

**APPENDIX 20-B
ECONOMIC MODEL REPORT**

Seabridge Gold Inc.

KSM PROJECT 2012 Economic Model Report

SEABRIDGE GOLD



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KSM PROJECT

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KSM PROJECT

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Glossary and Abbreviations

AIR	Application Information Requirements
CAPEX	Capital expenditures
CD	Census Division
Construction	The phase of the project during which the mine is constructed.
EA	Environmental Assessment
Economic impact	The result or effect that the mine development has on the economy of a particular region. Often described in terms of employment, personal income, Gross Domestic Product (GDP), and government revenue (taxes and royalty) effects.
EIS	Environmental Impact Statement
GDP	Gross Domestic Product. The value-added by economic activity, principally composed of personal income and corporate profits.
Operation	The phase of the project during which the mine is producing.
OPEX	Operating expenditures
Project	KSM Mine Project

1. Introduction

1.1 PROJECT PROPONENT

Seabridge Gold Inc. (Seabridge) is the proponent for the proposed KSM Project (the Project), a gold, copper, silver, molybdenum mine.

1.2 PROJECT LOCATION

The Project is located in the coastal mountains of northwestern British Columbia. It is approximately 950 km northwest of Vancouver and 65 km northwest of Stewart, within 30 km of the British Columbia-Alaska border (Figure 1.2-1).

1.3 PROJECT OVERVIEW

The Project is located in two geographical areas: the Mine Site and Processing and Tailing Management Area (PTMA), connected by twin 23-km tunnels, the Mitchell-Treaty Twinned Tunnels (Figure 1.3-1). The Mine Site is located south of the closed Eskay Creek Mine, within the Mitchell, McTagg, and Sulphurets Creek valleys. Sulphurets Creek is a main tributary of the Unuk River, which flows to the Pacific Ocean. The PTMA is located in the upper tributaries of Teigen and Treaty creeks. Both creeks are tributaries of the Bell-Irving River, which flows to the Nass River and into the Pacific Ocean. The PTMA is located about 19 km southwest of Bell II on Highway 37.

The Mine Site will be accessed by a new road, the Coulter Creek Access Road, which will be built from km 70 on the Eskay Creek Mine Road. This road will follow Coulter and Sulphurets creeks to the Mine Site. The PTMA will also be accessed by a new road, the Treaty Creek Access Road, the first 3-km segment of which is a forest service road off of Highway 37. The Treaty Creek Access Road will parallel Treaty Creek.

Four deposits will be mined at the KSM Project—Kerr, Sulphurets, Mitchell, and Iron Cap—using a combination of open pit and underground mining methods. Waste rock will be stored in engineered rock storage facilities located in the Mitchell and McTagg valleys at the Mine Site. Ore will be crushed and transported through one of the Mitchell-Treaty Twinned Tunnels to the PTMA. This tunnel will also be used to route the electrical power transmission lines. The second tunnel will be used to transport personnel and bulk materials. The Process Plant will process an average of 130,000 tpd of ore to produce a daily average of 1,200 t of concentrate. Tailing will be pumped to the Tailing Management Facility from the Process Plant. Copper concentrate will be trucked from the PTMA along highways 37 and 37A to the Port of Stewart, which is approximately 170 km away via road.

The mine operating life is estimated at 51.5 years. Approximately 1,800 people will be employed annually during the Operation Phase. Project Construction will take approximately five years, expected to begin in 2014, and the capital cost of the Project is approximately US\$5.3 billion. Mine closure is expected to take approximately six years to complete.

1.4 ECONOMIC IMPACT STUDY SCOPE

The Application Information Requirements (AIR) for the Project (dated January 31, 2011) require that the application report the expected Project expenditures and workforce requirements. Using this data as input, the indirect and induced employment, income, GDP, and government revenue effects are to be predicted. Estimation of this information requires a detailed economic impact analysis, the results of which are included as part of the Environmental Impact Statement (EIS) for the Project. The purpose of this report is to summarize the results of the economic impact model for the Project.



Figure 1.2-1

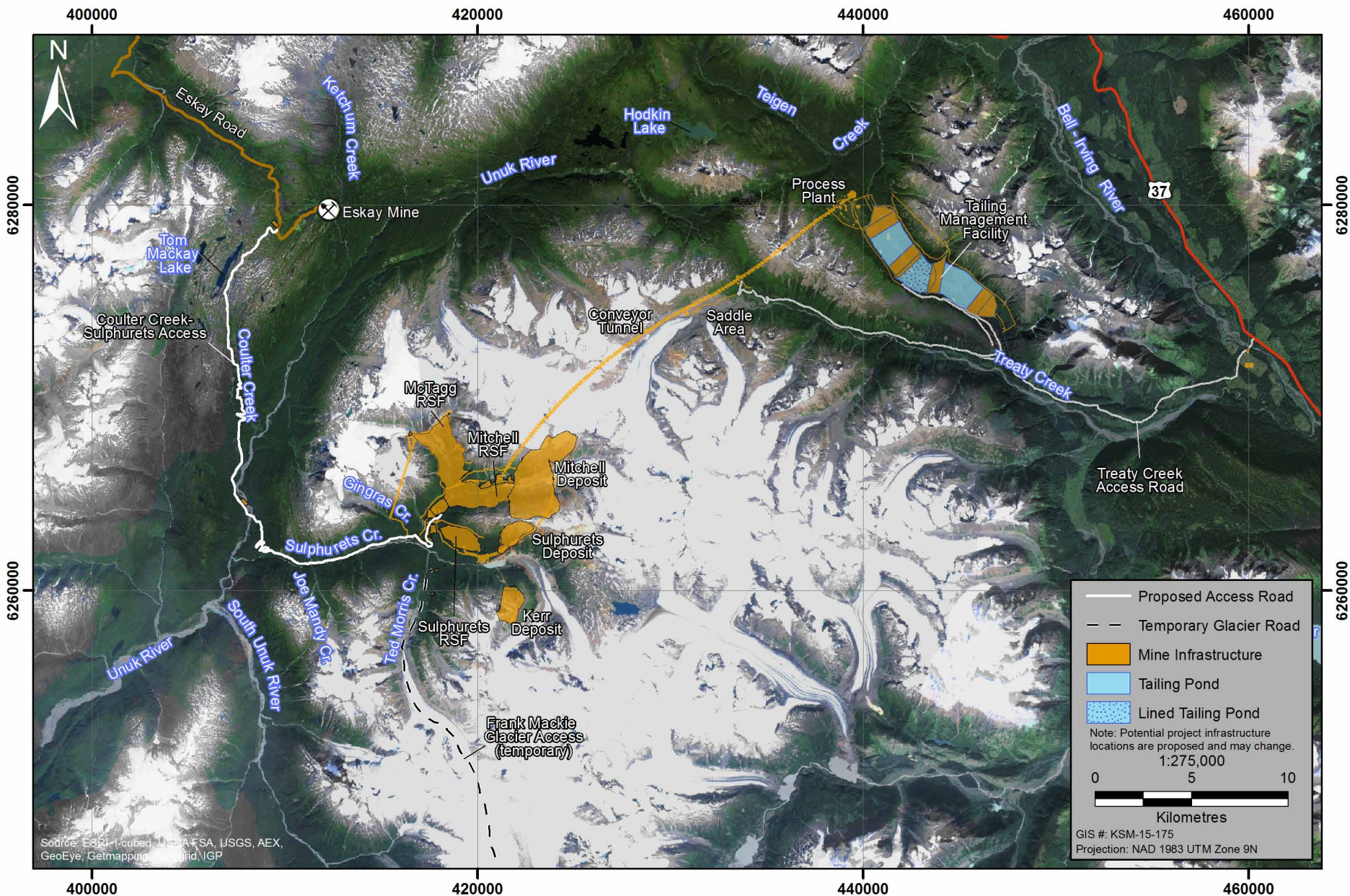


Figure 1.3-1

Figure 1.3-1

The requirements as stated in the AIR are typical for an Environmental Assessment (EA) for a project in Canada. Estimation of economic impacts uses well-established methods of input-output modelling. In Canada, all input-output models are based on Statistics Canada's Input-Output Model of the economies of Canada and the provinces. Many provincial governments, including British Columbia, offer their own models using Statistic Canada's data and model as the foundation.

For the Project, a proprietary economic impact model that is also based on Statistics Canada's Input-Output Model was employed. This model has a number of benefits including the ability to: 1) adjust the model structure to be more specific to the Project rather than being based on general statistical averages from secondary data sources; 2) with the use of econometric modules, incorporate dynamic model behaviour rather than relying strictly on a linear, static input-output structure; and 3) generate estimates at the sub-provincial level (i.e., Regional District or Census Division) rather than only at the provincial level. This approach has been successfully used in over 240 projects across Canada. Some examples include the Jansen Mine Project (Saskatchewan), the Voisey's Bay Mine Project (Labrador), the Brunswick Mine (New Brunswick), various mine projects in northern Quebec, and a sector-wide analysis of mining impacts in the Yukon, as well as many other mining, oil and gas, forestry, and fisheries sector projects.

2. Method

2.1 BACKGROUND

An economic impact model was used to estimate the direct, indirect, and induced benefits of the Project. The DYNATEC model is based on Statistics Canada's Input-Output Model of the economies of Canada and the provinces, but incorporates econometric modules to allow for dynamic, non-linear simulations of the likely effects. With the use of econometric modules, the linear behaviour of the base Input-Output Model is reduced to more closely mimic the real economy. The two most important econometric modules in the model are: (1) a labour market module, which considers the number of unemployed workers; and (2) a consumer expenditure module, which modifies expenditures based on expected changes in patterns of household behaviour according to changes in income.

The current version of the DYNATEC model uses the 2007 dataset of Statistics Canada's Input-Output Model, enhanced with data from various sources dating from 2007 to 2010. The core of the model operates at a level of aggregation consisting of 476 commodities and 117 industries. For the Project both open and closed versions of the model were run. The open model is used to estimate indirect effects (effects from inter-industry purchases of goods and services), while the closed version is used to estimate induced effects (effects from spending resulting after-tax household income, primarily from wages and salaries, taking into account the propensity to save).

In addition to the model's ability to simulate the dynamic nature of the economy, a key characteristic of the models are their ability to provide estimates of the distribution of the effects by Census Division (CD) within a province. The model does this through a mathematical allocation that takes into account the characteristics of existing industries and business within each CD, current economic structures and supplier relationships, and employment and skill-base profiles.

The output statistics of the economic impact modelling include:

- employment;
- personal income (wages and salaries, supplementary labour income, and mixed income);
- Gross Domestic Product (GDP); and
- government tax revenues (from personal income tax, corporate profit tax, and sales tax).

2.2 OVERVIEW OF METHOD

Economic impact simulations begin with a shock to the economy as represented by Construction and Operation expenditures. The main algorithm allocates the expenditures on each good and service purchased by the Project to the producing industries. These suppliers, in turn, purchase goods and services required to produce the items originally purchased directly by the Project.

The core of the model operates with a standard input-output algorithm. When expenditures first enter the model they are applied, for this Project, primarily to construction, machinery, and equipment sectors. Import coefficients are applied to account for the leakage of expenditures for items that are not produced within the province. Sales within the province are allocated to the industries that produce the specific goods and services purchased; each of these industries will, in turn, purchase goods and services to produce what they sell as determined by their technology mix and use of factors

of production (labour and capital). For purchases outside of the province, an interprovincial trade flow matrix is used to allocate production by industry and province.

The model continues to iterate until all expenditures have dissipated (i.e., imports, taxes, and savings are all leakages that eventually reduce the amount of money available for purchases to zero). At this point, the model is stopped and the total effects as measured by gross production (sales) by industry are summed for all iterations. Using the estimate of gross production, industry-specific employment coefficients, and data on salaries by industry, employment numbers are estimated. GDP is estimated by subtracting the primary input components from gross production, also determined by industry-specific coefficients. The primary input components include indirect taxes, subsidies, salaries and benefits for employees, profits, and depreciation.

Tax revenue from personal income tax, corporate profit tax, and indirect tax (predominantly sales tax) is calculated with coefficients derived from Statistics Canada and Canada Revenue Agency information. The amount of money collected by governments is subtracted from wages and salaries and profits at each round of expenditures. Within the model, 32 federal and provincial personal income tax coefficients are used to account for different income tax brackets.

To calculate the distribution of economic impacts by CD, regional weights are calculated and used to allocate expenditures. The mathematics used to allocate by CD take into account:

- the nature of the industry and whether or not the purchased good or service is likely to be supplied by local firms or by firms from elsewhere;
- distance from the supplier (which can be more important for some industries than others);
- the regional economic structure (industries with a strong presence in a given region are likely to be suppliers);
- the size of the local economy (a local labour supply and market for goods and services supports the development of local business); and
- transportation networks (a region well-served by air, road, and rail transportation will be in a better position to be a regionally important supplier).

The economic modeling was conducted for each year of Construction (estimated to occur from the year 2014 to 2019), for each year of Operation from the year 2020 to 2029, and in 10-year blocks from 2030 to 2069, and for the two-year period of 2070 to 2071 when Operation ends.¹

2.3 INPUT DATA

As input for calculating economic impacts, Seabridge and its design engineers provided estimates of total annual capital and operating expenditures (Table 2.3-1) and expected employment (Table 2.3-2) by job category for the years 2014 through 2071. For modeling purposes, only direct expenditures and employment in Canada are considered. Expenditures and employment were further disaggregated by predicted province/territory of origin (supplier office of purchase or employee home residence, respectively).

¹ Economic impacts were estimated in blocks of 10-years from the year 2030 as this is what was provided in the Prefeasibility Study for the Project. Annual expenditure estimates were not available.

Table 2.3-1. KSM Project Capital and Operating Expenditures in Canada, 2014 to 2071

Year	Annual Average Expenditures (Million Constant Dollars)		
	Construction	Operation	Total
2014	\$213.4	-	\$213.4
2015	\$662.6	-	\$662.6
2016	\$949.6	-	\$949.6
2017	\$991.6	-	\$991.6
2018	\$1,114.4	-	\$1,114.4
2019	\$681.1	-	\$681.1
2020	-	\$851.6	\$851.6
2021	-	\$732.9	\$732.9
2022	-	\$751.5	\$751.5
2023	-	\$781.5	\$781.5
2024	-	\$742.4	\$742.4
2025	-	\$667.8	\$667.8
2026	-	\$738.5	\$738.5
2027	-	\$669.0	\$669.0
2028	-	\$655.3	\$655.3
2029	-	\$687.2	\$687.2
2030-2039	\$49.8	\$5,656.5	\$5,706.2
2040-2049	\$1,461.1	\$7,366.2	\$8,827.2
2050-2059	\$1,304.4	\$6,628.5	\$7,932.9
2060-2069	\$255.6	\$6,137.8	\$6,393.5
2070-2071	\$21.1	\$1,190.3	\$1,211.3
Total	\$7,704.8	\$34,256.9	\$41,961.7

For the initial Construction period of 2014 to 2019, the Project involves a total capital investment of approximately \$5.26 billion, of which about \$4.61 billion is expected to be direct expenditures in Canada. Capital expenditures associated with a move to underground mining (block caving) total approximately an additional \$3.1 billion in Canada. Operating expenditures are estimated to be initially \$852 million in 2020, thereafter varying from as low as approximately \$570 million/a to a high of \$780 million/a.² Total direct spending by the Project through Construction and Operation total an estimated \$42 billion in Canada.

Direct (on-site) Project employment is estimated to be an average of approximately 314 person-years for the first year of Construction in 2014, increasing to a peak of 2,260 in 2018 (Table 2.3-2). It is expected that all initial Construction employment will be sourced within Canada. Direct employment is predicted to be approximately 1,066 person-years for the first year of Operation in the year 2020, remaining at that approximate level for four years then falling moderately to a low of 866 by 2030. Employment is expected to increase again starting in the year 2040, reaching a peak total of approximately 1,709 in 2051 and 2052; this increase is mainly attributed to a move to underground mining. Total employment is projected to then decrease moderately until the estimated end of

² Operation expenditures include sustaining capital, mainly consisting of expenditures to replace equipment that has reached the end of its useful life.

Operation in 2071. Overall, it is expected that the import content of employment during Operation will be small at approximately 3% of total employment.

Total direct Project employment is approximately 9,314 person-years for initial Construction (for open pit mining), 5,990 person-years for Construction associated with underground mining, and 54,162 person-years for Operation, for a grand total of approximately 69,466 person-years of direct employment (Table 2.3-2).

Table 2.3-2. KSM Project Capital and Operating Employment, 2014 to 2071

Year	Annual Average Employment (Person-years)		
	Construction	Operation	Total
2014	314	-	314
2015	1,048	-	1,048
2016	1,923	-	1,923
2017	2,059	-	2,059
2018	2,260	-	2,260
2019	1,710	-	1,710
2020	-	1,066	1,066
2021	-	1,061	1,061
2022	-	1,075	1,075
2023	-	1,074	1,074
2024	-	972	972
2025	-	979	979
2026	-	977	977
2027	-	967	967
2028	-	937	937
2029	-	865	865
2030	-	866	866
2031	-	866	866
2032	-	866	866
2033	-	866	866
2034	-	866	866
2035	-	866	866
2036	-	866	866
2037	-	866	866
2038	-	866	866
2039	124	875	999
2040	142	893	1,035
2041	200	897	1,097
2042	284	913	1,197
2043	292	913	1,205
2044	292	913	1,205
2045	224	1,194	1,418

(continued)

Table 2.3-2. KSM Project Capital and Operating Employment, 2014 to 2071 (completed)

Year	Annual Average Employment (Person-years)		
	Construction	Operation	Total
2046	254	1,197	1,451
2047	292	1,208	1,500
2048	402	1,226	1,628
2049	446	1,238	1,684
2050	446	996	1,442
2051	446	1,263	1,709
2052	446	1,263	1,709
2053	281	1,263	1,544
2054	199	1,252	1,451
2055	199	1,265	1,464
2056	199	1,278	1,477
2057	199	1,286	1,485
2058	199	1,286	1,485
2059	199	1,286	1,485
2060	143	1,264	1,407
2061	28	1,262	1,290
2062	6	1,219	1,225
2063	6	1,185	1,191
2064	6	1,185	1,191
2065	6	1,176	1,182
2066	6	1,108	1,114
2067	6	926	932
2068	6	901	907
2069	6	872	878
2070	6	726	732
2071	-	666	666
Total	15,304	54,162	69,466

The majority of capital expenditures are expected to be sourced within the Province of British Columbia, followed by Alberta, Ontario and, to a lesser extent, Quebec. The remaining expenditures are sourced internationally. The majority of Construction employment is also expected to be sourced within British Columbia, with lesser amounts from the other provinces.

Similar trends in sourcing are expected during Operation, with British Columbia being the primary direct beneficiary of operating expenditures. Alberta, Ontario, Quebec and the rest of Canada are all expected to receive smaller shares of direct operating expenditures, depending on the requirements of the purchases. Internationally sourced expenditures are of a similar magnitude to those sourced in Canadian jurisdictions outside of British Columbia. The majority of Operation employment is also expected to be sourced within British Columbia. Relatively small shares of direct employment are expected from other Canadian jurisdictions and international sources.

The input data was provided at the Prefeasibility Study-level of estimation. For the economic model, a 1:1 exchange rate is assumed in converting the costing information in US dollars to Canadian dollars. All values

reported here are in constant 2012 Canadian dollars. The capital and operating costs have been estimated to a +25/-10% level of accuracy.

2.4 MODEL CAVEATS

The main caveats associated with the economic impact modelling are:

- The structure of the economy is assumed to be largely as it was in 2007, the baseline data year for the Input-Output Model. Any substantive structural changes in the economy, including changes in the use of factors in production, changes in technology, and/or changes in inter-industry purchase patterns, will result in a loss of model accuracy.
- Production technologies are assumed to be uniform and consistent. In estimating the distribution of economic impacts within the province, the model is not able to account for any differences in the technologies used by industries within the same sector.
- Because the model operates at a macro level, it is not able to predict how economic impacts may be distributed or differ between socio-economic segments of society. For example, a distinction cannot be made between employment or income benefits to First Nations peoples and the wider community.
- The model is not able to take into account economies of scale. The presence of economies of scale means both that the proportional use of factors of production by the Project and inter-industry relationships may change.
- It is assumed that the Project will have no measurable, permanent impact on wage levels, productivity or consumer behaviour, in aggregate. In other words, the model is not able to account for substantive changes in the structure or behaviour of the provincial economy as a result of the impacts of the Project.
- The model assumes no limits to growth. All factors of production, including labour and capital, are assumed to be available for use, and there are no other exogenous factors that may affect economic production.
- The estimation of GDP impacts by the model does not include direct business operating profit from the Project. This component of GDP is excluded from all reported direct and total GDP figures. The direct GDP estimated by the model is principally labour expense. The estimates of indirect and induced GDP do include all components of GDP.
- The estimation of government tax revenues by the model is limited to personal income tax, indirect corporate profit tax, and sales tax. It does not include direct taxes on the profit of the Project, property taxes, or any royalties paid by the Project. Typically, these latter sources of government revenue are Project-specific and, if required, best estimated using other methods.

3. Results

For the KSM Project, employment, personal income, and GDP statistics were estimated for each of the 28 Census Divisions in British Columbia (Figure 3-1), as well as at the provincial level for all of Canada. Government tax revenue statistics are provided at the national and provincial levels only.

3.1 CONSTRUCTION

The Project consists of both an initial Construction phase of approximately five years duration to bring the mine to Operation with open pit mining, and a later Construction phase to begin underground (block cave) mining. For the purposes of the economic impact analysis these two distinct Construction activities are examined in terms of both combined and separate economic impacts. Thus, this section is organized into the following topics:

- combined impacts of Construction for open pit and underground mining;
- impacts of Construction for open pit mining only; and
- impacts of Construction for underground mining only.

3.1.1 Combined Impacts of Construction for Open Pit and Underground Mining

During the Construction phase, including that associated with initial construction works and the move later to underground mining, the Project is estimated to result a total of approximately 85,000 person-years of direct, indirect and induced employment across Canada (Table 3.1-1). The total GDP impact is estimated to be approximately \$9.4 billion. Resulting government revenues from personal income tax, indirect corporate profit tax and sales tax total about \$1.2 billion to the federal government and \$546 million to provincial governments.

As expected, the Province of British Columbia benefits substantially from the Project; however, Ontario, Quebec and Alberta also receive strong employment, GDP and tax revenue benefits (Table 3.1-2). For British Columbia, total employment benefits (direct, indirect, and induced) of approximately 46,160 person-years are predicted, along with total GDP benefits of approximately \$5.27 billion. Tax revenues to the Government of British Columbia are estimated to total approximately \$282 million, with an additional \$630 million to the federal government. The strength of the benefits to the other provinces can be attributed to two main factors: 1) construction workers will come from those provinces, and 2) those provinces are expected to play a role in providing goods and services purchased by the Project. This can be seen in Table 3.1-3 in terms of the direct and indirect employment and GDP estimates. Businesses based in Alberta and Ontario, in particular, are expected to be important suppliers to the Project.

As estimated by the design engineering, the vast majority of direct employment is anticipated to be from British Columbia. In addition, most British Columbia-based employment is estimated to be indirect and induced, which comprises approximately 37% and 36% of total Project-related employment in the province, respectively (Table 3.1-3). As expected, direct GDP impacts are mainly in British Columbia, followed by Alberta. Substantial indirect and induced GDP impacts occur in British Columbia followed by Alberta and Ontario, and to a lesser extent Quebec.

Table 3.1-1. Annual Economic Impacts of Construction (Open Pit and Underground) for Canada

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2014	634	\$69.5	\$8.3	\$3.9	\$12.2
2015	4,084	\$471.3	\$56.2	\$26.5	\$82.8
2016	7,838	\$907.3	\$108.6	\$51.2	\$159.8
2017	9,993	\$1,129.9	\$137.0	\$64.7	\$201.7
2018	11,685	\$1,317.7	\$160.5	\$75.7	\$236.2
2019	10,539	\$1,075.5	\$120.5	\$56.9	\$177.3
2020	5,326	\$539.1	\$70.6	\$33.3	\$104.0
2021	2,639	\$264.1	\$35.4	\$16.7	\$52.1
2022	1,297	\$128.2	\$17.5	\$8.3	\$25.8
2023	634	\$62.1	\$8.6	\$4.1	\$12.7
2024	308	\$30.0	\$4.2	\$2.0	\$6.2
2025	149	\$14.4	\$2.0	\$1.0	\$3.0
2026	72	\$6.9	\$1.0	\$0.5	\$1.5
2027	34	\$3.3	\$0.5	\$0.2	\$0.7
2028	16	\$1.6	\$0.2	\$0.1	\$0.3
2029	0	\$0.0	\$0.0	\$0.0	\$0.0
2030-2039	130	\$15.2	\$1.8	\$0.9	\$2.7
2040-2049	7,944	\$975.9	\$117.2	\$55.3	\$172.5
2050-2059	9,498	\$1,170.2	\$141.0	\$66.5	\$207.5
2060-2069	6,108	\$635.3	\$81.8	\$38.6	\$120.4
2070-2079	3,164	\$316.4	\$42.3	\$19.9	\$62.2
2080-2089	3,090	\$304.1	\$41.9	\$19.8	\$61.7
Total	85,181	\$9,437.9	\$1,157.0	\$546.0	\$1,703.0

Table 3.1-2. Total Economic Impacts of Construction (Open Pit and Underground) by Province or Territory

Province or Territory	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
Newfoundland and Labrador	66	\$5.8	\$0.7	\$0.4	\$1.1
Prince Edward Island	61	\$3.6	\$0.4	\$0.3	\$0.7
Nova Scotia	249	\$19.4	\$2.5	\$1.4	\$3.9
New Brunswick	208	\$16.8	\$2.1	\$1.3	\$3.4
Quebec	7,152	\$572.9	\$77.1	\$49.0	\$126.1
Ontario	15,168	\$1,463.7	\$195.8	\$100.1	\$296.0
Manitoba	1,353	\$115.0	\$13.0	\$8.0	\$21.0
Saskatchewan	895	\$86.4	\$9.4	\$5.1	\$14.4
Alberta	13,628	\$1,863.4	\$224.2	\$97.9	\$322.1
British Columbia	46,160	\$5,269.8	\$629.7	\$281.6	\$911.3
Territories	241	\$21.2	\$2.1	\$0.8	\$2.9
Total Canada	85,181	\$9,437.9	\$1,157	\$546.0	\$1,703.0

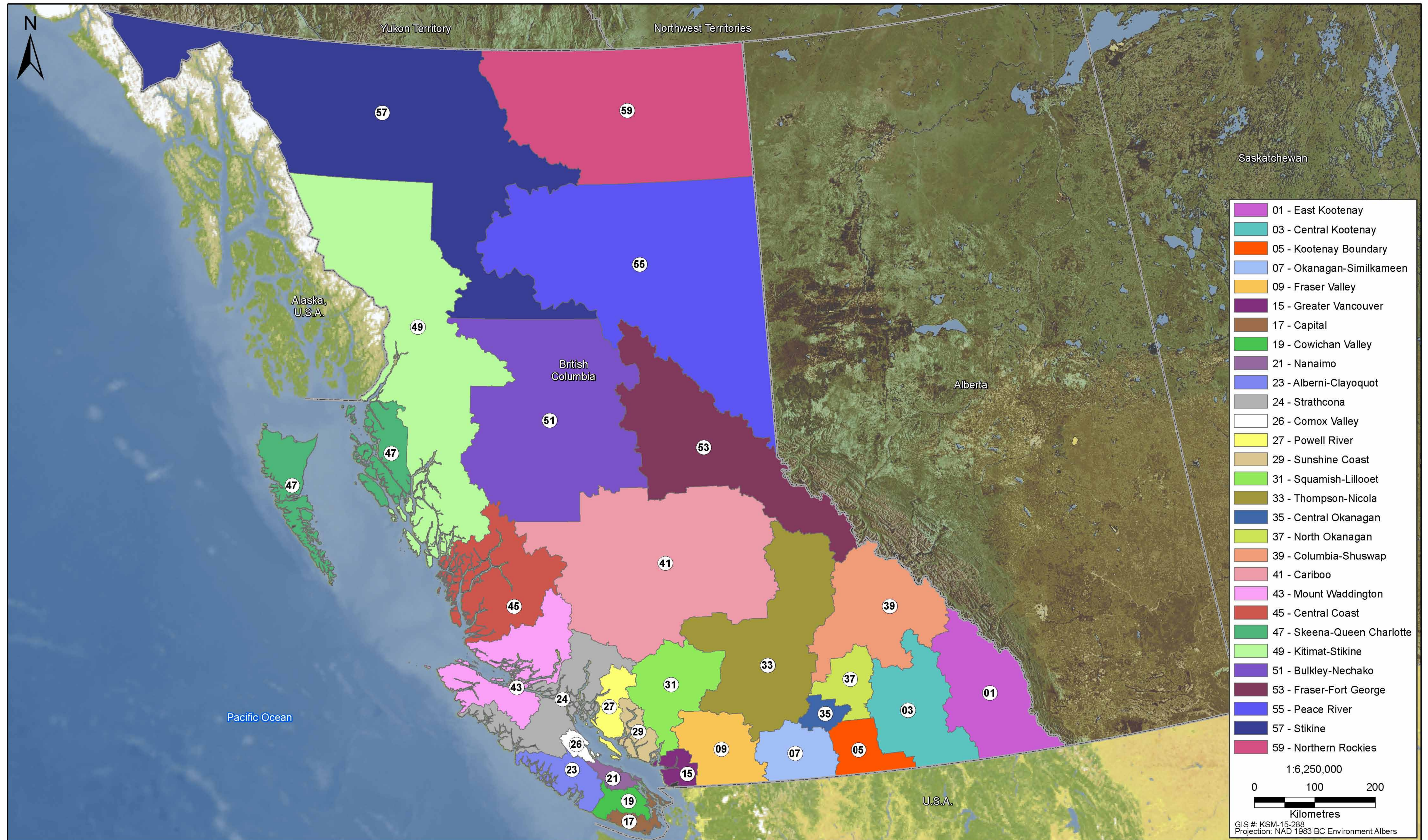


Table 3.1-3. Total Employment and GDP Impacts of Construction (Open Pit and Underground) by Province or Territory

Province or Territory	Employment (Person-years)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Newfoundland and Labrador	5	28	33	66	\$0.2	\$2.5	\$3.1	\$5.8
Prince Edward Island	0	31	31	61	\$0	\$1.5	\$2.1	\$3.6
Nova Scotia	5	115	129	249	\$0.2	\$8.1	\$11.1	\$19.4
New Brunswick	5	93	109	208	\$0.2	\$7.3	\$9.3	\$16.8
Quebec	5	2,843	4,304	7,152	\$0.4	\$224.3	\$348.2	\$572.9
Ontario	5	7,674	7,489	15,168	\$3.7	\$697.1	\$762.8	\$1,463.7
Manitoba	5	723	625	1,353	\$0.3	\$57.5	\$57.3	\$115.0
Saskatchewan	5	482	408	895	\$0.3	\$44.6	\$41.5	\$86.4
Alberta	3,019	6,391	4,218	13,628	\$482.7	\$768.5	\$612.2	\$1,863.4
British Columbia	12,071	17,256	16,834	46,160	\$1,967.9	\$1,436.2	\$1,865.7	\$5,269.8
Territories	0	155	86	241	\$0	\$12.1	\$9.1	\$21.2
Total Canada	15,125	35,790	34,265	85,181	\$2,455.8	3,259.6	\$3,722.5	\$9,437.9

Annually within British Columbia, total employment (direct, indirect and induced) increases sharply from approximately 388 person-years in 2014 to a high of approximately 7,024 person-years at the peak of Construction in 2018 (Table 3.1-4). GDP similarly increases from approximately \$44.8 million in 2014 to approximately \$808 million in 2018. Thereafter, both employment and GDP largely dissipate by 2029.³ Over Construction, the total contribution to tax revenues because of project-related economic activity within British Columbia is estimated at approximately \$630 million to the federal government and \$282 million to the Government of British Columbia.

Table 3.1-4. Annual Economic Impacts of Construction (Open Pit and Underground) in British Columbia

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2014	388	\$44.8	\$5.7	\$2.5	\$8.2
2015	2,603	\$309.2	\$36.7	\$16.4	\$53.2
2016	4,934	\$583.0	\$69.3	\$31.0	\$100.3
2017	6,079	\$699.6	\$84.1	\$37.6	\$121.8
2018	7,024	\$808.0	\$97.3	\$43.5	\$140.8
2019	6,043	\$607.0	\$64.5	\$28.8	\$93.3

(continued)

³ Employment, GDP, and tax revenue impacts dissipate, approaching zero from 2027 through 2029, because the expenditure and employment associated with the initial Construction phase are no longer being felt in the economy. In each year following a direct Project expenditure, a proportion of money is removed from the provincial economy mainly through savings and purchases made by individuals and businesses outside of the province.

Table 3.1-4. Annual Economic Impacts of Construction (Open Pit and Underground) in British Columbia (completed)

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2020	2,423	\$237.0	\$30.9	\$13.8	\$44.6
2021	955	\$93.9	\$12.2	\$5.5	\$17.6
2022	381	\$37.4	\$4.9	\$2.2	\$7.0
2023	155	\$15.2	\$2.0	\$0.9	\$2.9
2024	64	\$6.2	\$0.8	\$0.4	\$1.2
2025	27	\$2.6	\$0.3	\$0.2	\$0.5
2026	11	\$1.1	\$0.1	\$0.1	\$0.2
2027	5	\$0.5	\$0.1	\$0.0	\$0.1
2028	2	\$0.2	\$0.0	\$0.0	\$0.0
2029	0	\$0.0	\$0.0	\$0.0	\$0.0
2030-2039	76	\$9.5	\$1.1	\$0.5	\$1.6
2040-2049	4,669	\$608.5	\$72.1	\$32.2	\$104.3
2050-2059	5,582	\$729.6	\$86.7	\$38.8	\$125.5
2060-2069	2,745	\$281.5	\$35.7	\$16.0	\$51.6
2070-2079	1,174	\$114.9	\$14.8	\$6.6	\$21.4
2080-2089	819	\$80.2	\$10.4	\$4.7	\$15.1
Total	46,160	\$5,269.8	\$629.7	\$281.6	\$911.3

As expected, employment, income and GDP impacts of Construction within British Columbia are most strongly felt within the CD 14 covering the Greater Vancouver area (Figure 3-1; Table 3.1-5). The Capital, Central Okanagan, Fraser Valley, Fraser-Fort George, and Peace River CDs also stand out as receiving slightly higher proportions of total employment, income and GDP impacts than other regions.

For the CDs that define the economic study region in which the Project is located – Bulkley-Nechako (CD 2) and Kitimat-Stikine (CD 15) – direct employment is estimated to total approximately 1,068 person-years, indirect 492 and induced 695, for a total of approximately 2,255 person-years for Construction. Again, personal income and GDP impacts within the region mirror employment impacts. For Construction, personal income effects (direct, indirect, and induced) total approximately \$237 million and GDP effects total approximately \$295 million (Table 3.1-5).

3.1.2 Impacts of Construction for Open Pit Mining Only

For the initial Construction phase for open pit mining, the Project is estimated to result in a total of approximately 55,248 person-years of direct, indirect and induced employment across Canada (Table 3.1-6). For British Columbia, total employment benefits (direct, indirect, and induced) of approximately 31,094 person-years are predicted, along with total GDP benefits of approximately \$3.45 billion. Tax revenues to the Government of British Columbia are estimated to total approximately \$183 million, with an additional \$408 million to the federal government. The total GDP impact for all of Canada is estimated to be approximately \$6.0 billion. Resulting government revenues from personal income tax, indirect corporate profit tax and sales tax total about \$732 million to the federal government and \$345 million to provincial governments.

Table 3.1-5. Total Employment, Personal Income and GDP Impacts of Construction (Open Pit and Underground) by Census Division in British Columbia

Census Division	Employment (Person-years)				Personal Income (Million Constant Dollars)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
1 (Alberni-Clayoquot)	26	67	94	187	\$4.1	\$3.7	\$4.8	\$12.6	\$4.2	\$5.3	\$8.4	\$18.0
2 (Bulkley-Nechako)	533	253	347	1,133	\$84.9	\$14.0	\$18.8	\$117.8	\$85.3	\$18.8	\$40.9	\$145.0
3 (Capital)	517	900	922	2,339	\$82.3	\$50.0	\$50.8	\$183.1	\$85.5	\$71.0	\$97.9	\$254.4
4 (Cariboo)	149	187	223	559	\$23.7	\$10.1	\$11.9	\$45.8	\$24.4	\$15.2	\$25.4	\$65.0
5 (Central Coast)	21	20	43	84	\$3.1	\$1.1	\$2.2	\$6.4	\$3.1	\$2.0	\$4.6	\$9.6
6 (Central Kootenay)	273	259	273	804	\$43.5	\$14.8	\$14.8	\$73.2	\$43.9	\$22.7	\$33.1	\$99.7
7 (Central Okanagan)	533	742	725	2,000	\$84.6	\$41.8	\$39.0	\$165.4	\$86.7	\$61.3	\$80.5	\$228.6
8 (Columbia-Shuswap)	231	321	202	855	\$36.6	\$18.5	\$16.4	\$71.6	\$37.1	\$27.5	\$33.7	\$98.3
9 (Comox-Strathcona)	280	334	345	959	\$44.6	\$18.6	\$18.0	\$81.1	\$45.8	\$26.3	\$36.0	\$108.1
10 (Cowichan Valley)	142	246	233	621	\$22.5	\$13.7	\$11.9	\$48.1	\$23.0	\$19.5	\$24.0	\$66.6
11 (East Kootenay)	327	379	364	1,070	\$52.0	\$22.0	\$19.7	\$93.7	\$52.9	\$32.5	\$40.5	\$125.8
12 (Fraser Valley)	652	906	839	2,397	\$103.7	\$49.8	\$44.3	\$197.7	\$105.7	\$75.7	\$90.1	\$271.5
13 (Fraser-Fort George)	797	747	779	2,324	\$126.9	\$42.9	\$43.3	\$213.1	\$128.5	\$62.0	\$87.7	\$278.3
14 (Greater Vancouver)	4,200	7,449	7,030	18,679	\$668.2	\$416.5	\$386.2	\$1,470.9	\$694.8	\$614.4	\$772.0	\$2,081.2
15 (Kitimat-Stikine)	535	239	348	1,122	\$85.1	\$13.9	\$19.9	\$118.9	\$85.7	\$20.6	\$44.1	\$150.3
16 (Kootenay Boundary)	139	220	199	558	\$22.0	\$12.7	\$10.5	\$45.2	\$22.2	\$18.9	\$22.3	\$63.3
17 (Mount Waddington)	23	51	58	133	\$3.5	\$3.1	\$3.1	\$9.7	\$3.5	\$4.5	\$5.5	\$13.5
18 (Nanaimo)	323	484	459	1,265	\$51.4	\$27.2	\$24.8	\$103.4	\$53.0	\$39.1	\$49.2	\$141.3
19 (North Okanagan)	487	550	509	1,546	\$77.2	\$31.2	\$27.1	\$135.5	\$77.9	\$45.2	\$56.0	\$179.1
20 (Northern Rockies)	50	295	266	611	\$7.9	\$17.1	\$14.8	\$39.8	\$8.1	\$33.0	\$35.3	\$76.4
21 (Okanagan-Similkameen)	376	399	455	1,230	\$59.8	\$22.2	\$23.9	\$105.9	\$60.5	\$32.1	\$50.2	\$142.8
22 (Peace River)	683	797	606	2,085	\$108.8	\$46.4	\$33.5	\$188.8	\$110.3	\$74.5	\$81.9	\$266.7
23 (Powell River)	118	206	208	532	\$18.5	\$12.1	\$11.4	\$42.0	\$18.7	\$17.3	\$24.1	\$60.1
24 (Skeena-Queen Charlotte)	22	80	107	209	\$3.3	\$4.4	\$5.6	\$13.3	\$3.4	\$6.3	\$10.6	\$20.2
25 (Squamish-Lillooet)	112	288	324	724	\$17.9	\$16.1	\$16.6	\$50.5	\$18.1	\$23.3	\$30.7	\$72.1
26 (Stikine)	75	128	132	335	\$12.1	\$6.7	\$6.2	\$25.0	\$12.1	\$8.1	\$10.8	\$31.1
27 (Sunshine Coast)	31	130	119	280	\$5.0	\$7.7	\$6.1	\$18.8	\$5.2	\$11.4	\$12.3	\$28.8
28 (Thompson-Nicola)	417	581	523	1,521	\$66.3	\$33.0	\$28.1	\$127.4	\$68.3	\$47.8	\$58.0	\$174.2
Total	12,071	17,256	16,834	46,160	\$1,919.6	\$971.3	\$913.9	\$3,804.7	\$1,967.9	\$1,436.2	\$1,865.7	\$5,269.8

Table 3.1-6. Annual Economic Impacts of Construction (Open Pit Only) for Canada

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2014	634	\$69.5	\$8.3	\$3.9	\$12.2
2015	4,084	\$471.3	\$56.2	\$26.5	\$82.8
2016	7,838	\$907.3	\$108.6	\$51.2	\$159.8
2017	9,993	\$1,129.9	\$137.0	\$64.7	\$201.7
2018	11,685	\$1,317.7	\$160.5	\$75.7	\$236.2
2019	10,539	\$1,075.5	\$120.5	\$56.9	\$177.3
2020	5,326	\$539.1	\$70.6	\$33.3	\$104.0
2021	2,639	\$264.1	\$35.4	\$16.7	\$52.1
2022	1,297	\$128.2	\$17.5	\$8.3	\$25.8
2023	634	\$62.1	\$8.6	\$4.1	\$12.7
2024	308	\$30.0	\$4.2	\$2.0	\$6.2
2025	149	\$14.4	\$2.0	\$1.0	\$3.0
2026	72	\$6.9	\$1.0	\$0.5	\$1.5
2027	34	\$3.3	\$0.5	\$0.2	\$0.7
2028	16	\$1.6	\$0.2	\$0.1	\$0.3
Total	55,248	\$6,020.8	\$731.6	\$344.5	\$1,076.0

Again, the Province of British Columbia benefits substantially from the Project, although Quebec, Ontario and Alberta are also strong beneficiaries (Table 3.1-7). The provincial distribution of employment and business impacts is also reflected in the estimates of employment and GDP shown in Table 3.1-8. In addition to British Columbia-based businesses, those based in Alberta and Ontario, in particular, are expected to be important suppliers to the Project.

Table 3.1-7. Total Economic Impacts of Construction (Open Pit Only) by Province or Territory

Province or Territory	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
Newfoundland and Labrador	36	\$3.4	\$0.4	\$0.2	\$0.7
Prince Edward Island	36	\$2.1	\$0.3	\$0.2	\$0.4
Nova Scotia	143	\$11.4	\$1.5	\$0.8	\$2.3
New Brunswick	118	\$9.8	\$1.2	\$0.7	\$2.0
Quebec	4,309	\$346.3	\$46.5	\$29.6	\$76.1
Ontario	9,118	\$879.8	\$117.2	\$60.0	\$177.2
Manitoba	812	\$68.7	\$7.7	\$4.8	\$12.5
Saskatchewan	545	\$53.0	\$5.7	\$3.1	\$8.8
Alberta	8,888	\$1,187.6	\$141.3	\$61.7	\$203.0
British Columbia	31,094	\$3,445.6	\$408.4	\$182.8	\$591.3
Territories	147	\$13.1	\$1.3	\$0.5	\$1.8
Total Canada	55,248	\$6,020.8	\$731.6	\$344.5	\$1,076.0

Table 3.1-8. Total Employment and GDP Impacts of Construction (Open Pit Only) by Province or Territory

Province or Territory	Employment (Person-years)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Newfoundland and Labrador	0	16	20	36	\$0.1	\$1.4	\$1.9	\$3.4
Prince Edward Island	0	17	19	36	\$0.0	\$0.8	\$1.3	\$2.1
Nova Scotia	0	64	80	143	\$0.1	\$4.5	\$6.8	\$11.4
New Brunswick	0	51	67	118	\$0.1	\$4.0	\$5.7	\$9.8
Quebec	0	1,622	2,687	4,309	\$0.2	\$129.0	\$217.2	\$346.3
Ontario	0	4,451	4,667	9,118	\$1.9	\$403.5	\$474.4	\$879.8
Manitoba	0	420	392	812	\$0.1	\$32.9	\$35.7	\$68.7
Saskatchewan	0	287	259	545	\$0.2	\$26.6	\$26.2	\$53.0
Alberta	1,864	4,286	2,738	8,888	\$285.2	\$506.0	\$396.3	\$1,187.6
British Columbia	7,450	12,557	11,088	31,094	\$1,165.9	\$1,052.9	\$1,226.8	\$3,445.6
Territories	0	92	55	147	\$0.0	\$7.3	\$5.8	\$13.1
Total Canada	9,314	23,863	22,071	55,247	\$1,453.7	\$2,169.0	\$2,398.2	\$6,020.8

Most British Columbia-based employment is estimated to be indirect and induced, which comprises approximately 40% and 36% of total Project-related employment in the province, respectively (Table 3.1-8). Again, direct GDP impacts show the largest share in British Columbia. Indirect and induced GDP impacts are more distributed to other provinces (mainly Alberta and Ontario), but are still predominantly within British Columbia.

Annually within British Columbia, total employment (direct, indirect and induced) increases sharply from approximately 388 person-years in 2014 to a high of approximately 7,024 person-years at the peak of Construction in 2018 (Table 3.1-9). GDP similarly increases from approximately \$44.8 million in 2014 to approximately \$808 million in 2018. Thereafter, both employment and GDP dissipate by 2028. Over Construction, the total contribution to tax revenues because of project-related economic activity within British Columbia is estimated at approximately \$408 million to the federal government and \$183 million to the Province of British Columbia.

Table 3.1-9. Annual Economic Impacts of Construction (Open Pit Only) in British Columbia

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2014	388	\$44.8	\$5.7	\$2.5	\$8.2
2015	2,603	\$309.2	\$36.7	\$16.4	\$53.2
2016	4,934	\$583.0	\$69.3	\$31.0	\$100.3
2017	6,079	\$699.6	\$84.1	\$37.6	\$121.8
2018	7,024	\$808.0	\$97.3	\$43.5	\$140.8

(continued)

Table 3.1-9. Annual Economic Impacts of Construction (Open Pit Only) in British Columbia (completed)

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2019	6,043	\$607.0	\$64.5	\$28.8	\$93.3
2020	2,423	\$237.0	\$30.9	\$13.8	\$44.6
2021	955	\$93.9	\$12.2	\$5.5	\$17.6
2022	381	\$37.4	\$4.9	\$2.2	\$7.0
2023	155	\$15.2	\$2.0	\$0.9	\$2.9
2024	64	\$6.2	\$0.8	\$0.4	\$1.2
2025	27	\$2.6	\$0.3	\$0.2	\$0.5
2026	11	\$1.1	\$0.1	\$0.1	\$0.2
2027	5	\$0.5	\$0.1	\$0.0	\$0.1
2028	0	\$0.2	\$0.0	\$0.0	\$0.0
Total	31,093	\$3,445.6	\$408.4	\$182.8	\$591.3

As expected, employment, income and GDP impacts of Construction within British Columbia are most strongly felt within the CD 14 covering the Greater Vancouver area (Figure 3-1; Table 3.1-10). The Capital, Central Okanagan, Fraser Valley, Fraser-Fort George, and Peace River CDs also stand out as receiving higher proportions of total employment, income and GDP impacts than other regions.

For the CDs that define the economic study region in which the Project is located – Bulkley-Nechako (CD 2) and Kitimat-Stikine (CD 15) – direct employment is estimated to total approximately 659 person-years, indirect 390 and induced 448, for a total of approximately 1,497 person-years for Construction. Personal income and GDP impacts within the region mirror employment impacts. For Construction, personal income effects (direct, indirect, and induced) total approximately \$148 million and GDP effects total approximately \$187 million (Table 3.1-10)

3.1.3 Impacts of Construction for Underground Mining Only

For Construction phase for underground mining, the Project is estimated to result a total of approximately 29,934 person-years of direct, indirect and induced employment across Canada (Table 3.1-11). The total GDP impact is estimated to be approximately \$3.4 billion. Resulting government revenues from personal income tax, indirect corporate profit tax and sales tax total about \$425 million to the federal government and \$202 million to provincial governments. Note that employment, GDP, and tax revenues are reported in 10-year blocks in Table 3.1-11; annual averages are 10% of the 10-year averages.

The Province of British Columbia benefits substantially from the Project, although Quebec, Ontario and Alberta are also strong beneficiaries (Table 3.1-12). The provincial distribution of employment and business impacts is also reflected in the estimates of employment and GDP shown in Table 3.1-13. In addition to British Columbia-based businesses, those based in Alberta and Ontario are expected to be important suppliers to the Project.

British Columbia-based employment is estimated to be a mix of direct, indirect and induced (Table 3.1-13). Again, direct GDP impacts show the largest share in British Columbia. Indirect and induced GDP impacts are more distributed to other provinces (mainly Alberta and Ontario), but are still predominantly within British Columbia.

Table 3.1-10. Total Employment, Personal Income and GDP Impacts of Construction (Open Pit Only) by Census Division in British Columbia

Census Division	Employment (Person-years)				Personal Income (Million Constant Dollars)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
1 (Alberni-Clayoquot)	16	51	61	129	\$2.4	\$2.9	\$3.1	\$8.4	\$2.5	\$4.1	\$5.5	\$12.2
2 (Bulkley-Nechako)	329	202	224	755	\$50.5	\$11.4	\$12.1	\$74.0	\$50.7	\$15.1	\$26.3	\$92.1
3 (Capital)	319	637	604	1,559	\$48.9	\$35.8	\$33.3	\$118.0	\$50.6	\$51.0	\$64.0	\$165.5
4 (Cariboo)	92	137	146	375	\$14.1	\$7.5	\$7.8	\$29.5	\$14.5	\$11.3	\$16.6	\$42.4
5 (Central Coast)	14	15	28	57	\$1.8	\$0.9	\$1.4	\$4.1	\$1.8	\$1.5	\$3.0	\$6.3
6 (Central Kootenay)	168	202	180	550	\$25.9	\$11.7	\$9.8	\$47.4	\$26.1	\$17.7	\$21.8	\$65.6
7 (Central Okanagan)	329	557	480	1,366	\$50.3	\$31.9	\$25.8	\$108.0	\$51.4	\$46.6	\$53.3	\$151.2
8 (Columbia-Shuswap)	143	251	202	596	\$21.8	\$14.7	\$11.0	\$47.4	\$22.0	\$21.7	\$22.5	\$66.3
9 (Comox-Strathcona)	173	252	227	652	\$26.5	\$14.3	\$11.8	\$52.6	\$27.1	\$20.1	\$23.7	\$71.0
10 (Cowichan Valley)	88	186	154	428	\$13.4	\$10.5	\$7.9	\$31.8	\$13.6	\$14.9	\$16.0	\$44.6
11 (East Kootenay)	202	298	242	742	\$30.9	\$17.5	\$13.1	\$61.5	\$31.3	\$25.8	\$26.9	\$84.0
12 (Fraser Valley)	402	670	553	1,625	\$61.7	\$37.6	\$29.2	\$128.4	\$62.7	\$56.8	\$59.4	\$178.8
13 (Fraser-Fort George)	492	574	512	1,578	\$75.4	\$33.3	\$28.4	\$137.2	\$76.3	\$48.0	\$57.5	\$181.8
14 (Greater Vancouver)	2,591	5,115	4,626	12,331	\$397.4	\$289.5	\$254.2	\$941.2	\$410.7	\$425.4	\$505.8	\$1,342.0
15 (Kitimat-Stikine)	330	188	224	742	\$50.6	\$11.0	\$12.8	\$74.4	\$50.9	\$16.2	\$28.2	\$95.3
16 (Kootenay Boundary)	86	174	133	393	\$13.1	\$10.2	\$7.0	\$30.3	\$13.2	\$15.0	\$14.9	\$43.1
17 (Mount Waddington)	15	42	38	95	\$2.1	\$2.5	\$2.0	\$6.7	\$2.1	\$3.7	\$3.6	\$9.4
18 (Nanaimo)	199	358	302	859	\$30.6	\$20.4	\$16.3	\$67.3	\$31.4	\$29.5	\$32.4	\$93.2
19 (North Okanagan)	301	426	337	1,064	\$45.9	\$24.5	\$17.9	\$88.3	\$46.3	\$35.5	\$37.1	\$118.9
20 (Northern Rockies)	31	218	174	423	\$4.7	\$12.8	\$9.7	\$27.1	\$4.8	\$23.0	\$23.3	\$51.1
21 (Okanagan-Similkameen)	232	308	300	840	\$35.5	\$17.5	\$15.8	\$68.8	\$35.9	\$25.1	\$33.1	\$94.1
22 (Peace River)	421	615	401	1,437	\$64.7	\$36.2	\$22.2	\$123.2	\$65.5	\$56.2	\$54.2	\$175.9
23 (Powell River)	73	160	139	372	\$11.0	\$9.4	\$7.6	\$28.1	\$11.1	\$13.5	\$16.1	\$40.7
24 (Skeena-Queen Charlotte)	14	59	73	145	\$1.9	\$3.3	\$3.8	\$9.0	\$2.0	\$4.6	\$7.3	\$13.9
25 (Squamish-Lillooet)	69	223	218	510	\$10.6	\$12.6	\$11.1	\$34.4	\$10.8	\$18.4	\$20.7	\$49.9
26 (Stikine)	46	98	79	223	\$7.2	\$5.2	\$3.7	\$16.1	\$7.2	\$6.4	\$6.2	\$19.8
27 (Sunshine Coast)	19	401	84	207	\$3.0	\$6.2	\$4.4	\$13.5	\$3.1	\$9.1	\$8.8	\$21.0
28 (Thompson-Nicola)	257	440	346	1,043	\$39.4	\$25.3	\$18.6	\$83.3	\$40.4	\$36.7	\$38.4	\$115.6
Total	7,450	12,557	11,088	31,094	\$1,141.5	\$716.6	\$601.9	\$2,460.0	\$1,165.9	\$1,052.9	\$1,226.8	\$3,445.6

Table 3.1-11. Annual Economic Impacts of Construction (Underground Only) for Canada

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2030-2039	130	\$15.2	\$1.8	\$0.9	\$2.7
2040-2049	7,944	\$975.9	\$117.2	\$55.3	\$172.5
2050-2059	9,498	\$1,170.2	\$141.0	\$66.5	\$207.5
2060-2069	6,108	\$635.3	\$81.8	\$38.6	\$120.4
2070-2079	3,164	\$316.4	\$42.3	\$19.9	\$62.2
2080-2089	3,090	\$304.1	\$41.9	\$19.8	\$61.7
Total	29,934	\$3,417.0	\$425.4	\$201.5	\$626.9

Table 3.1-12. Total Economic Impacts of Construction (Underground Only) by Province or Territory

Province or Territory	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
Newfoundland and Labrador	30	\$2.3	\$0.3	\$0.2	\$0.6
Prince Edward Island	25	\$1.5	\$0.2	\$0.1	\$0.3
Nova Scotia	106	\$8.0	\$1.0	\$0.6	\$1.6
New Brunswick	89	\$7.0	\$0.9	\$0.5	\$1.4
Quebec	2,843	\$226.6	\$30.5	\$19.4	\$50.0
Ontario	6,050	\$583.9	\$78.6	\$40.2	\$118.8
Manitoba	542	\$46.3	\$5.3	\$3.2	\$8.5
Saskatchewan	350	\$33.3	\$6.3	\$2.0	\$5.6
Alberta	4,740	\$675.8	\$82.9	\$36.2	\$119.1
British Columbia	15,066	\$1,824.2	\$221.3	\$98.8	\$320.1
Territories	94	\$8.1	\$0.8	\$0.3	\$1.1
Total Canada	29,934	\$3,417.0	\$425.4	\$201.5	\$627.0

Table 3.1-13. Total Employment and GDP Impacts of Construction (Underground Only) by Province or Territory

Province or Territory	Employment (Person-years)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Newfoundland and Labrador	5	12	13	30	\$0.1	\$1.0	\$1.2	\$2.3
Prince Edward Island	0	13	12	25	\$0.0	\$0.6	\$0.8	\$1.5
Nova Scotia	5	51	50	106	\$0.1	\$3.6	\$4.3	\$8.0
New Brunswick	5	42	42	89	\$0.1	\$3.4	\$3.6	\$7.0
Quebec	5	1,221	1,617	2,843	\$0.2	\$95.4	\$131.1	\$226.6
Ontario	5	3,222	2,822	6,050	\$1.9	\$293.5	\$288.5	\$583.9

(continued)

Table 3.1-13. Total Employment and GDP Impacts of Construction (Underground Only) by Province or Territory (completed)

Province or Territory	Employment (Person-years)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Manitoba	5	303	233	542	\$0.1	\$24.6	\$21.6	\$46.3
Saskatchewan	5	195	149	350	\$0.1	\$18.0	\$15.2	\$33.3
Alberta	1,155	2,105	1,480	4,740	\$197.5	\$262.4	\$215.9	\$675.8
British Columbia	4,621	4,699	5,746	15,066	\$802.0	\$383.2	\$638.9	\$1,824.2
Territories	0	62	31	94	\$0.0	\$4.8	\$3.3	\$8.1
Total Canada	5,811	11,928	12,195	29,934	\$1,002.1	\$1,090.6	\$1,324.4	\$3,417.0

Within British Columbia, total employment (direct, indirect and induced) averages approximately 470 persons per year (FTE) from 2040 to 2049, and approximately 560 persons per year from 2050 to 2059, decreasing afterwards (Table 3.1-14). GDP contributions follow a similar pattern, peaking at approximately \$73 million per year. Over Construction for underground mining, total employment is approximately 15,066 person-years and the contribution to GDP \$1,824 million (Table 3.1-14). The total contribution to tax revenues because of project-related economic activity within British Columbia is estimated at approximately \$221 million to the federal government and \$99 million to the Province of British Columbia. Again, note that employment, GDP, and tax revenues are reported in 10-year blocks in Table 3.1-14; annual averages are 10% of the 10-year averages.

Table 3.1-14. Annual Economic Impacts of Construction (Underground Only) in British Columbia

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2030-2039	76	\$9.5	\$1.1	\$0.5	\$1.6
2040-2049	4,669	\$608.5	\$72.1	\$32.2	\$104.3
2050-2059	5,582	\$729.6	\$86.7	\$38.8	\$125.5
2060-2069	2,745	\$281.5	\$35.7	\$16.0	\$51.6
2070-2079	1,174	\$114.9	\$14.8	\$6.6	\$21.4
2080-2089	819	\$80.2	\$10.4	\$4.7	\$15.1
Total	15,066	\$1,824.2	\$221.3	\$98.8	\$320.1

As expected, employment, income and GDP impacts of Construction within British Columbia are most strongly felt within the CD 14 covering the Greater Vancouver area (Figure 3-1; Table 3.1-15). The Capital, Central Okanagan, Fraser Valley, Fraser-Fort George, and Peace River CDs also stand out as receiving higher proportions of total employment, income and GDP impacts than other regions in British Columbia.

For the CDs that define the economic study region in which the Project is located – Bulkley-Nechako (CD 2) and Kitimat-Stikine (CD 15) – direct employment is estimated to total approximately 409 person-years, indirect 102 and induced 247, for a total of approximately 758 person-years during Construction for underground mining. Again, personal income and GDP impacts within the region mirror employment impacts. For Construction, personal income effects (direct, indirect, and induced) total approximately \$88 million and GDP effects total approximately \$108 million (Table 3.1-15).

Table 3.1-15. Total Employment, Personal Income and GDP Impacts of Construction (Underground Only) by Census Division in British Columbia

Census Division	Employment (Person-years)				Personal Income (Million Constant Dollars)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
1 (Alberni-Clayoquot)	10	16	33	58	\$1.7	\$0.9	\$1.7	\$4.2	\$1.7	\$1.2	\$2.8	\$5.8
2 (Bulkley-Nechako)	204	51	123	378	\$34.4	\$2.7	\$6.7	\$43.8	\$34.6	\$3.7	\$14.6	\$52.9
3 (Capital)	198	263	318	779	\$33.4	\$14.2	\$17.5	\$65.1	\$34.9	\$20.1	\$33.9	\$88.8
4 (Cariboo)	57	50	77	184	\$9.6	\$2.6	\$4.1	\$16.3	\$10.0	\$3.9	\$8.8	\$22.7
5 (Central Coast)	7	5	15	27	\$1.2	\$0.3	\$0.7	\$2.2	\$1.2	\$0.5	\$1.5	\$3.3
6 (Central Kootenay)	105	57	93	255	\$17.7	\$3.1	\$5.1	\$25.8	\$17.8	\$4.9	\$11.3	\$34.1
7 (Central Okanagan)	204	185	246	634	\$34.3	\$10.0	\$13.2	\$57.5	\$35.3	\$14.8	\$27.3	\$77.4
8 (Columbia-Shuswap)	88	70	101	259	\$14.9	\$3.9	\$5.5	\$24.2	\$15.1	\$5.7	\$11.2	\$32.1
9 (Comox-Strathcona)	107	82	118	307	\$18.1	\$4.3	\$6.1	\$28.5	\$18.7	\$6.1	\$12.3	\$37.1
10 (Cowichan Valley)	54	60	78	193	\$9.1	\$3.2	\$4.0	\$16.3	\$9.4	\$4.6	\$8.1	\$22.0
11 (East Kootenay)	125	81	122	328	\$21.1	\$4.5	\$6.6	\$32.2	\$21.5	\$6.7	\$13.6	\$41.8
12 (Fraser Valley)	250	236	286	772	\$42.0	\$12.2	\$15.1	\$69.3	\$43.0	\$18.9	\$30.8	\$92.7
13 (Fraser-Fort George)	305	173	267	746	\$51.4	\$9.6	\$14.9	\$75.8	\$52.3	\$14.0	\$30.2	\$96.5
14 (Greater Vancouver)	1,609	2,334	2,404	6,348	\$270.9	\$126.9	\$131.9	\$529.7	\$284.0	\$189.0	\$266.2	\$739.2
15 (Kitimat-Stikine)	205	51	124	380	\$34.5	\$2.9	\$7.1	\$44.5	\$34.8	\$4.4	\$15.9	\$55.0
16 (Kootenay Boundary)	53	46	66	165	\$8.9	\$2.5	\$3.5	\$14.9	\$9.0	\$3.9	\$7.3	\$20.2
17 (Mount Waddington)	8	9	20	38	\$1.4	\$0.5	\$1.1	\$3.1	\$1.4	\$0.8	\$1.9	\$4.1
18 (Nanaimo)	124	126	157	406	\$20.8	\$6.8	\$8.5	\$36.1	\$21.6	\$9.7	\$16.8	\$48.1
19 (North Okanagan)	186	124	172	482	\$31.3	\$6.7	\$9.2	\$47.1	\$31.6	\$9.7	\$19.0	\$60.3
20 (Northern Rockies)	19	77	92	188	\$3.2	\$4.3	\$5.1	\$12.7	\$3.3	\$9.7	\$12.0	\$25.3
21 (Okanagan-Similkameen)	144	91	155	390	\$24.2	\$4.7	\$8.1	\$37.1	\$24.6	\$7.0	\$17.1	\$48.7
22 (Peace River)	262	182	204	648	\$44.1	\$10.2	\$11.3	\$65.6	\$44.9	\$18.2	\$27.7	\$90.8
23 (Powell River)	45	46	69	160	\$7.5	\$2.6	\$3.8	\$13.9	\$7.6	\$3.8	\$8.0	\$19.4
24 (Skeena-Queen Charlotte)	8	21	34	63	\$1.3	\$1.2	\$1.8	\$4.2	\$1.4	\$1.7	\$3.3	\$6.3
25 (Squamish-Lillooet)	43	65	107	214	\$7.2	\$3.4	\$5.4	\$16.1	\$7.4	\$4.8	\$10.0	\$22.2
26 (Stikine)	29	30	53	112	\$4.9	\$1.4	\$2.6	\$8.9	\$4.9	\$1.8	\$4.6	\$11.3
27 (Sunshine Coast)	12	26	35	73	\$2.0	\$1.5	\$1.8	\$5.3	\$2.1	\$2.2	\$3.4	\$7.8
28 (Thompson-Nicola)	160	142	177	478	\$26.9	\$7.7	\$9.5	\$44.1	\$27.8	\$11.1	\$19.6	\$58.6
Total	4,621	4,699	5,746	15,066	\$778.0	\$254.7	\$311.9	\$1,344.7	\$802.0	\$383.2	\$638.9	\$1,824.2

3.2 OPERATION

From Operation, total annual direct, indirect and induced employment for Canada as a whole is estimated to rise from approximately 3,710 persons (full time equivalent, FTE) in 2020 to a high of approximately 8,325 FTEs by 2026 (Table 3.2-1). Thereafter, total employment is expected to remain near those levels until 2030, where there is expected to be a drop in total employment effects from the years 2030 to 2039 to an average of about 3,300 FTEs. Over the remainder of mine life, total Canada employment is expected to increase over the duration of the mine life. Total Canadian GDP impacts of the Project follow a similar pattern, with Project contributions to total GDP reach a maximum of approximately \$815 million/a by 2026 (Table 3.2-1).

Table 3.2-1. Annual Economic Impacts of Operation in Canada

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2020	3,710	\$378.1	\$48.2	\$23.8	\$72.1
2021	5,982	\$615.7	\$81.3	\$40.1	\$121.5
2022	7,128	\$728.6	\$96.4	\$47.6	\$144.0
2023	8,076	\$805.1	\$106.2	\$52.4	\$158.7
2024	8,056	\$811.8	\$106.8	\$52.7	\$159.5
2025	7,624	\$784.3	\$95.4	\$47.1	\$142.5
2026	8,325	\$814.9	\$98.6	\$48.7	\$147.3
2027	7,906	\$797.4	\$96.8	\$47.8	\$144.6
2028	7,663	\$774.3	\$93.8	\$46.3	\$140.2
2029	7,660	\$764.7	\$92.7	\$45.7	\$138.4
2030-2039	33,270	\$3,582.0	\$452.0	\$223.1	\$675.0
2040-2049	51,915	\$5,467.6	\$714.1	\$352.5	\$1,066.6
2050-2059	63,574	\$6,923.4	\$892.7	\$440.6	\$1,333.3
2060-2069	65,306	\$7,003.8	\$912.5	\$450.4	\$1,362.8
2070-2079	78,720	\$7,907.2	\$1,041.7	\$514.1	\$1,555.8
Total	365,934	\$38,256.7	\$4,943.0	\$2,439.6	\$7,382.6

In sum, total Operation impacts across Canada over the life of the mine are estimated to be approximately 366,000 person-years of employment, \$38.3 billion in GDP contributions, and \$7.4 billion in government tax revenues (\$4.9 billion to the federal government and \$2.4 billion to provincial governments; Table 3.2-1).

The total economic impacts of Operation by province or territory for the years 2020, 2021 and 2022, representing the initial years of Operation and ramp up, are shown in Table 3.2-2. British Columbia is predicted to realize the majority of the benefits, with total employment rising from approximately 2,323 to 3,693 person-years, GDP from \$236 to \$378 million, and total tax revenue from \$52.3 to \$82.8 million. After British Columbia, Ontario also benefits substantially by Project Operation, followed by Alberta and Quebec (Table 3.2-2).

The British Columbia share of the total benefits decreases slightly from the year 2020 to 2022 primarily because the size of indirect and induced impacts increases outside of the province as initial Project-related spending begins to cycle through the economy and reach other regions of Canada. This pattern is similar for total employment, GDP and tax revenue effects. The detailed breakdown for employment and GDP effects by province or territory, in terms of direct, indirect and induced effects, is shown in Table 3.2-3.

Table 3.2-2. Total Economic Impacts of Operation by Province or Territory, 2020 to 2022

Province or Territory	Employment (Person-years)	GDP (Million Constant Dollars)	Total Tax Revenue (Million Constant Dollars)
2020			
Newfoundland and Labrador	42	\$4.466	\$1.234
Prince Edward Island	2	\$0.077	\$0.014
Nova Scotia	27	\$2.568	\$0.613
New Brunswick	26	\$2.654	\$0.605
Quebec	265	\$23.347	\$4.634
Ontario	539	\$50.405	\$8.702
Manitoba	65	\$5.581	\$1.014
Saskatchewan	39	\$3,219	\$0.528
Alberta	355	\$47.254	\$6.347
British Columbia	2,323	\$236.298	\$52.345
Territories	27	\$2.234	\$0.322
Total Canada	3,710	\$378.101	\$76.358
2021			
Newfoundland and Labrador	70	\$6.666	\$1.479
Prince Edward Island	7	\$0.351	\$0.074
Nova Scotia	54	\$4.658	\$1.011
New Brunswick	50	\$4.751	\$0.984
Quebec	623	\$51.620	\$11.665
Ontario	1,047	\$99.286	\$21.081
Manitoba	138	\$11.314	\$2.219
Saskatchewan	92	\$7.492	\$1.323
Alberta	598	\$90.199	\$14.086
British Columbia	3,249	\$334.792	\$74.073
Territories	54	\$4.579	\$0.710
Total Canada	5,982	\$615.706	\$128.704
2022			
Newfoundland and Labrador	81	\$7.692	\$1.718
Prince Edward Island	10	\$0.535	\$0.115
Nova Scotia	69	\$5.865	\$1.302
New Brunswick	62	\$5.826	\$1.233
Quebec	842	\$68.809	\$15.958
Ontario	1,317	\$125.024	\$27.042
Manitoba	173	\$14.215	\$2.818
Saskatchewan	116	\$9.784	\$1.780
Alberta	702	\$107.744	\$16.903
British Columbia	3,693	\$377.555	\$82.830
Territories	63	\$5.537	\$0.858
Total Canada	7,128	\$728.586	\$152.557

Table 3.2-3. Employment and GDP Impacts of Operation by Province or Territory, 2020 to 2022

Province or Territory	Employment (Person-years)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
2020								
Newfoundland and Labrador	11	29	2	42	\$1.250	\$2.894	\$0.321	\$4.466
Prince Edward Island	0	1	0	2	\$0.022	\$0.050	\$0.006	\$0.077
Nova Scotia	7	19	1	27	\$0.719	\$1.664	\$0.185	\$2.568
New Brunswick	7	18	1	26	\$0.743	\$1.720	\$0.191	\$2.654
Quebec	69	183	13	265	\$6.537	\$15.129	\$1.680	\$23.347
Ontario	140	372	27	539	\$14.113	\$32.664	\$3.628	\$50.405
Manitoba	17	45	3	65	\$1.563	\$3.616	\$0.402	\$5.581
Saskatchewan	10	27	2	39	\$0.901	\$2.086	\$0.232	\$3.219
Alberta	92	245	18	355	\$13.231	\$30.622	\$3.401	\$47.254
British Columbia	604	1,603	116	2,323	\$66.163	\$153.128	\$17.006	\$236.298
Territories	7	18	1	27	\$0.625	\$1.447	\$0.161	\$2.234
Total Canada	965	2,560	185	3,710	\$105.868	\$245.021	\$27.212	\$378.101
2021								
Newfoundland and Labrador	12	47	11	70	\$1.213	\$4.286	\$1.166	\$6.666
Prince Edward Island	1	5	1	7	\$0.064	\$0.226	\$0.061	\$0.351
Nova Scotia	9	37	8	54	\$0.848	\$2.995	\$0.815	\$4.658
New Brunswick	9	34	8	50	\$0.865	\$3.055	\$0.831	\$4.751
Quebec	107	422	94	623	\$9.395	\$33.191	\$9.033	\$51.620
Ontario	180	709	157	1,047	\$18.070	\$63.841	\$17.375	\$99.286
Manitoba	24	94	21	138	\$2.059	\$7.275	\$1.980	\$11.314
Saskatchewan	16	62	14	92	\$1.363	\$4.817	\$1.311	\$7.492
Alberta	103	405	90	598	\$16.416	\$57.998	\$15.785	\$90.199
British Columbia	559	2,202	488	3,249	\$60.932	\$215.271	\$58.589	\$334.792
Territories	9	37	8	54	\$0.833	\$2.944	\$0.801	\$4.579
Total Canada	1,029	4,054	899	5,982	\$112.058	\$395.899	\$107.749	\$615.706
2022								
Newfoundland and Labrador	12	49	21	81	\$1.200	\$4.392	\$2.100	\$7.692
Prince Edward Island	2	6	3	10	\$0.084	\$0.306	\$0.146	\$0.535
Nova Scotia	10	41	17	69	\$0.915	\$3.349	\$1.601	\$5.865
New Brunswick	9	37	16	62	\$0.909	\$3.327	\$1.590	\$5.826
Quebec	124	505	214	842	\$10.734	\$39.290	\$18.785	\$68.809
Ontario	193	790	334	1,317	\$19.504	\$71.389	\$34.132	\$125.024
Manitoba	25	104	44	173	\$2.218	\$8.117	\$3.881	\$14.215
Saskatchewan	17	69	29	116	\$1.526	\$5.586	\$2.671	\$9.784
Alberta	103	421	178	702	\$16.808	\$61.522	\$29.414	\$107.744
British Columbia	542	2,214	937	3,693	\$58.899	\$215.584	\$103.073	\$377.555
Territories	9	38	16	63	\$0.864	\$3.162	\$1.512	\$5.537
Total Canada	1,046	4,274	1,809	7,128	\$113.659	\$416.022	\$198.904	\$728.586

For the Province of British Columbia, total annual employment estimates for Operation increase from approximately 2,323 to a high of 4,320 by 2026 (Table 3.2-4). Provincial GDP impacts begin at approximately \$236.3 million rising to \$415.1 million by 2023, remaining near that level until 2030, after which annual provincial GDP contributions fall with decreased Operation expenditures through the next decade, subsequently increasing again through the life of the mine (Table 3.2-4). Tax revenues follow a similar pattern, increasing to approximately \$85.6 million in 2023, with approximately \$59.0 million to the federal government and \$26.6 million to the provincial government. Note that the government tax revenue estimates are predominately comprised of income and sales tax collected, and do not include direct corporate profit tax or royalties that are payable by Seabridge.

Table 3.2-4. Annual Economic Impacts of Operation in British Columbia

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2020	2,323	\$236.3	\$34.3	\$15.5	\$49.8
2021	3,249	\$334.8	\$48.6	\$21.9	\$70.5
2022	3,693	\$377.6	\$54.3	\$24.5	\$78.8
2023	4,232	\$415.1	\$59.0	\$26.6	\$85.6
2024	4,110	\$410.6	\$57.6	\$26.0	\$83.6
2025	3,667	\$383.3	\$48.9	\$22.0	\$70.9
2026	4,320	\$412.8	\$52.1	\$23.5	\$75.6
2027	4,003	\$401.1	\$50.9	\$22.9	\$73.8
2028	3,813	\$384.9	\$48.6	\$21.9	\$70.6
2029	3,860	\$382.3	\$48.0	\$21.6	\$69.6
2030-2039	18,695	\$2,089.2	\$288.3	\$130.0	\$418.4
2040-2049	29,808	\$3,147.4	\$444.6	\$200.5	\$645.1
2050-2059	33,187	\$3,689.2	\$498.1	\$224.6	\$722.7
2060-1069	32,141	\$3,554.0	\$486.3	\$219.3	\$705.6
2070-2079	28,005	\$2,790.3	\$365.3	\$164.7	\$530.0
Total	179,247	\$19,022.6	\$2,586.7	\$1,166.4	\$3,753.1

The total economic impacts of Operation by British Columbia Census Division the years 2020, 2021 and 2022, again representing the initial years of Operation and ramp up, are shown in Table 3.2-5a-c. Employment, personal income, and GDP benefits are predicted to predominantly occur with the Greater Vancouver region (CD 14), with share of employment and personal income effects of approximately 42% of the provincial total, and share of GDP effects of approximately 45% of the provincial total (Table 3.2-5a-c).

For the two CDs that define the region in which the Project is located – Bulkley-Nechako (CD 2) and Kitimat-Stikine (CD 15) – total employment (direct, indirect and induced) is estimated to be approximately 280 persons in 2020, 373 persons in 2021, and 403 persons in 2022. Again, personal income and GDP impacts mirror employment impacts. For Operation, personal income effects (direct, indirect, and induced) within the region increase from approximately \$24 million in 2020, \$28 million in 2021, and \$29 million 2022. Similarly, regional GDP impacts are estimated to be approximately \$29 million in 2020, \$40 million in 2021, and \$43 million 2022 (Table 3.2-5).

Table 3.2-5a. Employment, Income and GDP Impacts of Operation by British Columbia Census Division, Year 2020

Census Division	Employment (Person-years)				Personal Income (Million Constant Dollars)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
1 (Alberni-Clayoquot)	0	6	0	6	\$0	\$0.3	\$0.02	\$0.3	\$0.04	\$0.4	\$0.04	\$0.5
2 (Bulkley-Nechako)	120	14	4	139	\$10.3	\$0.7	\$0.9	\$11.9	\$10.4	\$1.0	\$1.9	\$13.3
3 (Capital)	31	74	4	108	\$2.7	\$4.0	\$0.4	\$7.0	\$3.4	\$5.8	\$0.7	\$9.9
4 (Cariboo)	31	24	2	57	\$2.6	\$1.2	\$0.2	\$4.0	\$2.8	\$1.8	\$0.5	\$5.0
5 (Central Coast)	0	2	0	1	\$0	\$0.07	\$0.007	\$0.07	\$3,342	\$0.1	\$0.02	\$0.2
6 (Central Kootenay)	0	21	1	22	\$0	\$1.2	\$0.03	\$1.2	\$0.1	\$2.7	\$0.07	\$2.9
7 (Central Okanagan)	0	66	3	70	\$0	\$3.6	\$0.1	\$3.7	\$0.6	\$6.7	\$0.3	\$7.5
8 (Columbia-Shuswap)	0	22	1	23	\$0	\$1.2	\$0.02	\$1.2	\$0.1	\$1.8	\$0.04	\$1.9
9 (Comox-Strathcona)	0	28	1	29	\$0	\$1.5	\$0.05	\$1.5	\$0.3	\$2.1	\$0.1	\$2.5
10 (Cowichan Valley)	0	22	1	23	\$0	\$1.2	\$0.03	\$1.2	\$0.1	\$1.6	\$0.05	\$1.8
11 (East Kootenay)	0	30	1	31	\$0	\$1.7	\$0.05	\$1.7	\$0.2	\$2.5	\$0.09	\$2.8
12 (Fraser Valley)	0	92	5	97	\$0	\$5.3	\$0.2	\$5.4	\$0.6	\$7.7	\$0.3	\$8.6
13 (Fraser-Fort George)	0	89	5	94	\$0	\$5.1	\$0.1	\$5.3	\$0.5	\$7.3	\$0.3	\$8.0
14 (Greater Vancouver)	180	739	64	983	\$15.7	\$40.8	\$3.7	\$60.2	\$22.6	\$76.0	\$7.4	\$106.0
15 (Kitimat-Stikine)	120	16	4	141	\$10.2	\$1.0	\$1.0	\$12.1	\$11.6	\$2.3	\$2.1	\$16.1
16 (Kootenay Boundary)	0	16	1	17	\$0	\$1.0	\$0.02	\$1.0	\$0.7	\$2.7	\$0.05	\$2.9
17 (Mount Waddington)	0	4	0	4	\$0	\$0.2	\$0.02	\$0.2	\$0.02	\$0.3	\$0.03	\$0.4
18 (Nanaimo)	0	41	2	43	\$0	\$2.3	\$0.08	\$2.4	\$0.4	\$3.2	\$0.1	\$3.8
19 (North Okanagan)	0	39	2	41	\$0	\$2.2	\$0.05	\$2.3	\$0.2	\$3.1	\$0.1	\$3.4
20 (Northern Rockies)	0	35	2	37	\$0	\$1.8	\$0.02	\$1.8	\$0.06	\$4.7	\$0.05	\$4.8
21 (Okanagan-Similkameen)	0	30	1	31	\$0	\$1.6	\$0.03	\$1.7	\$0.2	\$2.7	\$0.06	\$2.9
22 (Peace River)	60	80	7	147	\$5.1	\$4.2	\$0.5	\$9.8	\$5.5	\$7.9	\$1.2	\$14.6
23 (Powell River)	0	12	0	12	\$0	\$0.6	\$0.5	\$0.7	\$0.04	\$0.9	\$0.1	\$1.0
24 (Skeena-Queen Charlotte)	31	7	1	38	\$2.6	\$0.3	\$0.2	\$3.1	\$2.6	\$0.5	\$0.4	\$3.6
25 (Squamish-Lillooet)	0	18	0	18	\$0	\$0.9	\$0.08	\$1.0	\$0.06	\$1.4	\$0.2	\$1.6
26 (Stikine)	12	10	1	23	\$1.0	\$0.5	\$0.1	\$1.6	\$1.0	\$0.6	\$0.2	\$1.8
27 (Sunshine Coast)	0	8	0	8	\$0	\$0.4	\$0.04	\$0.5	\$0.04	\$0.7	\$0.07	\$0.8
28 (Thompson-Nicola)	18	58	4	80	\$1.7	\$3.1	\$0.3	\$5.2	\$2.6	\$4.6	\$0.6	\$7.8
Total	603	1,603	117	2,323	\$51.9	\$87.9	\$8.2	\$148.0	\$66.2	\$153.1	\$17.0	\$236.3

Table 3.2-5b. Employment, Income and GDP Impacts of Operation by British Columbia Census Division, Year 2021

Census Division	Employment (Person-years)				Personal Income (Million Constant Dollars)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
1 (Alberni-Clayoquot)	0	11	2	13	\$0	\$0.5	\$0.1	\$0.6	\$0.03	\$0.7	\$0.2	\$0.9
2 (Bulkley-Nechako)	112	23	51	185	\$9.6	\$1.2	\$3.0	\$13.7	\$9.7	\$1.6	\$6.6	\$17.9
3 (Capital)	28	104	24	155	\$2.4	\$5.5	\$1.6	\$9.6	\$3.0	\$8.0	\$3.1	\$14.1
4 (Cariboo)	28	37	15	80	\$2.4	\$1.8	\$1.0	\$5.2	\$2.6	\$2.6	\$2.1	\$7.3
5 (Central Coast)	0	3	1	4	\$0	\$0.2	\$0.5	\$0.2	\$0.003	\$0.4	\$0.1	\$0.5
6 (Central Kootenay)	0	32	3	35	\$0	\$2.0	\$0.09	\$2.0	\$0.1	\$4.4	\$0.2	\$4.7
7 (Central Okanagan)	0	87	9	96	\$0	\$5.0	\$0.5	\$5.5	\$0.5	\$9.3	\$0.9	\$10.8
8 (Columbia-Shuswap)	0	29	4	33	\$0	\$1.6	\$0.2	\$1.8	\$0.1	\$2.3	\$0.5	\$2.8
9 (Comox-Strathcona)	0	39	4	43	\$0	\$2.0	\$0.3	\$2.2	\$0.3	\$2.8	\$0.5	\$3.6
10 (Cowichan Valley)	0	32	3	35	\$0	\$1.6	\$0.2	\$1.8	\$0.1	\$2.1	\$0.4	\$2.7
11 (East Kootenay)	0	37	5	41	\$0	\$2.0	\$0.3	\$2.3	\$0.2	\$3.0	\$0.4	\$3.7
12 (Fraser Valley)	0	122	10	132	\$0	\$6.4	\$0.7	\$7.1	\$0.5	\$9.4	\$1.4	\$11.3
13 (Fraser-Fort George)	0	112	10	122	\$0	\$6.0	\$0.7	\$6.7	\$0.4	\$8.5	\$1.4	\$10.4
14 (Greater Vancouver)	168	1,020	194	1,382	\$14.5	\$58.5	\$10.8	\$83.8	\$20.8	\$109.2	\$21.6	\$151.6
15 (Kitimat-Stikine)	112	25	51	188	\$9.5	\$1.6	\$3.1	\$14.3	\$10.9	\$4.0	\$6.9	\$21.8
16 (Kootenay Boundary)	0	25	3	27	\$0	\$1.7	\$0.008	\$1.7	\$0.09	\$4.5	\$0.002	\$4.6
17 (Mount Waddington)	0	5	2	7	\$0	\$0.3	\$0.09	\$0.4	\$0.001	\$0.4	\$0.2	\$0.6
18 (Nanaimo)	0	54	6	60	\$0	\$2.8	\$0.4	\$3.3	\$0.3	\$4.0	\$0.8	\$5.1
19 (North Okanagan)	0	48	6	54	\$0	\$2.5	\$0.4	\$2.9	\$0.2	\$3.6	\$0.7	\$4.4
20 (Northern Rockies)	0	49	5	54	\$0	\$2.8	\$0.1	\$2.9	\$0.05	\$7.3	\$0.3	\$7.7
21 (Okanagan-Similkameen)	0	38	6	43	\$0	\$2.1	\$0.3	\$2.4	\$0.2	\$3.4	\$0.6	\$4.2
22 (Peace River)	56	116	29	202	\$4.8	\$6.2	\$1.6	\$12.6	\$5.2	\$11.7	\$3.9	\$20.8
23 (Powell River)	0	17	3	20	\$0	\$0.9	\$0.2	\$1.1	\$0.03	\$1.4	\$0.3	\$1.8
24 (Skeena-Queen Charlotte)	28	10	14	52	\$2.4	\$0.5	\$0.9	\$3.8	\$2.4	\$0.9	\$1.8	\$5.1
25 (Squamish-Lillooet)	0	26	5	31	\$0	\$1.4	\$0.2	\$1.6	\$0.05	\$2.1	\$0.4	\$2.6
26 (Stikine)	11	17	6	35	\$1.0	\$0.9	\$0.4	\$2.2	\$1.0	\$1.1	\$0.8	\$2.8
27 (Sunshine Coast)	0	12	2	14	\$0	\$0.7	\$0.1	\$0.8	\$0.03	\$1.1	\$0.2	\$1.3
28 (Thompson-Nicola)	17	73	14	105	\$1.4	\$3.8	\$1.0	\$6.2	\$2.2	\$5.6	\$2.0	\$9.8
Total	559	2,202	488	3,249	\$48.0	\$122.4	\$28.4	\$198.8	\$60.9	\$215.3	\$58.6	\$334.8

Table 3.2-5c. Employment, Income and GDP Impacts of Operation by British Columbia Census Division, Year 2022

Census Division	Employment (Person-years)				Personal Income (Million Constant Dollars)				GDP (Million Constant Dollars)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
1 (Alberni-Clayoquot)	0	11	5	16	\$0	\$0.6	\$0.3	\$0.8	\$0.03	\$0.7	\$0.5	\$1.2
2 (Bulkley-Nechako)	108	23	69	200	\$9.2	\$1.2	\$3.8	\$14.2	\$9.3	\$1.6	\$8.4	\$19.3
3 (Capital)	27	102	50	179	\$2.3	\$5.4	\$2.9	\$10.6	\$2.9	\$7.8	\$5.5	\$16.2
4 (Cariboo)	27	38	25	91	\$2.3	\$1.9	\$1.4	\$5.6	\$2.5	\$2.7	\$3.1	\$8.3
5 (Central Coast)	0	3	2	6	\$0	\$0.2	\$0.1	\$0.3	\$0.003	\$0.4	\$0.2	\$0.6
6 (Central Kootenay)	0	33	8	41	\$0	\$2.0	\$0.4	\$2.4	\$0.1	\$4.5	\$0.8	\$5.4
7 (Central Okanagan)	0	87	24	111	\$0	\$5.0	\$1.2	\$6.2	\$0.5	\$9.3	\$2.4	\$12.2
8 (Columbia-Shuswap)	0	30	10	39	\$0	\$1.6	\$0.5	\$2.1	\$0.1	\$2.3	\$0.9	\$3.4
9 (Comox-Strathcona)	0	42	11	53	\$0	\$2.1	\$0.6	\$2.7	\$0.3	\$2.9	\$1.1	\$4.3
10 (Cowichan Valley)	0	34	9	43	\$0	\$1.6	\$0.5	\$2.1	\$0.1	\$2.2	\$0.8	\$3.2
11 (East Kootenay)	0	36	11	47	\$0	\$2.0	\$0.6	\$2.5	\$0.2	\$3.0	\$1.1	\$4.3
12 (Fraser Valley)	0	124	29	153	\$0	\$6.4	\$1.6	\$7.9	\$0.5	\$9.3	\$3.0	\$12.8
13 (Fraser-Fort George)	0	111	25	137	\$0	\$5.9	\$1.4	\$7.3	\$0.4	\$8.4	\$2.7	\$11.6
14 (Greater Vancouver)	163	1,017	385	1,564	\$14.0	\$58.4	\$20.5	\$92.9	\$20.2	\$108.9	\$40.1	\$170.0
15 (Kitimat-Stikine)	108	25	70	203	\$9.2	\$1.6	\$4.0	\$14.9	\$10.5	\$4.0	\$9.1	\$23.6
16 (Kootenay Boundary)	0	25	7	33	\$0	\$1.7	\$0.3	\$2.0	\$0.9	\$4.6	\$0.6	\$5.3
17 (Mount Waddington)	0	6	3	9	\$0	\$0.3	\$0.2	\$0.5	\$0.01	\$0.4	\$0.3	\$0.7
18 (Nanaimo)	0	53	16	69	\$0	\$2.8	\$0.9	\$3.6	\$0.3	\$3.9	\$1.7	\$5.9
19 (North Okanagan)	0	47	14	61	\$0	\$2.5	\$0.7	\$3.2	\$0.1	\$3.5	\$1.4	\$5.0
20 (Northern Rockies)	0	48	14	61	\$0	\$2.8	\$0.6	\$3.4	\$0.05	\$7.3	\$1.5	\$8.8
21 (Okanagan-Similkameen)	0	37	14	51	\$0	\$2.0	\$0.7	\$2.7	\$0.2	\$3.3	\$1.4	\$4.8
22 (Peace River)	54	126	50	230	\$4.6	\$6.5	\$2.6	\$13.8	\$5.0	\$12.3	\$6.2	\$23.6
23 (Powell River)	0	17	7	25	\$0	\$0.9	\$0.4	\$1.3	\$0.03	\$1.4	\$0.7	\$2.2
24 (Skeena-Queen Charlotte)	27	10	21	59	\$2.3	\$0.6	\$1.2	\$4.0	\$2.3	\$0.9	\$2.5	\$5.7
25 (Squamish-Lillooet)	0	26	13	39	\$0	\$1.4	\$0.6	\$2.0	\$0.05	\$2.2	\$1.1	\$3.3
26 (Stikine)	11	16	12	39	\$0.9	\$0.8	\$0.7	\$2.4	\$0.9	\$1.0	\$1.3	\$3.2
27 (Sunshine Coast)	0	12	5	17	\$0	\$0.7	\$0.3	\$0.9	\$0.03	\$1.1	\$0.5	\$1.6
28 (Thompson-Nicola)	16	73	27	117	\$1.4	\$3.8	\$1.6	\$6.8	\$2.1	\$5.5	\$3.3	\$10.9
Total	542	2,214	936	3,693	\$46.3	\$122.5	\$50.3	\$219.1	\$58.9	\$215.6	\$103.1	\$377.6

3.3 COMBINED ECONOMIC IMPACTS

The combined employment, GDP and tax revenue impacts of the Project across Canada, including all provinces and territories, considering both Construction and Operation from 2014 to 2079, are shown in Table 3.3-1. Combined direct, indirect and induced impacts will peak in the year 2018 at an estimated employment of 11,685 person-years and GDP contribution of approximately \$1.3 billion. In that same year, revenues to government total approximately \$236 million (comprising \$161 million to the federal government and \$76 million to provincial governments).

Table 3.3-1. Annual Economic Impacts of Construction and Operation in Canada

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2014	634	\$69.5	\$8.3	\$3.9	\$12.2
2015	4,084	\$471.3	\$56.2	\$26.5	\$82.8
2016	7,838	\$907.3	\$108.6	\$51.2	\$159.8
2017	9,993	\$1,129.9	\$137.0	\$64.7	\$201.7
2018	11,685	\$1,317.7	\$160.5	\$75.7	\$236.2
2019	10,539	\$1,075.5	\$120.5	\$56.9	\$177.3
2020	9,035	\$917.2	\$118.9	\$57.1	\$176.0
2021	8,621	\$879.8	\$116.7	\$56.8	\$173.5
2022	8,425	\$856.8	\$113.9	\$55.8	\$169.7
2023	8,710	\$867.2	\$114.9	\$56.5	\$171.3
2024	8,364	\$841.8	\$111.0	\$54.7	\$165.6
2025	7,773	\$798.7	\$97.4	\$48.0	\$145.4
2026	8,397	\$821.8	\$99.6	\$49.1	\$148.8
2027	7,940	\$800.7	\$97.3	\$48.0	\$145.3
2028	7,679	\$775.9	\$94.1	\$46.4	\$140.5
2029	7,660	\$764.7	\$92.7	\$45.7	\$138.4
2030-2039	33,400	\$3,597.2	\$453.8	\$223.9	\$677.7
2040-2049	59,860	\$6,443.5	\$831.3	\$407.7	\$1,239.1
2050-2059	73,071	\$8,093.5	\$1,033.7	\$507.1	\$1,540.8
2060-2069	71,414	\$7,639.1	\$994.3	\$489.0	\$1,483.2
2070-2079	81,884	\$8,223.6	\$1,084.0	\$534.1	\$1,618.0
Total	451,115	\$47,694.6	\$6,100.0	\$2,985.6	\$9,085.6

Total economic impacts in Canada over the life of the Project total approximately 451,000 person-years of employment, \$47.7 billion in GDP contributions, and \$9.1 billion in tax revenue (Table 3.3-1).

With respect to the Province of British Columbia, combined employment, GDP and tax revenue impacts of the Project similarly peak in 2018 with an estimated employment of over 7,000 persons (FTEs), GDP contribution of about \$808 million, and tax revenues of approximately \$141 million (Table 3.3-2).

Table 3.3-2. Annual Economic Impacts of Construction and Operation in British Columbia

Year	Employment (Person-years)	GDP (Million Constant Dollars)	Tax Revenue (Million Constant Dollars)		
			Federal	Provincial	Total
2014	388	\$44.8	\$5.7	\$2.5	\$8.2
2015	2,603	\$309.2	\$36.7	\$16.4	\$53.2
2016	4,934	\$583.0	\$69.3	\$31.0	\$100.3
2017	6,079	\$699.6	\$84.1	\$37.6	\$121.8
2018	7,024	\$808.0	\$97.3	\$43.5	\$140.8
2019	6,043	\$607.0	\$64.5	\$28.8	\$93.3
2020	4,746	\$473.3	\$65.2	\$29.3	\$94.4
2021	4,203	\$428.7	\$60.8	\$27.3	\$88.1
2022	4,074	\$415.0	\$59.2	\$26.7	\$85.8
2023	4,387	\$430.3	\$61.0	\$27.5	\$88.5
2024	4,174	\$416.8	\$58.4	\$26.4	\$84.8
2025	3,694	\$385.9	\$49.2	\$22.2	\$71.4
2026	4,331	\$413.9	\$52.3	\$23.6	\$75.8
2027	4,008	\$401.6	\$50.9	\$23.0	\$73.9
2028	3,816	\$385.1	\$48.7	\$21.9	\$70.6
2029	3,860	\$382.3	\$48.0	\$21.6	\$69.6
2030-2039	18,772	\$2,098.7	\$289.5	\$130.5	\$420.0
2040-2049	34,477	\$3,755.9	\$516.7	\$232.7	\$749.4
2050-2059	38,769	\$4,418.8	\$584.8	\$263.4	\$848.2
2060-2069	34,887	\$3,835.5	\$522.0	\$235.2	\$757.2
2070-2079	29,179	\$2,905.2	\$380.1	\$171.3	\$551.4
Total	225,407	\$24,292.4	\$3,216.4	\$1,448.0	\$4,664.5

Total economic impacts in British Columbia over the life of the Project total approximately 225,000 person-years of employment, \$24.3 billion in GDP contributions, and \$4.7 billion in tax revenue (Table 3.3-2).

4. Summary

The Project is predicted to result in substantial economic benefits to British Columbia and Canada as a whole for well over a 60-year period.

For the initial Construction phase (for open pit mining), key economic benefits include the following:

- Direct Project employment of approximately 7,450 person-years in British Columbia and 9,314 person-years for all of Canada;
- Total employment (direct, indirect, and induced) of approximately 31,094 person-years in British Columbia and 55,248 person-years for all of Canada;
- Total GDP (direct, indirect, and induced) generated by the Project of approximately \$3.5 billion in British Columbia and \$6.0 billion for all of Canada; and
- Total tax revenue (federal and provincial) of approximately \$591 million from economic activity in BC and \$1.08 billion for all of Canada.

Subsequent Construction associated with the move to underground mining is expected to generate additional benefits:

- Direct Project employment of approximately 4,621 person-years in British Columbia and 5,811 person-years for all of Canada;
- Total employment (direct, indirect, and induced) of approximately 15,066 person-years in British Columbia and 29,934 person-years for all of Canada;
- Total GDP (direct, indirect, and induced) generated by the Project of approximately \$1.8 billion in British Columbia and \$3.4 billion for all of Canada; and
- Total tax revenue (federal and provincial) of approximately \$320 million from economic activity in BC and \$627 million for all of Canada.

For Operation, excluding Construction for underground mining, key economic benefits include the following:

- Direct Project employment of approximately 35,205 person-years in British Columbia and 52,537 person-years for all of Canada over the 51.5 mine life;
- Total employment (direct, indirect, and induced) of approximately 179,247 person-years in British Columbia and 365,934 person-years for all of Canada;
- Total GDP (direct, indirect, and induced) generated by the Project of approximately \$19.0 billion in British Columbia and \$38.3 billion for all of Canada; and
- Total tax revenue (federal and provincial) of approximately \$3.8 billion from economic activity in BC and \$7.4 billion for all of Canada.