

# APPENDIX A.13A: Economic Impacts of the Casino Mine Project

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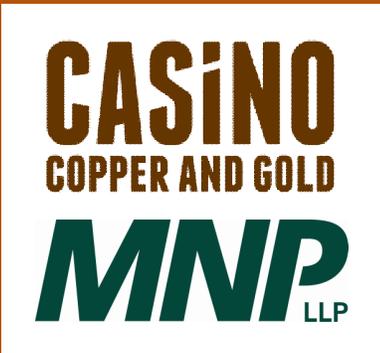
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Casino Mine Corporation

Economic Impacts of the Casino Mine Project

March 2013

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## 1. EXECUTIVE SUMMARY

This report examines the economic impacts that may be realized by Yukon communities, residents and governments as a result of the development and operation of the Casino Mining Corporation's ("CMC") Casino project. CMC is a wholly-owned subsidiary of Western Copper and Gold Corporation ("WCGC").

MNP LLP's ("MNP") original economic impact study of the Casino project, based on the 2011 Pre-Feasibility Study, was issued in January 2012.<sup>1</sup> This updated economic impact assessment is based on the recently published Feasibility Study.<sup>2</sup>

### Construction Impacts of the Casino Project

The construction of the Casino project is expected to occur over four years and to cost a total of \$2.5 billion in capital expenditures.<sup>3</sup> The following table summarizes the economic impacts that are estimated to occur in Yukon and Canada through development of the mine. As indicated, we estimate GDP generated in Yukon by the construction of the Casino project at \$363 million<sup>4</sup> (the equivalent of 13.6% of the Territory's 2011 nominal GDP of \$2.7 billion).<sup>5</sup> Combining the impacts generated in Yukon and the rest of Canada, we estimate the construction of the Casino project to contribute \$1,976 million to GDP throughout Canada. We also estimate the development of the mine to create total employment of 22,601 FTEs and to generate \$1.1 billion in wages and salaries across Canada. Additionally, we estimate the mine's construction to generate \$407 million in taxes to federal, provincial/territorial and municipal governments.

#### Total Projected Construction Impacts of the Casino Project

Total Construction Impacts (Direct, Indirect and Induced)	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions) <sup>6</sup>	Federal Tax (millions)	Yukon Territorial and Provincial Tax (millions)	Other Tax (millions)
Total Yukon Impacts	\$779	\$363	5,091	\$195	\$33	\$22	\$7
Rest of Canada	\$4,359	\$1,613	17,509	\$928	\$201	\$134	\$10
All of Canada							
<b>Total</b>	<b>\$5,138</b>	<b>\$1,976</b>	<b>22,601</b>	<b>\$1,123</b>	<b>\$234</b>	<b>\$156</b>	<b>\$17</b>

### Operation Impacts of the Casino Project

Operation of the Casino project is expected to generate economic benefits to Yukon and Canada through expenditures on goods and services, the creation of employment opportunities and the generation of tax revenues for local, territorial and federal governments. The following table summarizes the economic impacts that are estimated to occur in Yukon and Canada. We estimate the annual GDP generated in

<sup>1</sup> MNP. *Economic Impacts of the Casino Mine Project*. [Issued January 2012].

<sup>2</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].

<sup>3</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].

<sup>4</sup> Please note that economic impacts were derived using Statistics Canada's 2008 Input Output Model. In our previous report, we derived the economic impacts of the proposed Casino mine using Statistics Canada's 2007 Input Output Model.

<sup>5</sup> Statistics Canada, CANSIM, table 384-0038. *Gross Domestic Product, Expenditure-Based, Provincial And Territorial At Current Prices, 2011*. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ15-eng.htm> [Last Modified 2012-11-19].

<sup>6</sup> Please note that throughout the report, estimated wage and salary impacts do not include employers' contributions or payments to benefit plans for the health and financial well-being of employees and their families.

Yukon by the operation of the Casino project at \$274 million (equivalent to 10.3% of the Territory's 2011 nominal GDP of \$2.7 billion).<sup>7</sup> Combining the impacts generated in Yukon and the rest of Canada, we estimate the annual operation of the mine to contribute \$350 million to GDP in Canada. We also estimate the operation of the mine to create total employment of 1,308 FTEs and to generate \$61 million in wages and salaries across Canada in each year of operation.

#### Total Projected Annual Operating Impacts of the Casino Project

Total Operating Impacts (Direct, Indirect and Induced)	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial Tax and Royalties and Provincial Tax (millions)	Other Tax (millions)
Total Yukon Impacts	\$342	\$274	855	\$43	\$20	\$81	\$1
Rest of Canada	\$138	\$76	453	\$19	\$12	\$10	\$0
All of Canada <b>Total</b>	<b>\$480</b>	<b>\$350</b>	<b>1,308</b>	<b>\$61</b>	<b>\$32</b>	<b>\$92</b>	<b>\$2</b>

#### Government Revenue

Our economic model estimates that \$81 million in new annual tax revenues and royalties will accrue to the Yukon Government as a result of operation of CMC's proposed Casino mine. Of that amount, \$25 million is attributable to direct income taxation sources (Personal Income Tax and Corporate Income Tax) and the other \$56 million<sup>8</sup> is an estimate of annual resource royalty revenues.<sup>9</sup>

#### Total Impacts of the Casino Project

The Casino project will produce significant and extensive economic impacts for Yukon Territory and other provinces and territories across Canada. The following table summarizes the economic impacts that are estimated to occur in Yukon and Canada over the projected four years of construction and the 22 years of operation of the Casino mine. We estimate the Casino project to contribute a total of \$6.4 billion to GDP in Yukon Territory. Combining the impacts generated in Yukon and the rest of Canada, we estimate the Casino project to contribute a total of \$9.7 billion to GDP in Canada. Also, we estimate the Casino project to create overall employment of 51,373 FTEs and to generate a total of \$2.5 billion in wages and salaries in Canada. In addition to these impacts, we estimate the Casino project to generate \$3.1 billion in taxes to federal, provincial/territorial and municipal governments across the country during the life of the mine.

<sup>7</sup> Statistics Canada, CANSIM, table 384-0038. *Gross Domestic Product, Expenditure-Based, Provincial And Territorial At Current Prices, 2011*. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ15-eng.htm> [Last Modified 2012-11-19].

<sup>8</sup> Yukon Mining Royalties are assumed to be over a 24 year period.

<sup>9</sup> Please note that estimates on new annual tax revenue and royalties generated to the Yukon Government as a result of the proposed Casino mine are before any federal financial agreement offsets.

**Total Projected Impacts of the Casino project Construction and Operation**

<b>Total Projected Life Impacts- 4 years of construction and 22 years of operation (Direct, Indirect and Induced)</b>	<b>Output (millions)</b>	<b>GDP (million)</b>	<b>Employment (FTEs)</b>	<b>Wages and Salaries (millions)</b>	<b>Federal Tax (millions)</b>	<b>Yukon Territorial Tax and Royalties and Provincial Tax (millions)</b>	<b>Other Tax (millions)</b>
Total Yukon Impacts	\$8,308	\$6,402	23,893	\$1,131	\$464	\$1,810	\$36
Rest of Canada	\$7,388	\$3,275	27,480	\$1,338	\$472	\$359	\$16
All of Canada							
<b>Total</b>	<b>\$15,696</b>	<b>\$9,678</b>	<b>51,373</b>	<b>\$2,469</b>	<b>\$936</b>	<b>\$2,169</b>	<b>\$52</b>

**Other Economic Benefits**

In contrast to economic impacts, economic benefits include long-term or downstream activity that would not normally be captured in economic impacts. Some of the economic benefits that are expected to be realized through the development of the Casino project include:

- Training opportunities
- Joint ventures
- Support for local developments or infrastructure

**Social and Community Impacts**

Social impacts are not easily quantified, but may have far reaching impacts on individuals, communities and the environment. Some of the social and community impacts that may occur through the development of the Casino project include impacts to:

- Population
- Local infrastructure, social services and community services
- Housing

Please see *Section 6* for more detail on the economic and social considerations related to the Casino project.

## 2. BACKGROUND AND STUDY PURPOSE

### 2.1 INTRODUCTION

Casino Mining Corporation's ("CMC") Casino project is a proposed open pit mine located in west central Yukon. The property is approximately 300 km northwest of the territorial capital of Whitehorse and is located on Crown land administered by Yukon Government. The property is located within the Selkirk First Nation traditional territory and neighbours on the Tr'ondek Hwechin First Nation traditional territory that lies to the north. The road access falls within Selkirk First Nation and Little Salmon/Carmacks First Nation traditional territories.

In 2013, a Feasibility study on the Casino project assessed that the project could be economically developed. Four metals are planned to be produced at the proposed open pit mine: copper, gold, silver and molybdenum. With a projected mine life of 22 years, the mine is expected to produce 3.6 billion pounds of copper, 325 million pounds of molybdenum, 30.3 million ounces of silver and 5.7 million ounces of gold.<sup>10</sup>

The Casino project is expected to be a major contributor to growth in the Yukon mining sector and is expected to provide economic benefits to both Yukon and the rest of Canada.

### 2.2 STUDY PURPOSE

In this report we examine the economic impacts that may be realized by Yukon communities, residents and governments as a result of the development and operation of the Casino mine.

### 2.3 DATA COLLECTION, AVAILABILITY AND RELIABILITY

Data for economic impact modelling were obtained from CMC, Statistics Canada and Yukon Government sources (e.g. Yukon Economic Development). Additional material was collected through the review of publicly available statistics, articles and reports. Estimates of economic impacts were derived from Statistics Canada's 2008 input/output model. When estimating future operational and capital spending, assumptions and approaches were selected in cooperation with CMC representatives. Additional material was collected through the review of publicly available statistics, articles and reports.

In addition, as part of MNP LLP's (MNP's) original economic impact study we also conducted face to face interviews with sixteen representatives from relevant organizations including Yukon Energy Corporation, Yukon Economic Development, the Yukon Chamber of Mines, Yukon Bureau of Statistics, the Whitehorse and Yukon Chamber of Commerce, the Tourism Industry Association of Yukon and Yukon Finance. Interview sessions focused on the Yukon economy and its ability to meet the demand of a mining project such as Casino.

### 2.4 ORGANIZATION OF THE REPORT

The remaining sections of the report are organized as follows:

- Section 3 provides an overview of the Casino project.
- Section 4 provides a description of the economic impact methodology and provides the aggregate results for the economic impact associated with construction and operation of the mine.
- Section 5 describes the implications for government revenue at the federal, territorial and local level.
- Section 6 describes other economic benefits that might be associated with the mine.
- Section 7 provides a description of the social impacts that might be associated with the mine.

<sup>10</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].

## 2.5 REPORT LIMITATIONS

This report is not intended for general circulation, nor is it to be published in whole or in part without the prior written consent of MNP LLP. The report is provided for information purposes and is intended for general guidance only. It should not be regarded as comprehensive or a substitute for personalized, professional advice. We have relied upon the completeness, accuracy and fair presentation of all information and data obtained from CMC and public sources, believed to be reliable. The accuracy and reliability of the findings and opinions expressed in the report are conditional upon the completeness, accuracy and fair presentation of the information underlying them. As a result, we caution readers not to rely upon any findings or opinions expressed as accurate or complete and disclaim any liability to any party who relies upon them as such.

Additionally, the findings and opinions expressed in the report constitute judgments as of the date of the report, and are subject to change without notice. MNP is under no obligation to advise of any change brought to its attention which would alter those findings or opinions.

Finally, the reader must understand that our analysis is based upon projections, founded on past events giving an expectation of certain future events. Future events are not guaranteed to follow past patterns and results may vary, even significantly. Accordingly, we express no assurance as to whether the projections underlying the economic and financial analysis will be achieved.



### 3. OVERVIEW OF THE CASINO MINE PROJECT

#### 3.1 YUKON ECONOMY AND MINING INDUSTRY

The Yukon economy, and in particular the mining sector, has experienced significant growth over the last couple of years. Yukon's real GDP has increased 7% from \$2.2 billion in 2010 to \$2.4 billion in 2011.<sup>11</sup> Statistics Canada real GDP by industry release also noted a gain of 6.5% in Yukon's real GDP.<sup>12</sup> According to Statistics Canada, the Mining, Quarrying and Oil and Gas Extraction sector was the primary contributor to total real GDP growth in 2011, accounting for over 80% of all estimated gains in 2011.<sup>13</sup> The economic growth in the Yukon mining sector can be attributed to a variety of factors, including the permitting and operation of three new mines (Minto Mine, Bellekeno Mine and Wolverine Mine), the continuation of high mineral exploration, development expenditures and utility construction.

Even though there is uncertainty on the level of construction activity, mining project development, and exploration expenditures that will take place in the Yukon in 2013. It is expected for the Yukon's real GDP in 2013 to grow for a tenth consecutive year, but likely below levels recorded in recent years.<sup>14</sup>

#### 3.2 OVERVIEW OF THE CASINO MINE PROJECT

The Casino property has had a long exploration history dating from the first mineral claims dating in 1917. In 1936, discoveries of silver, lead and zinc were made, leading to focused exploration of the property for lead and silver through to 1967. From 1968 to 1995 the property was explored for its copper and molybdenum porphyry deposits (porphyry deposits are the world's most plentiful and important sources of copper and molybdenum).<sup>15</sup> In 2006, CMC acquired the Casino deposit and conducted several evaluations of the property. A Pre-Feasibility Study was conducted in 2008, and updated in 2011. The final Feasibility Study was released in January, 2013.<sup>16</sup>

The Casino property is located in south-western Yukon in the Dawson Range Mountains, where the terrain is characterized by rounded and rolling topography with moderate to deep valleys. The Yukon River flows to the west and is about 16 km north of the site. The property is situated about 300 km northwest of Whitehorse and 560 km from the year-round port in Skagway, Alaska. The area around the Casino project has been subject to increasing staking and exploration activities with over 100 mining companies now actively working in the general region.<sup>17</sup>



<sup>11</sup> Statistics Canada, CANSIM, table 384-0038. *Gross Domestic Product, Expenditure-Based, Provincial and Territorial, Chained 2007 Prices, 2011*. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ15-eng.htm> [Last Modified 2012-11-19].

<sup>12</sup> Statistics Canada. *The Daily, Provincial and Territorial Account, 2011*. [Published November 2012].

Available: <http://www.statcan.gc.ca/daily-quotidien/121119/dq121119a-eng.pdf> [Released November 2012]

<sup>13</sup> Statistics Canada, CANSIM, table 379-0030. *Gross Domestic Product by NAICS Code, Provinces and Territories, Chained 2007 Prices, 2011*. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ15-eng.htm> [Last Modified 2012-11-19].

<sup>14</sup> Department of Economic Development, Yukon Government. *Yukon Economic Outlook 2012*. [Published May 2012]. Available: <http://economics.gov.yk.ca/economy2012/update.htm#GDP> [February 2013 Update].

<sup>15</sup> Natural Resources Canada, *Geological Survey of Canada: Mineral Deposits of Canada*. Available: [http://gsc.nrcan.gc.ca/mindep/synth\\_dep/porph/index](http://gsc.nrcan.gc.ca/mindep/synth_dep/porph/index) [October 2011].

<sup>16</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].

<sup>17</sup> Western Copper and Gold Corporation. *Annual Information Forum*. [Published March 2012]. Available: <http://www.westerncopperandgold.com/i/pdf/misc/2011-WRN-AIF-Final.pdf>

An extensive amount of infrastructure, both on-site and off-site, will be required to support mine operations and the transport of people, supplies and extracted metals. On site infrastructure is planned to include a power generation plant fuelled by Liquefied Natural Gas (LNG). CMC has recently determined the best alternative is to construct a fit-for-purpose LNG liquefaction facility in the vicinity of Fort Nelson, BC and to truck LNG to the Yukon from this facility. The estimated cost of supplying LNG from BC is consistent with the costs used as the basis for the Feasibility Study released in 2013. Other on-site infrastructure will include construction of process buildings, a truck shop with service bays, accommodation and dining facilities, ancillary buildings such as an administrative building and warehouse, and sewage facilities.

The off-site infrastructure required for the transport of people, supplies and extracted metals is planned to include development of a new 1,600 metre airstrip for employee transport to and from the site and construction of a new 132 km all-weather access road to service the plant. The access road will link to the existing Freegold Road, which will also undergo improvements.

Significant amounts of construction labour will be required to build the Casino mine. At its peak, construction labour is estimated to total approximately 980 people. Initial capital costs associated with construction of the mine (including items such as an electricity generation plant, mine facilities and engineering activities) are estimated at \$2.5 billion.<sup>18</sup>

The life of the Casino mine is expected to be 22 years, during which time significant amounts of operations labour will be required. Annual operations labour requirements are expected to total of approximately 600 to 700 permanent mining personnel and 100 to 200 contracting support staff, with annual operating costs expected to average \$447 million.<sup>19</sup>

### 3.3 MINE VALUE CHAIN

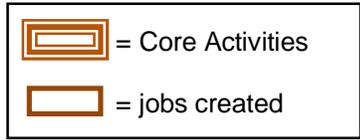
A value chain can be defined as a chain of activities that combine to create products within specific sectors. Products pass through the chain gaining value at each activity. These activities can range from research and development, to production and manufacturing and marketing. When applied to the extraction of natural resources, the value chain describes the steps from the extraction of natural resources to their processing and sale.

For development, operation and reclamation of a mine the size of Casino, direct impacts arise through the major activities associated with each stage while the indirect and induced activities arise from the linkages that exist with suppliers and other sectors. Such linkages are illustrated in the diagram on the following page.



<sup>18</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].

<sup>19</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].



## 4. ECONOMIC IMPACT ANALYSIS

### 4.1 METHODOLOGY

To estimate the economic impacts of the Casino project, we utilized an input-output methodology using economic multipliers published by Statistics Canada.<sup>20</sup> Input-output modeling is a widely-used and widely-accepted approach, making it recognizable by many different stakeholders and audiences. The structure of the approach also facilitates easy comparisons between reported results for different projects and facilities.

In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are output, GDP, government tax revenue and employment:

- **Output** is the total gross value of goods and services produced by a given company or industry measured by the price paid to the producer. This is the broadest measure of economic activity.
- **Gross Domestic Product (GDP)**, or value added refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. Thus GDP is equal to net output, or the difference between revenues and expenses on intermediate inputs. It is the incremental value created through labour or mechanical processing. Total GDP is a more meaningful measure of economic impact, as it avoids double counting during each round of impacts.
- **Government Tax Revenues** arise from personal income taxes, indirect taxes less subsidies, corporate income taxes and natural resource royalties.
- **Employment** is the number of additional jobs created. Employment is measured in terms of full-time equivalents (FTE).

Economic impacts may be estimated at the direct, indirect, and induced levels.

- **Direct impacts** are changes that occur in “front-end” businesses that would initially receive expenditures and operating revenue as a direct consequence of the operations and activities of a facility.
- **Indirect impacts** arise from changes in activity for suppliers of the “front-end” businesses.
- **Induced impacts** arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

### 4.2 CONSTRUCTION AND DEVELOPMENT IMPACTS

Construction of the Casino project is expected to generate economic impacts throughout Yukon. Detailed cost estimates associated with the construction of the mine were provided to us by CMC. In addition, CMC was able to provide us with estimates related to the proportion of spending expected to occur within Yukon and the proportion of expenditures expected to occur elsewhere in Canada.

Using the projected construction costs and the related assumptions, we estimate GDP generated by the construction of the Casino project at \$363 million (the equivalent of 13.6% of the Territory’s \$2.7 billion nominal GDP in 2011).<sup>21</sup> We also estimate the construction of the mine to create employment of 5,091 full-time equivalents (FTEs) and to generate \$195 million in wages and salaries. In addition, the Casino project’s construction is expected to generate \$62 million in revenues to the federal, territorial and local governments.

<sup>20</sup> Please note that economic impacts were derived using Statistics Canada’s 2008 Input Output Model. In our previous report, we derived the economic impacts of the proposed Casino mine using Statistics Canada’s 2007 Input Output Model.

<sup>21</sup> Statistics Canada, CANSIM, table 384-0038. *Gross Domestic Product, Expenditure-Based, Provincial And Territorial At Current Prices, 2011*. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/econ15-eng.htm> [Last Modified 2012-11-19].

**Table 1: Projected Construction Impacts of the Casino project to Yukon Territory**

Total Construction Impacts	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions) <sup>22</sup>	Federal Tax (millions)	Yukon Territorial and Provincial Tax (millions)	Other Tax (millions)
Direct	\$576	\$261	3,275	\$137	\$24	\$16	\$5
Indirect & Induced	\$204	\$102	1,817	\$58	\$10	\$6	\$2
<b>Total (Direct, Indirect and Induced)</b>	<b>\$779</b>	<b>\$363</b>	<b>5,091</b>	<b>\$195</b>	<b>\$33</b>	<b>\$22</b>	<b>\$7</b>

In addition to the impacts generated in Yukon, economic impacts are created throughout the rest of Canada. As indicated in the table below, the construction of the Casino project is estimated to contribute an additional \$1.6 billion to GDP outside of Yukon. We also estimate the construction of the mine to create employment of 17,509 FTEs and to generate \$928 million in wages and salaries in Canadian regions outside of Yukon. Furthermore, we estimate the construction of the mine to generate \$345 million in tax revenues to various levels of government outside of the Yukon.

**Table 2: Projected Construction Impacts of the Casino project to the Rest of Canada**

Total Construction Impacts	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial and Provincial Tax (millions)	Other Tax (millions)
Rest of Canada <b>Total (Direct, Indirect and Induced)</b>	\$4,359	\$1,613	17,509	\$928	\$201	\$134	\$10

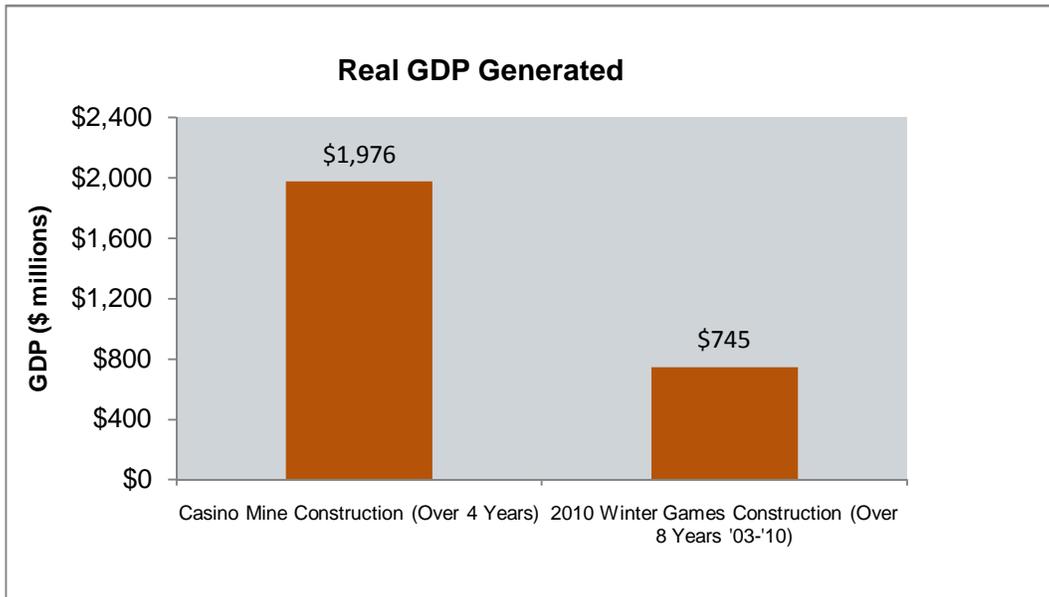
Combining the impacts generated in Yukon and the rest of Canada, we estimate the construction of the Casino project to contribute \$2.0 billion to GDP in Canada. We also estimate the development of the mine to create employment of 22,601 FTEs and to generate \$1.1 billion in wages and salaries in Canada. We estimate the mine's construction to generate \$407 million in taxes to federal, provincial/territorial and municipal governments.

**Table 3: Total Projected Construction Impacts of the Casino Project**

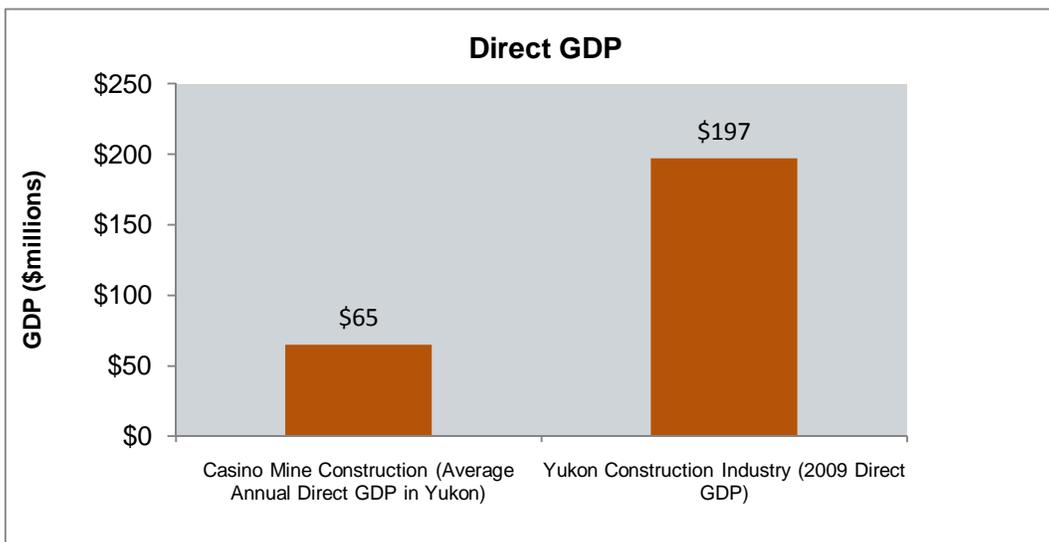
Total Construction Impacts	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial and Provincial Tax (millions)	Other Tax (millions)
All of Canada <b>Total (Direct, Indirect and Induced)</b>	\$5,138	\$1,976	22,601	\$1,123	\$234	\$156	\$17

<sup>22</sup> Please note throughout the report, estimated wage and salary impacts do not include employers' contributions or payments to benefit plans for the health and financial well-being of employees and their families.

To provide some perspective on the size of the Casino mine construction impacts it is illustrative to compare those impacts to ones produced by other projects and industries. As shown in the graph below, the total GDP (direct, indirect and induced) generated within Canada during the four years of mine construction are estimated to be close to three times as large as the total GDP generated by the eight years of construction activity related to the 2010 Winter Olympic and Paralympic Games in Vancouver.<sup>23</sup>



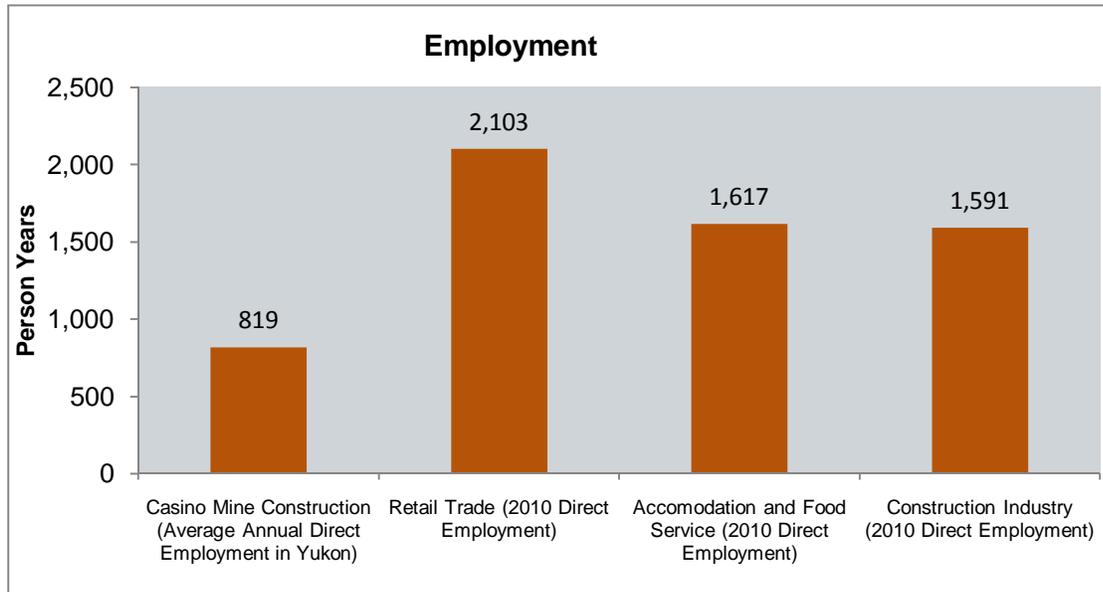
As shown in the graph below, the average annual direct GDP generated in Yukon by the construction of the Casino mine would be about 34% of the current annual GDP of the Yukon construction industry.<sup>24</sup>



<sup>23</sup> PWC. *The Games Effect Summary Report*. [Published October 2011]. Available: [http://www.fin.gov.bc.ca/reports/PwC\\_The\\_Games\\_Effect\\_Summary\\_Report\\_7\\_2010\\_EN\\_FINAL.PDF](http://www.fin.gov.bc.ca/reports/PwC_The_Games_Effect_Summary_Report_7_2010_EN_FINAL.PDF)

<sup>24</sup> Statistics Canada, CANSIM, table 379-0030. Gross Domestic Product (GDP) At Basic Prices, By North American Industry Classification System (NAICS), Provinces And Territories At Current Prices, 2009. Available: <http://www5.statcan.gc.ca/cansim/a47>.

The average annual direct employment produced in Yukon by the construction of the Casino mine would be between about 39% to 51% of the annual direct employment in major Yukon sectors, including the retail sector, the accommodation and food sector and the construction sector.<sup>25</sup>



<sup>25</sup> Yukon Bureau of Statistics. *Yukon Business Survey 2010*. Available: [http://www.eco.gov.yk.ca/stats/pdf/2010\\_Business\\_Survey\\_Report.pdf](http://www.eco.gov.yk.ca/stats/pdf/2010_Business_Survey_Report.pdf).

### 4.3 ANNUAL OPERATIONS IMPACTS

The operations of the Casino project are expected to impact Yukon's economy through expenditures on goods and services, the creation of employment opportunities and the generation of tax revenues for local, territorial and federal governments. CMC believes that roughly 69% of operational spending will occur in Yukon. Using that percentage, together with projected annual operational spending data provided by CMC, we estimate the annual GDP generated in Yukon by the operation of the Casino project at \$274 million. This is equivalent to 10.3% of the Territory's 2011 nominal GDP of \$2.7 billion.<sup>26</sup> We also estimate the operation of the mine to create annual employment of 855 FTEs and to generate \$43 million in annual wages and salaries.

**Table 4: Projected Annual Operating Impacts of the Casino project to Yukon Territory**

Operating Impacts	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial Tax and Royalties and Provincial Tax (millions)	Other Tax (millions)
Direct	\$307	\$232	542	\$32	\$16	\$78	\$1
Indirect and Induced	\$36	\$42	313	\$11	\$3	\$3	\$0.2
<b>Total (Direct, Indirect and Induced)</b>	<b>\$342</b>	<b>\$274</b>	<b>855</b>	<b>\$43</b>	<b>\$20</b>	<b>\$81</b>	<b>\$1</b>

In addition to the impacts generated in Yukon, Casino mine operations will generate economic impacts in other regions of Canada. Operations at the Casino project are estimated to contribute \$76 million annually to GDP in other regions of Canada. We also estimate the projected operating expenditures of the mine to create annual employment of 453 FTEs and to generate \$19 million in annual wages and salaries in regions outside of Yukon Territory. In addition, we estimate the operation of Casino project to generate \$23 million in annual tax revenues to various levels of government.

**Table 5: Projected Annual Operating Impacts of the Casino Project to the Rest of Canada**

Operating Impacts	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial and Provincial Tax (millions)	Other Tax (millions)
Rest of Canada							
<b>Total (Direct, Indirect and Induced)</b>	<b>\$138</b>	<b>\$76</b>	<b>453</b>	<b>\$19</b>	<b>\$12</b>	<b>\$10</b>	<b>\$0.3</b>

<sup>26</sup> Statistics Canada, CANSIM, table 384-0038. *Gross Domestic Product, Expenditure-Based, Provincial And Territorial At Current Prices, 2011*. Available: <http://www.statcan.gc.ca/tables-tableaux/sum-som/I01/cst01/econ15-eng.htm> [Last Modified 2012-11-19].

As shown in Table 6, we estimate the operations of the Casino project to contribute a total of \$350 million annually to GDP in Canada (Yukon plus the remainder of Canada). Also, we estimate the operations of the mine to create total annual employment of 1,308 FTEs and to generate a total of \$61 million in annual wages and salaries. In addition to these impacts, we estimate annual operations of the mine to generate \$125 million in taxes to federal, provincial/territorial and municipal governments across the country.<sup>27</sup>

**Table 6: Total Projected Annual Operating Impacts of the Casino project**

Operating Impacts	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial Tax and Royalties and Provincial Tax (millions)	Other Tax (millions)
All of Canada <b>Total (Direct, Indirect and Induced)</b>	\$480	\$350	1,308	\$61	\$32	\$92	\$2

## 5. IMPLICATIONS FOR GOVERNMENT REVENUE

As described above, the construction of the Casino project is expected to generate tax revenues for federal, territorial and municipal governments. This section summarizes the impacts for these governments.

### 5.1 FEDERAL

Using the projected construction costs and related assumptions provided by CMC, we estimate the construction of the Casino project to generate (through direct, indirect and induced effects) \$234 million in tax revenues to the federal government.

The operations of the Casino project are also expected to generate tax revenues to the Government of Canada. We estimate the operation of the mine to generate \$32 million in annual tax revenues to the federal government.

<sup>27</sup> Figures may not add up due to rounding.

## 5.2 TERRITORIAL

The Casino project's construction is expected to generate tax impacts throughout Yukon. Using the projected construction costs and the related assumptions, we estimate the mine's construction to generate \$22 million in revenues to Yukon Government.

**Table 7: Projected Tax Impacts of the Casino Project Construction to Yukon Territory**

Total Construction Impacts	Output (millions)	Yukon Territorial Tax (millions)
Direct	\$576	\$16
Indirect and Induced	\$204	\$6
<b>Total</b>	<b>\$779</b>	<b>\$22</b>

\*Average Effective tax rates provided by Natural Resources Canada

The operations of the Casino project also impact Yukon's economy through the generation of tax revenues and royalties for the Yukon Government. Using estimated operational spending data provided by CMC (and assuming 69% of this spending occurs in Yukon), we estimate the operation of the mine to generate \$81 million in annual tax revenues and royalties to Yukon Government.

**Table 8: Projected Annual Tax Impacts of the Casino Project Operation to Yukon Territory**

Operating Impacts	Output (millions)	Yukon Territorial Tax and Royalties (millions)
Direct	\$307	\$78
Indirect and Induced	\$36	\$3
<b>Total</b>	<b>\$342</b>	<b>\$81</b>

Please note that estimates from our economic impact model on the projected tax revenues and royalties that will accrue to the Yukon Government as a result of CMC's proposed Casino mine operations are before any federal financial agreement offsets (e.g. Territorial Formula Funding (TFF) and Resources Revenue Sharing (RRS) agreements). In the earlier MNP Economic Impact Assessment of the Casino mine, we estimated that, as a result of the provisions that were contained in the Yukon fiscal arrangement agreements with Canada, the Yukon Government would retain 78% of the annual tax and royalty amounts.<sup>28</sup>

<sup>28</sup> It is our understanding that this percentage may now be higher as a result of recent changes in the resource revenue arrangements between the government of Canada and Yukon. For more information on these changes please refer to [http://www.gov.yk.ca/news/get-thefacts\\_dta.html](http://www.gov.yk.ca/news/get-thefacts_dta.html).

## **6. OTHER ECONOMIC BENEFITS**

In contrast to economic impacts, economic benefits include measures that are broader in scope, and may include both activity-based and outcome-based measures. These benefits may also describe long-term or downstream activity that would not normally be captured in economic impacts. While economic impacts utilize standard measures that can be estimated for nearly any type of project, economic benefits and their accompanying measures may vary greatly from project to project. The following section illustrates some of the economic benefits that are expected to be realized through the development of the Casino project.

### **6.1 TRAINING OPPORTUNITIES**

It is our understanding that CMC is committed to providing training to local First Nations and other Yukon residents. While the specific training programs will not be created until the mine is in development, training opportunities are expected to include on the job training for mine employees and contractors, training on equipment and procedures and training for apprentices.

There may also be opportunities for literacy programs, completion of secondary school general equivalency degrees, pre-trades programs, community-based training, life-skills training, drug and alcohol awareness and rehabilitation and management development programs. It is our understanding that CMC is interested in opportunities to partner with local communities, government and others to provide community-based training.

### **6.2 SUPPORT FOR LOCAL DEVELOPMENTS OR INFRASTRUCTURE**

The construction and operation of the Casino project will require significant infrastructure developments including a new all-weather access road (approximately 132 km), construction of a new airstrip, upgrades to the Freegold Road and construction of an electrical power generation plant. Legacy infrastructure related to road and energy development may provide surrounding communities with opportunities to utilize the infrastructure in the future. For example, the existence of an airstrip may create opportunities to fly in tourists to surrounding areas.

During interviews with the Yukon Chamber of Mines and other Yukon organizations, representatives noted that legacy infrastructure may provide economic benefits to area communities. Respondents suggested the infrastructure created through the development and operation of Casino mine could provide communities with future access to power generation opportunities, roads and other transportation routes.

There is a strong interest among exploration companies in the Freegold Road region generally. Therefore the legacy infrastructure may also be viewed as advantageous to other resource development in this region.

### **6.3 JOINT VENTURES**

It is our understanding that CMC is committed to finding opportunities to partner with local First Nations and other local businesses. These joint ventures may provide an avenue for expanding local business capacity to prepare for and take advantage of business opportunities related to the Casino project's construction and operation.

Joint ventures offer an opportunity for two or more people to contribute goods, services or capital to a business enterprise. In the mining sector, joint ventures can be negotiated throughout the stages of a mine and offer opportunities for local communities to take advantage of the economic opportunities offered through construction and operation of a mine like Casino. Examples of joint ventures might include, catering, camp construction, equipment supply, sampling, fuel hauling or expediting. Typically business opportunities increase as a project moves through the stages of mine development.

## 7. SOCIAL AND COMMUNITY IMPACTS

Impacts generated from the development and operation of the Casino project also include impacts to communities. Social impacts are not easily quantified, but may have far reaching impacts on individuals, communities and the environment. The following section illustrates some of the social and community impacts that may occur through the development of the Casino project.

### 7.1 POPULATION AND INFRASTRUCTURE IMPACTS

Yukon's average annual population increased by 2% from 2011 to 36,101 in 2012.<sup>29</sup> This marked the tenth consecutive year of population growth in the territory. Both direct and indirect employment associated with the Casino project will most likely result in significant, additional population growth in the Territory. The types of population changes that may occur with the Casino project can have implications for surrounding communities. Large increases to population may require additional local infrastructure, social services and community services.

Operation of Casino may impact labour supply in Yukon. Demand for labour at the mine and the associated high wages may increase competition for available labour. During interviews with various Yukon representatives, respondents noted they were concerned about the potential labour shortages that might occur with development and operation of Casino mine. The attractive salaries associated with a mine like Casino, may draw employees from other jobs thus creating shortages in other, lower paying industries.

The activity associated with the Casino project may have implications for health care and other related services in the Territory. Territorial health systems are currently facing shortages in the availability of family physicians, hospitals and specialists. This is of particular concern outside of Whitehorse. The size of Yukon coupled with a sparse population result in many patients being medically transported to health facilities in other parts of Canada. The 2008 Yukon Health Care Review noted that Yukon is facing strains within its health care system that raise concerns about the sustainability of the health care system.<sup>30</sup>

In interviews with Yukon Government representatives, respondents noted that development and operation of the Casino project may result in infrastructure impacts to roads, education, social services, and daycare. The additional demand on related infrastructure may represent costs to government.

### 7.2 HOUSING

Development and operation of the Casino project may have indirect impacts on the availability and cost of accommodations in the Territory. In some regions, mining activity has contributed to increased costs for rent or real estate. The influx of workers can result in housing shortages, inflated house prices or rents and low vacancy rates.

Housing or the lack thereof, appears to be an existing concern in the Territory, with homelessness and housing inadequacy having been identified by governments as an issue. Recent estimates place the rental vacancy rate in Whitehorse at 1.3%.<sup>31</sup> In 2010, the Whitehorse Housing Adequacy Study found that 58% of respondents noted that it is difficult to find affordable rental accommodations and vacancies.<sup>32</sup>

During interviews with City of Whitehorse representatives, respondents suggested that the city was experiencing a housing crisis that may be exacerbated by development and operation of the Casino project. The project may place additional stress on the Yukon housing market leading to social and economic pressures on local residents who may not be directly benefiting from the resource development.

<sup>29</sup> Statistics Canada, CANSIM, table 051-0001. *Estimates Of Population, By Age Group And Sex For July 1, Canada, Provinces And Territories*. Available: <http://www5.statcan.gc.ca/cansim/a26.jsessionid=2694A2349B5252200DC57B024FEAEF6A>.

<sup>30</sup> Health and Social Services-Yukon Government. *The Yukon Health Care Review (2008). Final Report*. [Published October 2011]. Available: [http://www.hss.gov.yk.ca/pdf/yukon\\_health\\_care\\_review.pdf](http://www.hss.gov.yk.ca/pdf/yukon_health_care_review.pdf).

<sup>31</sup> Yukon Bureau of Statistics. *Yukon Rent Survey June 2012*. Available: [http://www.eco.gov.yk.ca/pdf/rent\\_Jun12.pdf](http://www.eco.gov.yk.ca/pdf/rent_Jun12.pdf).

<sup>32</sup> Yukon Health and Social Services (2010). *2010 Whitehorse Housing Adequacy Study*. [Published October 2011]. Available: [http://www.hss.gov.yk.ca/pdf/Whse\\_Housing\\_Adequacy-FINAL-DEC\\_03-10.pdf](http://www.hss.gov.yk.ca/pdf/Whse_Housing_Adequacy-FINAL-DEC_03-10.pdf).

## 8. CONCLUSION

The Casino project will produce significant economic impacts for Yukon Territory. In addition, considerable and extensive economic impacts would be realized for provinces and territories across Canada.

The overall life of the Casino project is estimated to contribute significantly to the Yukon economy. As shown in Table 9, the construction and operation of the Casino project over its 22 year life is estimated to generate \$6.4 billion (expressed in 2011 dollars) to GDP in Yukon. We also estimate the Casino project to create overall employment of 23,893 FTEs and to generate \$1.1 billion in total wages and salaries in Yukon. In addition, we estimate the Casino project to generate \$2.3 billion in tax revenues to various levels of governments over the project life.

**Table 9: Total Projected Impacts of Casino project Construction and Operation to Yukon Territory**

Total Project Life Impacts (combined construction and operations)	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial Tax and Royalties and Provincial Tax (millions)	Other Tax (millions)
Direct	\$7,321	\$5,373	15,199	\$832	\$386	\$1,729	\$30
Indirect and Induced	\$988	\$1,029	8,694	\$299	\$78	\$80	\$6
<b>Total (Direct, Indirect and Induced)</b>	<b>\$8,308</b>	<b>\$6,402</b>	<b>23,893</b>	<b>\$1,131</b>	<b>\$464</b>	<b>\$1,810</b>	<b>\$36</b>

In addition to the impacts generated in Yukon, the Casino project will generate considerable economic impacts in other regions of Canada. The Casino project is estimated to contribute a total of \$3.3 billion (expressed in 2011 dollars) to GDP in other regions of Canada. We also estimate the Casino project to create overall employment of 27,480 FTEs and to generate \$1.3 billion in total wages and salaries in regions outside of Yukon Territory. Furthermore, we estimate the Casino project to generate \$848 million in overall tax revenues to various levels of government in regions outside of Yukon.

**Table 10: Total Projected Impacts of Casino project Construction and Operation to the Rest of Canada**

Total Project Life Impacts (combined construction and operations)	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial and Provincial Tax (millions)	Other Tax (millions)
Rest of Canada							
<b>Total (Direct, Indirect and Induced)</b>	<b>\$7,388</b>	<b>\$3,275</b>	<b>27,480</b>	<b>\$1,338</b>	<b>\$472</b>	<b>\$359</b>	<b>\$16</b>

As shown in Table 11, we estimate the Casino project to contribute a total of \$9.7 billion to GDP in Canada (Yukon plus the remainder of Canada). Also, we estimate the Casino project to create overall employment of 51,373 FTEs and to generate close to \$2.5 billion in wages and salaries in Canada. In addition to these impacts, we estimate the life of the Casino project to generate \$3.1 billion in taxes to federal, provincial/territorial and municipal governments across the country.

**Table 11: Total Projected Impacts of the Casino project Construction and Operation**

Total Project Life Impacts (combined construction and operations)	Output (millions)	GDP (million)	Employment (FTEs)	Wages and Salaries (millions)	Federal Tax (millions)	Yukon Territorial Tax and Royalties and Provincial Tax (millions)	Other Tax (millions)
All of Canada <b>Total (Direct, Indirect &amp; Induced)</b>	\$15,696	\$9,678	51,373	\$2,469	\$936	\$2,169	\$52

In addition to the economic impacts that would be realized for Yukon Territory and Canada as a whole, economic benefits and social and community impacts may result from the Casino project. Some of the additional economic benefits that may be realized through the development of the Casino project include training opportunities, joint ventures and support for local developments or infrastructure. In addition, social and community impacts to population, housing, local infrastructure, social services and community services may also result from the development of the Casino project.

## APPENDIX A – ECONOMIC IMPACT MODELING ASSUMPTIONS

### Economic Impact Calculations

Data for the economic impact modelling were obtained from CMC, Statistics Canada, and Yukon Government sources (e.g. Yukon Economic Development). Additional material was collected through the review of publicly available statistics, articles and reports. Estimates of economic impacts were derived from Statistics Canada's input/output model. When estimating future operational and capital spending, assumptions and approaches were selected in cooperation with CMC representatives. Additional material was collected through the review of publicly available statistics, articles and reports.

### Analysis Approach

The economic impacts were estimated using Statistics Canada's interprovincial 2008 input-output model. The model was used to estimate the number of jobs, output, GDP and wages and salaries supported by proposed spending related to construction and operation of the Casino project. Tax impacts were also estimated based on model output.

Statistics Canada's interprovincial input-output model does not report induced multipliers. MNP estimated induced multipliers using the following procedure:

1. A portion of wages and salaries are directed towards consumption within the Yukon.
2. Wages and salaries are assumed to be spent in a pattern consistent with that reported in Statistics Canada's 2009 Yukon Survey of Household Spending (SHS).
3. Data from the SHS is matched with their respective industry (direct and indirect) Statistics Canada multipliers for output, GDP, employment and wages and salaries.
4. Using the above matching of industry multipliers to the SHS, estimate the first round of induced impacts. For example, if a worker is paid \$1000 and has \$700 remaining after taxes and savings, we distribute that \$700 across consumer goods and services and apply relevant industry multipliers to estimate a first round of induced impacts. That first round of consumer spending will, in turn, generate further incremental wages, a portion of which will be consumed in the Yukon economy. That spending will create a further amount of incremental wages and this will continue until the successive rounds of impacts converges to zero. The sum total of all of these rounds of spending is then totalled.
5. Using the results from steps 1 to 4, together with the Statistics Canada direct and indirect multipliers we then construct a set induced multipliers for each NAICS code which can then be used to estimate induced impacts associated with a particular increase or decrease in a particular industry's output.

As a check, we have compared the induced multipliers for BC produced using this approach with the induced multipliers for BC reported by BC Stats. We found that the induced multipliers produced using this approach are very similar to those reported by BC Stats.

### Main Assumptions

The analysis presented in this report is based on a number of assumptions. The main assumptions are:

- Dollar impacts are expressed in 2011 Canadian Dollars.
- Rest of Canada impacts were estimated using a blended multiplier constructed using Yukon import data:

Region	Percent of Impact
Ontario	29%
Alberta	25%
BC	30%
Rest of Canada	16%
<b>Total</b>	<b>100%</b>

- Based on information provided by CMC, the following assumptions regarding spending were used:

Percent of household spending in Yukon	70%
Percent of Mine Operations spending in Yukon	69%
Percent of Mine Construction spending in Yukon	26%
Percent of Workforce sourced from Yukon	70% (average over the life of mine)

- Economic impact analysis assumes that Yukon’s economy can accommodate the resource allocation required to operate the mine including labour, capital and other materials.
- The tax assumptions used for the economic impact analysis are presented in the following table. Firms are assumed to pay statutory corporate income tax rates on estimated operating surplus. NRCan’s recent tax modelling exercise has revealed that, for Yukon, average effective tax rates, which take into account the effect of delayed tax payments, were about only two-thirds of the statutory corporate rates. Hence, we used the effective tax rates corresponding to the statutory corporate rates for Yukon. It is our understanding that using effective tax rates of 6% for the federal corporate income tax and 10% for the Yukon corporate income tax better approximates the expected income tax generated from the project.

Tax Assumptions	
Average Personal Income Tax Rate	18.5%
Federal	12.7%
Provincial	5.8%
Corporate Income Tax Rate	
Federal	6.0%
Yukon	10.0%

- Based on data provided by CMC, the Average Annual Yukon Mining Royalty was assumed to be \$56 million<sup>33</sup>. Yukon mining royalties are based on 12% of revenues less operating expenses, depreciation (no more than 15% of the initial capital cost balance at the beginning of the year) and taxes paid. The estimate is based on profitability and does not take into account changes that may affect profitability such as commodity prices. The baseline commodity price assumptions, including exchange rates, can be found in the Feasibility Study.<sup>34</sup>

<sup>33</sup> Yukon Mining Royalties are assumed to be over a 24 year period.

<sup>34</sup> M3 Engineering & Technology Corp. *Casino Project: Technical Report Feasibility Study*. [Published January 2013].