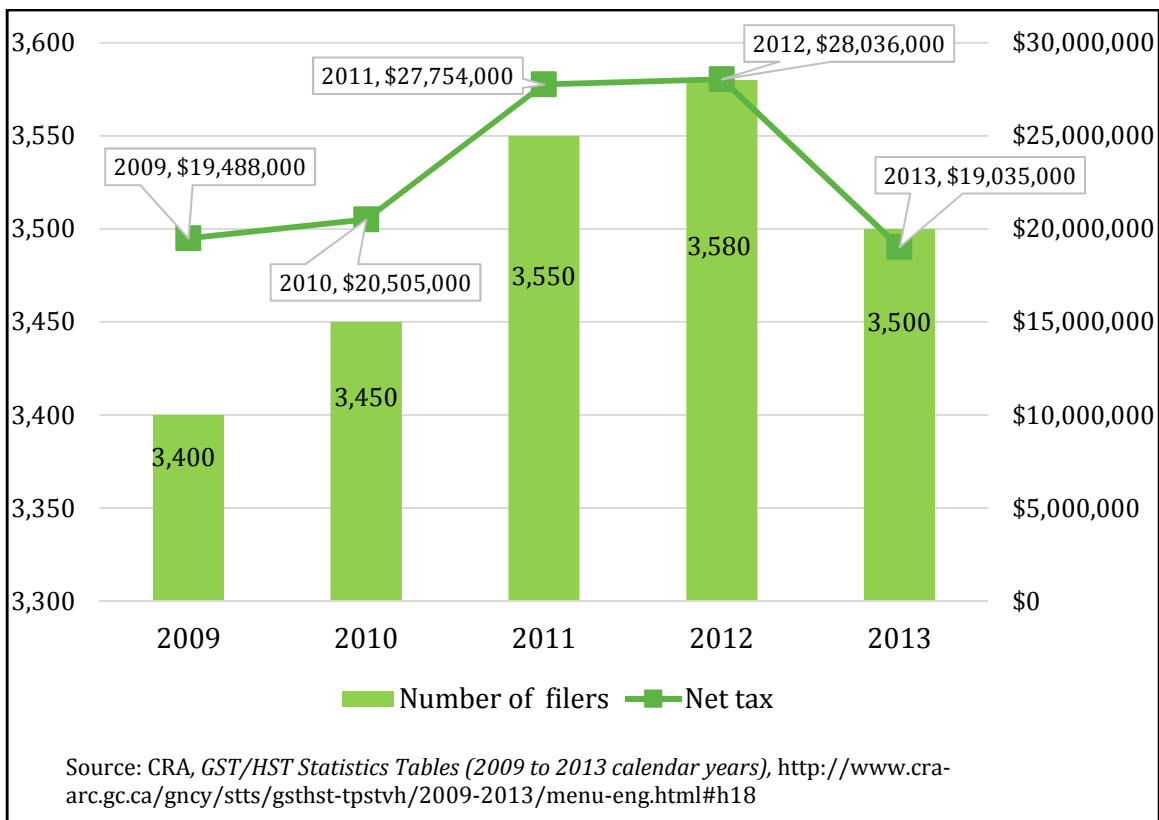
The last year for which data for income tax paid by community have been published is 2010. Table 6 presents the number of tax returns submitted by Yukon residents and by those in the communities, the total declared income and the federal, territorial and total income tax paid. The income tax paid in each community is obviously related to the population and to the average income, ranging from \$862,000 in Ross River to \$4.1 million in Watson Lake. Note that the effective average tax rate (total tax paid divided by total income) ranges from 10.9% in Ross River to 13% in Faro, compared to 13.9% for the Yukon as a whole.

**Table 6: Income tax returns, taxable income, and income tax paid, Watson Lake, Faro, Ross River and Yukon, 2010**

	Watson Lake	Faro	Ross River	Total Yukon
Number of Taxable Returns	600	200	130	18,550
Total number of Tax Returns	1,030	290	230	25,950
Total Income - Taxable Returns	\$30,805,000	\$10,819,000	\$6,280,000	\$1,136,177,000
Total Income - All Returns	\$37,074,000	\$11,955,000	\$7,906,000	\$1,234,714,000
Federal Tax Paid	\$2,847,000	\$1,067,000	\$592,000	\$117,704,000
Territorial Tax Paid	\$1,296,000	\$485,000	\$270,000	\$53,914,000
Total Income Tax Paid	\$4,143,000	\$1,551,000	\$862,000	\$171,618,000

Source: Revenue Canada, Locality Code Statistics

GST data is not available at the community level, only at the provincial or territorial level. The amount collected closely mirrors the economic fortunes of the territory and is somewhat more volatile than GDP which has a large stabilizing government spending element (Figure 14).



**Figure 14: GST Collected in the Yukon, 2009 through 2013**

## 3.0 HUMAN HEALTH AND WELL-BEING

Human health and well-being are universally valued.

### 3.1 INDIVIDUAL HEALTH

There are no health data available at the community level. Morbidity and mortality rates are published for the Yukon only. However, the Yukon Bureau of Statistics republishes health indicators drawn from Statistics Canada’s Canadian Health Survey. The selected Yukon-wide indicators shown in Table 7 may provide a reasonable proxy for individual health in the affected communities.

**Table 7: Selected Health Indicators, Yukon, 2010 through 2014**

	2010	2011	2012	2013	2014
Perceived health, very good or excellent	56.9%	59.1%	55.3%	57.9%	57.4%
Life satisfaction, satisfied or very satisfied	93.6%	94.7%	93.0%	90.9%	92.3%
Perceived life stress, quite a lot (15 years and over)	18.0%	22.7%	21.6%	20.3%	25.7%
Sense of belonging to local community, somewhat strong or very strong	82.0%	78.6%	73.3%	73.1%	73.5%
Current smoker, daily or occasional	27.9%	29.3%	29.4%	25.9%	26.2%
Self-reported overweight or obese (adults)	51.8%	55.0%	51.5%	64.2%	57.1%
Arthritis (diagnosed)	14.7%	15.7%	15.2%	19.5%	17.3%
Diabetes (diagnosed)	5.5%	4.5%	8.6%	5.0%	7.8%
High blood pressure (diagnosed)	11.3%	13.7%	14.2%	15.7%	15.0%
Has a regular medical doctor	76.8%	79.4%	71.4%	73.3%	73.9%

Source: Statistics Canada. Table 105-0501, CANSIM. (accessed 2016-05-30)

### 3.2 FAMILY STRESS

Indicators of family stress could include the percentage of the population that is divorced or separated. Unfortunately, the poor quality of the data collected in the voluntary 2011 NHS means the latest available data is for 2006.

The 2006 Census found the following for people aged 15 and over:

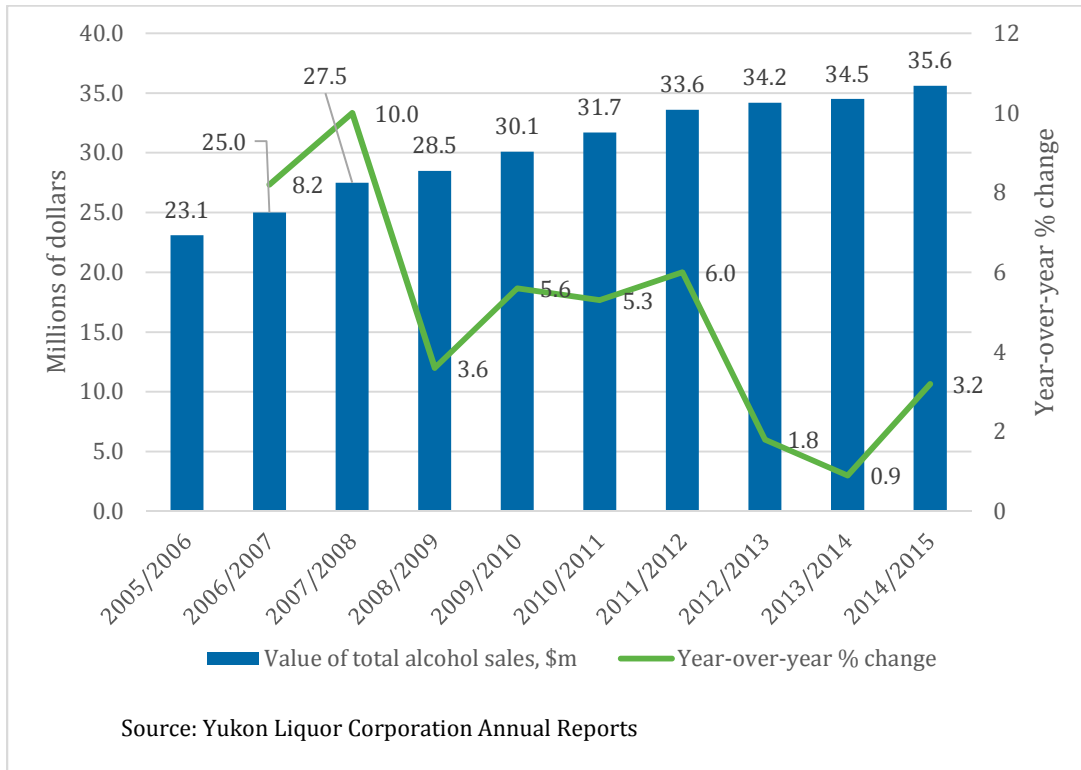
- In Ross River, 20% of people aged 15 and up were either divorced or separated;
- In Watson Lake the proportion was 16% either divorced or separated;
- In Faro the proportion was 12%; and
- In Yukon as a whole, 14% of people aged 15 and up were either divorced or separated.



### 3.3 REDUCING ALCOHOL AND DRUG ABUSE

Ideally, indicators for alcohol & drug use would be consumption per capita, but such data are not available. Indirect indicators include alcohol sales per capita and self-reported heavy drinking.

Figure 15 shows the total value of alcohol sold in Yukon each fiscal year and the year-over-year change in that value.



**Figure 15: Value of Alcohol Sales and Year-Over-Year Change in Value, Yukon, 2005/06 through 2014/15**

Watson Lake and Faro have territorial liquor stores while Ross River does not. Table 8 shows the total litres of different alcohol types sold in Watson Lake and Faro over the most recent two fiscal years for which data is available along with the total value of those sales.

Between 2013 and 2014 the population of Watson Lake increased by 2.6% from while total litres sold rose 3.4%. In Faro, the population declined by 3.5% while total litres sold remained stable. However, care must be taken in attempting to measure per-capita sales for either of these stores. The Watson Lake store total includes sales, likely significant, to the tourists and other drive-through traffic while Faro’s sales would include those made to residents of Ross River and others living along the highway.

**Table 8: Alcohol Sales, Watson Lake and Faro, 2013/14 and 2014/15**

Community	Type of Alcohol	Litres Sold 2013/14	Litres Sold 2014/15
Watson Lake	Beer	206,886	212,362
	Wine	32,011	36,141
	Spirits	18,889	17,921
Total Value of Sales, Watson Lake		\$1,792,000	\$1,911,000
Faro	Beer	66,428	65,724
	Wine	11,750	12,214
	Spirits	4,605	4,771
Total Value of Sales, Faro		\$596,000	\$626,000

Source: Yukon Liquor Corporation, Special data request

Finally, the Canadian health survey provides data on people who are heavy drinkers. In 2013, 32.4% of Yukoners reported having five or more drinks at least once a month. In 2014, that percentage dropped to 27.8%.

### 3.4 GATHERING TRADITIONAL MEDICINE

This information forms part of the confidential Traditional Knowledge of the Ross River Dena and Liard First Nations and cannot therefore be presented here.

### 3.5 PUBLIC HEALTH AND SAFETY — INCREASED TRAFFIC, HAZARDOUS MATERIAL TRANSPORT

The major highway that will serve the Project is the Robert Campbell Highway that stretches from Watson Lake on the Alaska Highway to Carmacks on the Klondike Highway. The 362 km stretch from Watson Lake to Ross River will likely receive the majority of any increases in traffic from the Project.

Up to 2011, the Yukon Department of Highways and Public Works published extensive traffic count data annually. Unfortunately, the publishing of that data has ceased. A special data request to the department did yield some more recent relevant data that is presented along with much earlier published data in Table 9.

**Table 9: Selected Traffic Count Data, Campbell Highway**

Location	Description
KM 10 Watson Lake	Between 1991 and 2011 average daily traffic counts (year-round) varied from 48 to 245.
	From May to October of 2015 the average daily traffic count (ADT) was 162.
KM 110.6 Tutchitua	Between 1997 and 2011 the ADT (year-round) varied from 17 to 44.
KM 355.2 South Canol intersection	Between 1996 and 2008 the ADT (May to October only) varied from 19 to 105.
	In 2014 the ADT (May to October only) was 55.

Source: Yukon Highways and Public Works. *2011 Yukon Traffic Count Summary* and special data request

### 3.6 WORKPLACE HEALTH AND SAFETY

The Yukon Workers' Compensation Health and Safety Board does not currently publish data by industry on the rate of injury reports or on days lost per injury. This is primarily due to the small number of firms operating in most industries causing issues with confidentiality.

Health and safety data from mining in BC can be used as a proxy for Yukon as regulations and standards are quite similar.

The annual report of the BC Chief Inspector of Mines<sup>4</sup> provides the data shown in Table 10.

**Table 10: BC Mines Selected Safety Data, 2013 and 2014**

Injury Rate (claims per 100 person-years of employment)	2013	2014
All mines	0.9	0.9
Open pit metal mines	1.3	1.0
Underground mines	0.9	1.6
Days lost to injury: all mines	10,399	7,933

Source: 2014 Annual Report of the Chief Inspector of Mines

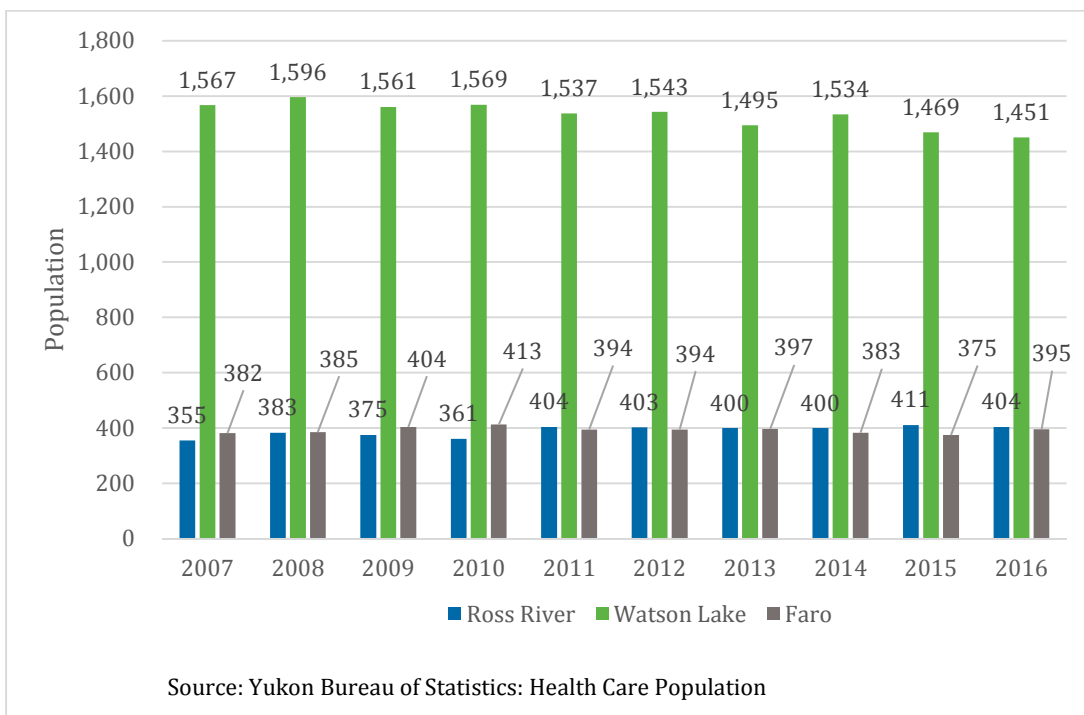
<sup>4</sup> British Columbia Ministry of Energy and Mines. 2014 Annual Report of the Chief Inspector of Mines. Accessed at: [http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/health-and-safety/2014\\_ci\\_annual\\_rpt.pdf](http://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/health-and-safety/2014_ci_annual_rpt.pdf)

## 4.0 COMMUNITY VITALITY

Community vitality includes a number of economic and social factors.

### 4.1 POPULATION — NUMBER OF CHILDREN

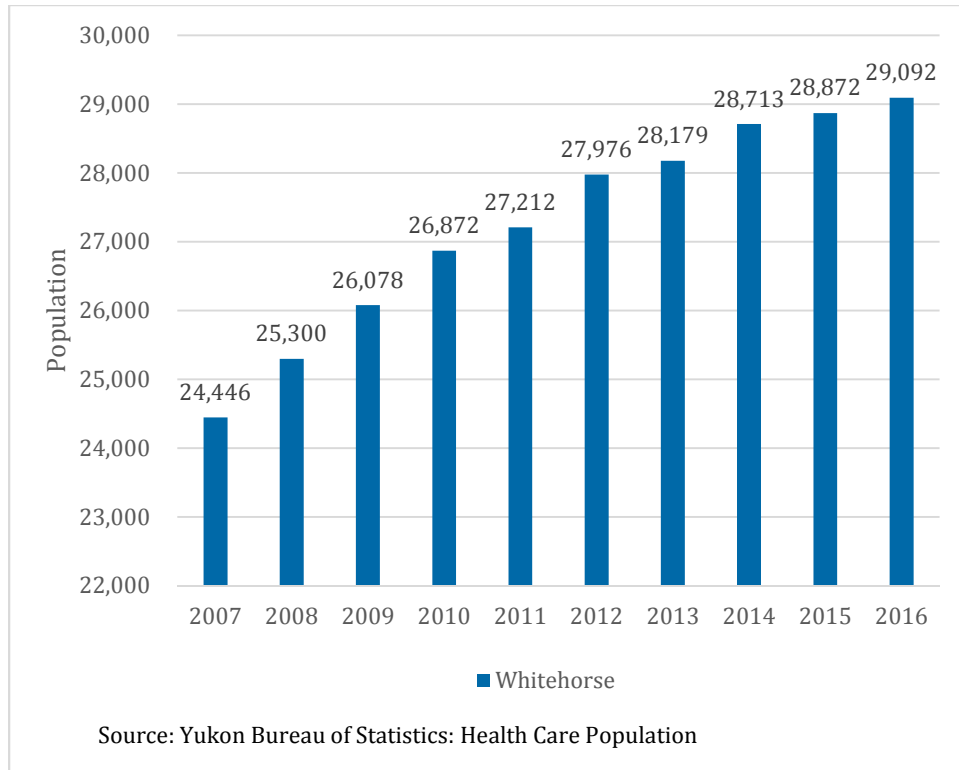
Figure 16 shows the population of Ross River, Watson Lake and Faro over the past decade. Ross River has been trending up while Watson Lake has been trending down. Faro has had a largely stable population over the past 10 years.



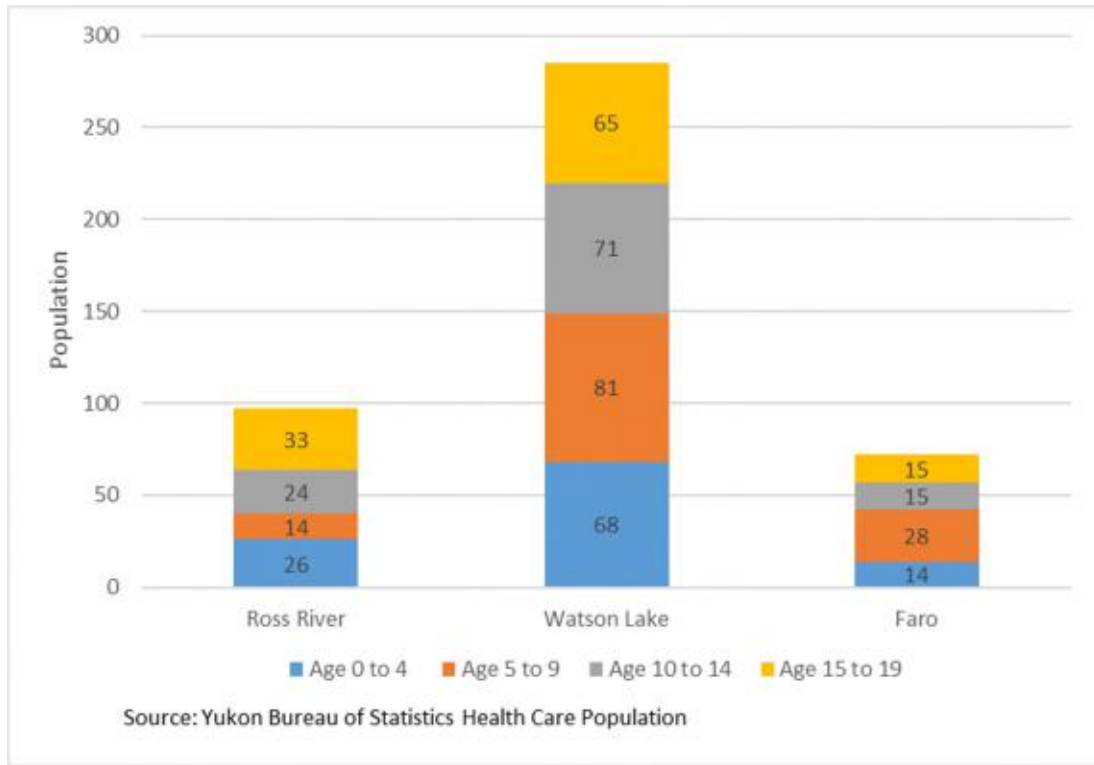
**Figure 16: Population of Ross River, Watson Lake and Faro, 2007 through 2016**

The population of Whitehorse has been growing steadily and significantly from 2007 through 2016 as shown in Figure 17 below. Growth was fastest from 2007 through 2012.

**Figure 17: Population of Whitehorse: 2007 through 2016**

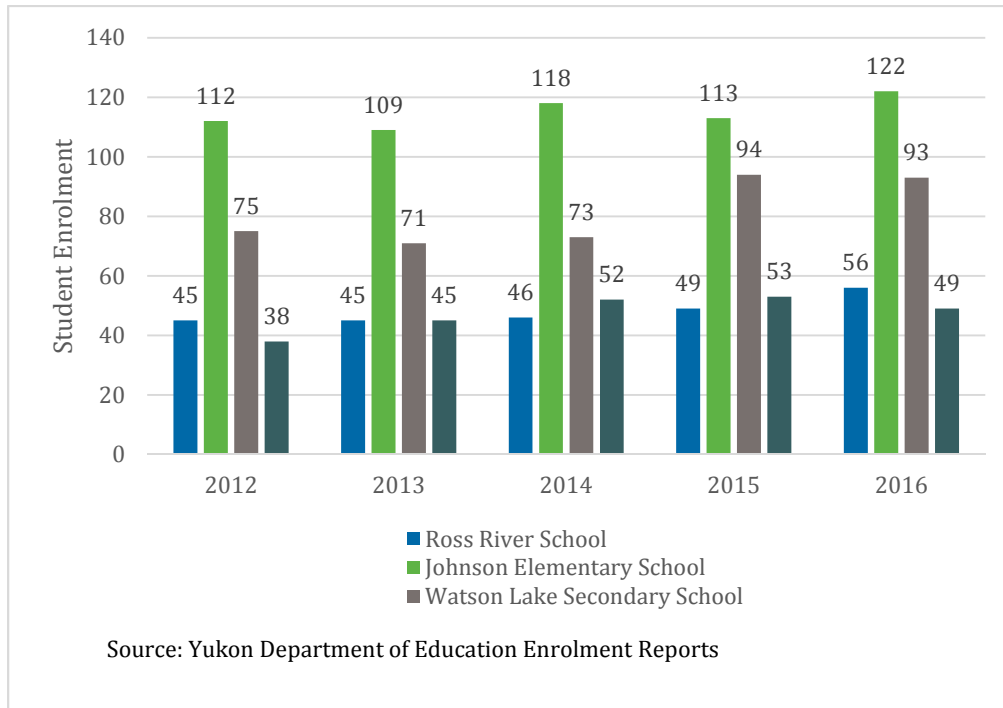


The Yukon Bureau of Statistics provides data on population age groups in Yukon communities for December of each year. Figure 18 shows the age distribution of children in Ross River, Watson Lake and Faro in December 2015. Watson Lake shows a very regular distribution of children across the 5-year groupings.



**Figure 18: Age Distribution of Children: Ross River, Watson Lake and Faro, December 2015**

A good indicator for the number of children in the community is the data on enrolment in the schools as provided by the Yukon's Department of Education. School enrolment as of June of each year for Ross River, Watson Lake and Faro schools is shown in Figure 19.



**Figure 19: June Student Enrolment, Selected Schools, 2012 through 2015**

## 4.2 HEALTHY LOCAL BUSINESS SECTOR — REDUCING THE COST OF LIVING

A healthy business sector not only provides economic benefits, it strengthens the community by providing more services, potentially reducing the cost of living in the community, and reducing the need for community members to work elsewhere.

The Yukon Bureau of Statistics conducts a business survey which contains data on the number of businesses found in each community and how many people these businesses employ. The relevant results from the last three business surveys are shown in Table 11.

**Table 11: Community Businesses, Ross River, Watson Lake and Faro, 2009, 2013 and 2015**

Community	Year	Number of Businesses	Number of Employees	Average Number of Employees
Ross River	2009	11	46	4.2
	2013	16	33	2.1
	2015	14	16	1.1
Watson Lake	2009	118	335	2.8
	2013	101	322	3.2
	2015	100	350	3.5
Faro	2009	27	42	1.6
	2013	26	50	1.9
	2015	30	47	1.6

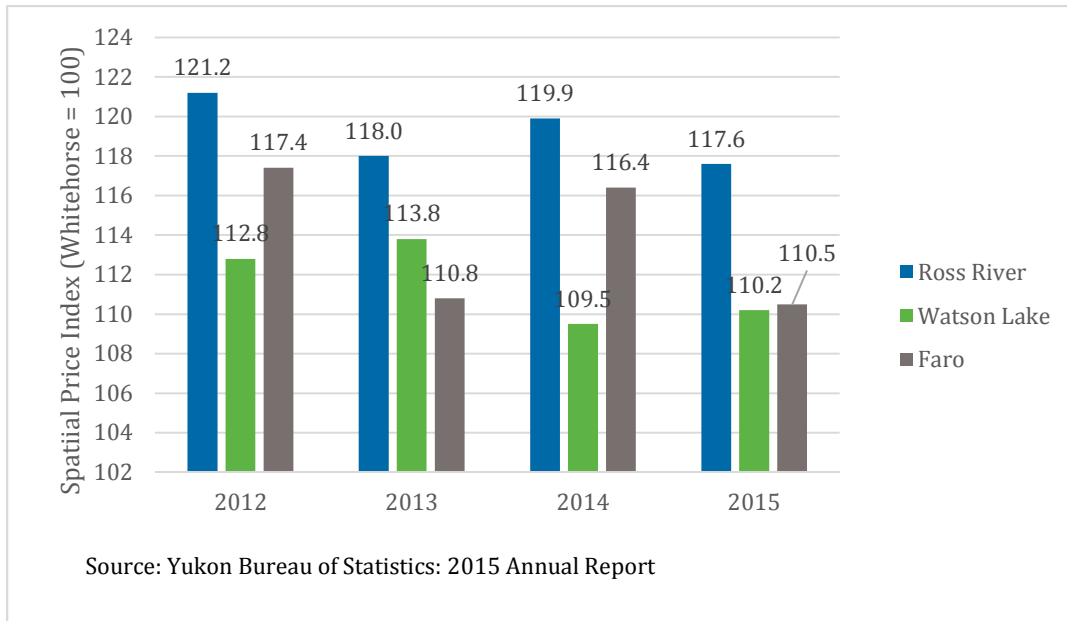
Source: Yukon Bureau of Statistics: Business Survey Reports

A healthy business sector in a small community can help reduce the cost of living or more specifically, the differential in cost of living between the community and a larger centre.

Figure 20 shows the spatial price index (i.e., the relative cost of goods and services) for Ross River, Watson Lake and Faro compared to Whitehorse for a number of staples. Items included in the survey are:

- Meat/Fish/Seafood;
- Dairy/Eggs;
- Fruit/Vegetables;
- Bread/Cereal;
- Other Foods;
- Household Operations;
- Health & Personal Care;
- Gasoline;
- Cigarettes; and,
- Home Heating Fuel.





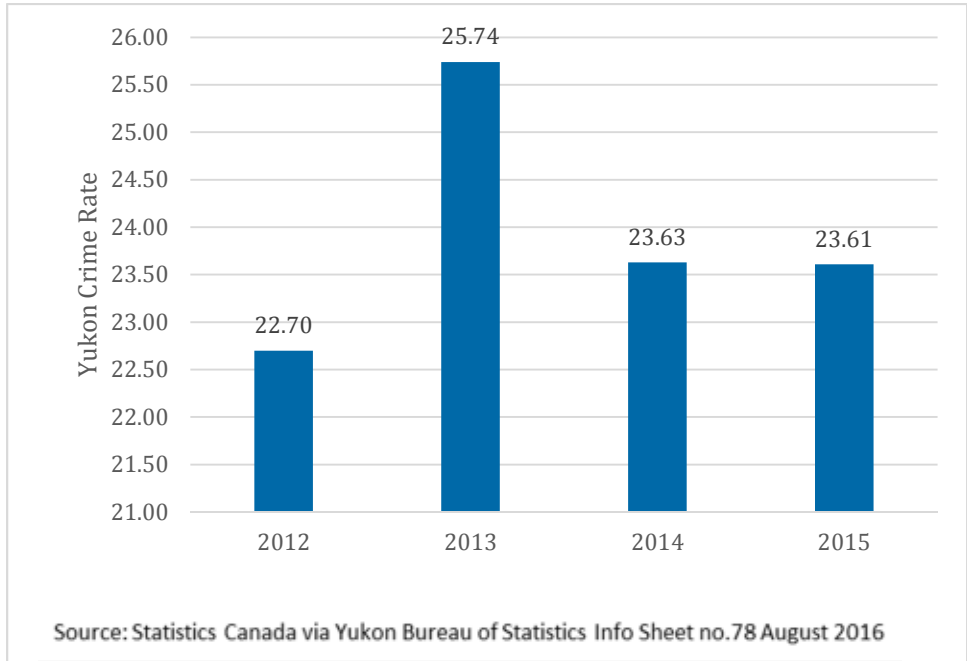
**Figure 20: Spatial Price Indices, Ross River, Watson Lake and Faro, 2012 through 2015**

### 4.3 REDUCING CRIME

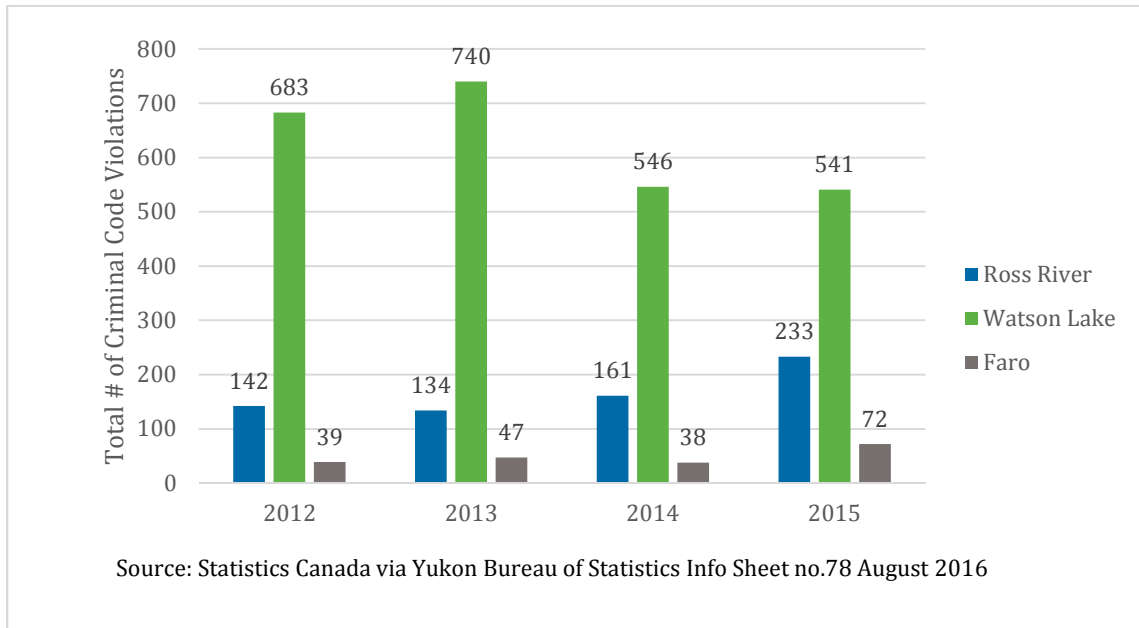
Statistics Canada’s means of collecting and reporting crime data has changed and one result is that crime data from 2012 through 2015 (the latest available) should not be directly compared to previous years.

Figure 21 shows the crime rate (violations per 100 people) for Yukon as a whole from 2012 through 2015.

Figure 22 shows the total number of criminal code violations (excluding traffic violations) for the communities of Ross River, Watson Lake and Faro from 2012 through 2015. The community level data is not collected or presented as a per-capita rate in part due to the large effects a small shift in population count can have in a small community.



**Figure 21: Yukon Total Criminal Code Violations (Excluding Traffic) per 100 Population, 2012 through 2015**



**Figure 22: Total Number of Criminal Code Violations (Excluding Traffic): Ross River, Watson Lake and Faro: 2012 through 2015**

## 4.4 REDUCING DISCRIMINATION AND RACISM

Discrimination and racism are difficult to quantify. There is some economic literature that uses income differences between ethnic groups as a proxy for quantifying the economic effects of discrimination and racism.

The best means to analyze earnings differentials is to estimate an earnings function on large-scale databases of individual incomes and characteristics. An earnings function is a regression equation with a minimum of age, sex, and education as explanatory variables for the logarithm of earnings.

The earnings function technique has been mainly used to explore male/female wage and income differentials, but it has also been used to examine racial income differences in the United States. Any unexplained difference is usually ascribed to “discrimination” or “privilege”.

Despite the large literature on racial income differences in the United States, only three known published studies are available on aboriginal/non-aboriginal differences in Canada. All three studies examine the effect of readily measurable characteristics such as sex, education, and location. The first, published in 1994, based on 1986 Census data (1985 income), found an unexplained wage gap of aboriginal Canadians working full time, full year earning about 11% less than non-aboriginal Canadians.<sup>5</sup>

Pendakur and Pendakur examined total wage earnings rather than wage rates using 1990 income data from the 1991 Census.<sup>6</sup> They found a gap of 12.5% between aboriginal men and Canadian-born white men, and a gap of 9.9% with the overall male average. This study excluded the Atlantic Provinces and the territories because the small number of cases in the Census Public Use database made statistically meaningful comparisons impossible. A third study by Bernier confirmed the findings of George and Kuhn, and of Pendakur and Pendakur.<sup>7</sup>

Simple income differentials are not necessarily evidence of discrimination; other factors need to be accounted for such as age, education, location, attachment to the labour force, etc. These are complicated in that they can also be affected by discrimination (e.g. because they are discriminated against, certain groups such as First Nations get smaller rewards from education resulting in reduced incentive for getting higher education).

Data on aboriginal versus non-aboriginal incomes at the community level are not available as the small population makes confidentiality a concern.

From the 2011 National Household survey the median total income of Yukon aboriginal people aged 15 and over with an income in 2010 was \$25,113. This compares to the overall Yukon median of \$40,391. Yukoners as a whole have a median total income 61% higher than aboriginal Yukoners. This gap in incomes has widened from 52% in 2006.

## 4.5 POLITICAL STRUCTURE

Ross River is the home community of the Ross River Dena Council, a Kaska First Nation that has not agreed to a land claim or self-government under the Umbrella Final Agreement but sees itself as exerting its authority over its traditional territory. Ross River has no municipal structure although a desire to develop one has been expressed for many years.

<sup>5</sup> George, Peter & Kuhn, Peter (1994). “The size and structure of native-white wage differentials in Canada.” *Canadian Journal of Economics*, XXVII, No. 1, February 1994, 20-42.

<sup>6</sup> Pendakur, Krishna & Pendakur, Ravi (1998). “The colour of money: earnings differentials among ethnic groups in Canada.” *Canadian Journal of Economics*, XXXI, No. 3, August 1998, 518-548.

<sup>7</sup> Bernier, Rachel (1997). “The dimensions of wage inequality among Aboriginal peoples.” *Statistics Canada, Catalogue No. 11F0019MPE97109, Analytical Studies Branch research paper series No. 109, December 1997.*

Watson Lake, and several smaller communities around it is the home community of the Liard First Nation. The Liard First Nation is a Kaska First Nation that, like the Ross River Dena Council, has not agreed to a land claim or self-government under the Umbrella Final Agreement but sees itself as exerting its authority over its traditional territory, which has the same boundaries as the Ross River Dena.

Both Watson Lake and Faro are incorporated communities with municipal governments, and are recognized as Towns under the Yukon Municipal Act.

## 4.6 COMMUNITY EVENTS AND VOLUNTEERISM

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Community life in small communities depends heavily on volunteers and volunteer organizations. There is no data available on the number of volunteers or volunteer hours worked in the communities, but some of the volunteer driven organizations and community events in Ross River, Watson Lake and Faro are listed below.

Volunteer organizations in Ross River include:

- Volunteer fire, ambulance and search & rescue organizations;
- School, college and library boards;
- Sportsman Club; and,
- Canadian Rangers.

Volunteer organizations in Watson Lake include:

- School, college and library boards;
- Watson Lake Community Outreach;
- A number of sports organizations;
- Arts and cultural organizations; and,
- Canadian Rangers.

Volunteer organizations in Faro include:

- Volunteer fire, ambulance and search & rescue organizations;
- School, college and library boards;
- Faro Arts and Recreation Association;
- Anvil Range Arts Society;
- Faro Golf Club;
- Entrepreneurship Society; and,
- Canadian Rangers.

There are many social and community events held in Ross River. It would be difficult to even begin to count them as, for example, most community consultations include a meal and become a social event. However, four major annual events in Ross River are the Aboriginal Day and Canada Day celebrations, the hockey challenge and the week-long Cultural Exchange held at Coffee Lake. Hand game tournaments are also popular events in the community.

Some of the community events in Watson Lake include:

- Fight the Freeze Festival;
- Policeman's Ball;
- Kiki Karnival;
- Open Air Curling Bonspiel;
- Sno-Pitch Tournament;
- Canada Day; and,

- Halloween Haunted House.

Some of the community events in Faro include:

- The Pelly River Hockey Challenge;
- The Ice Worm Squirm;
- The Crane and Sheep Festival;
- Canada Day;
- Faro Open Golf Tournament;
- Pelly Valley Art's Festival; and,
- Fireweed Festival.

## 4.7 RECREATIONAL FACILITIES AND OPPORTUNITIES

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Ross River lost its major recreational facility, the hockey rink, to a fire in 2011. The facility was rebuilt in 2013 and hockey was happening again in early 2014. The recreation centre includes a general purpose room and a youth lounge. The community also has a seasonal swimming pool.

In 2000 Watson Lake opened its new recreation centre that features a community hall, meeting rooms, squash courts, fitness room, a youth centre, bowling alley, hockey arena, three sheets of curling ice in the winter and a seasonal swimming pool. The community also boasts a downhill ski facility, walking trails with boardwalks and an impressive outdoor water slide at Lucky Lake.

Faro has a municipal recreation centre that offers a variety of programs and recreation opportunities including a full gymnasium, weight room, squash court, full size indoor arena, youth lounge, seasonal swimming pool and multi-purpose room. Faro also has a highly unusual golf course that winds its way through the center of the community.

## 5.0 INFRASTRUCTURE AND SERVICES

Infrastructure and related services make up the physical core of any community.

### 5.1 HOUSING AND LAND AVAILABILITY

One of the Yukon government’s Land Services Branch’s responsibilities is the development of crown land in or near Yukon communities in order to maintain a supply of building lots adequate to meet the demand for lots. The Land Services Branch is normally the only source of new building lots in most Yukon communities as there is little or no privately owned land that can be subdivided and developed.

As of September 7, 2016, the Land Services Branch had the residential lots for sale in the communities of Ross River, Watson Lake, Faro and Whitehorse, as shown in Table 12.

**Table 12: Residential Lots for Sale, Ross River, Faro, Watson Lake and Whitehorse, September 2016**

Community	Lot Type	Number of Lots
Ross River	Any Residential	0
Faro	Country Residential	5
Watson Lake	Mobile Home	8
	Residential	5
	Country Residential	1
Whitehorse	Residential	3
	Multi-family Residential	3

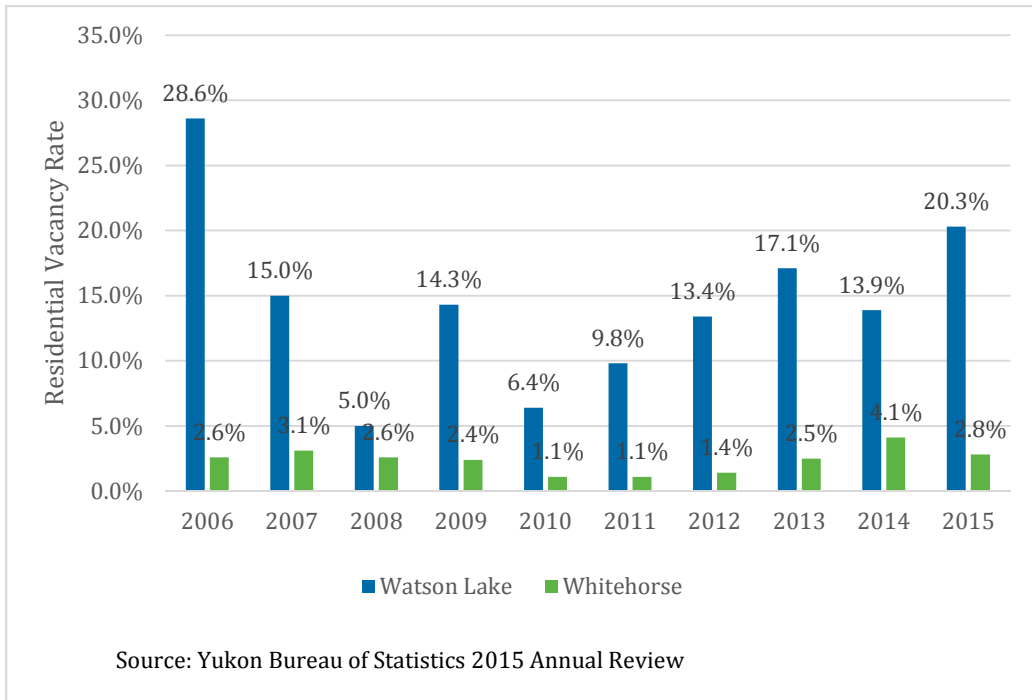
Source: Yukon Land Services Branch  
[http://www.emr.gov.yk.ca/landmanagement/lotsale\\_yukon.html](http://www.emr.gov.yk.ca/landmanagement/lotsale_yukon.html)

An examination of various real estate website listings<sup>8</sup> adds approximately 50 more residential building lots or equivalent raw land for sale in or around the four communities. This does not include the possible availability of First Nation land for long-term lease for residential construction. First Nation leasing of residential land is in its infancy in the Yukon and it is not yet possible to measure availability.

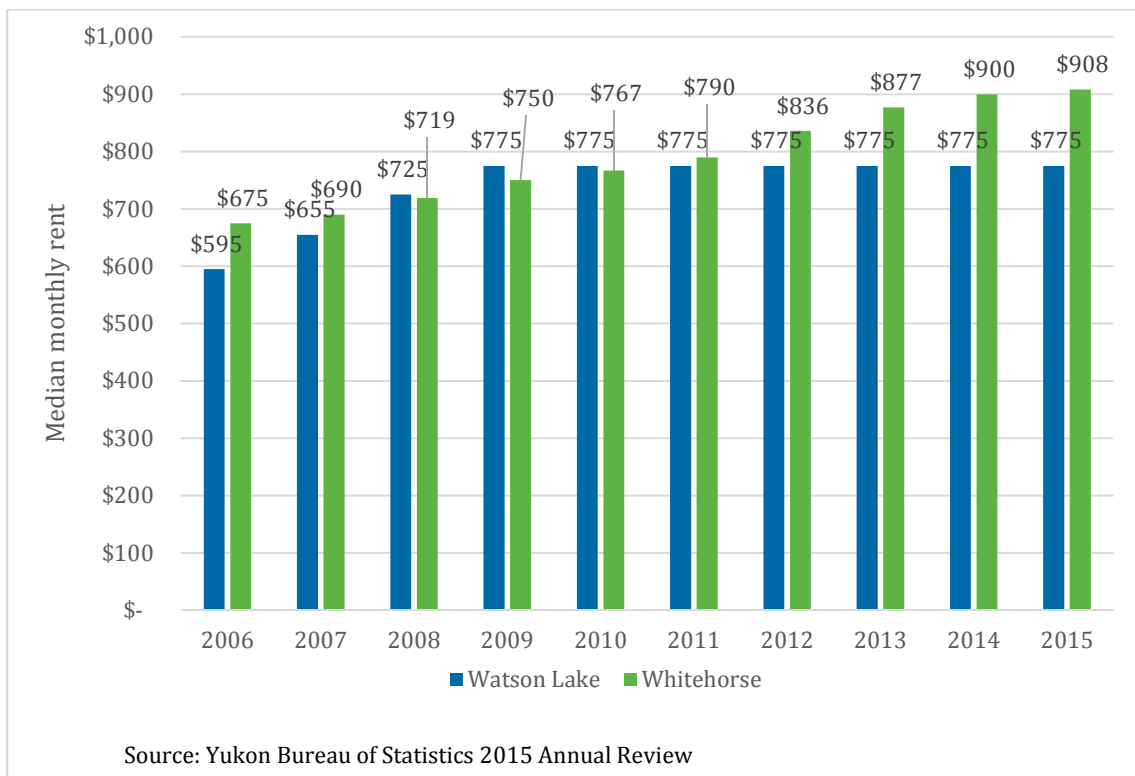
The examination of various real estate website listings on September 8, 2016 shows no houses for sale in Ross River, three in Watson Lake, three in Faro and approximately 200 residential listings in Whitehorse.

The annual residential vacancy rate and the median residential rent for Watson Lake and Whitehorse are shown in Figure 23 and Figure 24. No similar data exists for Ross River or Faro. Note that the data is for buildings with a minimum of three rental units.

<sup>8</sup> Kijiji, Property Guys, ReMax and Coldwell Baker on September 8, 2016.



**Figure 23: Residential Rental Vacancy Rate, Watson Lake & Whitehorse, 2006 through 2015**



**Figure 24: Median Residential Rent, Watson Lake and Whitehorse, 2006 through 2015**

## 5.2 TRANSPORTATION INFRASTRUCTURE — ROADS AND AIRPORTS

The major highway that will serve the Project is the 583 km long Robert Campbell Highway that stretches from Watson Lake on the Alaska Highway to Carmacks on the Klondike Highway. The Highway is maintained by the Department of Highways and Public Works. The Robert Campbell Highway between Watson Lake and Ross River often features surface breaks, rough sections, and soft shoulders.

The Yukon Department of Highways and Public Works also maintains the different airports and aerodromes in the Yukon. Features of those relevant to the Project are summarized in Table 13.

**Table 13: Aerodromes, Finlayson, Ross River, Watson Lake, Faro and Whitehorse**

Aerodrome	Runway Size (in feet)	Runway Surface	Maintenance	Community Aerodrome Radio Station	Terminal Building
Finlayson	1,847 X 50	Gravel	No	No	No
Ross River	5,113 X 100	Gravel	No	No	Yes
Watson Lake	5,504 X 150	Asphalt	Limited	Yes	Yes
Faro	3,997 X 100	Gravel	Limited	Yes	Yes
Whitehorse	9,500 X 150	Asphalt	Year-round	FFS/ATS	Yes
	5,317 X 100	Asphalt	Year-round	FFS/ATS	Yes
	1,798 X 75	Asphalt	Year-round	FFS/ATS	Yes

Source: Yukon Highways and Public Works Aerodrome Listing Dec. 2015

Whitehorse and Watson Lake are certified as airports. Neither Ross River nor Faro have scheduled air service but Alkan Air has very recently begun a three flight per week schedule between Whitehorse and Watson Lake. Whitehorse is an international airport with daily scheduled jet service to southern Canada year-round.

## 5.3 POWER AND COMMUNICATION INFRASTRUCTURE

There is no power infrastructure available near the Project site and needed electricity will have to be generated by the Project.

Ross River and Faro are served by Yukon Energy Corporation’s WAF (Whitehorse-Aishihik-Faro) grid, with three back-up diesel generators in Faro. The privately-owned Yukon Electrical Corporation owns a back-up generator in Ross River and is responsible for electricity distribution in that community. The corporation also owns and operates the diesel generators that serve Watson Lake, which is not on the Yukon’s electrical grid.

NorthwestTel (owned by Bell) provides and maintains the majority of the communication infrastructure in the Yukon. Bell Mobility provides High Speed Packet Access (HSPA+) and Code Division Multiple Access (CDMA) digital cellular service in 17 Yukon communities, including Ross River, Watson Lake and Faro. There is currently no cell service for Global System for Mobile (GSM) based phones in the Yukon and there are many large service gaps between communities.



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## 5.4 MUNICIPAL SERVICES — WATER, SEWER, SOLID WASTE

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Ross River is an unincorporated community and relies on the Yukon government to provide municipal services. The community depends on a trucked water supply from a community well and either on septic systems or individual holding tanks for sewage disposal. There is a primary treatment lagoon. Problems have occurred with the water supply in the past and residents have been leery of using the trucked water. The Ross River landfill is now a staffed and gated facility open four days a week that accepts most types of waste.

The Town of Watson Lake operates municipal piped water and sewer systems within the community along with garbage pick-up and a district heating system for several buildings in the center of the community. The Watson Lake municipal landfill site is open three days a week and accepts most types of waste. The Town and the Yukon government are currently negotiating who will be responsible for the eventual closure of the landfill site.

The Town of Faro operates a piped water system that relies on groundwater wells and a municipal piped sewage system with a multi-cell lagoon that provides secondary treatment. The community and its infrastructure was originally built for a population much larger than the current number of residents. One effect of this smaller population has been that the sewage lagoon very rarely needs discharge into the Pelly River. The municipality has been working for years to replace much of the water and sewage system, particularly the mix of types of underground pipes that have seen significant deterioration since they were installed. The Faro landfill is reported to be at 29% of its total capacity.<sup>9</sup>

The notes to both Faro's and Watson Lake's financial statements contain the bluntly worded message, "Town of Faro [Town of Watson Lake] is economically dependent on the continued support of the Government of Yukon to maintain normal operations." And because both Faro and Watson Lake rely on accessing a wide assortment of different funds for specific municipal infrastructure projects (e.g. pipe replacement), the proportion of the municipal budget that is devoted to operations and maintenance is not a particularly useful indicator.

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## 5.5 HEALTHCARE SERVICES

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The Yukon Department of Health and Social Services staffs and maintains a community health centre in Ross River and another in Faro. Community Nurse Practitioners, in the absence of a physician, provide daily clinics for medical treatment, community health programs, and 24-hour emergency services. Clients requiring more specialized care are referred to a hospital, usually in Whitehorse.

Watson Lake has more extensive healthcare services offered through the Watson Lake Community Hospital and the Watson Lake Health Centre. The hospital has six beds in its inpatient medical unit and offers emergency services along with acute, respite and palliative care.

The Watson Lake Health Centre shares facilities with the hospital and offers mental health services and a variant of community health programs.

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## 5.6 POLICE SERVICES

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Under an agreement with Yukon Justice, the RCMP provides policing throughout Yukon with a total of 120 full-time-equivalent officers assigned to active duty (as distinct from full-time administrative duties). There are RCMP detachments in almost all of Yukon's communities including Ross River, Watson Lake, and Faro.

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<sup>9</sup> 2015 Audited Financial Statements. <http://faroyukon.ca/cms-assets/documents/248679-305302.townoffaro2015fs-finalweb.pdf>

Since 2012 the RCMP has instituted a policy that all of its detachments have a minimum of three officers. The Ross River and Faro detachments have the three-member minimum while Watson Lake has 9 members. As a point of comparison, the Whitehorse detachment has 47 members.

## 5.7 CHILD CARE

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A lack of child care, and especially licensed child care, is a perennial issue in rural Yukon communities. As of August 2016 data published by Yukon Health and Social Services<sup>10</sup> indicates that there are no licensed providers of child care in Ross River or in Faro. There is one provider licensed for up to 45 children in Watson Lake.

Ross River did have a child care provider licensed for up to 30 children from 1997 until it closed abruptly in November of 2015.<sup>11</sup>

Whitehorse has a total of 46 daycares and family day homes that are registered with Yukon Health and Social Services.

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<sup>10</sup> <http://www.hss.gov.yk.ca/pdf/licensedchildcarecentres.pdf>

<sup>11</sup> See: <http://www.cbc.ca/news/canada/north/ross-river-daycare-closes-1.3346328>

## 6.0 CULTURE, HISTORY AND HERITAGE

Culture, history and heritage form a critical part of community identity

### 6.1 LANGUAGE PRESERVATION AND RESTORATION

There is no community-level data on Kaska speakers. However, the Census does provide some Yukon-wide data on Aboriginal speakers of Aboriginal languages, as summarized in Table 14.

**Table 14: Knowledge of Aboriginal Languages, Yukon, 2006 and 2011**

	2006 Census Percentage of Aboriginal Respondents	2011 NHS Percentage of Aboriginal Respondents
Aboriginal language as mother tongue	11.7%	12.9%
Aboriginal language as primary language in the home	2.0%	1.9%
Enough knowledge of aboriginal language to conduct a conversation	16.4%	14.2%

Source: Statistics Canada via Yukon Bureau of Statistics Information Sheet #C11-05 March 2014

Care must be taken in comparing the data from 2006 to that of 2011 given the much lower response rates for the voluntary 2011 NHS. However, higher proportion of those able to conduct a conversation compared with those with the language as a mother tongue indicates Aboriginal languages are being acquired as a second language.

The Ross River Dena Council and the Liard First Nation both promote and encourage the learning and use of the Kaska language. The Johnson Elementary School in Watson Lake, the Watson Lake High School, and the Ross River School all offer Kaska language school programs when language teachers are available. In the past, two Kaska language teachers worked in the Ross River School, while five taught in the two Watson Lake schools. Currently there appears to be two Kaska language teachers in the Ross River School and one in the Watson Lake High School.

The Yukon Native Language Centre offers teaching materials in Kaska and the Kaska Tribal Council published a noun dictionary in 1997.

### 6.2 TRADITIONAL KNOWLEDGE AND PRACTICE: PRESERVATION & RESTORATION

This information forms part of the confidential Traditional Knowledge of the Ross River Dena and therefore cannot be presented here.

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## 6.3 HERITAGE AND HISTORIC SITES

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Two small lithic sites have been identified in the Project area, one along the tote road and the other towards the ABM deposit. Details can be found in the Heritage Resources chapter of the Project Proposal.

Other aspects of heritage forms part of the confidential Traditional Knowledge of the Ross River Dena and therefore cannot be presented here.



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## APPENDIX A

### TETRA TECH'S GENERAL CONDITIONS

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# GENERAL CONDITIONS

## GEOENVIRONMENTAL REPORT

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This report incorporates and is subject to these "General Conditions".

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### 1.1 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

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Both electronic file and hard copy versions of TETRA TECH's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except TETRA TECH. The Client warrants that TETRA TECH's instruments of professional service will be used only and exactly as submitted by TETRA TECH.

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### 1.3 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

### 1.4 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

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