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Section 5.0 Social Effects Assessment

Chapter 1 Labour Market Valued Component

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Tenas Project

Section 5.0 Economic Effects Assessment Chapter 1 Labour Market Valued Component

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Appendix 5.1-A Socio-economic Baseline Report

ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
AIR	Application Information Requirements
ALR	Agricultural Land Reserve
AMSSA	Affiliation of Multicultural Societies and Service Agencies of British Columbia
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
BC MAL	British Columbia Ministry of Agriculture and Lands
BC MEM	British Columbia Ministry of Energy and Mines
BC MEMLI	British Columbia Ministry of Energy, Mines and Low Carbon Innovation
BC OGC	British Columbia Oil and Gas Commission
BMPs	best management practices
BDC	Business Development Bank of Canada
C	Chapter
C&M	care and maintenance
CEA	cumulative effects assessment
CUS	Cultural Use Study
CWB	community well-being
EA	environmental assessment
EAA	<i>Environmental Assessment Act</i> , SBC 2002, c 43 (Government of British Columbia [GovBC] 2002)
EAC	Environmental Assessment Certificate
EFAP	Employee and Family Assistance Program
FTEs	full-time equivalents
GDP	Gross Domestic Product
GovBC	Government of British Columbia
GovCan	Government of Canada
HEC	Human Ecology Consulting Inc.
IOM	Input-Output Model
ISET	Indigenous Skills and Employment Training Program
LNG	Liquefied natural gas
LSA	Local Study Area
MDO	Mineral Development Office
NAICS	North American Industry Classification System
NI	National Instrument
NOC	National Occupational Classification
OCP	official community plan

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
OHSP	Occupational Health and Safety Program (S13.0-C13)
PDAC	Prospectors & Developers Association of Canada
PNG	Pacific Northern Gas
Project	Tenas Project
RDBN	Regional District of Bulkley-Nechako
RSA	Regional Study Area
S	Section
SAIR	Supplementary Application Information Requirements
SEEA	Socio-Economic and Environmental Assessment
SEMP	Socio-economic Management Plan (S13-C16)
SLMP	Sector Labour Market Partnership
STEM	science, technology, engineering, and mathematics
TCL	Telkwa Coal Limited
TK	Traditional Knowledge
VC	Valued Component
WGAAP	Workforce Gap Analysis and Action Plan

UNITS OF MEASURE

Abbreviation	Long form of Abbreviation or Acronym
%	percent
ha	hectare
km	kilometre
kV	kilovolt
m	metre
MW	megawatt
V	volt

EXECUTIVE SUMMARY

This chapter provides an analysis of potential interactions between the Tenas Project (Project) and the Labour Market Valued Component (VC). Labour Market refers to the availability and characteristics of labour and employment in terms of supply and demand. The Project will hire workers from nearby communities to staff jobs during the Construction and Operation phases. The increased employment levels and increased demand for skilled labour have the potential to result in effects on the Labour Market VC.

Stakeholder engagement and consultation, collection of secondary data, and preparation of the British Columbia (BC) Input-Output Model (IOM) informed the selection of Labour Market as a VC, and issues scoping related to the VC. Key themes of interest identified through the consultation and reviews of other information related to Labour Market included Project potential effects on local hiring during Project Construction and Operation phases, as well as interest in local and Wet'suwet'en employment and training, potential barriers to inclusion of Wet'suwet'en in Project benefits, and potential effects related to income. Desktop data was collected to understand employment and unemployment levels by industry and educational attainment, as well as to describe relevant trends and challenges faced by workers in the region. BC IOM informed the estimation of direct, indirect, and induced effects of the Project on employment and income.

Spatial boundaries for the assessment of potential effects on Labour Market include the Local Study Area (LSA) defined to include Village of Telkwa, Town of Smithers, District of Houston, and the community of Witset (formerly Moricetown); and the Regional Study Area (RSA) defined to encompass the Regional District of Bulkley-Nechako (RDBN) and the community of Witset (formerly Moricetown). The assessment of Project-related effects and cumulative effects was conducted according to the methods set out in **Section (S) 3.0 Assessment Methodology** of the **Environmental Assessment Certificate (EAC) Application**.

In addition to the Project's beneficial effects on employment and income, the assessment conducted in this chapter identified three (3) potential adverse effects on Labour Market resulting from the proposed Project. During the Construction and Operation phases, the Project's need for skilled workers could lead to competition for skilled labour, resulting in an upward pressure on labour cost (i.e., wage inflation). In addition, Indigenous workers could face barriers to employment at the Project relating to lower levels of skills, and pre-existing socio-economic challenges; these conditions could limit their ability to participate in the economic benefits of the Project.

Mitigation measures for the competition for skilled labour and wage inflation during the Construction and Operation phases include: advance communications and hosting of Employment Information Sessions to prepare the local workforce for upcoming positions; a training plan; supporting specialized skill training and on-the-job training; supporting employees to upgrade their training and education as a means towards job advancement; and cooperating with local educational institutions to enhance skill level of the labour force. In addition, specific mitigation measures to reduce barriers to Indigenous employment and support Indigenous participation in Project-related economic benefits include creating a Health, Safety, and Human Resources Superintendent role at the Project to support Indigenous employment and long-term employment tenure at the Project, and provision of Indigenous Cultural Awareness Induction for all Project employees.

After the implementation of mitigation measures, three (3) potential residual effects were predicted for the Labour Market VC:

1. increase in competition for skilled local and regional workforce;
2. increase in labour cost; and
3. barriers to Indigenous employment and participation in Project-related economic benefits.

After characterisation, residual effects of the Project were predicted to be **Not Significant**; therefore, the effect of the Project on the VC is predicted to be **Not Significant**. The residual effects were carried forward for cumulative effects assessment (CEA). The CEA considered past, present, and reasonably foreseeable future projects and activities that could interact with the Project. The assessment determined that while there is potential for present and reasonably foreseeable future projects and activities to cumulatively interact with the Project, there is uncertainty surrounding the number of reasonably foreseeable future projects that will be realized, with additional uncertainty around scope and timing of those projects. While all three (3) cumulative effects are predicted, they are rated as **Not Significant**, and therefore cumulative effects on the VC are expected to be **Not Significant**.

A **Socio-economic Management Plan (SEMP) (S13.0-C16)** was developed as part of the EAC Application to outline processes related to planning and monitoring of required Project engagement and consultation, to monitor the predicted Project effects, to investigate the efficacy of the introduced mitigation measures, and to propose and develop new mitigation measures if needed.

1. INTRODUCTION

This chapter is an analysis of potential interactions between the Tenas Project (Project) and the Labour Market Valued Component (VC). Labour Market refers to the availability and characteristics of labour and employment in terms of supply and demand. The Project will hire workers from nearby communities to staff jobs during the Construction and Operation phases. Supplier industries directly supplying the Project and suppliers further down the supply chain are also expected to provide additional jobs. The increased employment levels and increased demand for skilled labour have the potential to result in effects on the Labour Market VC as considered in this chapter.

The assessment process includes:

- ▶ **Regulatory Context:** This section reviews the relevant regulatory frameworks in British Columbia (BC) and the Regional District of Bulkley-Nechako (RDBN) relevant to the Labour Market VC;
- ▶ **Scope of the Assessment:** A description of the assessment scope including issues scoping, rationale for the selection of the Labour Market VC and indicators, and definitions for the spatial and temporal boundaries of the assessment;
- ▶ **Existing Conditions:** A description of the baseline studies undertaken for the Project, other relevant information, and description of the Labour Market VC within the defined spatial boundaries;
- ▶ **Assessment of Project-related Effects:** A description of the potential interactions between the Project and the Labour Market VC, potential adverse effects, proposed mitigation measures, an evaluation of potential residual effects that remain following implementation of the proposed mitigation measures, and an assessment of the significance of these potential residual effects;
- ▶ **Cumulative Effects Assessment (CEA):** A description of the residual effects of the Project in combination with the residual effects of past, present, and reasonably foreseeable future projects and activities, (if/where necessary) the development of additional mitigation measures to eliminate, reduce, or control cumulative effects and an assessment of the cumulative effects on the Labour Market VC and their significance; and
- ▶ **Follow-up Strategy:** Due to uncertainties inherent in this analysis and the changing nature of the socio-economic landscape, a monitoring procedure is outlined to support adaptive management of the Project for potential effects to Labour Market VC.

2. REGULATORY CONTEXT

This environmental assessment (EA) considered applicable federal and provincial legislations, regulations, strategies, and guidelines relevant to the Labour Market VC, and information provided by Indigenous groups.

The Tenas Project Application Information Requirements (AIR) approved by the British Columbia Environmental Assessment Office (BC EAO) in 2022 included Labour Market as a VC to meet the federal and provincial EA requirements. Assessment of the Labour Market VC follows these guidelines and legislated requirements and is consistent with the requirements of the Project AIR.

At the provincial level, the *Environmental Assessment Act*, SBC 2002, c 43 (Government of British Columbia [GovBC] 2002) (EAA), regulations and agreements require consideration of environmental, economic, social, cultural, and health effects of a proposed Project (GovBC 2002). Guidelines for Socio-Economic and Environmental Assessment (SEEA) - Land Use Planning and Resource Management Planning guide the consideration of economic, social, and environmental components in the EA process (British Columbia Ministry of Agriculture and Lands [BC MAL] 2007). Relevant to the Labour Market VC, the guidelines suggest an overview of existing conditions in the labour market, as well the consideration of Project labour requirements, including generated employment, skills, and wages, as well as the consideration of workers earning higher wages than would otherwise occur in competitive labour markets.

The *Local Government Act*, RSBC 2015, c 1 (GovBC 2015) addresses classification of municipalities, municipal incorporation process, boundary changes, elections and voting, governance and responsibilities of regional districts, bylaw procedures, and enforcement, Treaty First Nation membership and services, financial management and collection of taxes, planning and land use management, official community plans (OCPs), development approvals, and responsibilities and roles for the local government (GovBC 2015). The Act defines (Part 13, Division 1) the regional growth strategy and its purpose to maintain the integrity of a secure and productive resource base, including the Agricultural Land Reserve (ALR), and to promote economic development that supports the unique character of communities (GovBC 2015)

In addition, federal, provincial, and regional policies and plans work to strengthen the jobs market in the RDBN. Canada Starts Here: The BC Jobs Plan (Affiliation of Multicultural Societies and Service Agencies of British Columbia [AMSSA] 2015), building on the strengths of the BC economy and to promote economic growth, outlines steps to attract investment and open new markets for BC, as well as to create jobs and ensure that British Columbians have the right skills for the jobs of the future (AMSSA 2015). BC's Mineral Exploration and Mining Strategy (GovBC 2012), outlines a plan to maximize the benefits of the mining industry in a sustainable way, with economic and social prosperity for communities supporting job creation and skill development, as well as providing opportunities for business growth and revenue sharing.

In October 2020, the federal government announced a three (3)-year, 10 billion dollar (\$) infrastructure plan to create 60,000 jobs and growth for the economy across Canada in response to economic challenges resulting from the COVID-19 pandemic (Government of Canada [GovCan] 2020). The Northern Development region, covering several regional districts including the RDBN, provides business development, capacity building and community development programs. The 2021-2023 Strategic Plan for economic development of the Northern Development region outlines goals to enhance regional capacity, investment, and growth opportunities for communities to stimulate job creation, support resiliency or businesses, and improve economic diversity of the region (Northern Development 2020). Also, the Sector Labour Market Partnership (SLMP) program in BC helps industry and employers understand labour market needs, changes, and challenges, and support long-term partnerships to provide sustainable solutions (Work BC 2020).

3. SCOPE OF THE ASSESSMENT

The assessment of Project-related effects and cumulative effects was conducted according to the methods set out in **S3.0 Assessment Methodology** of the **EAC Application**. Methodologies specific to Labour Market are described in their relevant section. The assessment applies 2016 Census data and other publicly available data obtained from Statistics Canada, as well as employment and income data provided by TCL. Data and information are supplemented by Project-specific studies and socio-economic field studies detailed in the **Socio-Economic Baseline Report** presented in **Appendix 5.1-A**. In addition, Input-Output Model (IOM) results prepared by BC Stats were utilized; as reported in **5.2.1 Beneficial Effects of the Beneficial Effects of the Project** on Employment and Income, the IOM results provide estimated indirect and induced jobs, and income effects as a result of the Project.

Assessment of effects on Labour Market includes the consideration of Project-related employment opportunities created and income paid during the Construction, and Operation phases of the Project. The assessment also considers employment opportunities created in supplier industries due to Project-related procurement opportunities, and induced employment opportunities created through the spending of income by Project workers and by workers employed in supplier industries. The assessment accounts for current employment levels and how those employment levels and incomes would change with the introduction of the proposed Project. While the provision of Project employment and income are considered as beneficial effects of the Project, the Project may result in adverse effects on the Labour Market VC (such as competition for skilled labour or increased cost of labour). For anticipated adverse effects, mitigation measures are proposed to eliminate or minimize the severity of effects. Enhancement measures may also be proposed to increase expected positive effects.

3.1 Issues Scoping

Issues scoping, to understand and identify issues related to the Labour Market VC, considered stakeholder engagement and consultation, collection of secondary data (Statistics Canada), preparation of the BC IOM, and other scientific information and professional expertise. Telkwa Coal Limited (TCL) has undertaken an engagement and consultation process to support the scoping of issues for the Project. **S11.0 Wet'suwet'en Rights and Interests Assessment** and **S12.0 Public Consultation** of the **EAC Application** detail the consultation programs.

Key themes of interest identified through the consultation and reviews of other information as related to Labour Market VC included Project potential effects on local hiring during Project Construction and Operation phases, as well as interest in local and Wet'suwet'en employment and training, potential barriers to inclusion of Wet'suwet'en in Project benefits, and potential effects related to income.

3.2 Rationale for Selection of Labour Market Valued Component (VC)

The Labour Market VC was selected during the pre-Application phase of the Project following the VC selection process set out in **S3.0 Assessment Methodology** of the **EAC Application** and using the methodology provided in the Guideline for Selection of Valued Components and Assessment of Potential Effects (BC EAO 2013). The goal was to focus on relevant issues, concerns, and components of the labour market that may be adversely affected by the Project. Baseline study findings; review of applicable government legislation, policies, and plans; comparable effects assessments for other relevant projects; issue scoping; professional judgement of the Project team; and inputs from Working Group members, government agencies, Indigenous groups, the public, and other interested parties during consultation were considered and used to inform the selection of the Labour Market VC.

3.2.1 Valued Component (VC)

The provision of Project employment, as well as Project-induced employment in supplier industries via contracting opportunities and through the spending of workers' incomes will increase employment levels in communities close to the Project. However, higher income provided by the Project may draw workers away from current employment and local/regional businesses, thus increasing labour cost and reducing the availability of skilled workers for local/regional businesses. Therefore, Labour Market was selected as a VC to investigate the potential adverse effects the proposed Project may have on local labour market cost and availability. Other VCs that support (inform) or are dependent on the Labour Market VC include:

- ▶ **Dependent on:**
 - ▶ **Economic Development VC (S5.0-C2)** – Changes in economic conditions resulting from the Project can affect the existing labour market conditions;
 - ▶ **Demographics VC (S6.0-C1)** – Changes in population resulting from the Project can affect the existing size and capacity of the labour force;
- ▶ **Supporting:**
 - ▶ **Economic Development VC (S5.0-C2)** – Provision of Project employment and associated income can determine the size of economic benefits in the region (Gross Domestic Product [GDP] and government tax revenue);
 - ▶ **Demographics VC (S6.0-C1)** – Provision of Project employment can increase in-migration to the region;
 - ▶ **Infrastructure and Services VC (S6.0-C3)** – Provision of Project employment can have implications on availability of housing and the provision of public services; and
 - ▶ **Community Well-being VC (S6.0-C5)** – Workers from vulnerable groups (such as Indigenous people) may experience barriers to employment at the Project and be excluded from economic benefits, resulting in adverse effects on their well-being.

Table 3.2-1 summarizes the rationale for the selection of the Labour Market as a VC, including its potential linkages with other VCs.

Table 3.2-1: Summary of Rationale for Selection of the Labour Market Valued Component (VC) and Linkages

VC	Rationale for Inclusion	Source of Information	VC Linkages	
Labour Market	Project-related hiring has the potential to compete with other businesses for skilled labour and increase wages.	▪ Issues scoping ▪ Comparable EAs.	Dependent on: ▪ Economic Development ▪ Demographics	Supporting: ▪ Economic Development ▪ Demographics ▪ Infrastructure and Services ▪ Community Well-being

Notes: EA=Environmental Assessment; VC= Valued Component

3.2.2 Subcomponents

There is no identified subcomponent for Labour Market, as this VC is narrowly defined and does not require subcomponents to facilitate the assessment process.

3.2.3 Indicators

Indicators are quantitative or qualitative measures used to describe existing VC conditions and trends, and to evaluate potential Project effects and cumulative effects on the VC. Indicators for Labour Market VC and the rationale for the selection of those indicators are provided in **Table 3.2-2**.

Table 3.2-2: Indicators for Labour Market Valued Component (VC)

Indicator	Rationale for Selection
Number of Workers by Occupation, Industry Affiliation, and Region of Residence	The Tenas Project (Project) has the potential to change the size of the labour force by industry, with increases in employment in occupations related to mining, driving away workforce from other sectors.
Participation Rate and Unemployment Rate	The Project has the potential to change the participation rate in the labour force and unemployment rates. Higher income offered at the Project can potentially incentivize workers not in the labour force to join the labour force, increasing the participation rate, while the provision of Project direct employment can lower the regional and local unemployment rates.
Difference Between Unemployment Rate and Natural Rate of Unemployment	The Project has the potential to affect unemployment in nearby communities, deviating from historical levels.
Potential Barriers to Indigenous Participation in Project-Related Economic Benefits	Some unskilled workers may be excluded from Project benefits due to inability to obtain employment at the Project. This can be especially true for vulnerable groups including Indigenous people that have typically lower levels of education, lack of skills, and face socio-economic challenges or barriers that prevent them from successful participation in the labour force.
Income Levels and Labour Income	Through the provision of Project employment, labour income of workers has the potential to increase. However, the Project is also expected to provide higher wages to those commonly found in nearby communities, potentially increasing labour cost for local businesses.

The above indicators will be used to evaluate potential adverse effects, characterise potential residual effects, and determine effect Significance.

3.2.4 Assessment Boundaries

This subsection identifies the spatial, temporal, and administrative boundaries established for the assessment of Labour Market. There are no technical boundaries applicable to this VC.

3.2.4.1 Spatial Boundaries

The spatial boundaries for the Labour Market VC include the Local Study Area (LSA) defined to include Village of Telkwa, Town of Smithers, District of Houston, and the community of Witset (formerly Moricetown); and the Regional Study Area (RSA) defined to encompass the RDBN and the community of Witset¹ (**Table 3.2-3**). These boundaries were selected because the Project is expected to provide employment and contracting opportunities to LSA communities and in the broader RSA that can affect employment and economic conditions of those communities.

¹ The community of Witset is located outside of the RDBN, in the Kitimat-Stikine Regional District.

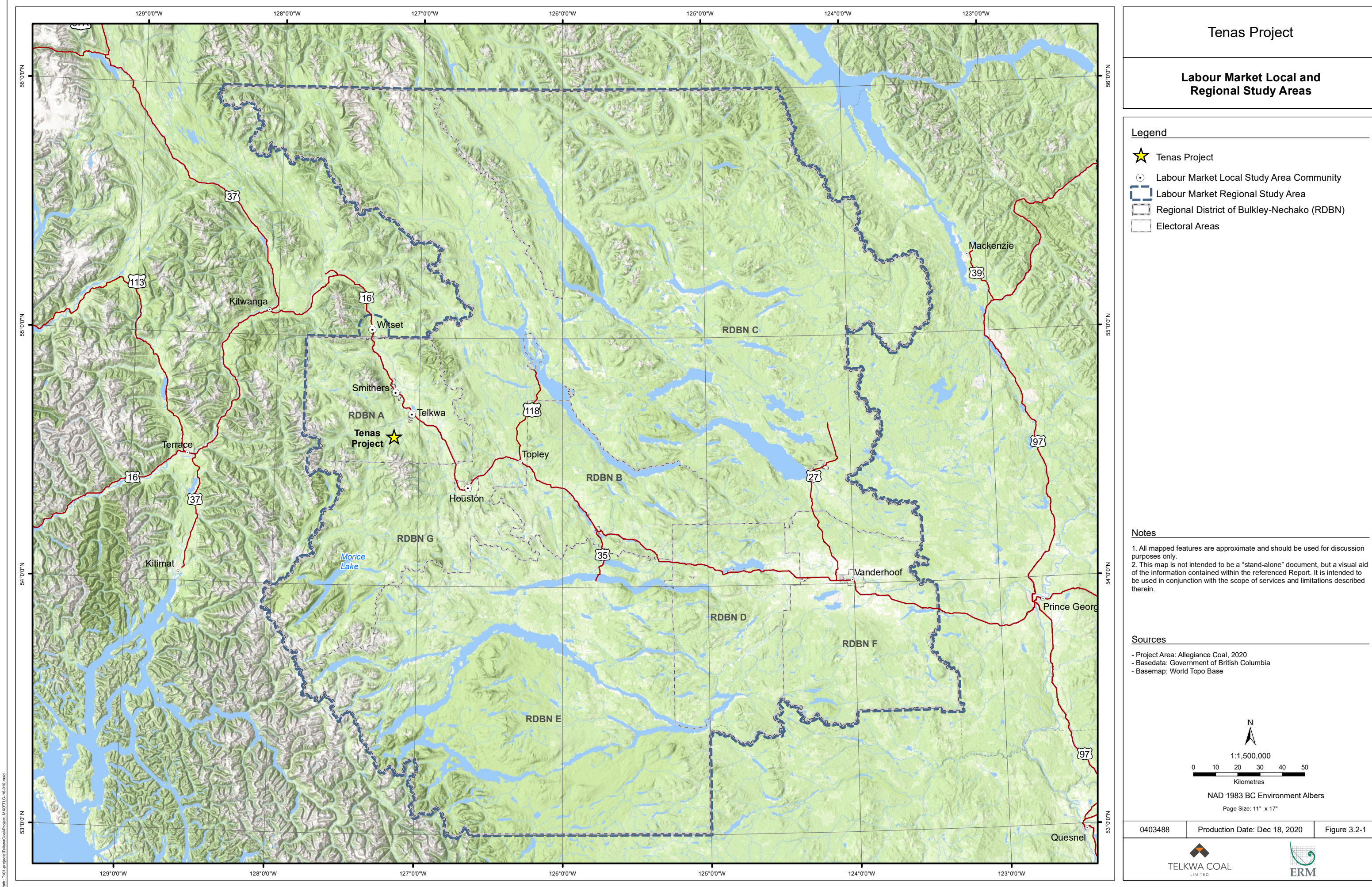
Table 3.2-3: Spatial Boundary Definitions for Labour Market Valued Component (VC)

Spatial Boundary	Description of Study Area
Local Study Area (LSA)	Telkwa, Smithers, Houston, and Witset (formerly Moricetown)
Regional Study Area (RSA)	Regional District of Bulkley-Nechako (RDBN) and the community of Witset

The assessment for Witset is based on available Census data for the following Indian Reserves: Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17.

A specific geographical area of the RSA consisting of Electoral Areas RDBN A and RDBN G, while not formally part of the LSA, is also considered in the assessment to account for the labour force available in rural areas outside of the LSA communities.

Project spatial boundaries are shown in **Figure 3.2-1**.



3.2.4.2 Temporal Boundaries

Temporal boundaries for the project include the Construction, Operation, Decommissioning and Reclamation, and Post-closure phases as defined in **Table 3.2-4** and described in **S1.0 Overview of Project Proponent Description** of the **EAC Application**. These are the boundaries that will be used to assess the residual and cumulative effects of the Project on the Labour Market VC. Most employment and training opportunities would be provided during Construction, and Operation phases and these are the phases of focus for this assessment. Decrease in employment during the Decommissioning and Reclamation, and Post-closure phases is assessed as part of economic downturn effect during those phases in **S5.0-Chapter (C) 2 Economic Development VC** of the **EAC Application**.

Table 3.2-4: Temporal Boundaries for the Tenas Project

Phase	Year	Duration (years)	Description of Activities
Construction	-0.5 to 0	1.5	Site clearing, soil salvage, open pit development, building construction, service and haul road development, Rail Infrastructure construction, bridge construction and development of onsite utilities and services. Development of mine rock, and overburden storage piles, stockpiling of reclamation material such as soil, overburden and other materials suitable for reclamation. Development of water management systems and management ponds for storage of potentially acid generating (PAG) materials.
Operation	1 to 21	21	Development of the open pit through drilling, blasting, loading, and hauling functions. Development of mine rock, and overburden storage piles, stockpiling of reclamation material such as soil, overburden, and other materials suitable for reclamation. Development of water management systems and management ponds for PAG storage. Conducting coal processing, stockpiling of raw coal prior to processing, and stockpiling of processed coal prior to shipping. Progressive reclamation will be accomplished during operation including, where available, reclamation activities such as sloping, topsoil placement and revegetation.
Decommissioning and Reclamation	22 to 25	4	Tear-down of infrastructure onsite plus reclamation activities, including sloping of storage piles, backfill materials, and placement of reclamation materials including growth media, overburden and non-PAG rock for management pond covers and revegetating surfaces that are planned to be reclaimed.
Post-closure	26 to 50	10	Active: This involves the filling of the open pit with water, monitoring of vegetation growth and water quality for both groundwater and surface water and wildlife. Control and sedimentation ponds may still be needed for settling of total suspended solid levels. The management ponds are left as dry land reclamation except for portions that will be left as open water.
		15	Passive: This stage is when the control and sedimentation ponds are no longer required for settling of total suspended solid (TSS) levels and the management ponds are left as dry land reclamation except for portions that will be left as open water. Telkwa Coal Limited (TCL) is now simply monitoring the site.

3.2.4.3 Administrative Boundaries

Administrative boundaries for the Labour Market VC are influenced by local government jurisdiction for the management of economic development and job creation. Municipal administrative boundaries approximately align with the spatial boundaries for the assessment, and thus do not interfere with the ability to identify or assess potential effects on the Labour Market VC. However, the Province of BC also plays a major role in determining the political and fiscal direction relevant to the Labour Market VC. The British Columbia Ministry of Labour sets standards of payment (such as the minimum wage), compensation, and working conditions (work life balance, health, and safety) for workers in the province and promotes fair, healthy, and safe labour and employment relationships. Supporting bodies for the Ministry include the British Columbia Labour Relations Board, Employment Standards Branch, Employers' Advisers Office, Support for Forestry Workers, Worker's Advisers Office, and WorkSafe BC (British Columbia Ministry of Labour 2020a). The 2020/21-2022/23 Service Plan for the British Columbia Ministry of Labour outlines the current strategic direction for the ministry regarding labour laws and standards to reflect the changing nature of workplaces (British Columbia Ministry of Labour 2020b). In addition, the Northern Development region, which covers the RDBN and supports economic development for the region, also supports job creation through promoting economic diversity, community development, and business resiliency (Northern Development 2020).²

3.2.4.4 Technical Boundaries

Technical boundaries for the Labour Market VC were considered but did not apply.

² The Northern Development initiative covers the following economic regions in BC – Northeast, Prince George, Northwest, and Cariboo-Chilcotin-Lillooet. Smithers, Telkwa, Witset and Houston are in the Northwest region. The RDBN is in both the Northwest and the Prince George economic regions.

4. EXISTING CONDITIONS

This subsection describes the existing conditions in the LSA and the RSA as related to Labour Market based on Traditional Knowledge (TK), scientific and other information, and baseline studies undertaken for the Project. The information in this subsection establishes the context for the assessment of effects on the VC. As noted in **3.2.3 Indicators**, the overview of existing conditions focuses on the following indicators:

- ▶ number of workers by occupation, industry affiliation, and region of residence;
- ▶ participation rate and unemployment rate;
- ▶ difference between unemployment rate and prevailing regional rate of unemployment;
- ▶ potential barriers to Indigenous participation in Project-related economic benefits; and
- ▶ income levels and labour income.

4.1 Background Information and Studies

4.1.1 Traditional Knowledge (TK)

While information on the Indigenous population is utilized, TK does not inform or affect the current state and trends of the labour market and employment. A Cultural Use Study (CUS) prepared for the Project was considered in writing this chapter, as it informs socio-economic conditions in Indigenous communities, opportunities available to Indigenous people or lack thereof, and challenges faced by Indigenous people. These, in turn, inform effect assessment and the definition of mitigation measures. See **Appendix 7.1-B of S7.0-C1 Heritage Resources VC** of the **EAC Application**.

4.1.2 Scientific and Other Information

Scientific information is important to the assessment as the existing conditions section for the Labour Market VC is primarily based on desktop research that included the review of published studies, databases, news articles, and government publications as referenced throughout this subsection. The focus is on the most recent available data and information covering the period of 2015 to 2020. Key sources of data to describe the existing labour market and employment trends for the RDBN and the LSA included the 2016 Census Profiles, other Census data tables, as well as the Workforce Gap Analysis and Action Plan (WGAAP) prepared for the RDBN (Human Ecology Consulting Inc. [HEC] 2020).

4.1.3 Baseline Studies

Table 4.1-1 summarizes desktop and field studies that are of relevance to the Labour Market VC and that were considered in the review and assessment process.

Table 4.1-1: Summary of Desktop and Field Studies Related to the Labour Market Valued Component (VC)

Study Name	Study Purpose, Duration and Spatial Boundaries
Socio-economic Baseline Report (Appendix 5.1-A)	The report documents the regional and local socio-economic conditions in the communities that may be affected by development of the Tenas Project (Project), to support the assessment of potential economic and social effects to be presented in the Environmental Assessment Certificate (EAC) Application. The report is based on the review, analysis, and summary of multiple sources of data and information collected between January and August 2019. This includes official government statistics, information from provincial, regional, and local organizations and government agencies, public and unpublished reports, media analyses, and the results of public engagement activities. The study was conducted for the Regional District of Bulkley-Nechako (RDBN), and the communities of Telkwa, Smithers, Houston, and Witset (formerly Moricetown).
Cultural Use Study (CUS) (Appendix 7.1-B of S7.0-C1 Heritage Resources VC)	The CUS compiled a baseline inventory of cultural heritage resources pertaining to Wet'suwet'en communities, including an examination of pre-existing cultural, social, historic, and economic data. The CUS also briefly describes concerns of landowners and non-Indigenous stakeholders with longstanding histories in the area.

Note: C=Chapter; S=Section; VC=Valued Component

4.2 Description of Existing Conditions

This subsection provides information on pre-Project labour market conditions, derived from desktop research. Baseline conditions consider the cumulative effects of past and present projects and activities on Labour Market, prior to and including 2016, as they are incorporated in the most recent 2016 Census data. The presentation of existing conditions is provided for both the LSA and RSA. The LSA is defined to include Village of Telkwa, Town of Smithers, District of Houston, and the community of Witset. The RSA is defined to encompass the RDBN, as well as the community of Witset.

The RSA's population in 2016 was 38,527, representing a 3.1 percent (%) decrease from 2011, whereas the population of the LSA was 10,352 representing a 1.0% decrease since 2011. An estimated 20.9% of the RSA's population, and 17.3% of LSA's population, identified as Indigenous in 2016. Resource-based industries including forestry, tourism, and mining provide an important source of employment and income for workers in the RSA and in the LSA (Statistics Canada 2017e).

In 2016, the RSA had 20,465 workers in the labour force, with a participation rate³ of 66.7% and an unemployment rate⁴ of 12.4%, being almost double the provincial unemployment rate of 6.7%. The LSA had a labour force of 8,170 workers (27.1% of regional total), with most workers residing in Smithers and Houston, and an average participation rate of 68.5%. The overall unemployment rate for the LSA was 10.4%, with the highest in Witset at 19.3% and lowest in Smithers at 8.9%. In total, in 2016, there were 2,535 unemployed in the RSA, of which 580 (22.9% of regional unemployment) were in the LSA. In addition, there were 370 unemployed people in the two (2) electoral areas surrounding the LSA communities

³ Participation rate represents the share of the working-age population (15 years and over) that is working or looking for work.

⁴ Unemployment rate represents the number of unemployed persons expressed as a percentage of the labour force.

RDBN A and RDBN G⁵ (**Table 4.2-1**). Electoral areas cover rural residences not included in other community census subdivisions.

Important industries in the RSA in 2016 included forestry (14.6%), manufacturing (12.5%), and retail trade (10.1%) with other important sectors of employment centering around health care and social assistance, educational services, construction, and public administration (**Table 4.2-2**). Similar trends are present in the LSA where 12.7% of all labour force by industry was in retail trade, 8.7% in forestry, and 9.2% in manufacturing – mostly of wood related products (**Table 4.2-2**). Labour force data by industry for each LSA community, the RSA, and BC is presented in **Table 4.2-2**.

Labour force by occupation statistics is presented in **Table 4.2-3** and informs that, as expected, occupations in sales and services, as well as trades, transport, and equipment operations represent 40.5% of all occupations in the RDBN and 44.1% of occupations in the LSA. The labour force of Witset has also more occupations in wood product manufacturing (22.2%), whereas professional occupations in business and administration, sciences, and education and law account for a larger portion of jobs in Smithers (34.8%). Labour force data by occupation for each LSA community, the RSA and BC are presented in **Table 4.2-3**.

Income statistics for the RSA is not available; income statistics for the RDBN and the LSA suggests that on average, the RDBN and the LSA (except Witset) have higher median total incomes and median employment incomes compared to the provincial average (**Table 4.2-4**). For full-time workers, District of Houston had the highest median employment income in 2015 at \$72,292, compared to other LSA communities, the RDBN and BC, followed by Smithers and Telkwa, while the median employment income for full-time workers in Witset was only \$30,016 (**Table 4.2-4**). Government transfer payments, as a source of income, were highest in Witset at 25.1%, while employment income represented the highest proportion of income in Telkwa at 81.5% (**Table 4.2-4**).

⁵ The RDBN is made up of eight (8) municipalities and seven (7) electoral areas.

Table 4.2-1: Labour Force Characteristics, 2016

Total -	Telkwa	Smithers	Houston	Witset	Total LSA	RDBN A	RDBN G	RDBN	RSA	BC
Population Aged 15 years and Over by Labour Force Status - 25% Sample Data	1,015	4,315	2,355	485	8,170	4255	730	30,175	30,660	3,870,375
In the Labour Force	735	2,965	1,615	285	5,600	3060	510	20,180	20,465	2,471,665
Employed	660	2,700	1,435	220	5,015	2770	420	17,695	17,915	2,305,690
Unemployed	75	265	185	55	580	285	85	2,480	2,535	165,975
Not in the Labour Force	280	1,355	740	210	2,585	1200	215	9,995	10,205	1,398,710
Participation Rate	72.4%	68.7%	68.6%	58.8%	68.5%	71.9%	69.9%	66.9%	66.7%	63.9%
Employment Rate	65.0%	62.6%	60.9%	45.4%	61.4%	65.1%	57.5%	58.6%	58.4%	59.6%
Unemployment Rate	10.2%	8.9%	11.5%	19.3%	10.4%	9.3%	16.7%	12.3%	12.4%	6.7%

Source: Statistics Canada 2017e

Notes: %=percent; BC=British Columbia; LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area (RDBN + Witset)

Data for Witset is based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17

Labour force consists of population 15 years of age and over who are either employed or are unemployed but available for work or actively seeking work. Participation rate represents the share of the working-age population (15 years and over) that is working or looking for work. Employment rate represents the number of employed persons expressed as a percentage of the population 15 years of age and over. Unemployment rate represents number of unemployed persons expressed as a percentage of the labour force. Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

Table 4.2-2: Labour Force by Industry, 2016

	Telkwa	Smithers	Houston	Witset	Total LSA	RDBN A	RDBN G	RDBN	RSA	BC
Labour Force Population Aged 15 Years and Over by Industry - North American Industry Classification System (NAICS) 2012 - 25% Sample Data	735	2,965	1,615	285	5,600	3,060	510	20,180	20,465	2,471,665
No Applicable Industry	10	40	20	20	90	45	15	400	420	43,805
All Industry Categories	730	2,920	1,595	270	5,515	3,010	495	19,780	20,050	2,427,865
Agriculture, Forestry, Fishing And Hunting	6.2%	4.1%	18.5%	7.4%	8.7%	14.6%	16.2%	14.7%	14.6%	2.7%
Mining, Quarrying, and Oil and Gas Extraction	6.8%	4.6%	4.7%	0.0%	4.7%	4.8%	4.0%	3.7%	3.6%	1.1%
Utilities	1.4%	0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.4%	0.3%	0.5%

	Telkwa	Smithers	Houston	Witset	Total LSA	RDBN A	RDBN G	RDBN	RSA	BC
Construction	10.3%	6.3%	6.0%	7.4%	6.8%	8.3%	10.1%	7.1%	7.1%	8.2%
Manufacturing	8.9%	5.0%	14.4%	24.1%	9.2%	6.1%	14.1%	12.3%	12.5%	6.5%
Wholesale Trade	1.4%	3.9%	2.5%	3.7%	3.2%	1.3%	2.0%	2.0%	2.0%	3.4%
Retail Trade	11.6%	13.7%	12.2%	7.4%	12.7%	13.1%	6.1%	10.1%	10.1%	11.7%
Transportation and Warehousing	11.0%	7.0%	6.3%	3.7%	7.2%	6.5%	12.1%	5.5%	5.5%	5.3%
Information and Cultural Industries	0.0%	0.7%	0.0%	0.0%	0.4%	1.0%	2.0%	0.6%	0.6%	2.8%
Finance and Insurance	2.7%	1.5%	0.9%	0.0%	1.5%	1.7%	2.0%	1.5%	1.5%	3.9%
Real Estate and Rental and Leasing	0.0%	1.2%	0.9%	0.0%	0.9%	1.3%	0.0%	0.8%	0.8%	2.3%
Professional, Scientific, and Technical Services	6.2%	7.2%	2.8%	3.7%	5.6%	5.1%	0.0%	4.1%	4.1%	8.1%
Management of Companies and Enterprises	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.1%	0.0%	0.2%
Administrative and Support, and Waste Management and Remediation Services	2.7%	2.2%	2.2%	3.7%	2.4%	2.2%	2.0%	2.3%	2.3%	4.5%
Educational Services	5.5%	6.7%	4.7%	9.3%	6.1%	6.1%	10.1%	7.9%	7.9%	7.2%
Health Care and Social Assistance	13.0%	10.4%	6.0%	7.4%	9.3%	8.0%	6.1%	9.4%	9.4%	11.2%
Arts, Entertainment, and Recreation	1.4%	1.9%	1.3%	0.0%	1.5%	1.8%	0.0%	1.2%	1.1%	2.4%
Accommodation and Food Services	6.8%	12.3%	4.7%	11.1%	9.3%	6.0%	5.1%	5.9%	6.0%	8.5%
Other Services (Except Public Administration)	2.7%	3.4%	6.6%	0.0%	4.1%	5.0%	4.0%	4.1%	4.0%	4.6%
Public Administration	3.4%	7.5%	4.1%	11.1%	6.2%	6.3%	6.1%	6.4%	6.5%	5.1%

Source: Statistics Canada 2017e

Notes: %=percent; BC=British Columbia; LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area (RDBN + Witset)

Data for Witset is based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19 and Babine 17; Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

Table 4.2-3: Labour Force by Occupation, 2016

	Telkwa	Smithers	Houston	Witset	Total LSA	RDBN A	RDBN G	RDBN	RSA	BC
Labour Force Population Aged 15 Years and Over by Occupation - National Occupational Classification (NOC) 2016 - 25% Sample Data	735	2,960	1,610	280	5,585	3,055	510	20,180	20,460	2,471,665
Occupation - Not Applicable	10	40	20	30	100	45	10	400	430	43805
All Occupations	730	2,920	1,595	270	5,515	3,010	495	19,780	20,050	2,427,860
Management Occupations	5.5%	9.9%	7.5%	0.0%	8.2%	15.3%	9.1%	9.9%	9.8%	11.3%
Business, Finance, and Administration Occupations	8.2%	12.2%	9.7%	11.1%	10.9%	14.1%	14.1%	11.4%	11.4%	15.2%
Natural and Applied Sciences and Related Occupations	8.2%	11.5%	3.8%	0.0%	8.3%	7.8%	3.0%	5.8%	5.7%	6.7%
Health Occupations	6.2%	6.3%	4.1%	3.7%	5.5%	5.0%	3.0%	4.8%	4.7%	6.7%
Occupations In Education, Law, and Social, Community, and Government Services	9.6%	11.1%	9.4%	14.8%	10.6%	8.6%	9.1%	11.0%	11.1%	11.1%
Occupations in Art; Culture, and Recreation and Sport	2.1%	1.5%	1.9%	0.0%	1.6%	2.5%	2.0%	1.6%	1.6%	3.8%
Sales and Service Occupations	24.0%	26.4%	18.8%	25.9%	23.8%	15.9%	14.1%	19.1%	19.2%	24.5%
Trades, Transport and Equipment Operators, and Related Occupations	24.7%	14.4%	29.2%	20.4%	20.3%	19.8%	36.4%	21.3%	21.3%	14.9%
Natural Resources, Agriculture, and Related Production Occupations	5.5%	3.8%	7.8%	3.7%	5.2%	6.6%	5.1%	8.2%	8.1%	2.6%
Occupations in Manufacturing and Utilities	6.2%	3.1%	8.5%	22.2%	6.0%	3.8%	7.1%	7.0%	7.2%	3.2%

Source: Statistics Canada (2017e)**Notes:** %=percent; BC=British Columbia; LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area (RDBN + Witset)

Data for Witset is based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17; Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

Table 4.2-4: Income of Individuals and Households, 2015

	Telkwa	Smithers	Houston	Witset	RDBN A	RDBN G	RDBN	BC
Income of Individuals								
Median total income in 2015 among recipients	\$39,131	\$37,120	\$36,309	\$17,856	\$37,316	\$33,749	\$34,688	\$33,012
Median employment income in 2015 among recipients	\$38,656	\$32,064	\$37,522	\$19,776	\$30,784	\$35,925	\$33,322	\$31,713
Median employment income in 2015 for full-year full-time workers	\$55,469	\$60,393	\$72,292	\$30,016	\$53,894	\$62,688	\$60,400	\$53,940
Composition of Total Income in 2015 of the Population Aged 15 Years and Over in Private Households (%)								
▪ Market income	89.7%	88.3%	88.2%	76.0%	90.3%	87.5%	87.8%	88.9%
- Employment income	81.5%	75.3%	80.1%	74.6%	72.7%	75.6%	75.1%	70.8%
▪ Government transfers	10.3%	11.6%	11.8%	25.1%	9.7%	12.7%	12.2%	11.1%
Income of Households:								
Median total income of households in 2015 (\$)	\$87,936	\$74,610	\$80,477	\$55,424	\$85,184	\$78,592	\$76,008	\$69,995
Average total income of households in 2015 (\$)	\$94,834	\$84,461	\$89,908	\$59,311	\$100,859	\$94,344	\$86,862	\$90,354

Source: Statistics Canada 2017e

Notes: \$=Canadian dollar; %=percent; BC=British Columbia; RDBN=Regional District of Bulkley-Nechako

Data for Witset is based on data for Moricetown 1 as income data for Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17 is not available; Market income is the sum of employment, investment, private retirement, and other money income. Employment income represents all income received as wages, salaries, and commissions paid by employment and self-employment, and is one (1) component of market income. Government transfer payments include all cash payments received from the federal, provincial, or municipal governments (such as government pension and social assistance payments) and is not part of market income. Income data for the LSA, comprising all four (4) communities, as well as the RSA (RDBN and the community of Witset) is not available and cannot be calculated given data that is publicly disclosed.

In the RDBN, by industry, the highest unemployment was in forestry and logging (535 unemployed), construction (235 unemployed), transportation and warehousing (210 unemployed), and manufacturing of wood products (135 unemployed) with similar unemployment levels in retail and accommodation (125 to 130 each). The mining and oil and gas sector had 145 unemployed, including 75 unemployed related to support activities for mining and oil and gas extraction (**Table 4.2-5**).⁶

Table 4.2-5: Number of Employed and Unemployed in the Regional District of Bulkley-Nechako (RDBN) by North American Industry Classification System (NAICS), 2016

Industry - North American Industry Classification System (NAICS)	Employed	Unemployed
Total - Industry - North American Industry Classification System (NAICS)	17,695	2,480
Industry - NAICS Not applicable	0	400
All industry categories [8]	17,695	2,080
11 Agriculture, forestry, fishing, and hunting	2,290	625
111 - 112 Farms (111 and 112) [9]	905	25
113 Forestry and logging	1,055	535
1131 Timber tract operations	35	10
1132 Forest nurseries and gathering of forest products	30	10
1133 Logging	985	520
114 Fishing, hunting, and trapping	15	15
115 Support activities for agriculture and forestry	315	50
1150 Support activities for farms (1151 and 1152) [11]	20	0
1153 Support activities for forestry	295	50
21 Mining, quarrying, and oil and gas extraction	575	145
211 Oil and gas extraction	10	15
212 Mining and quarrying (except oil and gas)	385	60
2121 Coal mining	0	0
2122 Metal ore mining	370	60
2123 Non-metallic mineral mining and quarrying	15	0
213 Support activities for mining and oil and gas extraction	180	75
22 Utilities	70	0
23 Construction	1,160	235
236 Construction of buildings	380	65
237 Heavy and civil engineering construction	210	65
238 Specialty trade contractors	565	100
31-33 Manufacturing	2,265	170
321 Wood product manufacturing	1,900	125
3211 Sawmills and wood preservation	1,615	95

⁶ This type of data is only available at the regional level (RDBN).

Industry - North American Industry Classification System (NAICS)	Employed	Unemployed
3212 Veneer, plywood, and engineered wood product manufacturing	70	10
3219 Other wood product manufacturing	215	30
322 Paper manufacturing	35	0
41 Wholesale trade	385	15
44-45 Retail trade	1,875	130
48-49 Transportation and warehousing	875	210
482 Rail transportation	95	15
4841 General freight trucking	230	35
4842 Specialized freight trucking	155	65
488 Support activities for transportation	135	70
4931 Warehousing and storage	10	10
51 Information and cultural industries	110	0
52 Finance and insurance	290	10
53 Real estate and rental and leasing	145	0
54 Professional, scientific, and technical services	780	35
5413 Architectural, engineering, and related services	180	15
55 Management of companies and enterprises	10	0
56 Administrative and support, waste management and remediation services	405	50
61 Educational services	1,520	35
62 Health care and social assistance	1,785	80
71 Arts, entertainment, and recreation	170	55
72 Accommodation and food services	1,045	125
81 Other services (except public administration)	765	40
811 Repair and maintenance	305	25
91 Public administration	1,175	100

Source: Statistics Canada (2017b)

Notes: Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

By the National Occupational Classification (NOC) skill-level, as expected, the highest unemployment in the RDBN is for low-skilled workers - those with Skill Level C (high school or job specific training) and Skill Level D (on-the-job training) - with close to 15% of total workforce in each skill level category being unemployed and representing 53.2% of total unemployment in the RDBN (Table 4.2-6).⁷

⁷ This type of data is only available at the regional level (RDBN).

Table 4.2-6: Number of Employed and Unemployed in the Regional District of Bulkley-Nechako (RDBN) by National Occupational Classification (NOC) 2016 Skill-level

	Employed	Unemployed	Unemployed % of Total
Skill Level A Managers	1,920	45	2.3
Skill Level A Professionals	2,180	80	3.5
Skill Level B College or Apprenticeship Training	5,990	630	9.5
Skill Level C High School or Job Specific Training	5,105	885	14.8
Skill Level D On-the-Job Training	2,500	435	14.8
All Skill Levels	17,700	2,480	12.3

*Source: Statistics Canada (2017c)**Notes: %=percent**Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.*

Employers in the RDBN find it difficult to find employees with the right skill sets, citing lack of training or education as the most common barrier to employment for both jobs seekers and employers (HEC 2020). In 2016, 22.2% of the labour force in the LSA and 24.3% of the labour force in the RSA did not have a high school diploma⁸ (1) compared to 15.5% of the labour force in BC in general. Another 29.7% of the LSA labour force and 31.1% of the RSA labour force had a high school diploma⁹, compared to 29.4% of BC's labour force (Statistics Canada 2017e). This suggests that more than half of the regional and local workforce has low educational attainment and may lack the skills to take advantage of existing or forthcoming employment opportunities and career advancement.

Educational attainment data for the RDBN and the LSA suggests that, of those in the labour force and without a high school diploma, 20.1% in the LSA and 22.7% in the RDBN were unemployed. In contradiction with expectations, labour force participants with an apprenticeship/trades diploma or certificate had higher unemployment rates compared to those with a high school diploma. For the RSA, unemployment for those with a high school diploma was 12.9%, whereas it was 13.6% for those with an apprenticeship/trades diploma or certificate. For the LSA, unemployment for those with a high school diploma was 10.8% whereas it was 12.4% for those with an apprenticeship/trades diploma or certificate (**Table 4.2-7**).

Educational attainment is not the only area of focus for employers, with soft skills being some of the most difficult skills to find in potential candidates for jobs (HEC 2020). Additional barriers to employment in the RDBN include struggles with a camp-based lifestyle for remote workers, drug and alcohol abuse, transportation and housing issues, a lack of child care options, and a lack of reliable internet connection for smaller communities. In addition, cultural barriers are faced by Indigenous workers (HEC 2020). Indigenous workers typically have lower skill levels and face several socio-economic challenges that prevent them from successful participation in the labour force. In 2016, Witset had 300 workers in the labour force, with 100 having no high school diploma and 95 having only a high school diploma or equivalency. Thus, only a third of the labour force in the community had post-secondary education (**Table 4.2-7**).

The BC labour market is considered one of Canada's most competitive labour markets and employers are working hard to attract and retain skilled workers. In 2019, BC identified high opportunity occupations indicating, that by 2029, BC would require 7,300 construction managers, 6,180 automotive technicians and

⁸ No certificate; diploma or degree.⁹ Secondary (high) school diploma or equivalency certificate.

mechanics, 4,660 facility operations and maintenance managers, 4,190 civil engineers, and 3,770 senior managers in construction, transportation, production and utilities, and other skilled jobs. The above will require a degree, diploma, or a certificate (Work BC 2019a). By trade, BC will require 4,300 construction trades helpers and labourers, 3,330 heavy equipment operators, 3,010 construction millwright's and industrial mechanics, 2,450 welders and related machine operators, and 2,380 electricians (Work BC 2019b). In general, of all new jobs to be created in BC by 2029, only 3% will require Skill Level D, and 20% will require Skill Level C, with the remaining jobs requiring a degree, certificate, or diploma (GovBC 2019). Additional demand for skilled workers will come from the rest of Canada, with a recent estimate that 79,680 jobs would need to be filled in the mining industry over the next decade in Canada, with additional jobs created from indirect and induced opportunities (Mining 2020).

Table 4.2-7a: Number of Employed and Unemployed by Educational Attainment, 2016

	Telkwa		Smithers		Houston		Witset		Total LSA		
	E	U	E	U	E	U	E	U	E	U	U (%)
All Workers	660	75	2,700	260	1,430	185	225	75	5,015	595	10.6
No Certificate, Diploma Or Degree	105	15	295	55	200	75	75	25	675	170	20.1
Secondary (High) School Diploma or Equivalency Certificate	175	40	810	90	515	40	75	20	1,575	190	10.8
Apprenticeship or Trades Certificate or Diploma	80	15	355	70	265	20	40	0	740	105	12.4
College, CEGEP or Other Non-University Certificate or Diploma	160	0	535	30	275	40	45	0	1,015	70	6.5
University Certificate or Diploma Below Bachelor Level	35	0	105	0	35	0	10	0	185	0	0.0
University Certificate, Diploma or Degree at Bachelor Level or Above	105	10	595	20	135	10	30	0	865	40	4.4

Source: Statistics Canada 2017d**Notes:** (E)mployment, (U)nemployment, (U%) – unemployment as % of total

% = percent; LSA = Local Study Area; RDBN = Regional District of Bulkley-Nechako

Data for Witset is based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17. Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

Table 4.2-8b: Number of Employed and Unemployed by Educational Attainment, 2016

	RDBN A		RDBN G		RDBN			RSA		
	E	U	E	U	E	U	U (%)	E	U	U (%)
All Workers	2770	290	420	90	17,700	2,480	12.3	17,925	2,555	12.5
No Certificate, Diploma Or Degree	330	60	80	15	2,660	780	22.7	2,735	805	22.7
Secondary (High) School Diploma or Equivalency Certificate	820	130	140	35	5,750	855	12.9	5,825	875	13.1
Apprenticeship or Trades Certificate or Diploma	370	35	85	10	2,485	390	13.6	2,525	390	13.4
College, CEGEP or Other Non-University Certificate or Diploma	575	25	85	25	3,510	345	8.9	3,555	345	8.8
University Certificate or Diploma Below Bachelor Level	105	10	0	0	545	30	5.2	555	30	5.1
University Certificate, Diploma or Degree at Bachelor Level or Above	570	30	25	0	2,745	75	2.7	2,775	75	2.6

Source: Statistics Canada 2017d**Notes:** (E)mployment, (U)nemployment, (U%) – unemployment as % of total

% = percent; RDBN = Regional District of Bulkley-Nechako; RSA = Regional Study Area (RDBN + Witset)

Data for Witset is based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17. Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

Close to 60% of employed workers in 2016 worked less than full time, with the remaining working full-time full-year (**Table 4.2-9**). This suggested that in addition to those who are unemployed or did not work in 2016¹⁰, there is a large pool of underutilized workers working below full capacity.

Table 4.2-9: Work Activity, 2016

	Telkwa	Smithers	Houston	Witset	Total LSA	RDBN A	RDBN G	RDBN	RSA
All Workers	1,015	4,315	2,355	240	7,925	4,260	725	30,175	30,415
Did Not Work	250	1,145	650	95	2,140	965	185	8,615	8,710
Worked									
Worked Part Year, Part Time, or Full Time	415	1,525	885	65	2,890	1,770	290	11,080	11,145
Worked Full Year Part Time	70	230	145	10	455	220	25	1,520	1,530
Worked Full Year Full Time	280	1,415	680	70	2,445	1,305	225	8,965	9,035
Worked Less Than Part Time (% of Those Who Worked)	63.4%	55.4%	60.2%	51.7%	57.8%	60.4%	58.3%	58.4%	58.4%
Worked Full Year Full Time (% of Those Who Worked)	36.6%	44.6%	39.8%	48.3%	42.2%	39.6%	41.7%	41.6%	41.6%

Source: Statistics Canada 2017a

Notes: %=percent; LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area (RDBN+ Witset).

Data for Witset is based on data for Moricetown 1. Data for Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17 was not available. Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

More specifically, there were 2,570 employed people in the LSA and another 1,660 employed in RDBN A and RDBN G who worked less than full time; the distribution of those underutilized workers by educational attainment is provided in **Table 4.2-10**. This provides a large pool of unemployed and underutilized workers in the LSA, including the rural areas of the RDBN A and RDBN G, from which prospective Project workers could be drawn during the Construction, and Operation phases.

¹⁰ This category also includes those who do not participate in the labour force.

Table 4.2-10: Work Activity by Educational Attainment, 2016

	All Workers	No Certificate, Diploma, or Degree	Secondary (High) School Diploma or Equivalency Certificate	Apprenticeship or Trades Certificate or Diploma	College, CEGEP, or Other Non-University Certificate or Diploma	University Certificate or Diploma Below Bachelor Level	University Certificate, Diploma, or Degree at Bachelor Level or Above
LSA							
Total - Work Activity During The Reference Year	7,925	1,705	2,375	1,055	1,455	260	1,075
Did Not Work	2,140	805	575	205	325	60	150
Worked Part-Year, Part-Time Or Full Time	2,890	570	900	430	500	95	420
Worked Full-Year Part-Time	455	110	125	50	135	10	60
Worked Full-Year Full-Time	2,445	225	800	395	465	100	460
<i>Number Of Underutilized Workers</i>	2,570	450	775	345	550	85	405
RDBN A and RDBN G							
Total - Work Activity During The Reference Year	4,985	855	1,580	635	915	150	845
Did Not Work	1,150	310	390	115	140	30	160
Worked Part-Year, Part-Time Or Full-Time	2,060	325	660	240	420	45	355
Worked Full-Year Part-Time	245	50	110	10	55	0	20
Worked Full-Year Full-Time	1,530	170	425	270	300	70	310
<i>Number Of Underutilized Workers</i>	1,660	240	535	185	360	35	285
RDBN							
Total - Work Activity During The Reference Year	30,175	7,215	9,410	3,925	5,230	805	3,590
Did Not Work	8,615	3,430	2,385	905	1,130	215	550

	All Workers	No Certificate, Diploma, or Degree	Secondary (High) School Diploma or Equivalency Certificate	Apprenticeship or Trades Certificate or Diploma	College, CEGEP, or Other Non-University Certificate or Diploma	University Certificate or Diploma Below Bachelor Level	University Certificate, Diploma, or Degree at Bachelor Level or Above
Worked Part-Year, Part-Time Or Full-Time	11,080	2,295	3,675	1,470	1,960	285	1,400
Worked Full-Year Part-Time	1,520	335	500	135	360	30	160
Worked Full-Year Full-Time	8,965	1,150	2,845	1,420	1,785	280	1,480
RSA							
Total - Work Activity During The Reference Year	30,415	7,340	9,480	3,940	5,255	805	3,600
Did Not Work	8,710	3,490	2,410	905	1,130	215	560
Worked Part-Year, Part-Time Or Full-Time	11,145	2,325	3,700	1,480	1,960	285	1,410
Worked Full-Year Part-Time	1,530	345	510	135	360	30	160
Worked Full-Year Full-Time	9,035	1,180	2,860	1,430	1,795	280	1,480

Source: Statistics Canada (2017a)

Notes: %=percent; LSA=Local Study Area; RDBN= Regional District of Bulkley-Nechako; Notes: LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA = Regional Study Area (RDBN + Witset).

Data for Witset is based on data for Moricetown 1. Data for Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17 was not available. The number of underutilized workers in this table was calculated by subtracting “worked full-year full-time” from this table from the number of “employed” from table 4.2-7. Estimates in the table may not add up due to random rounding applied by Statistics Canada. All estimates are rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality.

5. ASSESSMENT OF PROJECT-RELATED EFFECTS

Assessment of Project-related effects involves the following:

- ▶ investigation of potential Project-related interactions with Labour Market VC;
- ▶ identification and assessment of potential Project-related effects on Labour Market VC;
- ▶ development of mitigation/enhancement measures; and
- ▶ identification and characterisation of residual effects, including Significance determination.

5.1 Potential Project-related Interactions with Labour Market Valued Component (VC)

The potential for interactions between Labour Market and identified Project activities were considered, with focus on those interactions with potential to adversely affect Labour Market. When no interaction between the Project activity and the Labour Market VC was anticipated, or the interaction was considered minor (i.e., not expected to have a substantive influence on the short- or long-term integrity of the VC [effect would not be measurable or detectable using the identified indicator]), the interaction is not considered further in the assessment. Each potential interaction is rated using the terms provided in **Table 5.1-1** and described in **Table 5.1-2**.

Table 5.1-1: Potential for an Interaction Between Labour Market Valued Component (VC) and the Tenas Project

Term	Definition
No Interaction	Project activity will not interact with the Labour Market Valued Component (VC), no adverse effect is expected; no further consideration is warranted.
Interaction	Interaction between the Project activity and the Labour Market VC may have a substantive influence on the short- or long-term integrity of the VC (i.e., measurable, or detectable using the identified indicator). The potential effect(s) of the interaction is considered further in the effects assessment.

For the Labour Market VC, the interaction will occur, and the associated effect will manifest at the overall Project phase level (i.e., Construction, Operation, Decommissioning and Reclamation, Post-closure), rather than with respect to a particular Project activity. This is because the Project will provide employment opportunities that are associated with collective rather than specific Project activities (**Table 5.1-2**).

Interactions expected to result in potential effects on Labour Market VC are discussed further in **5.2 Potential Project-related Effects**.

Table 5.1-2: Interactions between Labour Market Valued Component (VC) and the Tenas Project

Project Activities	Labour Market
Construction	
Transportation of equipment, materials, and personnel	
Site clearing (surveying, clearing, grubbing, soil salvaging)	
Construction of Surface Water Management Infrastructure, including channels and ponds (sedimentation, control, management, storage)	
Construction of Bypass Road and quarries from the Minesite to the Rail Infrastructure	
Improvements to existing private road and Forest Service Roads	
Construction of haul roads and service roads within the Minesite	
Construction of the permanent Goathorn Bridge Crossing over Goathorn Creek	
Construction of the Coal Processing Plant	
Construction of fuel and lubricant storage facilities and distribution network	
Construction of administration buildings (first aid, maintenance, mine dry, warehouse, laboratory, parking, and vehicle wash facilities)	
Construction of a 25 kilovolt (kV) powerline and a 600 volt (V) substation adjacent to the Coal Processing Plant	
Construction of Rail Infrastructure including Rail Loop and Loadout connecting to the existing main Canadian National Railway line	
Installation of water supply wells, storage, and distribution system	
Construction of the water discharge infrastructure	
Construction of storage piles for overburden, rock separated from coal in Coal Processing Plant, and stockpiles for topsoil and vegetation management	
Construction of material handling systems for Minesite, including run-of-mine coal, processed coal, process rock conveyors, and stockpiles	
Construction of solid waste management systems including recycling and composting facilities	
Construction of Explosives Magazine (storage building)	
Employment and labour	X
Operation	
Mining the open pit (soil salvaging, drilling and blasting, excavation of material, dewatering, loading, hauling, unloading)	
Operation of Surface Water Management Infrastructure including channels and ponds (sedimentation, control, management, storage)	
Maintain and use Bypass Road and quarries from the Minesite to the Rail Infrastructure	
Maintain improved private and Forest Service Roads	
Maintain haul roads within the Minesite, including service roads	
Maintain permanent bridge over Goathorn Creek	
Operate Coal Processing Plant	

Project Activities	Labour Market
Maintain fuel and lubricant storage facilities	
Maintain administration buildings (first aid, maintenance, mine dry, warehouse, laboratory, and vehicle wash facilities)	
Maintain 25 kV powerline and a 600 V substation adjacent to the Coal Processing Plant	
Transportation of equipment, materials, and personnel	
Maintain and use Rail Infrastructure including Rail Loop and Loadout connecting to the existing main Canadian National Railway line	
Operate water supply wells, storage, and distribution system	
Operate the spillway	
Maintain storage piles for overburden, rock separated from coal in Coal Processing Plant, and stockpiles for topsoil and vegetation management	
Operate material handling systems for Minesite, including run-of-mine coal, processed coal, process rock conveyors, and stockpiles	
Operate solid waste management systems including recycling and composting facilities	
Maintain Explosives Magazine (storage building)	
Progressive reclamation	
Employment and labour	X
Decommissioning and Reclamation	
Dismantle and remove mining equipment and facilities (including powerline, Rail Infrastructure)	
Transportation of equipment, materials, and personnel	
Reclamation and closure activities at Minesite	
Reclamation and closure of Bypass Road and haul roads, including quarries	
Reclamation and closure of permanent bridge over Goathorn Creek	
Reclamation and closure of powerlines	
Reclamation and closure of Rail Infrastructure	
Implement post-mining systems and monitoring	
Employment and labour	X
Post-closure	
Maintain post-mining systems and ongoing monitoring	
Transportation of equipment, materials, and personnel	
Employment and labour	X

Notes:

Interaction (X): Interaction between the Project activity and the VC may have a substantive influence on the short- or long-term integrity of the VC (i.e., measurable using the identified indicator). The potential effect(s) of the interaction is considered further in the effects assessment.

No interaction (blank cell): Project activity will not interact with the VC; no adverse effect is expected; no further consideration is warranted.

5.2 Potential Project-related Effects

Potential adverse effects of the Project on Labour Market VC arising from potential interactions, as identified in **Table 5.1-2**, and in relation to indicators listed in **Table 3.2-2**, are identified and described in this subsection. **5.2.1 Beneficial Effects of the Project on Employment and Income** summarizes beneficial effects of the Project on employment and personal income (this included BC IOM results), while **5.2.2 Increase in Competition for Skilled Local and Regional Workforce**, **5.2.3 Increase in Labour Cost** and **5.2.4 Barriers to Indigenous Employment and Participation in Project-related Economic Benefits** describe the potential adverse effects of the Project on Labour Market VC.

The potential adverse Project-related effects on Labour Market VC include:

- ▶ increase in competition for skilled local and regional workforce;
- ▶ increase in labour cost; and
- ▶ barriers to Indigenous employment and participation in Project-related economic benefits.

5.2.1 Beneficial Effects of the Project on Employment and Income

This subsection summarizes the provision of direct Project employment attributed to each Project phase, as well as indirect and induced employment resulting from Project spending and employment as estimated by the BC IOM. BC IOM does not have the operational capability to estimate effects of the Project at the LSA level, as defined for the purpose of this EA. The most disaggregated level at which effects can be estimated is the Regional District in BC, thus, effects are estimated for the RDBN, rest of BC, and rest of Canada.

5.2.1.1 British Columbia (BC) Input-Output Model (IOM) Assumptions and Caveats

Economic modelling is an imprecise science, and the precision of the figures in the tables should not be taken as an indication of their accuracy. Key assumptions and caveats to be aware of when interpreting the results of the BC IOM are listed below.

- ▶ Project financial data and estimated monetary impacts are provided in 2020 Canadian dollars and do not account for inflation or discount rates;
- ▶ The BC IOM should be viewed as a snapshot of the BC economy. Currently, it is derived from 2016 Interprovincial Supply-Use tables developed by Statistics Canada and includes details on 492 commodities, 240 industry groups and 280 final-demand categories, plus a set of computer algorithms to complete the calculations required for the solution of the model. The model assumes that relationships between industries are relatively stable over time, and the 2016 structure of the economy continues to be applicable today. However, it should be noted that employment estimates have been adjusted to reflect wage levels for the year of expenditures in 2020, as have various tax rates (federal and provincial personal income tax rates, Municipal and Regional District Tax by region); for all other tax data, the model uses the tax structure for 2016 based on the average for each commodity for each industry;
- ▶ The BC IOM is linear. It assumes that a given change in the demand for a commodity or for the outputs of a given industry will translate into a proportional change in production. The model uses known information about inter-industry relationships to trace through all the changes in the output of supplier industries that are required to support an initial increase in an industry's output, or an increase in commodity expenditure. This process is commonly referred to as "shocking" the model. The model is therefore used to predict how an increase or decrease in demand for the products of one industry will affect other industries and, therefore, on the entire economy; and

- ▶ The model assumes that if a change in demand is met by increasing imports from other jurisdictions, there is no net effect on domestic production. The benefits or costs associated with employment generation or loss, and other economic effects, will occur outside the region. Commodities made in BC have a much bigger impact than those imported into the province. The input-output analysis using the BC IOM is based on default import ratios for each commodity valued at the factory gate. That is, all the retail, wholesale, and transportation margins and tax components are valued separately with their own import ratios (mostly, these are domestic values with correspondingly small import ratios), and the factory gate price with its own import ratio.

5.2.1.2 Construction Phase

The Construction Phase, with duration of 1.5 years, is expected to provide a total of 118.3 full-time equivalents (FTEs) of contractor¹¹ employment with labour cost of \$12.4 million, and 9.6 FTEs for TCL employees with labour cost of \$1.2 million. Construction activity is expected to peak at 186 jobs in June of the second year of construction¹² (Year 0, see **Figure 5.2 1**^{13,14}). In addition, 9.0 FTEs of contractor employment (or up to 23 jobs) that would be created in the first year of the Operation Phase in the Heavy Equipment and Maintenance Shop are also considered here because the work requirements are directly related to the Construction Phase. The average cost of contractor employment is estimated at \$105,000 per year per FTE (this amount includes employer benefit contributions and other labour cost beyond salary). An estimated 58.1% of all direct jobs during the Construction Phase are expected to be filled by workers from the LSA (plus RDBN A and RDBN G; see **Figure 5.2 2**). Total and average wages and salaries for the Construction Phase are provided in **Table 5.2-1**.

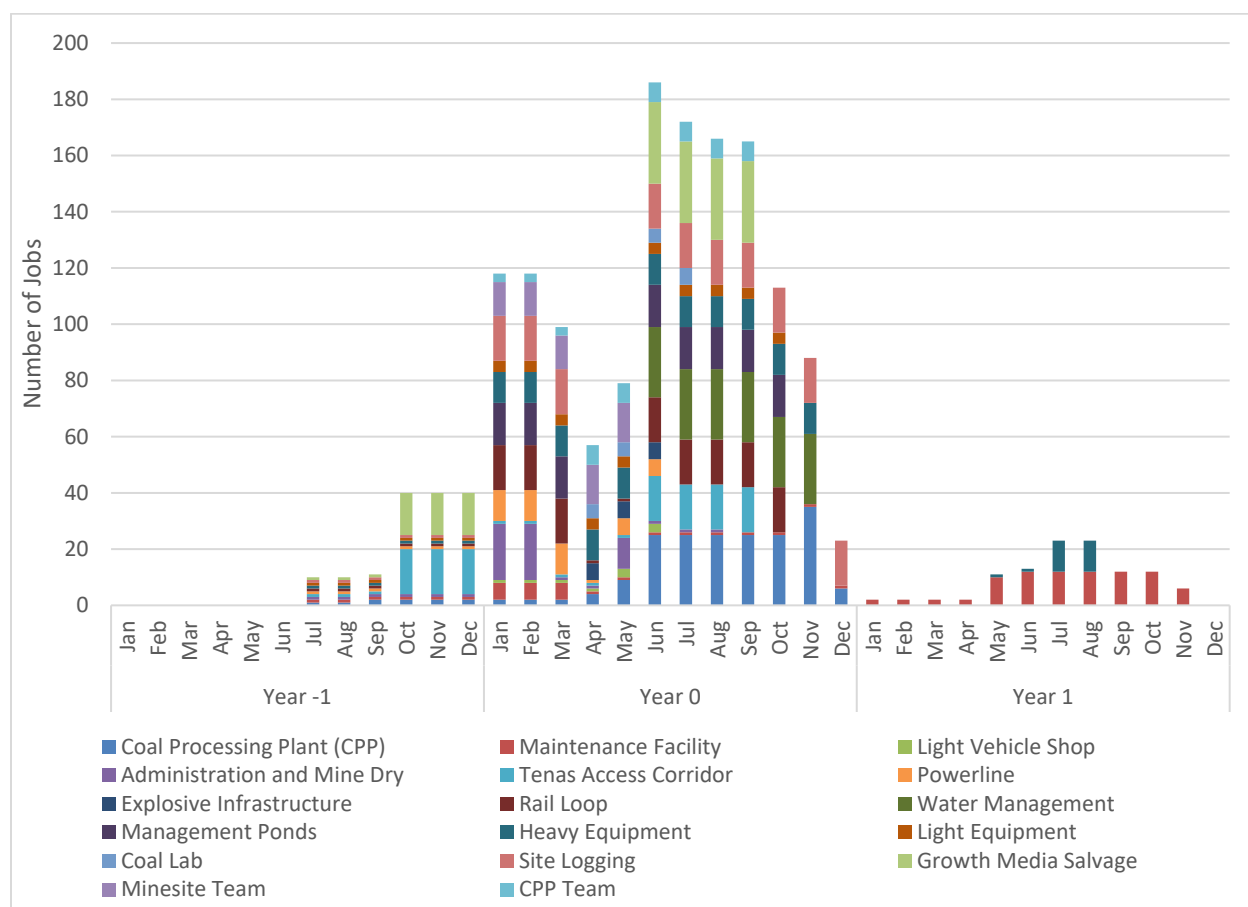
While there can be up to 186 jobs during peak construction, most fabrication activities will take place offsite, with complete modules and equipment already assembled and brought to the Project. In general, the onsite construction workforce at any one (1) time will be typically small (around 70 people or less), varying dependent on the specific scheduled construction requirements.

¹¹ Contractor is a person or company that works on a contractual basis.

¹² This refers to the peak workforce activity, not the various jobs that would be created due to Project construction.

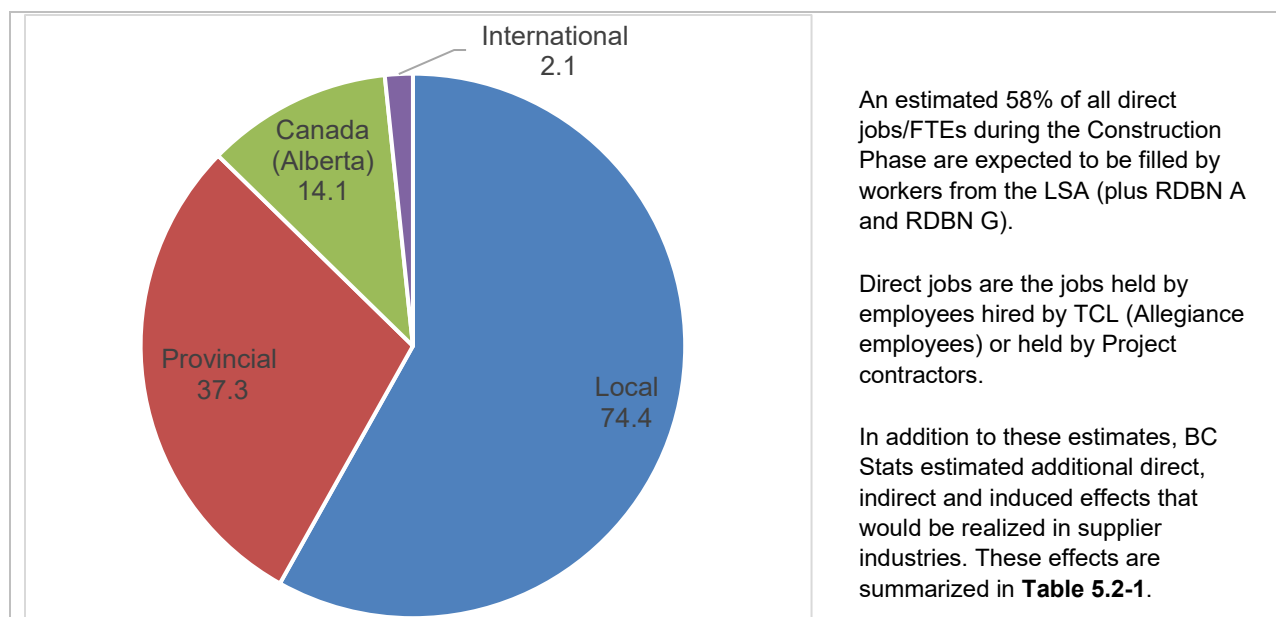
¹³ One (1) job is not equivalent to one (1) FTE. Most construction jobs will be short-term in nature (lasting a few weeks to a few months) thus many jobs would be needed to arrive at one (1) FTE. One (1) FTE typically consists of 2,000 to 2,080 hours worked in one (1) year.

¹⁴ Construction phase is expected to take place over 1.5 years (0.5 year in Year -1 and one year in Year 0). Year -1 and Year 0 cover the period of -1.5 to 0 as described in **Table 3.2-4**.



Notes: Construction Phase is expected to take place over 1.5 years (0.5 year in Year -1 and one [1] year in Year -2). Year -1 and Year 0 cover the period of -1.5 to 0 as described in **Table 3.2-4**. All direct jobs presented in this figure add up to 136.9 full-time equivalents (FTEs), including the 118.3 contractor and 9.6 TCL FTEs for Year -1 and Year 0, and 9.0 FTEs in Year 1 as there will be some remaining construction activities in Year 1 of Project Operation Phase. One (1) job is not equivalent to one (1) FTE. Most construction jobs will be short-term in nature (lasting a few weeks to a few months) thus many jobs would be needed to arrive at one (1) FTE. Contractor is a person or company that works on a contractual basis.

Figure 5.2-1: Direct construction workforce (number of jobs)



Notes: %=percent; FTE=full-time equivalent; LSA=Local Study Area; Project=Tenas Project; RDBN=Regional District of Bulkley-Nechako; TCL=Telkwa Coal Limited

Construction Phase is expected to take place over 1.5 years (0.5 year in Year -1 and one [1] year in Year 0). Year -1 and Year 0 cover the period of 1.5 years as described in **Table 3.2-4**. Related to the Construction Phase (Year -1 and Year 0) direct employment include 118.3 contractor and 9.6 TCL FTEs for a total of 127.9 FTEs for that phase. There would another 9.0 FTEs in Year 1 (during the Operation Phase) as there will be some remaining construction activities in Year 1. One (1) job is not equivalent to one (1) FTE. Most construction jobs will be short-term in nature (lasting a few weeks to a few months) thus many jobs would be needed to arrive at one (1) FTE. Contractor is a person or company that works on a contractual basis.

Figure 5.2-2: Sourcing of direct Tenas Project workers by number of full-time equivalents (FTE) (TCL employees and contractors)

Additional employment effects would be realized in supplier industries and through workers spending their income. In general, for the purpose of analysis, we distinguish between the following effects of the Project:

- ▶ Direct effects are the employment and personal income generated directly by the Project, including the effects generated by industries directly contracted to supply the onsite goods and services used by the Project. For the Construction, Decommissioning and Reclamation, and Post-closure phases, direct effects in the RDBN and direct effects in the rest of BC include the direct TCL employees and direct Project contractors, as well as other direct positions that the BC IOM estimated for direct supplier industries;
- ▶ Indirect effects are the employment and personal income associated with all industries that are ultimately supplying the goods and services used by the industries supplying the Project and includes all transactions to the beginning of the supply chain (excluding direct onsite suppliers to the Project and the Project itself); and
- ▶ Induced effects are the employment and personal income associated with economic activity because of workers spending their incomes on goods and services, including those directly and indirectly employed because of the Project.

BC Stats prepared the BC IOM to estimate the direct, indirect, and induced effects of the Project. Related to the Construction Phase, the direct, indirect, and induced effects on employment and personal income are summarized in **Table 5.2 1**.

Table 5.2-1: Direct, Indirect and Induced Effects of Construction Phase on Employment and Personal Income

		Employment (jobs)	Employment (FTEs)	Average Wages and Salaries	Total Wages and Salaries (Millions)	Labour Income (Millions)
RDBN	Direct	164.3	160.0	\$84,700	\$13.55	\$15.65
	Indirect	28.8	25.1	\$62,551	\$1.57	\$1.95
	Induced	24.1	18.2	\$50,394	\$0.91	\$1.17
	Total RDBN	217.2	203.3	\$78,899	\$16.04	\$18.77
Rest of BC	Direct	151.9	135.8	\$87,230	\$11.85	\$13.94
	Indirect	151.4	129.1	\$58,324	\$7.53	\$9.56
	Induced	75.1	56.5	\$49,244	\$2.78	\$3.64
	Total Rest of BC	378.4	321.4	\$68,944	\$22.16	\$27.14
	Total BC	595.6	524.7	\$72,801	\$38.20	\$45.91
Rest Of Canada	Indirect	79.1	75.9	\$60,309	\$4.58	\$5.51
	Induced	57.9	55.4	\$47,050	\$2.61	\$3.17
	Total Rest of Canada	137.0	131.3	\$54,717	\$7.18	\$8.67
Grand Total		732.5	655.9	n/a	\$45.38	\$54.58

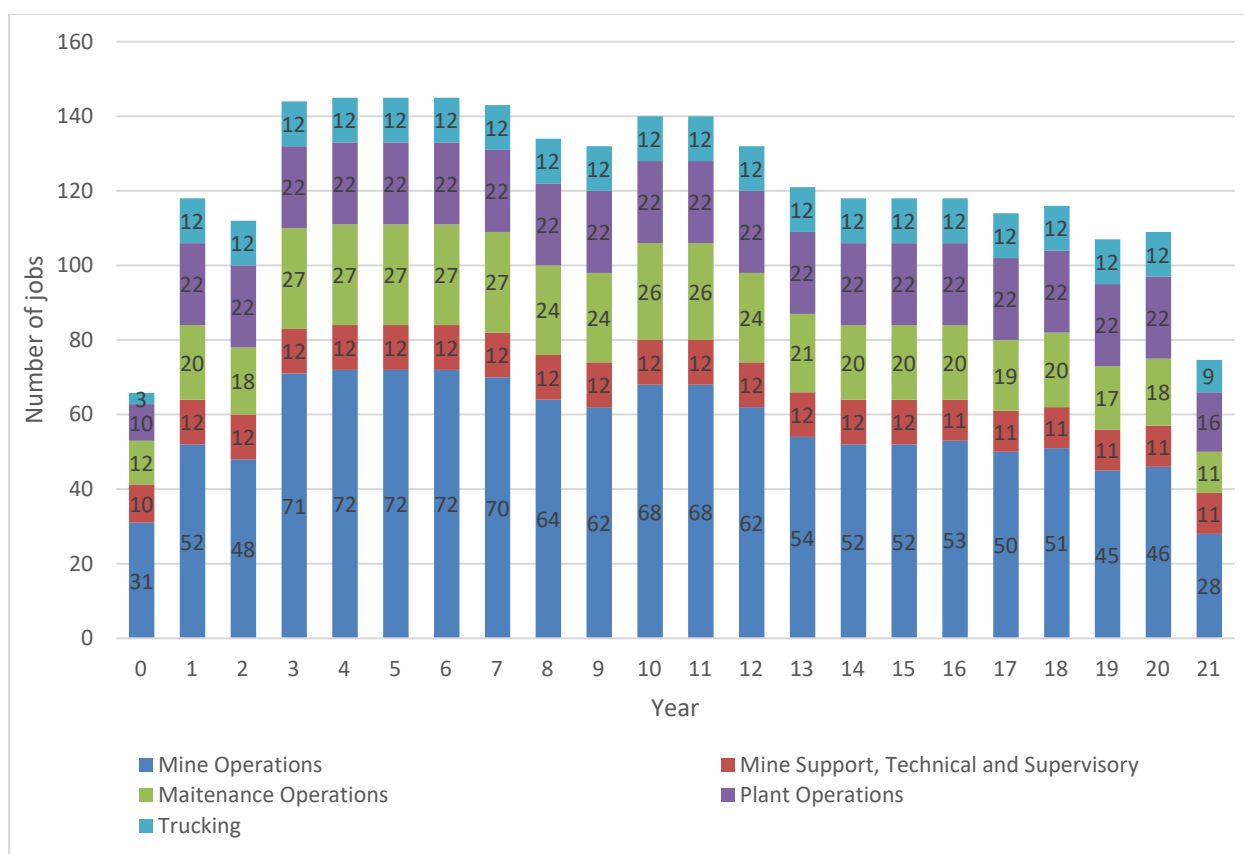
Notes: \$=Canadian dollars; BC=British Columbia; FTE=full-time equivalent; n/a=not applicable; RDBN= Regional District of Bulkley-Nechako

Direct effects in the RDBN and direct effects in the Rest of BC include the direct Telkwa Coal Limited (TCL) employees and direct Project contractors, as well as other direct positions that the BC IOM estimated for direct supplier industries. Wages and salaries do not include burden and are based on FTEs measures. Burden refers to the total cost of hiring and maintaining an employee beyond their direct compensation in wages/salaries and can include items such as training, benefits, sick leave, pension contributions, among several others. The employment (jobs) estimates reflect the wages paid and annual hours spent on the job by a typical worker in each industry. The FTEs estimates are calculated based on the assumption that a full-time employee works 40 hours a week, for 50 weeks of the year (a total of 2,000 hours a year). Labour income includes wages and salaries, mixed income, and employer's social contributions. BC IOM can only estimate Project effects at the Regional District level (RDBN), provincial, and national; Project indirect and induced effects cannot be estimated for the Local Study Area (LSA).

5.2.1.3 Operation Phase

During the Operation Phase, the Project is expected to provide up to 145 direct FTEs for TCL employees, with an estimated 60 people working onsite at any given time due to shift rotations for all workers. **Figure 5.2-3** summarizes direct Project employment (TCL employees) by work area.

Most operational workforce (up to 131 FTEs of the 145 total) are expected to be hired from the LSA, RDBN A, and RDBN G so that employment benefits can be realized by local labour force, to reduce the pressure on housing in Smithers, Telkwa, Houston and Witset, and to allow people to safely get to work with a drive no longer than an hour. Overall, due to the duration of the Operation Phase (21 years), all direct employment and income effects are expected to be realized in the RDBN as, over time, workers from outside of the LSA/RSA are predicted to relocate to those communities to reside closer to the Project.

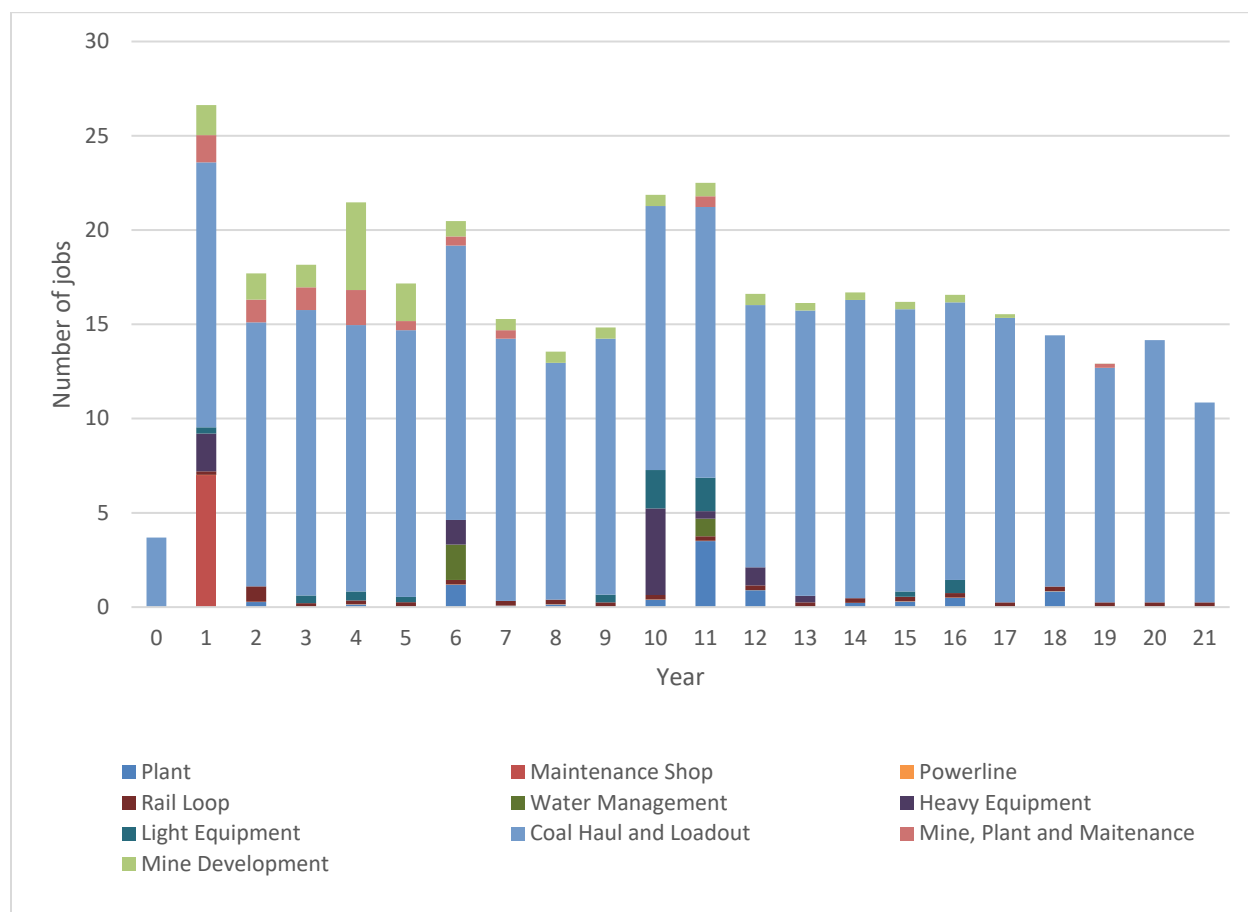


Notes: The figure shows total direct Project workforce. It is expected that some operational workforce will be also hired during Project construction. Thus, in Year 0, there are 65.8 jobs for TCL employees that include 9.6 jobs related to construction and 56.2 jobs related to Operation. This type of workforce is not predicted for Year -1.

Figure 5.2-3: Direct Tenas Project employment during the Operation Phase – TCL employees (jobs)

In addition to employment held by TCL employees, contractors working at the Project site during the Operation Phase (primarily related to coal haul and load-out, with an average of 17 contractors) represent

a total of 363.4 person-years¹⁵ of employment during the 21-year duration of the Operation Phase (Figure 5.2-4).



Notes: Some operational workforce will be also hired during Project construction thus Year 0 is included on the graph.

Figure 5.2-4: Direct Tenas Project employment during the Operation Phase – contractors (number of jobs)

Approximately 90% of total workforce during the Operation Phase is expected to be sourced from the LSA (including RDBN A and RDBN G), with the remaining hired from the rest of BC.

Additional employment effects would be realized in supplier industries and through workers spending their income. Related to the Operation Phase, indirect and induced effects on employment are summarized in

¹⁵ Employment effects over more than one (1) year are expressed in person-years where one (1) person-year represents 2,000 hours of work performed by one (1) or more workers in a given year. Thus, one (1) person-year could be equivalent to one (1) person having a full-time employment for one (1) year, or for example, two (2) workers, each working part-time (1,040 hours each) that year. The person-year estimate of 6,495 years results from the summation of all FTEs over all years of Project Operation Phase.

Table 5.2-2 (jobs) and **Table 5.2-3** (FTEs). Total and average wages and salaries for the Operation Phase are summarized in **Table 5.2-4**.

Table 5.2-2: Number of Indirect and Induced Jobs During the Operation Phase

	RDBN			Rest of BC		Rest of Canada		Total		Grand Total
Year	Direct	Indirect	Induced	Indirect	Induced	Indirect	Induced	Indirect	Induced	
0	59.9	2.0	4.3	11.8	12.9	2.3	1.7	16.1	19.0	95.0
1	144.6	18.3	15.3	108.3	44.7	19.1	14.5	145.8	74.4	364.8
2	129.7	19.9	15.6	110.7	43.5	19.5	15.4	150.1	74.6	354.4
3	162.2	16.3	16.3	90.9	45.7	16.2	12.7	123.4	74.7	360.3
4	166.5	18.0	17.2	100.6	48.2	17.8	14.0	136.4	79.5	382.3
5	162.2	13.6	15.2	77.1	43.3	14.0	10.9	104.8	69.3	336.3
6	165.5	22.2	18.1	127.2	53.6	24.2	18.4	173.6	90.1	429.1
7	158.3	12.0	14.2	68.2	41.0	12.6	9.7	92.8	64.9	316.0
8	147.5	11.2	13.1	63.7	38.3	12.0	9.1	86.8	60.6	294.9
9	146.8	12.7	13.8	71.8	39.6	13.2	10.2	97.7	63.6	308.1
10	161.9	21.7	18.4	120.2	51.0	21.0	16.7	162.8	86.1	410.8
11	162.5	17.6	15.8	103.5	49.0	20.7	15.3	141.8	80.0	384.4
12	148.6	16.2	15.2	91.0	43.5	16.6	12.9	123.8	71.6	343.9
13	137.1	10.7	12.3	61.0	36.0	11.5	8.7	83.2	57.0	277.3
14	134.7	13.9	13.5	78.0	38.6	14.3	11.0	106.1	63.1	303.9
15	134.2	12.4	12.8	70.2	37.1	13.1	10.0	95.7	59.9	289.7
16	134.6	12.8	13.0	72.8	37.7	13.6	10.4	99.1	61.1	294.8
17	129.5	9.3	11.2	53.5	33.4	10.3	7.7	73.1	52.3	254.9
18	130.4	12.4	12.5	70.6	36.7	13.4	10.1	96.4	59.3	286.1
19	119.9	8.8	10.4	50.8	31.2	9.8	7.4	69.5	48.9	238.3
20	123.2	8.8	10.6	50.9	31.8	9.9	7.4	69.6	49.7	242.4
21	85.5	6.1	7.3	35.4	22.1	6.9	5.1	48.4	34.5	168.4

Notes: BC=British Columbia; RDBN=Regional District of Bulkley-Nechako.

Direct effects in the RDBN include the direct Telkwa Coal Limited (TCL) employees and direct Project contractors as described above in this section. While some direct workers will be from outside of the RDBN, it is assumed that the direct job effect will be realized in the RDBN; thus, there is no direct effect in the rest of British Columbia (BC). The employment (jobs) estimates reflect the wages paid and annual hours spent on the job by a typical worker in each industry. Direct job effects are summarized in **Notes:** The figure shows total direct Project workforce. It is expected that some operational workforce will be also hired during Project construction. Thus, in Year 0, there are 65.8 jobs for TCL employees that include 9.6 jobs related to construction and 56.2 jobs related to Operation. This type of workforce is not predicted for Year -1.

Figure 5.2-3 and **Notes:** Some operational workforce will be also hired during Project construction thus Year 0 is included on the graph.

Figure 5.2-4. BC Input-Output Model (IOM) can only estimate Project effects at the Regional District level (RDBN), provincial, and national; Project indirect and induced effects cannot be estimated for the Local Study Area (LSA).

Table 5.2-3: Number of Indirect and Induced Full-time Equivalent Positions During the Operation Phase

	RDBN			Rest of BC		Rest of Canada		Total		Grand Total
Year	Direct	Indirect	Induced	Indirect	Induced	Indirect	Induced	Indirect	Induced	
0	59.7	1.9	3.3	10.6	9.7	2.2	1.6	14.7	14.6	89.0
1	144.1	16.9	11.5	97.1	33.6	18.1	13.7	132.1	58.8	335.0
2	129.3	18.4	11.8	99.4	32.8	18.6	14.6	136.3	59.1	324.7
3	161.6	15.0	12.2	81.7	34.4	15.4	12.1	112.2	58.7	332.5
4	165.9	16.7	13.0	90.3	36.3	16.9	13.3	123.9	62.5	352.4
5	161.6	12.6	11.4	69.5	32.6	13.4	10.4	95.5	54.3	311.4
6	164.9	20.7	13.6	115.1	40.3	23.1	17.4	158.9	71.4	395.2
7	157.7	11.2	10.7	61.4	30.8	12.0	9.2	84.6	50.7	293.1
8	147.0	10.4	9.9	57.5	28.8	11.4	8.7	79.3	47.4	273.7
9	146.3	11.8	10.4	64.6	29.8	12.5	9.7	89.0	49.8	285.1
10	161.3	20.0	13.9	107.8	38.4	20.0	15.8	147.8	68.0	377.1
11	162.0	16.5	11.9	94.1	36.8	19.7	14.5	130.4	63.3	355.6
12	148.1	15.0	11.4	82.0	32.7	15.8	12.2	112.8	56.4	317.2
13	136.7	10.0	9.2	55.1	27.0	10.9	8.3	76.0	44.6	257.2
14	134.2	12.8	10.1	70.2	29.0	13.6	10.5	96.6	49.6	280.5
15	133.7	11.5	9.6	63.3	27.9	12.4	9.5	87.3	47.0	268.0
16	134.1	11.9	9.8	65.6	28.4	12.9	9.9	90.4	48.0	272.5
17	129.1	8.7	8.4	48.3	25.1	9.8	7.3	66.8	40.9	236.8
18	130.0	11.5	9.4	63.8	27.6	12.7	9.6	88.0	46.6	264.6
19	119.5	8.2	7.8	46.0	23.4	9.4	7.0	63.6	38.3	221.3
20	122.7	8.2	8.0	46.0	23.9	9.4	7.0	63.6	38.9	225.2
21	85.2	5.7	5.5	32.0	16.6	6.6	4.9	44.3	27.0	156.5

Notes: BC=British Columbia; RDBN=Regional District of Bulkley-Nechako

Direct effects in the RDBN include the direct TCL employees and direct Project contractors as described above in this section. While some direct workers will be from outside of the RDBN, it is assumed that the direct job effect will be realized in the RDBN; thus, there is no direct effect in the rest of BC. The full-time equivalent (FTE) estimates are calculated based on the assumption that a full-time employee works 40 hours a week, for 50 weeks of the year (a total of 2,000 hours a year). Direct job effects are summarized in

Notes: The figure shows total direct Project workforce. It is expected that some operational workforce will be also hired during Project construction. Thus, in Year 0, there are 65.8 jobs for TCL employees that include 9.6 jobs related to construction and 56.2 jobs related to Operation. This type of workforce is not predicted for Year -1.

Figure 5.2-3 and **Notes:** Some operational workforce will be also hired during Project construction thus Year 0 is included on the graph.

Figure 5.2-4. BC Input-Output Model (IOM) can only estimate Project effects at the Regional District level (RDBN), provincial, and national; Project indirect and induced effects cannot be estimated for the Local Study Area (LSA).

Table 5.2-4: Indirect and Induced Effects of the Project on Wages and Salaries During the Operation Phase (in Millions of Canadian Dollars)

	RDBN			Rest of BC		Rest of Canada		Grand Total
Year	Direct	Indirect	Induced	Indirect	Induced	Indirect	Induced	
0	\$5.63	\$0.23	\$0.16	\$0.80	\$0.48	\$0.13	\$0.08	\$7.51
1	\$13.46	\$1.76	\$0.58	\$6.98	\$1.64	\$1.08	\$0.65	\$26.15
2	\$12.23	\$2.13	\$0.59	\$7.81	\$1.59	\$1.12	\$0.70	\$26.17
3	\$15.31	\$1.77	\$0.62	\$6.38	\$1.67	\$0.93	\$0.58	\$27.25
4	\$15.70	\$1.95	\$0.65	\$7.07	\$1.76	\$1.02	\$0.64	\$28.80
5	\$15.32	\$1.50	\$0.57	\$5.37	\$1.59	\$0.81	\$0.49	\$25.65
6	\$15.64	\$2.57	\$0.69	\$8.68	\$1.98	\$1.41	\$0.83	\$31.77
7	\$14.95	\$1.34	\$0.54	\$4.70	\$1.51	\$0.73	\$0.44	\$24.21
8	\$13.93	\$1.26	\$0.50	\$4.38	\$1.41	\$0.69	\$0.41	\$22.57
9	\$13.87	\$1.41	\$0.52	\$4.97	\$1.45	\$0.76	\$0.46	\$23.45
10	\$15.29	\$2.32	\$0.70	\$8.50	\$1.86	\$1.20	\$0.76	\$30.63
11	\$15.32	\$2.11	\$0.60	\$6.94	\$1.81	\$1.21	\$0.69	\$28.67
12	\$14.04	\$1.80	\$0.58	\$6.32	\$1.60	\$0.96	\$0.58	\$25.86
13	\$12.94	\$1.21	\$0.47	\$4.19	\$1.32	\$0.66	\$0.39	\$21.18
14	\$12.72	\$1.53	\$0.51	\$5.41	\$1.42	\$0.82	\$0.50	\$22.91
15	\$12.66	\$1.39	\$0.48	\$4.84	\$1.36	\$0.75	\$0.45	\$21.94
16	\$12.72	\$1.44	\$0.49	\$5.01	\$1.39	\$0.78	\$0.47	\$22.30
17	\$12.26	\$1.06	\$0.42	\$3.63	\$1.23	\$0.59	\$0.35	\$19.56
18	\$12.37	\$1.41	\$0.47	\$4.83	\$1.35	\$0.77	\$0.46	\$21.67
19	\$11.35	\$1.01	\$0.39	\$3.44	\$1.15	\$0.57	\$0.33	\$18.25
20	\$11.65	\$1.01	\$0.40	\$3.45	\$1.17	\$0.57	\$0.33	\$18.59
21	\$8.08	\$0.70	\$0.28	\$2.39	\$0.81	\$0.40	\$0.23	\$12.90
Total	\$287.46	\$32.93	\$11.22	\$116.05	\$31.56	\$17.96	\$10.80	\$507.97
Average Wage/Salary	\$94,613	\$119,417	\$50,357	\$76,276	\$48,857	\$60,518	\$47,541	n/a

Notes: \$=Canadian dollar; BC=British Columbia; n/a=not applicable; RDBN=Regional District of Bulkley-Nechako

Direct effects in the RDBN include the direct TCL employees and direct Project contractors. Wages and salaries in this table do not include burden and are based on full-time equivalent (FTE) measures. Burden refers to the total cost of hiring and maintaining an employee beyond their direct compensation in wages/salaries and can include items such as training, benefits, sick leave, pension contributions, among several others. Data is provided in millions of Canadian dollars except for the average wage/salary estimate. BC Input-Output Model (IOM) can only estimate Project effects at the Regional District level (RDBN), provincial, and national; Project indirect and induced effects cannot be estimated for the Local Study Area (LSA).

The provision of Project employment during the Operation Phase is expected to decrease local unemployment levels. As estimated, there could be up to 166 direct jobs, and up to 22 indirect and 18 induced jobs (see **Table 5.2-2**). Total operation-related jobs are expected to peak at 206 in Year 6. This positive job effect has the potential to decrease the overall unemployment in the LSA communities,

including RDBN A and RDBN G, from 10.4% to 8.1%¹⁶. Additionally, the provision of well-paid Project-related employment could potentially incentivise some workers, not currently in labour force, to join the labour force to take advantage of new employment opportunities, increasing the labour force participation rate in that region.¹⁷

The total effect on salaries and wages resulting from direct, indirect, and induced employment during the Operation Phase of the Project is estimated at \$331.6 million in the LSA, including RDBN A and RDBN G (see **Table 5.2 4**).

5.2.1.4 Decommissioning and Reclamation Phase

The Decommissioning and Reclamation Phase consists of Decommissioning, planned for Year 22, and Reclamation, planned for Years 23 to 25.

During Decommissioning (Year 22), the Project is expected to provide 20.6 FTEs for TCL employees with an estimated total income effect (including burden¹⁸) of \$2.4 million¹⁹, and 10 FTEs for contractors with an estimated total income effect (including burden) of \$1.1 million.

During Reclamation (Years 23 to 25), the Project is expected to provide 18.2 FTEs (for a total of 54.6 person-years of employment over that phase) and an estimated total income effect (including burden) of \$5.9 million²⁰.

Additional employment and income effects would be realized in supplier industries and through workers spending their income. Related to the Decommissioning and Reclamation Phase, indirect and induced effects on employment and income are summarized in **Table 5.2-5**.

¹⁶ Based on unemployment rates from 2016 Census.

¹⁷ If this happens, the effect on the unemployment rate would be less than estimated because more people would be entering the labour force to take up the available jobs, rather than all jobs going to those currently unemployed.

¹⁸ Burden refers to the total cost of hiring and maintaining an employee beyond their direct compensation in wages/salaries and can include items such as training, benefits, sick leave, pension contributions, among several others.

¹⁹ Estimated annual salary, including burden, of \$116,000.

²⁰ Estimated annual salary, including burden, of \$88,000.

Table 5.2-5: Number of Indirect and Induced Jobs/Full-time Equivalents (FTEs) and Income Effect During Project Decommissioning and Reclamation Phase

	RDBN			Rest of BC			Rest of Canada	
	Direct	Indirect	Induced	Direct	Indirect	Induced	Indirect	Induced
Jobs								
Decommissioning	36.2	0.4	2.1	1.3	1.8	6.9	1.0	0.7
Reclamation	70.5	3.7	7.5	36.4	18.3	20.6	10.2	8.1
FTEs								
Decommissioning	34.2	0.4	1.6	1.2	1.5	5.2	0.9	0.6
Reclamation	66.0	3.1	5.6	32.7	15.3	15.5	9.8	7.7
Wages and Salaries								
Decommissioning (total)	\$3,091,033	\$24,681	\$80,035	\$105,160	\$89,244	\$255,642	\$55,508	\$30,467
<i>Estimated Average Wages</i>	\$90,381	\$61,703	\$50,022	\$87,633	\$59,496	\$49,162	\$61,676	\$50,778
Reclamation (total)	\$6,301,486	\$192,764	\$283,582	\$2,829,411	\$870,765	\$754,026	\$580,257	\$368,854
<i>Estimated Average Wages</i>	\$95,477	\$62,182	\$50,640	\$86,526	\$56,913	\$48,647	\$59,210	\$47,903

Notes: \$=Canadian dollar; BC=British Columbia; FTE=full-time equivalent; RDBN=Regional District of Bulkley-Nechako

Direct effects in the RDBN and direct effects in the Rest of BC include the direct TCL employees and direct Project contractors, as well as other direct positions that the BC IOM estimated for direct supplier industries. Wages and salaries in this table do not include burden and are based on FTEs measures. Burden refers to the total cost of hiring and maintaining an employee beyond their direct compensation in wages/salaries and can include items such as training, benefits, sick leave, pension contributions, among several others. The employment (jobs) estimates reflect the wages paid and annual hours spent on the job by a typical worker in each industry. The FTE estimates are calculated based on the assumption that a full-time employee works 40 hours a week, for 50 weeks of the year (a total of 2,000 hours a year) BC Input-Output Model (IOM) can only estimate Project effects at the Regional District level (RDBN), provincial, and national; Project indirect and induced effects cannot be estimated for the Local Study Area (LSA).

5.2.1.5 *Post-closure Phase*

For estimating economic benefits of the Project during the Post-closure Phase, this phase can be divided into Active (10 years in duration) and a subsequent Passive (15 years in duration) Post-closure phase.

The Project is expected to provide one (1) job during the Active Post-closure Phase (for a total of 10 person-years of employment over that phase and an estimated total income of \$0.7 million for the phase²¹) and one (1) part-time job during the Passive Post-closure Phase (for a total of 7.5 person-years of employment over that phase and an estimated total income of \$0.6 million for the phase²²). For both the Active Post-closure and Passive Post-closure phases, indirect and induced effects on employment and income are summarized in **Table 5.2-6**.

²¹ Estimated annual salary, including burden, of \$74,000.

²² Estimated annual salary, including burden, of \$37,000.

Table 5.2-6: Number of Indirect and Induced Jobs/Full-time Equivalents (FTEs) and Income Effect during Post-closure Phase

	RDBN			Rest of BC			Rest of Canada	
	Direct	Indirect	Induced	Direct	Indirect	Induced	Indirect	Induced
Jobs								
Active Post-closure	8.3	0.3	0.7	2.7	1.5	2.1	0.8	0.6
Passive Post-closure	6.5	0.3	0.6	2.7	1.5	1.8	0.8	0.6
FTEs								
Active Post-closure	7.8	0.3	0.6	2.4	1.2	1.6	0.8	0.6
Passive Post-closure	6.1	0.3	0.5	2.4	1.2	1.3	0.8	0.6
Wages and Salaries								
Active Post-closure (total)	\$738,681	\$16,621	\$28,093	\$206,402	\$70,537	\$76,326	\$46,638	\$29,040
<i>Estimated Average Wages</i>	\$94,703	\$55,403	\$46,822	\$86,001	\$58,781	\$47,704	\$58,298	\$48,400
Passive Post-closure (total)	\$582,938	\$16,531	\$23,958	\$206,223	\$70,398	\$65,040	\$46,590	\$29,005
<i>Estimated Average Wages</i>	\$95,564	\$55,103	\$47,916	\$85,926	\$58,665	\$50,031	\$58,238	\$48,342

Notes: \$=Canadian dollar; BC=British Columbia FTEs=full-time equivalent; RDBN=Regional District of Bulkley-Nechako

Direct effects in the RDBN and direct effects in the Rest of BC include the direct TCL employees and direct Project contractors, as well as other direct positions that the BC IOM estimated for direct supplier industries. Wages and salaries in this table do not include burden and are based on FTEs measures. Burden refers to the total cost of hiring and maintaining an employee beyond their direct compensation in wages/salaries and can include items such as training, benefits, sick leave, pension contributions, among several others. The employment (jobs) estimates reflect the wages paid and annual hours spent on the job by a typical worker in each industry. The FTEs estimates are calculated based on the assumption that a full-time employee works 40 hours a week, for 50 weeks of the year (a total of 2,000 hours a year); BC Input-Output Model (IOM) can only estimate Project effects at the Regional District level (RDBN), provincial, and national; Project indirect and induced effects cannot be estimated for the Local Study Area (LSA).

5.2.2 Increase in Competition for Skilled Local and Regional Workforce

Through the provision of Project-related employment, the Project has the potential to increase competition for skilled local and regional workforce. The Project is expected to offer higher wages compared to those generally earned by workers in non-mining industries in the LSA and RSA, attracting skilled workers away from local and regional businesses. In turn, those businesses might find it harder to find skilled workers and fill available positions. This effect is predicted for the Construction Phase and the beginning of the Operation Phase of the Project given the numerous employment opportunities available at the Project. Decommissioning and Reclamation, as well as Post-closure phases of the Project are not expected to have a similar effect, as very few jobs will be available at the Project during those phases.

Mitigation measures for this effect are described in **5.3 Mitigation Measures**.

5.2.2.1 Construction Phase

During the Construction Phase, the Project is projected to provide 118.3 FTEs for contractors and 9.6 FTEs for TCL employees, with up to 186 jobs during peak construction in June of the second year of Construction. Close to 60% of these positions are expected to be filled by local workers (from the LSA, RDBN A, and RDBN G). An additional 25 indirect FTEs and 18 induced FTEs are modelled to be created in the RDBN in supplier industries and in businesses benefiting from direct and indirect workers spending their income. BC IOM does not have the capability to estimate effects of the Project for the LSA; thus, information on indirect and induced employment is limited to the regional district, and specific estimates for the LSA are not available.

In 2016, the LSA labour force had 5,600 people with 580 of them unemployed. In addition, there were 3,570 people in the labour force in RDBN A and RDBN G, with 370 of them unemployed. Further, of those employed, less than half worked full-time full-year, implying that there is a large pool of underutilized workers. More specifically, there were 2,570 employed people in the LSA and another 1,660 employed in RDBN A and RDBN G who worked less than full time (**4.2 Description of Existing Conditions**).

It is expected that most workers required for the Construction Phase would require Skill Level B (college or apprenticeship training) and Skill Level C (high school or job specific training). An estimated 355 workers from the LSA (plus RDBN A and RDBN G) who are unemployed have Skill Level C, and another 270 have Skill Level B. Underutilized workers (those working less than full-time full-year) are also expected to be available with Skill Level B and C, with up to 1,310 workers with Skill Level B and 1,440 with Skill Level C (**4.2 Description of Existing Conditions**). However, a mismatch of skills is expected as not all those with Skill Level B and Skill Level C will qualify for employment during the Construction Phase.

Of those workers who are unemployed, some will likely remain unemployed, being unable to fill available jobs because they lack the skills or education, do not live where jobs are available, or are unwilling to work at the wage rate offered in the market. This is referred to as structural unemployment.²³ In addition, in a healthy and growing economy, there is always some unemployment to allow for the “mobility” of workers between jobs. This type of unemployment is referred to as a natural rate of unemployment.²⁴ Structural unemployment is included in the natural rate of unemployment. For Canada, due to the lack of more recent

²³ “Structural unemployment” takes place when workers are unable to fill available jobs because they lack the skills, do not live where jobs are available, or are unwilling to work at the wage rate offered in the market. For Canada, structural unemployment varies by sector, but it is generally less than 1%.

²⁴ “Natural rate of unemployment” – that consists of frictional and structural unemployment – is the unemployment rate that would exist in a healthy, growing economy (not cyclical, institutional or policy based); it is the employment rate that ensures the “mobility” of workers. Due to a lack of recent estimates of the natural rate of unemployment, and common consensus that an unemployment rate of 4% to 5% is not concerning, the natural rate of unemployment is assumed at 3%.

estimates, it is assumed that the natural rate of unemployment is at 3%. This rate of unemployment is removed from the existing unemployment levels to understand the true numbers of workers that are unemployed but available to work in the LSA, RDBN A, and RDBN G, and the RSA. **Table 5.2-7** provides the estimated number of people by skill level who are unemployed (**4.2 Description of Existing Conditions**), accounting for the 3% natural rate of unemployment, but available to work or “employable”. As shown, in the LSA communities, including the rural area (RDBN A and RDBN G), there are 176 unemployed people available to work with Skill Level B and another 269 with Skill Level C.

Table 5.2-7: Estimated Number of Unemployed and Available to Work, 2016

	LSA	RDBN A and RDBN G	RDBN	RSA
Skill Level A Managers	7	18	32	32
Skill Level A Professionals	117	59	532	532
Skill Level B College or Apprenticeship Training	138	131	654	677
Skill Level C High School or Job Specific Training	144	60	678	697

Notes: LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako, RSA=Regional Study Area (RDBN+Witset)

Estimates relating the number of unemployed by industry are only available at the regional level (RDBN; **Table 4.2-5**). In 2016, the RDBN had 235 unemployed in construction, 210 unemployed in transportation and warehousing, and 75 unemployed in support activities to mining. Other industries such as logging (that had 520 unemployed in 2016) or oil and gas extraction and mining (that had 75 unemployed in 2016), are expected to have workers with skills transferable and relevant to the construction sector. Applying the 3% natural rate of unemployed, there are some 974 unemployed but available to work workers in the RDBN with skills relevant to the construction industry, with about 40% or 388 of those workers living in the LSA and rural areas surrounding the LSA communities (RDBN A and RDBN G).²⁵

The above estimates suggest that there is a sufficient pool of unemployed workers in the LSA, RDBN A and RDBN G to fill Project construction jobs designated for the local workforce. Additional workers could be available from the pool of underutilized workers²⁶, which represents over 50% of all employed (an estimated 7,960 workers in the LSA, RDBN A and RDBN G). The Construction Phase is also of very short duration (1.5 years, with some jobs lasting only several weeks or months) and it is unlikely that workers who currently hold permanent full-time employment would leave those jobs in hopes of obtaining short-term employment at the Project, even if that employment offers temporarily higher wages. Despite this, some limited competition for skilled labour is expected due to the Construction Phase, as there is incomplete information regarding the ability to match available jobs with those seeking employment, and there is an expected focus to hire the most skilled workers available for jobs.

Indirect and induced employment are not expected to contribute to the competition for skilled labour as the expected effect on those jobs in the LSA, as well as RDBN A and RDBN B would likely be undetectable. Indirect jobs are created in supplier industries, while induced jobs are created in businesses benefiting from the spending of workers (mostly retail, food services and accommodation). Such jobs can largely be filled by hiring lower skilled workers and providing on-the job training.

²⁵ Assumption based on relative size of the labour force in the RDBN, compared to labour force in the LSA, RDBN A, and RDBN G.

²⁶ Those who worked part-year (part-time or full-time) or full-year (part-time).

5.2.2.2 Operation Phase

During the Operation Phase, the Project is projected provide up to 145 FTEs, with up to 131 FTEs filled by workers from the LSA, RDBN A, and RDBN G (**5.2.1.3 Operation Phase**). There is also expected to be up to 27 contractors (FTEs) working onsite (an average of 17 FTEs over the Operation phase), mostly in coal haul and loadout. An estimated 60 people are expected to be working onsite at any given time due to shift rotations for all workers. Due to the projected duration of the Operation (21 years), workers hired to work at the Project will be mostly from the local area. If from outside, those workers will likely move to the area to reduce time travelled to work. Thus, all direct employment and income effects of the Project during the Operation Phase are expected to be realized locally. In addition, each year there is anticipated to be up to 21 indirect FTEs in supplier industries and up to 14 induced FTEs in industries benefiting from workers spending their income.

Most workers required for the Operation of the Project would need Skill Level B (college or apprenticeship training) and C (high school or job specific training). As summarized above, the LSA communities, including the surrounding rural area (RDBN A and RDBN G), had 176 people available to work with Skill Level B and 269 people with Skill Level C in 2016. Further, by industry and accounting for the natural rate of unemployment of 3%, there were an estimated 388 people unemployed collectively in construction, transportation and warehousing, mining and support activities, and logging. A large pool of underutilized workers (those who work less than full-time full-year) is also available in the LSA communities, including the surrounding rural area.

While many Project jobs are expected to be filled by those currently unemployed, some jobs are likely to be filled by workers who are currently underutilized, or by workers who seek new employment opportunities at higher wages. When hiring takes place to fill operational jobs at the beginning of the Operation Phase, competition for skilled labour is expected as skilled workers consider new opportunities that offer higher wages. Local and regional businesses may not be able to offer similarly high wages, and thus could face losing the skilled and experienced workers to the Project. This competition will take place mainly at the beginning of the Operation Phase, with an effort to staff all operational jobs, and is expected to dissipate after a couple of years. After operational jobs are filled, new hiring would take place to fill job vacancies resulting from employment turnover at the Project.

Indirect and induced employment are not expected to contribute to the competition for skilled labour, as the expected effect on those jobs in the LSA, as well as RDBN A and RDBN B, would likely be undetectable.

5.2.2.3 Decommissioning and Reclamation Phase

No competition for skilled local and region labour is expected during the Decommissioning and Reclamation Phase.

5.2.2.4 Post-closure Phase

No competition for skilled local and region labour is expected during the Post-closure Phase.

5.2.3 Increase in Labour Cost

During the Construction and Operation phases, the Project will offer well-paid employment opportunities. Wages at the Project are expected to be higher compared to those typically offered in non-mining industries in the LSA and the RSA; other mining projects in the RDBN (e.g., Mount Milligan) could potentially offer similar or higher wages compared to wages to be offered at the Project. This can incentivise some skilled workers to leave current employment held at local or regional businesses in hopes of higher income at the

Project. Inflationary pressures on wages in the local area and an increase in the labour cost for employers to be able to keep skilled workers could result from this competition for skilled labour. This effect is expected during the Construction Phase and Operation Phase. Decommissioning and Reclamation, as well as Post-closure phases of the Project are not expected to experience a similar effect because of the relatively low number of workers employed at the Project during those phases.

Mitigation measures for this effect are described in **5.3 Mitigation Measures**.

5.2.3.1 Construction Phase

In 2015, median employment for full year full time workers was \$30,000 to \$72,000 in the LSA communities, \$54,000 and \$63,000 respectively in RDBN A and RDBN G, and \$60,000 in the RDBN overall (see **4.2 Description of Existing Conditions**). During the Construction Phase of the Project, direct Project workers are expected to earn an average full-time income of \$85,000²⁷. In addition, income benefits are expected to be also realized in supplier industries with an average income of \$63,000, and \$50,000 for induced employment. The income offered at the Project exceeds average wages/salaries earned in the LSA and RSA and is expected to attract skilled workers from current employment. This can put pressure on local and regional businesses to increase wages to retain skilled and experienced workers, increasing labour cost and decreasing labour affordability for those businesses. However, as noted before, the Construction Phase is of short duration (1.5 years, with some jobs lasting only several weeks or months) and it is unlikely that workers who currently hold permanent full-time employment would leave those jobs in hopes of obtaining short-term employment at the Project. Thus, while some inflationary pressure could be expected during the Construction Phase, it is expected that most workers will retain jobs that they currently have, and those unemployed or underutilized will be attracted to the short-term, construction-related employment.

5.2.3.2 Operation Phase

During the Operation Phase of the Project, direct Project workers are expected to earn an average full-time income of \$94,000²⁸. In addition, income benefits are anticipated to also be realized in supplier industries, with an average income of \$119,000, and \$50,000 for induced employment. Many Project jobs will be filled by those currently unemployed, and some jobs will be staffed by workers who are currently underutilized, or by workers who seek new employment opportunities at higher wages. Because the Operation Phase of the mine is estimated at 21 years, this offers an opportunity for long-term, well-paid, and permanent employment at the Project. Inflationary pressures on wages could take place at the beginning of the Operation Phase when extensive hiring takes place to staff all operating jobs. This can increase labour cost for local and regional businesses and cause a loss of skilled and experienced labour at businesses unable to provide competitive wages.

5.2.3.3 Decommissioning and Reclamation Phase

An increase in labour cost is not expected during the Decommissioning and Reclamation Phase.

5.2.3.4 Post-closure Phase

An increase in labour cost is not expected during the Post-closure Phase.

²⁷ Wages in this section do not include burden.

²⁸ Wages in this section do not include burden.

5.2.4 Barriers to Indigenous Employment and Participation in Project-related Economic Benefits

The effect of the Project regarding barriers to Indigenous employment and participation in Project-related economic benefits is expected for the Construction, and Operation phases and assessed without making a distinction between the two (2) phases. Like the effects previously described above (5.2.1, 5.2.2, 5.2.3) no change in barriers to Indigenous employment and participation in Project-related economic benefits is expected during either the Decommissioning and Reclamation or Post-closure phases. This is because barriers to employment faced by Indigenous peoples are an ongoing issue resulting from the lack of specific skills required for Project employment, and other socio-economic challenges. These barriers have existed in the past and are still expected to continue and cover skilled occupations across multiple industries.

Mitigation measures for this effect are described in **5.3 Mitigation Measures**.

5.2.4.1 Construction, and Operation Phases

The Project can provide employment opportunities to Indigenous people during the Construction, and Operation phases. There are Indigenous people living in communities in the LSA and RSA, including the community of Witset; Witset is comprised of four (4) neighbouring reserves of the Witset First Nation (Morisetown 1, Coryatsaqua (Morisetown) 2, Bulkley River 19, and Babine 17). In 2016, there were 2,245 Indigenous people in the LSA communities, including RDBN A and RDBN G rural areas, representing 13.7% of the total population (Statistics Canada 2017e). In 2016, Witset had 300 residents in the labour force, including 100 at Skill Level D (including 25 unemployed), and 95 at Skill Level C (including 20 unemployed). There were also 85 residents in the labour force with a Skill Level B, and 40 with a Skill Level A; they were all employed in 2016 (4.2 Description of Existing Conditions). Most jobs available at the Project will require Skill Level B and Skill Level C, with few jobs available for those with Skill Level D. Lack of skills and education can create barriers to employment for Indigenous people at the mine and accelerate unequal distribution of Project-related economic benefits (specifically, employment income). While the Project is expected to provide on-the-job training for all employees to various degrees, depending on job type, on-the-job training may not be enough to obtain a job at the Project, especially for those without a high school diploma.

Most jobs require post-secondary education and forthcoming jobs will require higher technological literacy and the ability to work with new tools. Post-secondary education is available in larger urban centers in the study area such as Smithers, which has a campus for the Coast Mountain College. Indigenous people are also eligible for training and essential skills programs delivered through territorial and federal programming, such as the Indigenous Skills and Employment Training (ISET) Program, delivered at the federal level, that provides funding for Indigenous individuals and organizations, and can support regional labour market initiatives. Some training is available online for other residents who need to travel to larger urban areas. However, a lack of reliable internet connection can put constraints on online training, while sense of belonging to a community and social support in home community make it difficult for residents to seek training outside of home community. As part of initiative in 2013 to support virtual learning, Pathways to Technology Project and TELUS partnered to deliver high-speed Internet to Witset, an undertaking achieved in Witset only in the summer of 2017 (Telus 2019).

As described in **Community Well-being VC (S6.0-C4)** of the **EAC Application**, the community well-being (CWB) index scores for Morisetown 1 are lower than the rest of LSA communities. This is common to many Indigenous communities that face deeply rooted social and economic challenges, including poverty and a lack of social services and infrastructure. Inadequate housing, lack of employment and training opportunities in home communities, overuse of drugs and alcohol, and domestic violence affect children and their ability to successfully participate in and complete schooling. In addition, lack of transportation,

lack of daycare options, and well as financial struggles faced by many Indigenous people limit their ability to undertake training. These challenges are intricately connected to historic effects of colonialism at individual, family, community, and systemic levels, and affect the ability of Indigenous people to successfully participate in the labour force (**S6.0-C4**). Low participation in the labour force, low rates of employment, and high unemployment rates are common to Indigenous communities, including Witset.

In 2016, Witset had 55 unemployed workers with an unemployment rate of 19.3% (**4.2 Description of Existing Conditions**). A CUS prepared for the Project (**Appendix 7.1-B of S7.0-C1 Heritage Resources VC of the EAC Application**) indicated that due to the high unemployment rate, many Indigenous workers are excited by the anticipated jobs opportunities provided by the Project and other similar developments. However, a common complaint among Wet'suwet'en is that such projects do not often include many Indigenous workers, despite taking place on Wet'suwet'en traditional territory. For example, though many Wet'suwet'en may be provided temporary employment during construction, afterwards, only a few acquire long-term jobs, and workers are excluded from economic benefits.

In consideration of the above, Indigenous workers from the LSA communities are likely to face barriers to employment at the Project and are more likely to be excluded from obtaining Project-related economic benefits. This effect is predicted for the Construction, and Operation phases.

5.2.4.2 Decommissioning and Reclamation, and Post-closure Phases

Barriers to Indigenous employment and participation in Project-related economic benefits are not expected during the Decommissioning and Reclamation Phase or the Post-closure Phase.

5.3 Mitigation Measures

This subsection describes mitigation measures taken to avoid, minimize, rehabilitate onsite, and if required compensate or offset the potential adverse effects of the Project on the Labour Market VC. Mitigation measures include applicable standards and guidelines, and best management practices (BMPs) supported by specific guidance documents.

TCL incorporated several mitigation measures in the Project's design and/or operational procedures to reduce the magnitude, duration, and extent of effects due to the Project. These Project mitigation measures are outlined in **S1.0 Overview of Project Proponent Description** of the **EAC Application**. Project mitigation measures that are relevant to the Labour Market VC are described below in **5.3.1 to 5.3.4**.

While there are no specific mitigation measures that can be implemented by TCL to eliminate predicted effects, there are communication, and employment and training strategies that can be implemented to minimize the adverse effects and/or enhance the beneficial effects of the Project on Labour Market VC and these are described below in **5.3.5 to 5.3.11**. All mitigation measures for Labour Market VC are summarized in **Table 5.3-1**.

Measures to mitigate potential effects on the Labour Market VC will be incorporated into the various Project management plans such as the **Socio-economic Management Plan (S13.0-C16) (SEMP)**. The management plans provide direction on sequencing, monitoring, and adaptive management to ensure that measures are timely and effective. The mitigation measures are expected to be effective immediately following implementation.

5.3.1 People, Employees, Contractors, and Onsite Policies

The following mitigation measures apply to people, employees, contractors, and onsite policies:

- ▶ Establish and implement an onsite policy prohibiting alcohol consumption, smoking, vaping, and drug use;
- ▶ Establish and implement an onsite policy prohibiting shooting, hunting, and fishing within the Project Area;
- ▶ Establish an Indigenous Cultural Awareness Induction program for employees, visitors, and contractors in collaboration with the Wet'suwet'en (refer to **5.3.10** below); and
- ▶ Establish and implement policies to promote: no workplace harassment of any kind; environmental protection and awareness; whistle blower protection; health, safety, and security; and multicultural and multi-generational workforce considerations.

5.3.2 Occupational Health and Safety Program (OHSP)

The following is related to health, safety, and wellness:

- ▶ TCL will meet all regulatory requirements by implementing the **Occupational Health and Safety Program (S13.0-C13) (OHSP)**. Maintain safety records and report results to BC MEMLI and designated Indigenous groups;
- ▶ Implement a Health and Wellness Program (Employee and Family Assistance Program) for employees and selected contractors to promote health and wellness aspects (e.g., sleep habits, exercise, healthy eating), including resources related to addiction, family planning, stress, abusive relationships, and financial planning. The Health and Wellness Program is part of the Project's **OHSP**;
- ▶ Implement a third-party phone line for employees via the Employee and Family Assistance Program that can be used by all personnel to report issues related to TCL employees on discrimination, harassment, financial irregularities, abuse, and bullying incidents; and
- ▶ Work with local agencies to assist in monitoring community well-being and take corrective actions where appropriate, including developing a health and well-being program based on guidelines from Northern Health.

5.3.3 Enhance Local and Regional Benefits including Employment

The following mitigation measures are intended to enhance local and regional benefits and are relevant to the effect of a change in the capacity of local or regional businesses to supply goods or services:

- ▶ Enhance local and regional benefits by identifying opportunities to promote direct employment and procurement of Project goods and services acquired from the Socio-economic RSA;
- ▶ Provide incentives and inducements such as higher wages to employees, bonuses to employees, and covering transportation costs for employees to workers to move permanently to a location within the Socio-economic RSA and require the Project management team to reside within the Socio-economic RSA to benefit the local and regional economy;
- ▶ Work with Indigenous groups to develop a strategy to identify and reduce barriers to employment and training, and report progress annually to designated Indigenous groups;

- ▶ Establish and implement plans that include training opportunities (see **SEMP**), such as:
 - ▶ Work with training institutions such as local colleges and education providers to provide training programs and skills upgrading;
 - ▶ Partner with local contractors to provide TCL apprenticeship programs;
 - ▶ Identify and train under-represented groups;
 - ▶ Offer scholarships and bursaries to encourage high school graduation and encourage groups to participate in science, technology, engineering, and mathematics (STEM) programs at a college, and/or university level;
 - ▶ Offer scholarships and bursaries to encourage people to participate in recognized trade programs;
 - ▶ Offer scholarships, bursaries, and employment opportunities for dependents of TCL employees in post-secondary education institutions;
- ▶ Offer employment opportunities for students in local post-secondary education institutions;
- ▶ Support apprentice programs both onsite and offsite with other industry partners; and
- ▶ Report progress in implementing these plans annually to designated Indigenous and stakeholder groups.

5.3.4 Housing Measures

TCL is aware of the current housing shortage and lack of housing stock and diversity within the Socio-economic RSA determined for the Project. The following measures are intended to promote local housing opportunities:

- ▶ Provide incentives and inducements to employees such as higher wages to employees, bonuses to employees, and covering transportation costs for employees to move permanently to a location within the Socio-economic RSA and require the Project management team to reside in the Socio-economic RSA to benefit the local and regional economy (refer to the **SEMP**); and
- ▶ Provide incentives and inducements to developers and partner with government (by providing funds and personnel, purchase of lands, rezoning of private land TCL already owns) to encourage the development of additional housing stock/supply and diversity of housing in the Socio-economic LSA and RSA.

5.3.5 Procurement Program

A Procurement Program will be implemented to support procurement from local and regional businesses, and to reduce the barriers to entry for contracting opportunities for local and regional businesses, to maximize economic benefits to those businesses. The Procurement Program will assist local and regional businesses in taking advantage of the opportunities to supply the Project directly and indirectly, and it will improve the understanding of procurement requirements and expectations. The Procurement Program is presented in the **SEMP**.

A Buyer role will be created for the Project to develop local opportunities, improve understanding of the local/regional market, and assess the availability of goods and services that can be sourced locally. TCL will also:

- ▶ advertise contracting opportunities well in advance of the goods or services being required, to allow local suppliers to increase capacity, meet qualifying requirements, and prepare a competitive bid. TCL internal policy is to obtain at least three (3) received quotes for each good or service request for quote (RFQ);

- ▶ provide smaller contracts to allow businesses with limited capacity to participate in the bidding process, and/or implement a multi-supplier procurement by allowing the breakdown of some larger contracts; and
- ▶ Improve the participation of Indigenous-owned businesses in the procurement process.

5.3.6 Child Care Program

TCL will share information about its projected workforce needs with child care service providers in the LSA in accordance with the **SEMP** so that they can anticipate and plan for the increased demand for services.

TCL will fund at least one (1) full-time position at a government approved child care facility in the RDBN that will be selected by TCL via an application process, with the provision that additional matching full-time positions are funded by government sources, and that preference is given to children of TCL employees for additional capacity created.

TCL will also fund at least one (1) full-time position with Indigenous groups at an approved child care facility operated by an Indigenous group in the region that will be selected by TCL via an application process, with the provision that an additional matching full-time position is funded from Indigenous and/or government sources, and that preference is given to children of TCL Indigenous employees first, and then TCL non-Indigenous employees for additional capacity created. The Child Care Program is part of the Education, Training, and Employment Program presented in the **SEMP**.

5.3.7 Communications

To support potential employees within the LSA (including RDBN A and RDBN G) to take advantage of Project-related employment opportunities, TCL will implement the following communication measures as part of the Education, Training, and Employment Program (refer to **SEMP**):

- ▶ Establish temporary Project recruitment offices in Telkwa, Smithers, Houston, and Witset prior to commencement of the Construction Phase;
- ▶ Communicate Project schedules and the type and number of jobs to be required by phase, including required skills, education, responsibilities, and compensation;
- ▶ Advertise employment opportunities for potential employees within the RDBN and contractors well in advance to provide job seekers with improved opportunity to obtain skills to qualify for employment at the Project;
- ▶ Set and communicate local employment objectives to maximize local employment and income benefits, including employment for Indigenous workers and other vulnerable groups; and
- ▶ Host Employment Information Sessions in LSA/RSA communities during the Construction Phase of the Project, to provide information about the opportunities associated with Project employment.

Communication activities will take place before hiring for Project Construction, and Operation phases takes place to ensure that local and regional workforce has sufficient information to maximize benefit from Project employment and income and to prepare for jobs that will be offered in the future. Communication activities will improve the understanding of schedules and hiring activities for the Project, as well as skill requirements and thus have the potential to improve the skill capacity of the local and regional workforce.

General and workforce-specific communication activities will take place in advance of Project activities and will be continuous throughout the four (4) phases of the Project. Frequent and transparent communication, and advertisement of employment opportunities and skills required for those opportunities well in advance

of planned hiring, are proven to be an effective tool at improving local employment content and ensuring that workers can obtain the necessary skills and qualifications to work at the Project. A robust communication and engagement program is a standard approach to support local hiring and procurement for mining developments in Canada. These plans set standards and timelines for how and when communications should take place to ensure interested stakeholders receive timely and relevant information, intended to maximize benefits to local communities.

In the longer term, effective communication regarding employment opportunities is expected to improve the local skills base, reducing competition for skilled labour, and decreasing inflationary pressures on labour cost. Effective and timely communication supports Indigenous workers to obtain skills and quality for jobs at the Project, thus reducing barriers for Indigenous people to employment. However, while Project communication activities are essential and effective at improving the success of local hiring, and longer term development of the local and regional workforce and skills base, they will not be able to fully mitigate the effect of the increase in competition for skilled labour, increase in labour cost, and barriers to Indigenous employment.

5.3.8 Education and Training Support

TCL will work to increase the skill capacity of the local and regional labour force and to reduce barriers to employment for Indigenous workers. Mitigation measures will focus on training efforts to prepare the unemployed and underutilized labour force for employment at the Project, as well as to increase the availability of skilled workers in the region for employment at other local and regional businesses. The following measures will be addressed through the Education, Training, and Employment Program (see **SEMP**) and include:

- ▶ Provide training, targeting entry-level positions and on-the-job training where previous experience is not necessary;
- ▶ Develop and implement a professional training plan to support training needs for the Project that can include specialized skilled training, such as apprenticeship programs for trades positions;
- ▶ Support efforts on the part of employees to upgrade their education as a means towards job advancement;
- ▶ Cooperate with local educational authorities and institutions, and the industry in general to develop and implement high school and college training with mining sector content;
- ▶ Support the training of Indigenous people and cooperate with programs such as ISET to improve access to funding for Indigenous individuals and support skill building of the Indigenous workforce in the RSA; and
- ▶ Cooperate with financial institutions to support financial resource needs required for training (e.g., a clear indication of workforce needs and intention to employ workers at the Project), given specific education can increase the likelihood of receiving a student loan.

The provision of training is expected to support the development of a skilled and experienced workforce within the LSA and RSA. Such initiatives should take place well in advance of the Construction, and Operation phases and continue throughout those phases. Training programs and the support of training opportunities, other than on the job training, will require time to identify and implement. Depending on job type, required training may take from a few weeks or months to a few years. Thus, early engagement regarding communicating job types and required skills before the initiation of the Project, as well as early collaboration with educational institutions, are essential to make this effort successful.

There is substantial uncertainty associated with the ability of those measures to successfully mitigate the predicted effects. While TCL will make realistic efforts regarding building the capacity of the local and regional workforce, such efforts also need to be undertaken at an individual level. Workers need to express interest in Project-related employment and training opportunities and put in the required work. In addition, training and schooling require a financial investment to cover tuition fees and living expenses. While there are federal and provincial support programs that can provide loans, scholarships, or other contributions, not everyone can qualify for such programs. Unavailability of financial resources can, thus, limit the effectiveness of the proposed measures. While TCL is expected to undertake some financial investment as related to training, this is unlikely to address individual needs of prospective workers.

The proposed mitigation measures are expected to improve the availability and capacity of the local and regional workforce and, thus, reduce upward pressures on labour cost. However, they will not be able to completely remove the predicted effects of an increase in competition for skilled local and regional labour and an increase in labour cost, or to remove barriers to employment for Indigenous workers.

5.3.9 Health, Safety, and Human Resources Superintendent

Regarding the effect of barriers to Indigenous employment and participation in Project-related economic benefits, the Project will make reasonable efforts to hire Indigenous workers and work towards reducing the barriers to employment for Indigenous people.

- ▶ TCL will set clear and ambitious objectives regarding Indigenous employment at the Project and create a Health, Safety, and Human Resources Superintendent role at the Project to support employment opportunities for Indigenous people;
- ▶ The Health, Safety, and Human Resources Superintendent will
 - ▶ engage with prospective applicants and provide information about employment opportunities, qualifications, and the nature of working at the Project, as well as liaise with the Indigenous workers at the Project to help address challenges at the workplace as they arise;
 - ▶ support the workers at the Project in health and well-being;
 - ▶ develop and support an Employee and Family Assistance Program to be available to employees and their families;
 - ▶ address specific health and well-being needs of the workers at the Project, as they arise;
 - ▶ develop (and review annually) health and well-being policies and procedures to suit the needs of the Project and the workers; and
 - ▶ provide workers with information and access to the resources this program provides and encourage their use.

The Health, Safety, and Human Resources Superintendent role is expected to have most beneficial effect preceding and during Construction, and Operation phases, as hiring takes places to staff Project employment opportunities.

The proposed mitigation measures are expected to support the employment of Indigenous workers at the Project and their participation in the economic benefits of the Project; however, they will not be able to completely remove the predicted effect as lower skill level and other socio-economic challenges faced by Indigenous workers are a persistent issue, affecting multiple Indigenous groups and communities across Canada.

5.3.10 Indigenous Cultural Awareness Induction

TCL will provide Indigenous Cultural Awareness Induction to all Project employees to educate all employees on how to work effectively with colleagues from different backgrounds, to strengthen relationships, and improve intercultural competence (refer to **SEMP**). This induction process is expected to improve the hiring and retention of Indigenous workers, and workers from other minorities or vulnerable groups.

Indigenous Cultural Awareness Induction is a practice that is becoming more common for mining projects in Canada, with the objective to improve the hiring and retention of workers from vulnerable groups or minorities. Indigenous Cultural Awareness Induction can improve cultural awareness by helping employees to respond to their own unconscious or hidden bias, act in a culturally appropriate manner, and improve communication and decision-making.

To recruit and retain a local resident workforce, TCL will:

- ▶ work with the OW to develop and implement an Indigenous Cultural Awareness Induction Program to educate employees and contractors on how to work effectively with colleagues from different backgrounds, to strengthen relationships, and improve retention of Indigenous workers, and workers from other minorities or vulnerable groups; and
- ▶ design cultural awareness induction before the Construction Phase of the Project and provide it to Project employees, and contractors during the four (4) phases of the Project, continuously working to improve cultural awareness and acceptance. The Indigenous Cultural Awareness Induction Program is part of the Education, Training, and Employment Program presented in the **SEMP**.

While this type of training is likely to reduce barriers to employment for Indigenous people and improve the retention of Indigenous workers in Project roles, it may not fully remove the expected adverse effect related to barriers to Indigenous employment.

5.3.11 Socio-economic Management Plan (SEMP)

A **SEMP** was developed and is provided in **S13.0-C16** of this **EAC Application**. The purpose of the plan is to describe the expected effects of the Project and corresponding mitigation measures, and detail planned monitoring to assess the actual effects and effectiveness of the monitoring measures on the socio-economic environment, and to describe reporting requirements and schedule. This includes the consideration of effects related to the Labour Market. The **SEMP** will ensure effects of the Project on socio-economic aspects are tracked and investigated annually and that the effectiveness and appropriateness of the proposed mitigation measures are confirmed. The **SEMP** will also help to identify any new or unanticipated effects, if any, in addition to those expected in this EAC Application, and to identify and implement additional mitigation measures, if required.

5.3.12 Summary of Mitigation Measures

A summary of the mitigation measures to avoid or reduce potential Project-related adverse effects on Labour Market, and whether a residual effect is anticipated, is provided in **Table 5.3-1**.

The increase in competition for skilled local and regional workforce is assessed in **5.2.2 Increase in Competition for Skilled Local and Regional Workforce**; increase in labour cost is assessed in **5.2.3 Increase in Labour Cost**; barriers to Indigenous employment and participation in Project-related economic benefits are assessed in **5.2.4 Barriers to Indigenous Employment and Participation in Project-related**

Economic Benefits. A residual effect is expected for adverse effects on the Labour Market as proposed mitigation measures may not fully remove those effects.

Most of employment effects from the Project, as related to the Labour Market VC and the predicted effects, will take place during Construction and Operation phases; these two (2) phases are, thus, the focus of this assessment, including the prediction related to residual effects. Decrease in employment during the Decommissioning and Reclamation, and Post-closure phases is assessed as part of economic downturn effect during those phases and is summarized in **S5.0-C2 Economic Development VC**. There are no adverse effects on the Labour Market VC during the Decommissioning and Reclamation, and Post-closure phases.

Table 5.3-1: Summary of Potential Effects and Mitigation Measures for Labour Market Valued Component (VC)

Potential Effect	Contributing Activities within the Project Phases (C, O, D, P)	Proposed Mitigation Measure	Residual Effect (Yes/No)
▪ Increase in Competition for Skilled Local and Regional Workforce ▪ Increase in Labour Cost	Project Employment and Income (C, O)	▪ People, employees, contractors, and onsite policies ▪ Occupational Health and Safety Program (S13.0-C13) (OHSP) ▪ Enhance local and regional benefits including employment ▪ Housing measures (refer to Socio-Economic Management Plan (S13.0-C17) [SEMP]) ▪ Procurement Program (Refer to SEMP) ▪ Child Care Program (Refer to SEMP) ▪ Communications (Refer to SEMP) ▪ Education and Training Support (Refer to SEMP) ▪ SEMP	Yes
Barriers to Indigenous Employment and Participation In Project-Related Economic Benefits	Project Employment and Income (C, O)	In addition to the above, the following measures are applicable to this effect: ▪ Health, Safety, and Human Resource Superintendent (Refer to SEMP) ▪ Indigenous Cultural Awareness Induction (Refer to SEMP) ▪ SEMP	Yes

Notes: C, O, D, P represent Project Phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure
LSA=Local Study Area; VC=Valued Component
See **Table 5.1-2** for list of applicable activities for each listed Project phase, unless otherwise noted in this table.

5.4 Residual Effects and Significance of Residual Effects

Predicted residual effects of the Project (i.e., effects anticipated to occur following the application of mitigation measures) related to the Labour Market VC include:

- ▶ increase in competition for skilled local and regional workforce;
- ▶ increase in labour cost; and
- ▶ barriers to Indigenous employment and participation in Project-related economic benefits.

As described in **5.3 Mitigation Measures**, there are no specific mitigation measures that can remove the expected adverse effects on the Labour Market VC. Employment strategies, however, can be introduced to minimize the adverse effects and/or enhance the beneficial effects of the Project on employment. Thus, residual effects are predicted for identified effects as the adverse effects may not be fully mitigable.

This subsection describes the residual effects of the Project. It determines the Significance of residual effects on Labour Market, as well as the Likelihood of the residual effects, and the Level of Confidence associated with the determination of Significance. The determination of Significance for the potential residual effects on is based on a consideration of the residual effects characteristics and socio-economic context of Labour Market.

The residual effects are predicted only for the Construction Phase and the Operation Phase as key employment and income opportunities at the Project will be realized during those phases. There are no residual effects predicted for Decommissioning and Reclamation, and Post-closure phases as employment effects during those phases will be very low. Loss of employment, income, and other economic benefits of during Decommissioning and Reclamation, and Post-Closure phases is assessed as part of the economic downturn effect during those phases and is summarized in **S5.0-C2 Economic Development VC** of the **EAC Application**.

5.4.1 Description of Evaluation Criteria

5.4.1.1 Residual Effects Characteristics

Table 5.4-1 provides definitions and ratings for each residual effect characteristic for the Labour Market VC. Only adverse effects of the Project are characterised.

Table 5.4-1: Effect Characteristics Considered when Determining the Significance of Residual Effects on Labour Market Valued Component (VC)

Residual Effect Characteristic	Definition	Rating
Magnitude	Severity of the residual effect measured in terms of the proportion of the Labour Market affected, relative to the range of natural or historic variation	Low: differs from the baseline conditions but remains within the range of natural variation Moderate: differs substantially from baseline conditions and approaches the limits of natural variation High: differs substantially from baseline conditions resulting in a detectable change beyond the range of natural variation
Geographic Extent	Spatial scale over which the residual effect is expected to occur	LSA: effect is limited to the LSA communities RDBN A and RDBN G: effect takes place in the Electoral Areas RSA (RDBN and Witset) : effect occurs in the RDBN in general Beyond RSA: effect occurs in the RSA, in the province and the rest of Canada
Duration	Length of time over which the residual effect is expected to persist	Short-term: less than 2 years Medium-term: 2 to 5 years Long-term: over 5 years
Frequency	How often the residual effect is expected to occur	Infrequent: effect occurs rarely and at sporadic intervals Frequent: effect occurs on a regular/frequent basis Continuous: effect occurs constantly

Residual Effect Characteristic	Definition	Rating
Reversibility	Whether or not the residual effect can be reversed once the activity causing the residual effect ceases. Irreversible effects are considered to be permanent	Fully Reversible: effect can be reversed Partially Reversible: effect can be partially reversed Irreversible: effect cannot be reversed
Context	The extent to which the Labour Market has been affected by past and present socio-economic processes and conditions, its potential sensitivity to the Project-related residual effect, and its ability to recover from that effect (i.e., resilience)	Low: the receiving population has a high baseline resilience to imposed stresses, and can respond and adapt to the effect Moderate: the receiving population has a neutral resilience to imposed stresses and may be able to respond and adapt to the effect High: the receiving population has a low resilience to imposed stresses, and will not easily adapt to the effect

Notes: LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area

5.4.1.2 Likelihood

Likelihood refers to the probability that the predicted residual effect will occur while considering that the mitigation will be successful. Likelihood is defined as Likely or Unlikely:

- ▶ **Likely:** Moderate-to-High Likelihood of an effect; or
- ▶ **Unlikely:** Low probability of an effect.

5.4.1.3 Significance Determination

Each residual effect is rated as **Not Significant**, or **Significant**, according to the following definitions:

Significant Residual effects occur when the residual effect is of High Magnitude, Provincial Extent, Long-term Duration, with Frequent or Continuous Occurrence, is Irreversible, and of High Context. Effects are characterised as **Significant** if they are likely to cause structural and functional changes in the labour market. Significant residual effects are carried forward to the CEA; or

Not Significant Residual effects are **Not Significant** if they are not characterised as Significant. Not Significant residual effects are still carried forward to the CEA.

In addition, Level of Confidence in the assessment include the following ratings: Low, Moderate, and High, and inform the predicted effects assessment. Confidence, which can also be understood as the level of uncertainty/risk associated with the residual effects assessment (including Significance determination), is a measure of how well residual effects are understood and the quality of the input data. The reliability of data inputs and analytical methods used to predict Project effects, confidence in the effectiveness of mitigation measures, and certainty of the predicted outcome are all considered. Confidence estimates allows the decision-maker to evaluate risk associated with the residual effects of the Project. In the determination of Confidence, the following is considered:

- ▶ **Low Confidence:** Cause-effect relationships between the Project and Labour Market are poorly understood. There may be several unknown external variables and/or data for the Project is incomplete. The effectiveness of the mitigation measures may not yet be proven. Modelling results may vary considerably given the data inputs. There is a high degree of uncertainty in the conclusions of the assessment;
- ▶ **Moderate Confidence:** The cause-effect relationships between the Project and Labour Market are not fully understood (e.g., there are several unknown external variables or data for the Project are incomplete). The effectiveness of mitigation measures may be moderate or high. Modelling predictions are relatively confident. Based on the above, there is a Moderate Confidence in the assessment conclusions; or
- ▶ **High Confidence:** There is a good understanding of the cause-effect relationship between the Project and Labour Market, and all necessary data are available to support the assessment. The effectiveness of the selected mitigation measures is moderate to high. There is a low degree of uncertainty associated with data inputs and/or modelling techniques, and variation from the predicted effect is expected to be low. Given the above, there is High Confidence in the conclusions of the assessment.

Based on these criteria, it was determined that an additional risk analysis was not required.

Characterisation of residual effects is based on the reviewed publicly available information on existing trends and conditions in **4.2 Description of Existing Conditions** assessment of Project effects in **5.2 Potential Project-related Effects**, scientific information, and professional expertise obtained while conducting similar assessments.

5.4.2 Labour Market Valued Component (VC)

5.4.2.1 Increase in Competition for Skilled Local and Regional Workforce

5.4.2.1.1 Residual Effect Characteristics

A residual effect for the increase in competition for skilled local and regional workforce is expected because proposed mitigation measures may not fully mitigate the predicted effect. Competition for skilled labour is expected in both the construction and the mining industry. As described in **4.2 Description of Existing Conditions**, the BC labour market is considered one of Canada's most competitive labour markets and employers are working hard to attract and retain skilled workers. In 2019, BC identified high-opportunity occupations that included construction managers, automotive technicians and mechanics, facility operations and maintenance managers, civil engineers, senior managers in construction, transportation, production and utilities, and other skilled jobs. These jobs will require a degree, diploma, or a certificate (Work BC 2019a). By trade, BC will require construction trades helpers and labourers, heavy equipment operators, construction millwrights and industrial mechanics welders and related machine operators, and electricians (Work BC 2019b).

In general, of all new jobs to be created in BC by 2029, only 3% will require Skill Level D, and 20% will require Skill Level C, with the remaining jobs requiring a degree, certificate, or diploma (GovBC 2019). Additional demand for skilled workers will come from the rest of Canada, with a recent estimate that 79,680 jobs would need to be filled in the mining industry over the next decade in Canada, with additional jobs to be created from indirect and induced opportunities (Mining 2020).

The Project will aim to maximize employment opportunities for workers from the LSA/RSA and, thus, has the potential to contribute to labour competition at the local and regional level. Competition for skilled labour

is expected as the Project will offer relatively high wages compared to those currently earned by workers in the LSA and RSA and may therefore attract skilled workers away from local and regional businesses. Mitigation measures such as advanced and frequent communications of available employment opportunities and skill requirements to facilitate skill capacity building, education, and training support, and the Health, Safety, and Human Resources Superintendent role will collectively work towards improving skills and education in the local and regional workforce to help workers qualify for Project employment. The introduced mitigation measures may not fully avoid the potential increase in competition for skilled local and regional workforce, although they will be able to reduce this adverse effect. The success of those mitigation measures will also depend on the willingness and effort of workers to upgrade their skills and search employment at the Project.

In consideration of the proposed mitigation measures and the assessment in **5.2.2 Increase in Competition for Skilled Local and Regional Workforce** that identified that there is a sufficient pool of unemployment and underutilized workers in the LSA (including RDBN A and RDBN G) to staff Project-related jobs. The adverse effect of an increase in competition for skill labour is expected to be of Low Magnitude. While collaborative training and skill development strategies can potentially reduce this competition by adding new skilled workers to the labour pool, prospective workers will need to pursue and complete required training (Business Development Bank of Canada [BDC] 2018).

The increase in competition for skilled labour will take place at the beginning of the Construction and the Operation Phases of the Project, as both construction and mining operations will require an increasing number of skilled workers. Thus, the residual effect of the increase in competition for skilled local and regional workforce will be of Medium Duration (2 to 5 years) and will occur Infrequently as it will mainly take place at the time of hiring for the phases. This increase is predicted to be Reversible and of Low Context as once Project jobs are staffed and there are no additional wage incentives, the competition is expected to return to its pre-Project levels. **Table 5.2 4** provides characterisation of the residual effect and the rationale for each rating according to definitions in **5.4 Residual Effects and Significance of Residual Effects**. Characterisation of this residual effect is conducted jointly for the Construction and Operation phases. This is done because the predicted characteristics are expected to have parallel rationale and importance and, thus, mirroring ratings between the two (2) phases; furthermore, workforce demands of the Project continuously span the Construction Phase and the start of the Operation Phase, and are inherently related and overlapping, making meaningful separation difficult to justify for the effects assessment.

Table 5.4-2: Summary of Effect Characteristics Ratings for Increase in Competition for Skilled Local and Regional Workforce

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	The Magnitude of this effect is Low as there is a sufficient pool of skilled and unemployed/underutilized workers in the area that can be hired to fill available jobs at the Project. The Project will also provide on-the-job training and support local training and educational initiatives to increase the skill level of the available labour pool. These measures will work collectively to reduce competition for skilled local and regional workforce.
Geographic Extent	LSA, RDBN A and RDBN G	Approximately 60% of construction jobs and 90% of operating jobs will be from the LSA (plus RDBN A and RDBN G).
Duration	Medium-term	The Construction Phase is predicted to be completed in 1.5 years. During the Operation Phase, the residual competition for skilled labour is expected to take place only at the beginning of the phase when the Project conducts most hiring to staff available positions. This effect is considered of Short-term for each phase, as different jobs will be

Residual Effects Characteristic	Rating	Rationale for Rating
		required during the two (2) phases and hiring focus will be on different skills (beyond cases where workers hired for the Construction Phase also obtain jobs related to the Operation Phase).
Frequency	Infrequent	This effect will take place only at the time of hiring for the Project Construction and Operation phases.
Reversibility	Fully Reversible	Once hiring is completed, there will be little Project-related competition for skilled labour, thus, this effect is Fully Reversible.
Context	Low	There is high resilience for the Labour Market to recover from this effect. Once Project jobs are staffed, competition for skilled labour will be reduced. With an increase in job opportunities, it is expected that there will be an increase in training and schooling as workers prepare for future jobs; this will increase the availability of skilled workers for local and regional businesses.

Notes: %=percent; LSA=Local Study Area; Project=Tenas Project; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area.

5.4.2.1.2 Likelihood

Given the expected growing demand for skilled workers that is expected to exceed the supply of skilled workers, it is Likely that this residual effect will occur despite the implemented mitigation measures. This determination is based primarily on professional judgement.

5.4.2.1.3 Significance Determination

Based on the above (Table 5.4-2 and the definition of Significance²⁹ in 5.4 Residual Effects and Significance of Residual Effects), the residual effect of an increase in competition for skilled local and regional workforce is rated as **Not Significant**. TCL is planning to focus hiring on qualified workers residing within an hour to an hour and a half drive of the Project; thus, the LSA is the affected area. The area was also assessed to have a sufficient labour pool to meet Project staffing requirements. Competition induced by the Project will mostly take place at the time of hiring for Construction and Operation phase jobs and is going to be very low to undetectable once hiring is completed. TCL will also undertake substantial efforts to increase the skill level of the local and regional workforce, increasing the availability of skilled workers. Finally, the Project is relatively small (compared to other similar developments) and lasting changes are not predicted.

There is Moderate Level of Confidence in the assessment and the rating, as the number of workers from the LSA (including RDBN A and RDBN G) to be hired to work at Project Construction and Operation phases is unclear at this point and cannot be predicted with certainty.

²⁹ Significant residual effects occur when the residual effect is of High Magnitude, Provincial Extent, Long-term Duration, with Frequent or Continuous Occurrence, Irreversible, and of Low Context. Effects are characterised as Significant if they meet at least three (3) of the above criteria and are likely to cause structural and functional changes in the labour market.

5.4.2.2 Increase in Labour Cost**5.4.2.2.1 Residual Effect Characteristics**

A residual effect for the increase in labour cost is expected because proposed mitigation measures may be unable to fully mitigate the predicted effect. Increase in labour cost is directly related to the competition for skilled labour. Growing demand for skilled workers, tightening supply, as well as the expectation of higher wages to be offered at the Project are expected to put an upward pressure on labour cost. The competition for skilled labour can, thus, lead to an increase in labour cost and a decrease in labour affordability for local and regional employers. An increase in labour cost is considered as one of the top responses to labour shortages, in addition to employees working longer hours and business experiencing growth constraints (BDC 2018). Effects on business capacity, growth, and resiliency can be expected. Increased investments in post-secondary education, collaboration of industry and educational institutions, and employee training will be needed to increase the pool of skilled workers and reduce effects on wages. Mitigations measures targeting the potential increase in competition for skilled local and regional workforce will also work indirectly to reduce the pressure on wages to increase. Thus, while frequent communications of available employment opportunities and skill requirements to facilitate skill capacity building, education and training support, and the Health, Safety, and Human Resources Superintendent role will collectively work towards maintaining a stable labour cost, the success of those mitigation measures will also depend on the willingness and effort of workers to upgrade their skills and search employment at the Project. The proposed strategies therefore may not eliminate but may reduce the pressure on labour cost; therefore, a residual effect is predicted for both the Construction, and Operation phases.

While assessment in **5.2.2 Increase in Competition for Skilled Local and Regional Workforce** identified that there is a sufficient pool of unemployment and underutilized workers in the LSA (including RDBN A and RDBN G) to staff Project-related jobs, resulting in Low Magnitude of the effect, competition for skilled labour and resulting upward pressure on wages are expected as the Project will offer higher wages compared to those currently earned by workers in the LSA and RSA. This effect is projected to take place during both the Construction, and Operation phases of the Project, as both construction and mining will offer high wages and require an increasing number of skilled workers. Potential increases in labour cost are expected to be of Medium Duration (2 to 5 years) and to occur Infrequently mainly taking place at the time of hiring for the phases. This increase is expected to be Reversible and of Low Context as once Project jobs are staffed and there are no additional wage incentives, the effect is expected to return to is pre-Project variation.

Table 5.4-3 provides characterisation of the residual effect and the rationale for each rating according to definitions in **5.4 Residual Effects and Significance of Residual Effects**. Characterisation of this residual effect is conducted jointly for the Construction, and Operation phases as characteristics are expected to have parallel rationale and, thus, mirroring ratings between the two (2) phases. Also, workforce demands of the Project continuously span the Construction Phase and the start of the Operation Phase, and are inherently related and overlapping, making meaningful separation difficult to justify for the effects assessment.

Table 5.4-3: Summary of Effect Characteristics Ratings for Increase in Labour Cost

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	The Magnitude of this effect is Low as there is a sufficient pool of skilled and unemployed/underutilized workers in the area that can be hired to fill available jobs at the Tenas Project (Project). The Project will also provide on-the-job training and support local training and

Residual Effects Characteristic	Rating	Rationale for Rating
		educational initiatives to increase the skill level of the available labour pool. These measures will work collectively to reduce competition for labour and the associated inflationary wage pressures.
Geographic Extent	LSA, RDBN A and RDBN G	Approximately 60% of construction jobs and 90% of operating jobs will be from the LSA (plus RDBN A and RDBN G).
Duration	Medium-term	The Construction Phase is predicted to be 1.5 years. During the Operation Phase, the residual competition for labour is expected to take place only at the beginning of the phase when the Project conducts most hiring to staff available positions. This is considered Short-term for each phase, as different jobs will be required during the two (2) phases and hiring focus will be on different skills (not including cases where workers hired for the Construction Phase also obtain jobs related to the Operation Phase). Pressures on wages to increase are expected to end once the initial periods of staffing up for the Project is completed.
Frequency	Infrequent	This effect will take place only at the time of hiring for the Project Construction, and Operation phases.
Reversibility	Fully Reversible	Once hiring is completed, there will be little Project-related competition for skilled labour and resulting pressures on wages to increase; thus, this effect is Fully Reversible.
Context	Low	There is high resilience for the Labour Market VC to recover from this effect. Increase in labour cost is directly related to the competition for skilled labour thus it is expected to be temporary. Once Project jobs are fully staffed, no upward pressure on labour cost is predicted.

Notes: %=percent; LSA=Local Study Area; Project=Tenas Project; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area.

5.4.2.2.2 Likelihood

Given the direct correlation of this effect with the effect of an increase in competition for skilled local and regional workforce, and the expectation that the competition for skilled labour will put an upward pressures on wages, it is Likely that the residual effect of an increase in labour cost will occur despite the implemented mitigation measures. This determination is based primarily on professional judgement.

5.4.2.2.3 Significance Determination

Based on the above (Table 5.4-3) and the definition of Significance³⁰ in 5.4 Residual Effects and Significance of Residual Effects), the residual effect of an increase in labour cost is rated as **Not Significant**; justification is parallel to that provided for the competition for skilled local and regional workforce (5.4.2.1.3 Significance Determination).

³⁰ Significant residual effects occur when the residual effect is of High Magnitude, Provincial Extent, Long-term Duration, with Frequent or Continuous Occurrence, Irreversible, and of Low Context. Effects are characterised as Significant if they meet at least three (3) of the above criteria and are likely to cause structural and functional changes in the labour market.

There is Moderate Level of Confidence in the assessment and the rating as the number of workers to be hired from the LSA (including RDBN A and RDBN G) during Project Construction, and Operation phases cannot be predicted with certainty and, thus, it is challenging to predict the resulting effect on labour cost.

5.4.2.3 Barriers to Indigenous Employment and Participation in Project-related Economic Benefits

5.4.2.3.1 Residual Effect Characteristics

A residual effect for the barriers to Indigenous employment and participation in Project-related economic benefits is expected because proposed mitigation measures will not be able to fully mitigate the predicted effect. Many Project-related jobs will require workers with Skill Level C and Skill Level B; thus, most jobs will require at a minimum a high school diploma, with better jobs requiring job specific training, a college degree, or apprenticeship training. Indigenous workers with Skill Level C comprise a large portion of the available labour base in Witset, while Indigenous workers with Skill Level B and Skill Level A are typically fully utilized in existing community roles. Socio-economic challenges such as poverty, addictions, and housing issues faced by Indigenous people and communities are intricately connected to historic effects of colonialism and residential schools. These ongoing challenges inhibit the ability of Indigenous peoples to obtain a high school diploma or to take advantage of training and upskilling opportunities, preventing them from successful participation in the labour market. In addition, logistical limitations such as lack of transportation or daycare options affect the participation and employment rate of Indigenous workers in the labour force.

Mitigations measures such as frequent communications of available employment opportunities and skill requirements to facilitate skill capacity building, education, and training support, the Health, Safety, and Human Resources Superintendent role to maximize employment of Indigenous people, and Indigenous Cultural Awareness Induction to improve hiring and retention of Indigenous workers will collectively work towards reducing barriers to Indigenous employment. The success of those measures will depend on the willingness and effort of workers to upgrade their skills and seek employment at the Project. While TCL will make realistic effort to support training and employment of Indigenous workers, ongoing socio-economic challenges faced by Indigenous peoples are systemic and not likely to be resolved in the near term and will continue to limit participation in the labour force and in the Project workforce.

Under ideal conditions, the size of the Indigenous workforce at the Project, as a proportion of total workforce, should be representative of the proportion of Indigenous population in the study area. An estimated 13.7% of the total Project workforce (of up to 166.5 FTEs during peak Project Operation Phase) or up to 23 Indigenous workers during the Operation Phase would be representative of the Indigenous population. However, there is insufficient information to determine if this employment level can be achieved; thus, the effect is predicted to have Moderate Magnitude. Indigenous workers from the LSA (including RDBN A and RDBN G) are expected to be affected as the focus of the Project will be on hiring local workforce. This effect will take place throughout the Construction and the Operation phases of the Project, being of Long Duration (over 5 years) and Continuous Frequency as Indigenous people are expected to continue to face ongoing socio-economic challenges to find meaningful employment. TCL will make significant efforts to increase the skills and experience of Indigenous workers to maximize opportunities of employment at the Project for Indigenous peoples. This increase is expected to be Partly Reversible and of Moderate Context as Indigenous workers are typically underrepresented in the workforce due to lower skill levels; this often implies that lower employment targets for Indigenous workers are achieved than desired.

Table 5.4-4 provides characterisation of the residual effect and the rationale for each rating according to definitions in **5.4 Residual Effects and Significance of Residual Effects**. Characterisation of this residual

effect is conducted jointly for the Construction, and Operation phases as barriers to Indigenous employment are an ongoing challenge and are expected to have similar rationale across multiple industries and phases.

Table 5.4-4: Summary of Effect Characteristics Ratings for Barriers to Indigenous Employment and Participation in Tenas Project-related Economic Benefits

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Moderate	The Magnitude of this effect is Moderate as there is a large pool of unskilled unemployed/underutilized Indigenous workers who might find it difficult to obtain Tenas Project (Project)-related employment due to barriers to employment often faced by Indigenous workers (lack of skills, socio-economic challenges, and cultural barriers). These difficulties decrease the ability of those workers to participate in Project-related economic benefits.
Geographic Extent	LSA, RDBN A and RDBN G	Approximately 60% of construction jobs and most operating jobs will be from the LSA (plus RDBN A and RDBN G) – an area with a relatively high Indigenous population. The focus of the Project will be on hiring local workforce.
Duration	Long-term	This effect will take place throughout the Construction and the Operation phases of the Project, being of Long-term Duration (over 5 years) as Indigenous people are expected to continue to face ongoing socio-economic challenges to find meaningful employment. The hiring process and level of interest in the available jobs will determine the relative participation of the Indigenous workers in the Project workforce and their ability to obtain Project-related employment income.
Frequency	Continuous	Barriers to employment present themselves not only at major periods of hiring but are also reflected in turnover and ongoing challenges to find meaningful employment with the Project. This the effect is predicted to have Continuous Frequency.
Reversibility	Partially reversible	Once hiring is completed, the participation of Indigenous workers in Project workforce will be largely determined (beyond job vacancies resulting from employee turnover). In ideal conditions, the size of the Indigenous workforce at the Project, as a proportion of total workforce, ideally should be representative of the proportion of Indigenous population in the study area (13.7%) or up to 23 Indigenous workers during the Operation Phase. There is insufficient information to determine if this employment level can be achieved. Thus, some workers will continue to be excluded from Project benefits throughout the Construction and Operation phases.
Context	Moderate	There is moderate resilience for the Labour Market VC to recover from this effect. Indigenous workers are typically underrepresented in the workforce. This may imply lower employment targets for Indigenous workers than desired.

Notes: %=percent; LSA=Local Study Area; Project=Tenas Project; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area.

5.4.2.3.2 Likelihood

Barriers to employment for Indigenous people are an ongoing challenge in Canada. Therefore, it is Likely that the residual effect for the barriers to Indigenous employment and participation in Project-related

economic benefits will occur, despite the implemented mitigation measures. This determination is based primarily on professional judgement.

5.4.2.3.3 *Significance Determination*

Limited job opportunities, local context, and the Project's ability to affect the employment of Indigenous people influence the Significance determination of this effect. Ongoing socio-economic challenges faced by Indigenous peoples that prevent them from obtaining education or successfully participating in the labour force reflect the larger socio-economic issues at the national level and are beyond the capacity and ability of the Project to adequately address or resolve. TCL will make considerable but realistic efforts to support training opportunities for Indigenous workers and to maximize Indigenous employment at the Project.

In consideration of the above assessment (**Table 5.4-4** and the definition of Significance³¹ in **5.4 Residual Effects and Significance of Residual Effects**), the residual effect of barriers to Indigenous employment and participation in Project-related economic benefits is rated as **Not Significant**.

Despite the ongoing challenges faced by Indigenous people to find meaningful employment, there is Moderate Level of Confidence in the assessment and the rating as the extent of Indigenous participation in Project employment cannot be precisely estimated.

5.5 Summary of Project-related Residual Adverse Effects and Significance

Table 5.5-1 summarizes the potential residual effects of the Project as related to the Labour Market VC and provides Significance and Confidence ratings. After assessing the effectiveness of the proposed mitigation measures, three (3) residual effects were predicted: increase in competition for skilled local and regional workforce, increase in labour cost, and barriers to Indigenous employment and participation in Project-related economic benefits. Residual effects of the Project on the Labour Market were predicted only for the Construction and Operation phases as key employment and income would be realized during those phases. Residual effects are rated as **Not Significant** with a Moderate Level of Confidence in the rating and the assessment. Therefore, the effect of the Project on the Labour Market VC is rated as **Not Significant**. Residual effects were carried forward into the CEA.

³¹ Significant residual effects occur when the residual effect is of High Magnitude, Provincial Extent, Long-term Duration, with Frequent or Continuous Occurrence, Irreversible, and of Low Context. Effects are characterised as Significant if they meet at least three (3) of the above criteria and are likely to cause structural and functional changes in the labour market.

Table 5.5-1: Summary of Residual Adverse Effects for Labour Market Valued Component (VC)

Residual Adverse Effects	Contributing Activities within the Project Phases (C, O, D, P)	Proposed Mitigation Measures	Residual Effects Characterisation								
			Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Context	Likelihood	Significance	Level of Confidence
Increase in Competition for Skilled Local and Regional Workforce	Provision of Project employment and income (C, O)	▪ Socio-Economic Management Plan (S13.0-C17) (SEMP) ▪ Procurement Program (Refer to SEMP) ▪ Education and Training Support (Refer to SEMP) ▪ Communications (Refer to SEMP)	L	LSA, A/G	MT	IF	FR	L	L	NS	M
Increase in Labour Cost	Provision of Project employment and income (C, O)	▪ SEMP ▪ Procurement Program (Refer to SEMP) ▪ Education and Training Support (Refer to SEMP) ▪ Communications (Refer to SEMP)	L	LSA, A/G	MT	IF	FR	L	L	NS	M
Barriers to Indigenous Employment and Participation in Project-Related Economic Benefits	Provision of Project employment and income (C, O)	In addition to the above, the following measures are applicable to this effect: ▪ Health, Safety, and Human Resources Superintendent ▪ Indigenous Cultural Awareness Induction (refer SEMP)	M	LSA, A/G	LT	CF	PR	M	L	NS	M

Notes: C, O, D, P represent Project Phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure

Magnitude: Low (L), Moderate (M), High (H)

Geographic Extent: Local (LSA), RDBN A and RDBN G (A/G), Regional (RSA), beyond Regional (beyond RSA)

Duration: Short-term (ST), Medium-term (MT), Long-term (LT)

Frequency: Infrequent (IF), Frequent (FF), Continuous (CF)

Reversibility: Fully reversible (FR), Partially reversible (PR), Irreversible (IR)

Context: Low (L), Moderate (M), High (H)

Likelihood: Unlikely (UL), Likely (L)

Significance: Not-Significant (NS), Significant (S)

Level of Confidence: High (H), Moderate (M), or Low (L)

See **Table 5.1-2** for list of applicable activities for each listed Project phase, unless otherwise noted in this table.

6. CUMULATIVE EFFECTS ASSESSMENT (CEA)

This subsection presents an assessment of potential cumulative effects on the Labour Market VC. Consideration of cumulative effects is made for all residual adverse effects, whether they are Significant or Not Significant. The following criteria must be met:

- ▶ There must be an effect of the Project;
- ▶ The identified effect is demonstrated to act cumulatively with the effects from other projects or activities;
- ▶ It must be known that the other projects or activities have been or will be carried out and are not hypothetical; and
- ▶ The cumulative effect must be likely to occur. If no cumulative interaction is considered likely, no further analysis is completed.

A rationale is provided if a project or activity is not analyzed further than the initial consideration of each project. Baseline conditions in **4.2 Description of Existing Conditions** include the cumulative effects of past and present projects and activities on Labour Market, prior to and including 2016, as they are incorporated in the most recent 2016 Census data.

The Project and Activity Inclusion List is provided in the **3.0 Assessment Methodology** of the **EAC Application** and identifies past, present, and reasonably foreseeable projects in the LSA and RSA that could have residual effects overlapping with the Project's residual effect on the Labour Market VC. The potential cumulative effects, in consideration of Project's residual effects in **Table 6-1** include:

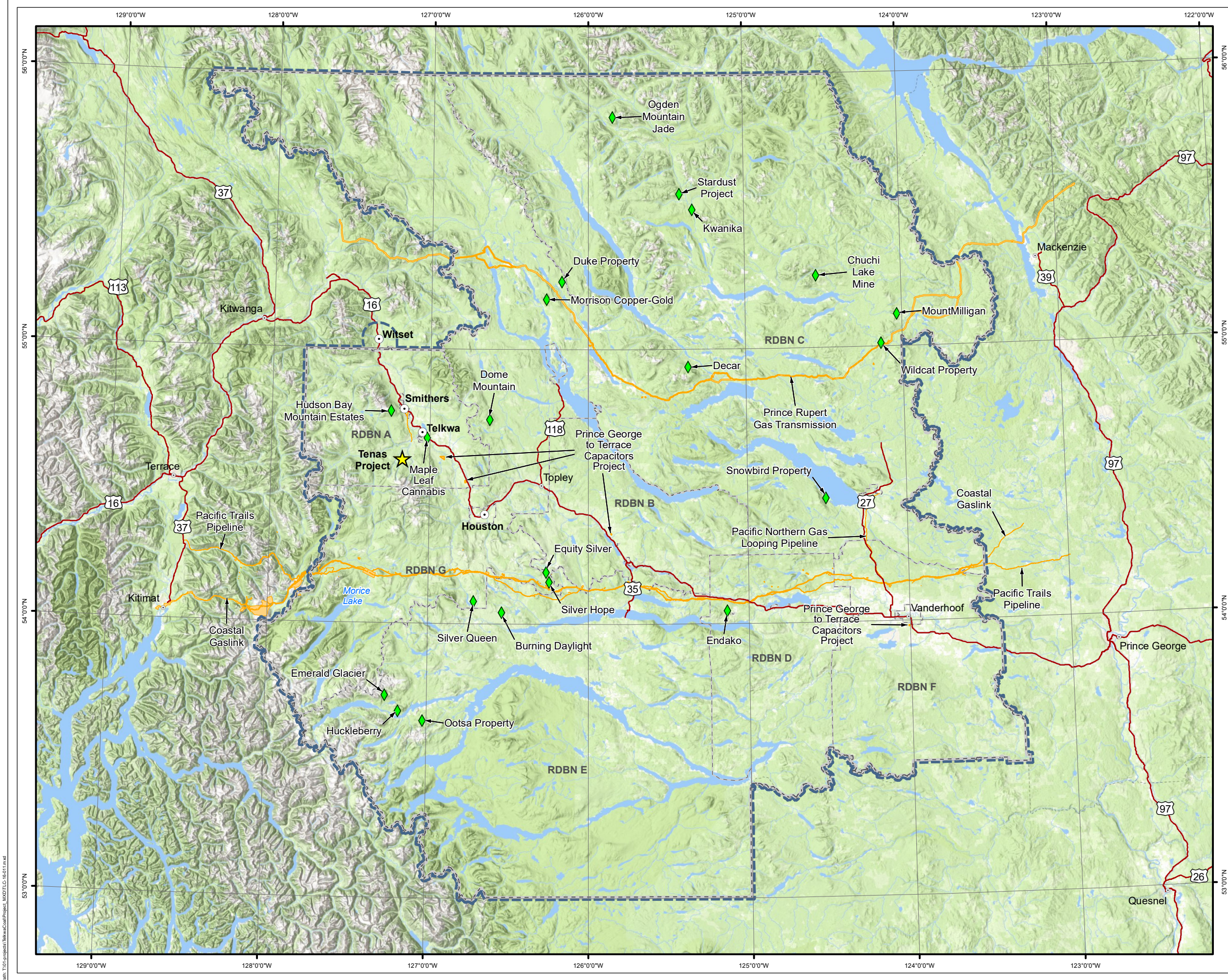
- ▶ increase in competition for skilled local and regional workforce;
- ▶ increase in labour cost; and
- ▶ barriers to Indigenous employment and participation in Project-related economic benefits.

The approach to determining cumulative effects is as follows:

- ▶ Consider all residual Project effects (**Table 5.5-1**);
- ▶ Assess the type of project/activity and location of project/activity of identified reasonably foreseeable future projects in the study area (past/present disturbances were accounted for within **4. Existing Conditions**, and therefore, all past/present effects on Labour Market were addressed in **5. Residual Effects and Significance of Residual Effects**);
- ▶ Use assumptions of spatial and temporal boundaries based on the project/activity category;
- ▶ Determine which projects/activities will have an interaction with the residual effects of the Project, based on set criteria;
- ▶ Proceed with CEA appropriate in resolution to the detail known of the residual effects of reasonably foreseeable future projects/activities;
- ▶ Characterise cumulative effects;
- ▶ Determine if additional mitigation measures are feasible to address cumulative effects (in addition to mitigation measures identified for Project-related effects in **5.3 Mitigation Measures**); and
- ▶ Determine Significance as defined in and as carried out for residual Project effects assessment in **5.4 Residual Effects and Significance of Residual Effects**.

Table 6-1 and **Figure 6-1**³² identify projects and activities likely to interact with the Labour Market VC, as well as the spatial and temporal (past, present, or reasonably foreseeable future) context of those projects and activities. Various projects and activities are considered to interact with the Labour Market VC if they are expected to have past and present spatial and temporal overlap, or reasonably foreseeable future spatial and temporal overlap, or both. Projects and activities are likely to interact with the Labour Market VC because they will require skilled labour from the LSA and RSA that can have implications on competition for skilled labour, labour affordability, and barriers to employment for Indigenous people.

³² Forestry activities are not identified on **Figure 6-1** as this would make the map difficult to read. Potential future developments in Smithers, Houston, Telkwa, and Witset are only identified as “LSA Community”.



Tenas Project

Project and Activities Included in the Cumulative Effects Assessment for Labour Market

Legend

- ★ Tenas Project
- Labour Market Local Study Area Community
- ▭ Labour Market Regional Study Area
- ▭ Regional District of Bulkley-Nechako (RDBN)
- ▭ Electoral Areas
- ◆ Project
- ▭ Oil and Gas Feature

Notes

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

Sources

- Project Area: Allegiance Coal, 2020
- Basedata: Government of British Columbia
- Basemap: World Topo Base

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Figure 6-1

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The Project has the potential to interact with other exploration/drilling projects and mining developments. Exploration/drilling projects refer to exploration and drilling activities to investigate mineral deposits for potential mining development. Such projects have the potential to interact with the Project if there was recent exploration/drilling activity (in the last five (5) years) and future exploration/drilling is planned, or if there are studies being done, agreements being established, or the project is in pre-application stage. Other mining projects have the potential to interact with the Project if they are in operation, under care and maintenance (C&M), or they have planned exploration or expansion. Commercial, community, or utility-related projects can interact with the Project if they require substantial construction or operation workforce that may have skills transferable to the mining industry. All other projects and activities are not considered as interacting with the effects of the Project on Labour Market.

Table 6-1: Projects Included in the Assessment of Labour Market Valued Component (VC) Based on Spatial and Temporal Interaction

Project/Activity Name	Interacts with Project-related Effects on the VC as a Past, Present or Reasonably Foreseeable Future Project/Activity	
	Past and Present	Reasonably Foreseeable Future
Maple Leaf Cannabis Production Facility	Yes	No
Hudson Bay Mountain Estates	Yes	Yes
Smithers, Houston, Telkwa, Witset, Hudson's Bay Estates, and any miscellaneous developments	Yes	Yes
Forestry Activities	Yes	Yes
Burning Daylight Quarry	Yes	Yes
Chuchi Lake Mine	Yes	Yes
Decar	Yes	Yes
Dome Mountain	Yes	Yes
Duke Property	Yes	Yes
Emerald Glacier	Yes	No
Endako	Yes	No
Equity Silver	Yes	No
Huckleberry	Yes	Yes
Kwanika	Yes	Yes
Morrison Copper/Gold	Yes	Yes
Mount Milligan	Yes	Yes
Ogden Mountain Jade	Yes	No
Ootsa Property	Yes	Yes
Silver Hope	Yes	Yes
Silver Queen Property	Yes	Yes
Snowbird Property	Yes	Yes
Stardust Project	Yes	Yes
Wildcat Property	Yes	Yes

Project/Activity Name	Interacts with Project-related Effects on the VC as a Past, Present or Reasonably Foreseeable Future Project/Activity	
	Past and Present	Reasonably Foreseeable Future
Coastal Gaslink	Yes	Yes
Pacific Northern Gas Looping Pipeline	No	Yes
Pacific Trails Pipeline	No	Yes
Prince George to Terrace Capacitors Project	No	Yes
Prince Rupert Gas Transmission	No	Yes

Notes: Project=Tenas Project; VC=Valued Component

6.1 Cumulative Effects Assessment (CEA) - Labour Market Valued Component (VC)

As described in **3.2.4.1 Spatial Boundaries**, the spatial boundaries of the CEA for the Labour Market VC consist of the LSA defined to include Village of Telkwa, Town of Smithers, District of Houston and the community of Witset; and the RSA is defined to encompass the RDBN and the community of Witset. Electoral Areas RDBN A and RDBN G, while officially not part of the LSA, are also considered in the CEA where relevant. If past, present or reasonably foreseeable future projects and activities are near LSA communities, in RDBN A or RDBN G, this is specified in **6.1.1 Potential Cumulative Effects**. If these projects and activities are outside the LSA, RDBN A or RDBN G, it is stated in **6.1.1 Potential Cumulative Effects** that they are located in the RDBN.

Temporal boundaries within which cumulative effects will be considered are defined as those overlapping with the Construction, and Operation phases of the Project as provided in **Table 3.2-4**. Expected construction of the Project is expected to take place in early 2020s.

6.1.1 Potential Cumulative Effects

Baseline conditions represent past and present projects/activities, including all disturbance. Present and reasonably foreseeable future projects and activities are likely to interact with the Labour Market VC because they will require skilled labour from the LSA and RSA, potentially contributing to the competition for skilled labour. Some workers may also have skills transferable to the mining industry further contributing to the competition for skilled labour. Cumulative effects on labour affordability can be also expected, as mining and exploration projects offer competitive wages above what some local and regional businesses are able to offer. As well, lack of skills and education can create barriers to employment for Indigenous peoples at the various projects and accelerate unequal distribution of economic benefits in the RSA.

While specific temporal boundaries for the Project have not been set, with construction likely taking place in early 2020s, there is a likelihood of cumulative effects as a result of overlapping effects of the following projects and activities in the LSA and RSA (temporal boundaries for projects and activities as well as expected job effect are specified if data was available):

- ▶ **Maple Leaf Cannabis Production Facility:** The construction of the facility is in progress in Telkwa and is unlikely to overlap with the construction activities at the Project. The operation of the plant planned for 2020/21 will provide 20 permanent and 50 temporary or seasonal jobs (Barker 2019);

- ▶ Hudson Bay Mountain Estates: This development is in progress in RDBN A with phased construction of chairlift and runway, and development of 148 residential lots; it is not specified how many construction jobs will be created (Hudson Bay Mountain 2020). Some construction activities may overlap with the construction activities at the Project; however, they would be expected to be gradual and spaced-out construction efforts;
- ▶ Smithers, Houston, Telkwa, Witset, Hudson's Bay Estates, and any miscellaneous developments: Some community developments/projects may require skilled workers and be forced to compete with the Project for skilled workers; this would be particularly expected during the Construction Phase of the Project, as construction activities have transferable skills between industries;
- ▶ Forestry Activities: Forestry and wood-related sectors require skilled workers that may have skills transferable to the mining industry (e.g., operation of machinery);
- ▶ Burning Daylight Quarry: This operational quarry is in the RDBN and has a workforce with skills potentially transferable to the mining industry (e.g., operation of machinery);
- ▶ Chuchi Lake Mine: Exploration and drilling took place in 2019 at this gold and copper property in the RDBN, with potential future exploration (Clarke et al. 2020). Drilling and exploration projects and activities require limited workforce; however, if those projects were to proceed to the EA process, potential Construction, and/or Operations phases could overlap with the Project and its effects on the Labour Market VC. Similar interpretation is drawn from other exploration and drilling projects listed below;
- ▶ Decar: This is a nickel-iron alloy property in the RDBN with rock testing completed in 2019 (Clarke 2020);
- ▶ Dome Mountain: This includes a past producing gold-silver mine and one (1) mining lease totaling 10,970 hectares (ha), located approximately 38 km east of Smithers (RDBN). Over the past 12 years, \$28 million was spent on the mine (Blue Lagoon Resources 2020). The mine is projected to have a 12-year mine life with existing infrastructure in place. It requires an additional capital investment of \$1.5 million to resume operations. There are no approximate project timelines (Junior Mining Network 2020a);
- ▶ Duke Property: Duke Property is an important porphyry copper-molybdenum-silver-gold deposit located 80 km northeast of Smithers (RDBN), with exploration completed in 2017 and 2018 (Amarc Resources 2020);
- ▶ Emerald Glacier: The old mine, located in the RDBN, is under C&M. No exploration has been completed since 2012 (British Columbia Ministry of Energy and Mines [BC MEM] 2015). Mines that are in C&M require limited workforce with skills transferable to the mining sector. Considering that such mines are not yet decommissioned, potential exists for future exploration or expansion. Thus, while unlikely, such projects can cumulatively interact with the Project;
- ▶ Endako: This molybdenum mine, located in the RDBN, is currently under C&M with no exploration conducted since 2015 (Centerra Gold 2020);
- ▶ Equity Silver: Currently under C&M, this silver, copper, and gold mine is in the RDBN;
- ▶ Huckleberry: A copper mine located in the RDBN; Huckleberry has been under C&M since 2016. In 2020, drilling was completed to check the extent of copper mineralization to potentially extend mine life (Mineral Development Office [MDO] 2020);
- ▶ Kwanika: This advanced stage copper-gold exploration project located in the RDBN signed an agreement with Takla Nation and had recent exploration in 2020. A feasibility study is also being prepared (Sereneti Resources 2020);

- ▶ Morrison Copper/Gold: This proposed copper and gold mine is located 65 km northeast of Smithers in RDBN G. The project was refused certification in 2012 but was issued an opportunity for further assessment. A Supplementary Application Information Requirement (SAIR) was submitted in 2019, and a mining lease was extended in 2020 (Pacific Broker 2020);
- ▶ Mount Milligan: A copper and gold mine located in the RDBN, Mount Milligan has been in production since 2013. The estimated mine life is 22 years. The mine employs about 485 people. Local expenditures in 2015 were \$54 million to local suppliers, of a total \$270 million. Wages/salaries in 2015 totalled \$64 million. Payments to governments totalled \$14 million in 2015 (Prospectors and Developers Association of Canada [PDAC] 2020);
- ▶ Ogden Mountain Jade: Currently under C&M, this jade mine is in the RDBN and has been in production for over 30 years (Green Mountain Jade 2015);
- ▶ Ootsa Property: Located in the RDBN, this property has ongoing exploration with most recent drilling activities conducted in 2020 (Surge Copper Corp 2020);
- ▶ Silver Hope: This is a silver property located in the RDBN G, with exploration activities conducted in 2020;
- ▶ Silver Queen Property: This gold and silver property is in RDBN G, 43 km south of Houston, BC. A National Instrument (NI) 43-101 Mineral Resource Estimate was prepared in 2019 (Equity Metals Corp. 2020).
- ▶ Snowbird Property: This gold resource is in the RDBN, with promising prospects for development and recent exploration in 2017 (Junior Mining Network 2020b);
- ▶ Stardust Project: Exploration occurred in 2020 at this high-grade copper-gold deposit in the RDBN. A future exploration program is estimated at \$3.8 million (Sunmetals 2020);
- ▶ Wildcat Property: A gold and copper deposit located in the RDBN, with the most recent drilling at Wildcat Property occurring in 2018 (Newsfile 2018);
- ▶ Coastal Gaslink: Located in RDBN G, the project includes construction and operation of an approximately 650-km, 48-inch diameter natural gas pipeline. It is currently under construction with a planned service date of 2023. It is expected to provide 2,500+ jobs and spend \$1 billion, including \$42 million in local and regional spending, \$21 million in property taxes, and \$8 million in community investment (Coastal GasLink 2020);
- ▶ Pacific Northern Gas (PNG) Looping Pipeline: This is a proposal to loop its existing natural gas transmission pipeline between Summit Lake and Kitimat, with an estimated construction cost of \$1.3 billion and up to 2,400 direct jobs created during construction. It is in RDBN A and RDBN G (PNG 2013);
- ▶ Pacific Trails Pipeline: A 463-km, 42-inch natural gas pipeline, the proposed pipeline would deliver gas from Summit Lake, BC to the proposed Kitimat liquefied natural gas (LNG) facility. In 2019, the project was granted a five (5)-year EAC extension (British Columbia Oil and Gas Commission [BC OGC] 2020a). This project is in the RDBN G;
- ▶ Prince George to Terrace Capacitors Project: The project involves constructing three (3) new capacitor stations to increase the capacity along the 450-km, 500-kilovolt (kV) transmission line that runs between Prince George and northwest BC. There is one (1) station near Telkwa (BC Hydro 2020). This project is in RDBN A and RDBN G; and
- ▶ Prince Rupert Gas Transmission: This proposed 900-km natural gas pipeline was granted a five (5)-year EAC extension in 2019 (BC OGC 2020b). This project is in the RDBN G.

Present or reasonably foreseeable future projects have the potential to interact with the Project and the Labour Market VC if they have overlapping spatial and temporal boundaries, and if they would require substantial construction or operation workforce that may have skills transferable to the mining industry. The following projects and activities are not considered to have a potential interaction with the effects of the Project on the Labour Market VC, and are therefore not considered in the CEA:

- ▶ Agriculture, recreation, and sustenance and traditional land activities: These are not likely to interact with the Labour Market VC and workers in those industries do not have skills transferable to the construction or mining industry;
- ▶ Smithers Regional Airport Runway Expansion (Community): Is a proposed runway extension in Town of Smithers at both ends of Runway 15-33 1,368 feet (417 metres [m]) at the Runway 15 end and 1,132 ft. (345 m). While this extension is being considered, there is limited information available. Temporal boundaries of construction activities are unlikely to overlap with those for the Project. Further, this type of Project would require skillset not applicable to Project construction or operation;
- ▶ Berg Copper-Molybdenum Silver Mine (Mining): Proposed molybdenum mine located 80 km southwest of Houston in scoping stages. Previous 42,000 m drill program has revealed a significant copper-molybdenum resource. The project is only in advanced exploration stage and does not have defined temporal boundaries. Hiring for the Project is not expected to interact with activities Berg Copper-Molybdenum Silver Mine;
- ▶ Big Onion Project (Mining): The property consists of nine (9) contiguous mineral claims comprising a total area of 3,206 ha, exploration occurred from 2006 to 2009. No recent activity suggest that this project is unlikely to interact with the Project;
- ▶ Blackjack Mineral (Mining): Past producer, gold and lead are commodities. Activities for this mine took place in the past and are not expected to interact with future activities of the Project;
- ▶ Buck (Mining): Gold/silver/zinc property in north-central BC. The project is in exploration. Hiring for the Project is not expected to interact with activities of this development if it proceeds;
- ▶ Fenton Creek (Mining): Similco Mines Ltd tested the Fenton Creek site, 3,000 m of diamond drilling in nine (9) holes. The project is in exploration and project development is uncertain. The Project is not expected to interact with activities of this development;
- ▶ Fran Property (Mining): The main target on this property is high grade gold-poly metallic shear zones and veins that may be amenable to bulk tonnage mining. The original Fran Property consisted of eight mineral claims covering approximately 4,000 ha in the Omineca Mining Division of BC. Additional staking to the east, south and west has expanded the property to 10,227.28 ha in area. The project is in exploration and project development is uncertain. The Project is not expected to interact with activities of this development;
- ▶ Hanson (Mining): The property is comprised of two (2) mineral tenures covering a total area of 3,554.80 ha. Elevated zinc, copper, and molybdenum in augered till samples. The project is in exploration and project development is uncertain. The Project is not expected to interact with activities of this development;
- ▶ Holy Cross (Mining): Consists of 132 units in seven claims. Gold concentrations of rock samples was generally low. Most contained background gold tenors. The project is in exploration and project development is uncertain. The Project is not expected to interact with activities of this development;
- ▶ Lennac Lake (Mining): A diamond drill was mobilized to the Lennac property on August 6, 2012 to begin drill testing of the Lennac Lake copper porphyry target. The project is in exploration and project development is uncertain. The Project is not expected to interact with activities of this development;

- ▶ Lorraine-Jajay Copper Mine (Mining): Exploration and feasibility reviews underway for a potential copper mine located 280 km northwest of Prince George, BC. The property covers 28,000 ha with the potential to develop 100-200 million tonnes. The project is in exploration and project development is uncertain. The Project is not expected to interact with activities of this development;
- ▶ Bulbous Toe BC Hydro (Utilities): Bulbous Toe is a slow-moving landslide with a major transmission line traversing it. One (1) of the towers requires periodic maintenance. The Project is not expected to interact with activities of this development;
- ▶ Cheslatta Green Energy Project (Utilities): Proposed 10 megawatt (MW) power plant, located near Cheslatta Forest Products, to use gasification technology to convert wood residue into electricity for 9500 homes. This project is not currently moving forward and is unlikely to interact with the activities of the Project;
- ▶ Fort St. James Green Energy (Utilities): 40 MW power plant utilizing wood residue, began operations in 2018, and is unlikely to interact with the Project; and
- ▶ Kenney Dam Cold Water Release Facility (Utilities): Project to protect salmon on the Nechako River through either a cold-water release facility (Kenney Dam) or other environmental enhancements, as part of an August 1997 agreement with the BC government, which resolves issues surrounding the Kemano dam. There are ongoing studies and consultation in progress, construction is not expected to start for several years. This type of development and temporal boundaries regarding construction activities are unlikely to overlap with the Project.

6.1.2 Additional Mitigation Measures

Additional mitigation measures to those proposed in **5.3 Mitigation Measures** are not identified. Competition for skilled labour, and resulting potential inflationary pressures on wages, are a common consequence of a free and competitive market and there are no other specific measures, beyond those already proposed, that can reasonably mitigate this effect. Further, barriers to Indigenous employment result from ongoing socio-economic challenges faced by Indigenous peoples being beyond the capacity and ability of projects to adequately address or resolve.

It is expected that other present and potential reasonably foreseeable future projects and activities would have similar mitigation measures in place to cumulatively reduce or remove the potential cumulative effects on the Tenas Project Labour Market. A **SEMP** was also developed and is included in **S13.0-C17**.

6.1.3 Cumulative Effects and Characterisation of Significance

Table 6.1-1 provides characterisation of residual effects of the Project in combination with those of other project/activities.

The assessment identified several drilling and exploration projects and activities with potential to overlap, spatially and temporarily, with the Project. These activities are likely to contribute to the competition for skilled labour or put upward pressures on labour cost as if they enter the Construction and/or Operation phases and have coinciding hiring activities with those of the Project.

Thus, the effects of the increase in competition for skilled local and regional workforce and resulting increases in labour cost are predicted to have a Moderate Magnitude. A Regional Context is predicted for these two (2) effects as projects and activities from the RDBN are expected to draw workers from various communities contributing to these effects. The two (2) effects are predicted to have a Medium Duration and to be Infrequent as effects on skilled labour and wages are expected to be most noticeable during hiring activities of various projects and activities. The two (2) effects will be Fully Reversible as once jobs are

staffed and there are no additional wage incentives, the competition is expected to return to its pre-Project levels. While these effects are Likely to occur, they are predicted to have a Low Context given the anticipated increase in capacity of the local and regional workforce due to training to prepare for future employment opportunities. As such, the effects of the increase in competition for skilled local and regional workforce and resulting increases in labour cost are predicted to be **Not Significant**.³³ The Level of Confidence in the assessment is Moderate due to uncertainties and lack of information around the number of reasonably foreseeable future projects that will be realized, and their specific scope and timing.

Regarding barriers to employment often faced by Indigenous people and their participation in Project-related economic benefits, this cumulative effect is characterised to be of Moderate Magnitude, to take place in the RSA (RDBN and the community of Witset), be Long-Term, of Continuous Frequency, Partially Reversible, and of Moderate Context. These ratings follow from the ongoing and widespread challenges Indigenous workers face in the labour market and being generally underrepresented in the workforce, including employment in construction and mining. These trends are expected to continue despite the number of projects and activities taking place in the RSA.

While other projects and activities in the region can undertake similar actions to those proposed by TCL (maximizing employment and training opportunities for Indigenous workers) to address the predicted cumulative effect, socio-economic challenges in Indigenous communities are likely to continue impacting the ability of Indigenous peoples to successfully participate in the labour market. In consideration of the above, this effect is Likely to take place but is rated as **Not Significant**.³⁴ There is Moderate Level of Confidence in the assessment and the rating as the extent of Indigenous participation in Project employment, and the employment of other projects and activities, cannot be precisely estimated.

Table 6.1-1: Summary of Cumulative Effects for Labour Market Valued Component (VC)

Cumulative Effects	Contributing Activities within the Project Phases (C, O, D, P)	Cumulative Effects Characterisation								
		Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Context	Likelihood	Significance	Level of Confidence
Increase in Competition for Skilled Local and Regional Workforce	Provision of employment and income (C, O).	M	RSA	MT	IF	FR	L	L	NS	M
Increase in Labour Cost	Provision of employment and income (C, O).	M	RSA	MT	IF	FR	L	L	NS	M
Barriers to Indigenous Employment and Participation in	Provision of employment and income (C, O).	M	RSA	LT	CF	PR	M	L	NS	M

³³ Significant residual effects occur when the residual effect is of High Magnitude, Provincial Extent, Long-term Duration, with Frequent or Continuous Occurrence, Irreversible, and of Low Context. Effects are characterised as Significant if they meet at least three (3) of the above criteria and are likely to cause structural and functional changes in the labour market.

³⁴ Significant residual effects occur when the residual effect is of High Magnitude, Provincial Extent, Long-term Duration, with Frequent or Continuous Occurrence, Irreversible, and of Low Context. Effects are characterised as Significant if they meet at least three (3) of the above criteria and are likely to cause structural and functional changes in the labour market.

Cumulative Effects	Contributing Activities within the Project Phases (C, O, D, P)	Cumulative Effects Characterisation								
		Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Context	Likelihood	Significance	Level of Confidence
Project-Related Economic Benefits										

Notes: C, O, D, P represent Project Phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure

Magnitude: Low (L), Moderate (M), High (H)

Geographic Extent: Project Area (PA), Local (LSA), RDBN A and RDBN G (A/G), Regional (RSA), Beyond Regional (beyond RSA)

Duration: Short-term (ST), Medium-term (MT), Long-term (LT)

Frequency: Infrequent (IF), Frequent (FF), Continuous (CF)

Reversibility: Fully reversible (FR), Partially reversible (PR), Irreversible (IR)

Context: Low (L), Moderate (M), High (H)

Likelihood: Unlikely (UL), Likely (L)

Significance: Not-Significant (NS), Significant (S)

Level of Confidence: High (H), Moderate (M), Low (L)

See **Table 5.1-2** for list of applicable activities for each listed Project phase, unless otherwise noted in this table. Includes all existing and reasonably foreseeable projects as outlined in **Table 6-1**.

6.2 Summary of Cumulative Effects Assessment (CEA)

Table 6.2-1 summarizes cumulative effects on Labour Market and provides Significance of these cumulative effects. Three (3) residual effects were carried forward to CEA: increase in competition for skilled local and regional workforce, increase in labour cost, and barriers to Indigenous employment and participation in Project-related economic benefits. All cumulative effects of the Project on the Labour Market VC were predicted only for the Construction and Operation phases as key employment and income would be realized during those phases. All assessed cumulative effects are rated as **Not Significant**, and therefore cumulative effects on the Labour Market VC are rated as **Not Significant**.

Table 6.2-1: Summary of Cumulative Effects on Labour Market Valued Component (VC)

Potential Cumulative Effect	Contributing Activities within the Project Phases (C, O, D, P)	Cumulative Effect (Yes/No)	Significant (Yes/No)
Increase in Competition for Skilled Local and Regional Workforce	Provision of employment and income (C, O)	Yes	No
Increase in Labour Cost	Provision of employment and income (C, O)	Yes	No
Barriers to Indigenous Employment and Participation in Project-Related Economic Benefits	Provision of employment and income (C, O)	Yes	No

Notes: C, O, D, P represent Project Phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure

See **Table 5.1-2** for list of applicable activities for each listed Project phase, unless otherwise noted in this table. Includes all existing and reasonably foreseeable projects as outlined in **Table 6-1**.

7. SUMMARY OF EFFECTS ASSESSMENT FOR LABOUR MARKET VALUED COMPONENT (VC)

The assessment identified three (3) potential adverse effects on Labour Market with respect to the Project. During the Construction, and Operation phases, the Project's need for skilled workers could lead to competition for skilled labour as well as an increase in labour cost (wage inflation). In addition, Indigenous workers, due to lack of skills and other challenges, can face barriers to employment at the Project and, thus, have limited ability to participate in the economic benefits of the Project.

Mitigation measures for the competition for skilled labour and wage inflation during the Construction, and Operation phases include advance communications and hosting of Employment Information Sessions to prepare the local workforce for upcoming positions; a training plan; supporting specialised skills training and on-the-job training; supporting employees to upgrade their training and education as a means towards job advancement; and cooperating with local educational institutions to enhance skill level of the labour force. In addition to the above measures that are also applicable to the effect of barriers to Indigenous employment, additional mitigation measures for the barriers to Indigenous employment and the participation in Project-related economic benefits include creating a Health, Safety, and Human Resources Superintendent role at the Project to support Indigenous employment and long-term employment tenure at the Project, and provision of Indigenous Cultural Awareness Induction for all Project employees.

After the implementation of mitigation measures, three (3) residual effects were predicted for Labour Market that included:

1. increase in competition for skilled local and regional workforce;
2. increase in labour cost; and
3. barriers to Indigenous employment and participation in Project-related economic benefits.

After characterisation, all adverse residual effects of the Project were predicted to be **Not Significant**, and therefore, adverse residual effects of the Project on the Labour Market VC are predicted to be **Not Significant**.

The adverse residual effects were carried forward for CEA. The CEA considered past, present and reasonably foreseeable future projects and activities that could interact with the Project. The assessment determined that while there is potential for present and reasonably foreseeable future projects and activities to cumulatively interact with the Project, there is uncertainty surrounding the number of potential future projects that will be realized, with additional uncertainty around scope and timing of those projects. While all three (3) cumulative effects are predicted, they are rated as **Not Significant**, and therefore, cumulative effects on the Labour Market VC are predicted to be **Not Significant**.

8. FOLLOW-UP STRATEGY

A **SEMP** was developed and is found in **S13.0-C16** of the **EAC Application**. The **SEMP** describes the anticipated components and contents of the Project **SEMP**. The final **SEMP** will be developed in compliance with issued Conditions of the EAC and prior to the start of the Construction Phase. The **SEMP** will describe the predicted effects of the Project and corresponding mitigation measures, detail planned monitoring to assess the actual effects and effectiveness of the monitoring measures on the socio-economic environment, as well to describe reporting requirements and schedule. This includes the consideration of effects related to the Labour Market VC.

The **SEMP** will be designed to reduce, manage, and mitigate Project-related economic and social effects, while strategically supporting community benefits and engagement. The **SEMP** will provide guidance regarding community engagement and communications for the purpose of sharing information and maximizing the potential for local and regional workforce to benefit from the Project, while demonstrating the Project's contribution to community development. Subject to further guidance from the BC EAO, the following information would be included in the **SEMP**:

- ▶ a description of the social and economic opportunities related to the Project, including employment, procurement and training, and the processes for applying to or accessing these opportunities;
- ▶ a clear and transparent plan for how these opportunities will be communicated to local and regional communities and, where relevant, developed in partnership with these communities, so as to enhance local and regional benefits;
- ▶ information provided to local governments and service providers about the Project schedule, progress, and plans for employee and contractor transportation through regional hubs, to reduce potential risks or effects associated with the Project; and
- ▶ roles and responsibilities, monitoring and reporting requirements, and points of contact, to be applied over the life of the Project.

The **SEMP** will:

1. verify the accuracy of the residual effects and cumulative effects predictions, and the value of proposed mitigation measures;
2. assess the efficacy of proposed mitigation measures and the need for modifications to those measures to allow effects predictions to remain valid;
3. identify unexpected socio-economic issues or challenges; and
4. implement additional mitigation measures as per follow-up strategies and management plans.

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