



BC EAO EAC Application – Tenas Project

Section 5.0 Economic Effects Assessment

Chapter 2 Economic Development Valued Component

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Submitted by:	Telkwa Coal Limited Suite 1410 – 409 Granville Street Vancouver, BC V6C 1T2

Tenas Project

Section 5.0 Economic Effects Assessment Chapter 2 Economic Development Valued Component

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ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
AIR	Application Information Requirements
AMSSA	Affiliation of Multicultural Societies and Service Agencies of British Columbia
AQMP	Air Quality Management Plan (S13.0-C2)
ARD	acid rock drainage
BC	British Columbia
BC EAO	British Columbia Environmental Assessment Office
BC FLNR	British Columbia Ministry of Forests, Lands, and Natural Resources
BC MFLNRORD	British Columbia Ministry of Forests, Lands and Natural Resource Operations and Rural Development
BC MEM	British Columbia Ministry of Energy and Mines
BC OGC	British Columbia Oil and Gas Commission
BMPs	best management practices
C	Chapter
C&M	care and maintenance
CCP	Comprehensive Community Plan
CEA	cumulative effects assessment
CNR	Canadian National Railway
CPP	Coal Processing Plant
CUS	Cultural Use Study
EA	environmental assessment
EAA	<i>Environmental Assessment Act</i> , SBC 2002, c 43 (Government of British Columbia [GovBC] 2002)
EAC	Environmental Assessment Certificate
EMP	Explosives Management Plan (S13.0-C6)
FSR	Forestry Service Road
FTE	full-time equivalent
GDP	gross domestic product
GovBC	Government of British Columbia
GovCan	Government of Canada
GST	Goods and Services Tax
IGF	Intergovernmental Forum
IOM	BC Input-Output Model
LNG	liquefied natural gas
LRMP	Land and Resource Use Plan

Abbreviation or Acronym	Long Form of Abbreviation or Acronym
LSA	Local Study Area
LUP	Land Use Plan
MDO	Mineral Development Office
MiHR	Mining Industry Human Resource Council
NI	National Instrument
NAICS	North American Industry Classification System
non-PAG	non-potentially acid generating
OCP	official community plans
OW	Office of the Wet'suwet'en
PAG	potentially acid generating
PDAC	Prospectors and Developers Association of Canada
PNG	Pacific Northern Gas
Project	Tenas Project
PST	Provincial Sales Tax
RCP	Reclamation and Closure Plan (S13.0-C15)
RD	regional district
RDBN	Regional District of Bulkley-Nechako
ROM	run-of-mine
ROW	right-of-way
RSA	Regional Study Area
S	Section
SAIR	Supplementary Application Information Requirement
SEEA	Socio-economic and Environmental Assessment
SEMP	Socio-economic Management Plan (S13.0-C16)
STEM	science, technology, engineering, and mathematics
TAC	Tenas Access Corridor
TCL	Telkwa Coal Limited
TK	Traditional Knowledge
TSA	Timber Supply Area
VC	Valued Component

UNITS OF MEASURE

Abbreviation	Long form of Abbreviation or Acronym
\$	dollar
%	percent
ha	hectare
km	kilometre
kV	kilovolt
m ³	cubic metre
MW	megawatt
Vd	volt

EXECUTIVE SUMMARY

This chapter provides an analysis of potential interactions between the Tenas Project (Project) and the Economic Development Valued Component (VC). Economic development refers to processes that are aimed at improving the overall economic growth of a region. Provision of Project employment, business contracts and payment of taxes have the potential to affect the economic conditions and economic development of communities.

Stakeholder engagement and consultation, collection of secondary data, and preparation of the British Columbia (BC) Input-Output Model (IOM) informed the selection of Economic Development as a VC and issue scoping as related to the VC. Themes of interest identified through the consultation and review of other information, as related to the Economic Development VC, included Project-related distribution of revenues and benefits from industry, interest in and business response to procurement opportunities, effects of the Project on other industries including tourism, effects on income and the cost of living, potential of economic downturn associated with the Post-closure Phase, and potential barriers to inclusion of Wet'suwet'en in Project benefits. Desktop data was collected to understand existing economic conditions, as well as to describe relevant trends and challenges faced by businesses and main sectors in the region. BC IOM informed the estimation of direct, indirect, and induced effects of the Project on employment, income, Gross Domestic Product (GDP), and tax revenue.

Spatial boundaries for the assessment of potential effects on the Economic Development VC include the Local Study Area (LSA) defined to include Village of Telkwa, Town of Smithers, District of Houston, and Witset First Nation; and the Regional Study Area (RSA) defined to encompass the RDBN (as well as Witset). 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 this **Environmental Assessment Certificate (EAC) Application**.

The assessment identified six (6) potential adverse effects on Economic Development and the Local Business and Industry subcomponent. These effects include the following:

1. Decrease in economic diversity: Through the provision of Project employment and procurement, the Project has the potential to increase the reliance of the economy on the mining industry during Project Construction, and Operation phases (reduction in economic diversity);
2. Change in the capacity of local and regional businesses: Local and regional businesses may have limited business capacity and not be able to fully participate and benefit from the Project's procurement opportunities during Construction, and Operation phases;
3. Change that affects development plans or strategies of government: The Project has potential to affect the development plans and strategies of governments during Construction, and Operation phases;
4. Decrease in local and regional marketable timber: There could be potential effects on local and regional marketable timber due to Project activities and removal of trees with the construction of the Minesite and other Project infrastructure (all phases of the Project);
5. Decrease in local or regional tourism: Project activities have the potential to interact with factors related to the tourism sector by affecting visual resources of recreational sites and resulting in noise increase or loss of air quality during Construction, Operation, and Decommissioning and Reclamation phases; and
6. Decrease in economic activity: Project activities have the potential to affect the economy during the Decommissioning and Reclamation Phase, resulting in potential for economic downturn.

To reduce the effect of a decrease in economic diversity, Telkwa Coal Limited (TCL) will investigate opportunities to provide business start-ups with providing funds, training, equipment, and/or in-kind technical expertise. Mitigation measures for the change in local and regional business capacity include a procurement policy focussed on obtaining goods and services from the local/regional businesses, including Indigenous-owned businesses. TCL will have a Buyer role to develop these local opportunities, improve understanding of the local/regional market, and assess the availability of goods and services that could be sourced locally; along with early advertisement of contracting opportunities.

The Project will hire workers from nearby communities to staff Construction, and Operation phase jobs, and will provide contracting opportunities for businesses, collectively increasing the income of workers and the revenue of businesses. Indirect and induced changes can be expected for workers and businesses in supplier industries directly supplying the Project, and other businesses further down in the supply chain. Additional effects will be realized through the payments of taxes, royalties and other Project contributions to governments, such as resource royalty revenue and passed on to Indigenous groups. These collective activities have the potential to positively affect the economic conditions and economic development of affected communities.

Mitigation measures to reduce or remove adverse effects of the Project on the Land and Resource Use VC (as related to land use and planning, and forestry resources) are provided in **S6.0-C4 Land and Resource Use VC** of the **EAC Application**. Mitigation measures for the decrease in local or regional tourism include measures that enhance visual aesthetics of the Project, or reduce Project related disturbances (noise, vibration and dust). Mitigation measures that enhance the visual resources of the Project (as related to tourism) are provided in **S6.0-C2 Visual Resources VC** of the **EAC Application**. Mitigation measures to reduce noise, vibrations, and dust and improve air quality around the Minesite are provided in **S4.0-C1 Atmospheric Environment VC** of the **EAC Application**).

Mitigation measures to reduce the effect of economic downturn at the Decommissioning and Reclamation Phase include a Decommissioning and Reclamation, and Post-closure Program to help employees identify and secure new employment, and the provision of contracts to local and regional business during the Decommissioning and Reclamation Phase to continue the provision of economic benefits in the region.

After the implementation of mitigation measures, four (4) residual effects were predicted for Economic Development that included:

1. decrease in economic diversity;
2. change in the capacity of local or regional businesses to supply goods or services;
3. decrease in local or regional tourism; and
4. decrease in economic activity during the Decommissioning and Reclamation Phase.

After characterisation, all residual effects of the Project were predicted to be **Not Significant**, and therefore, the residual effects of the Project on Economic Development were predicted to be **Not Significant**. All residual effects were carried forward for a cumulative effects assessment (CEA). The CEA in **6** of this VC chapter 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 going forward, there is uncertainty surrounding the number of potential, reasonably foreseeable future projects that could take place, with additional uncertainty around scope and timing of those projects. Thus, while all four (4) cumulative effects are predicted, they are rated as **Not Significant**, and therefore, cumulative effects on Economic Development were rated to be **Not Significant**.

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

1. INTRODUCTION

This chapter is an analysis of potential interactions between the Tenas Project (Project) and the Economic Development Valued Component (VC). Economic development refers to processes that are aimed at improving the overall economic growth of a region. The Project will hire workers from nearby communities to staff Construction, and Operation phase jobs, and will provide contracting opportunities for businesses, collectively increasing the income of workers and the revenue of businesses. Indirect and induced changes can be expected for workers and businesses in supplier industries directly supplying the Project, and other businesses further down in the supply chain. Additional effects will be realized through the payments of taxes, royalties and other Project contributions to governments, such as resource royalty revenue and passed on to Indigenous groups. These collective activities have the potential to positively affect the economic conditions and economic development of affected communities.

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 Economic Development VC;
- ▶ **Scope of the Assessment:** A description of the assessment scope including issues scoping, rationale for the selection of the Economic Development 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 Economic Development VC within the defined spatial boundaries;
- ▶ **Assessment of Project-related Effects:** A description of the potential interactions between the Project and the Economic Development 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 Economic Development VC and their significance; and
- ▶ **Follow-up Strategy:** Due to uncertainties inherent in this analysis and the changing nature of the landscape, a monitoring procedure is outlined to support follow-up strategies and management of the Project for potential effects to the Economic Development VC.

2. REGULATORY CONTEXT

This environmental assessment (EA) has considered applicable federal and provincial legislation, regulations, strategies, guidelines, and official community plans (OCPs) relevant to the Economic Development VC, and includes 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 Economic Development as a VC to meet federal and provincial EA requirements. Assessment of the Economic Development 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) requires the consideration of environmental, economic, social, cultural, and health effects of a proposed project. Guidelines for Socio-Economic and Environmental Assessment (SEEA) - Land Use Planning and Resource Management Planning, published by the Province of BC, guide the consideration of economic, social, and environmental components in the EA process (GovBC 2007). Relevant to the Economic Development VC, the guidelines recommend the preparation of an Economic Impact Analysis (providing consideration of direct, indirect, and induced effects) to understand the expected economic activity by sector (forestry, tourism, etc.) resulting from the Project. The focus should be given to job and income effects, effects of the Project on Provincial Government Finances, as well as the gross domestic product (GDP). An important task of the SEEA is also to describe the current economic sectors dependent on the resources used in the study area.

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, OCPs, development approvals, and responsibilities and roles for the local government (GovBC 2015). In Part 13, Division 1, the *Local Government Act*, RSBC 2015, c 1 (GovBC 2015) defines the regional growth strategy and its purpose to maintain the integrity of a secure and productive resource base, including the agricultural land reserve, and to promote economic development that supports the unique character of communities.

The RDBN guides economic development for the regional district. The Economic Development Department of the RDBN provides assistance for non-profits and businesses, connects businesses and consumers, and guides regional projects. The individual OCPs further guide the economic development initiatives for the considered communities: Telkwa, Smithers, Houston, and Witset (formerly Moricetown). The Smithers Telkwa Rural Official Community Plan (Bylaw No 1704 2014; Electoral Area A) sets objectives and policies to guide land use planning and economic development decisions in the area; the plan was prepared in accordance with Section 875 of the *Local Government Act*, RSBC 2015, c 1 (GovBC 2015) (RDBN 2020b). The plan's objectives are to concentrate commercial and industrial activities in the Town of Smithers and the Village of Telkwa, to increase the economic attractiveness of the plan area, and to support the local business base (RDBN 2020b). This plan also covers Witset, a Wet'suwet'en village. The Office of the Wet'suwet'en (OW) directs land and resource management for the Wet'suwet'en First Nation members. Houston, Topley, Granisle Rural Official Community Plan (Bylaw No 1622, 2011; Electoral Area G) provides community vision and guides development in the plan area, including facilitation of opportunities for economic development and diversification (RDBN 2020b). Witset First Nation also has its own Comprehensive Community Plan (CCP) and a Land Use Plan (LUP) (Witset 2020).

Federal, provincial, and regional policies and plans also work to address economic development priorities and to enhance economic development of the RDBN. Specifically, Canada Starts Here: The BC Jobs Plan

(Affiliation of Multicultural Societies and Service Agencies of BC [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 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 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 (GovBC 2012). This strategy directly supports the Canada Starts Here: The BC Jobs Plan (AMSSA 2015).

In October of 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 of businesses, and improve economic diversity of the region (Northern Development 2020).

3. SCOPE OF THE ASSESSMENT

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 **EAC Application**. Methodologies specific to the Economic Development VC are described in their relevant sections. The assessment applies 2016 Census data and other publicly available data obtained from Statistics Canada, BC Stats, as well as employment, income, spending, and tax data provided by Telkwa Coal Limited (TCL). Data and information are supplemented by Project-specific studies and socio-economic field studies detailed in the **Socio-Economic Baseline Report (See Appendix 5.1-A of S5.0-Chapter [C] 1 Labour Market VC of the EAC Application)**. In addition, Input-Output Model (IOM) results prepared by BC Stats were utilized; as reported in **5.2.1 Project Economic Benefits**, the BC IOM results provide estimated direct, indirect, and induced effects on jobs, income, GDP, and tax revenue as a result of the Project.

Assessment of effects on the Economic Development VC includes the consideration of Project-related employment and procurement during Project Construction and Operation phases, and employment and procurement opportunities resulting from activities related to the Decommissioning and Reclamation, and the Post-Closure phases of the Project. The assessment considers current economic conditions in the region and how those conditions would change given Project expenditures and other indirect and induced spending during the Construction, and Operation phases, and removal of those benefits during the Decommissioning and Reclamation, and Post-closure phases. Both beneficial and adverse effects of the Project are described. For anticipated adverse effects, mitigation measures are proposed to eliminate or minimize the severity of effects. Enhancement measures are also proposed, where relevant, in order to increase expected positive effects.

3.1 Issues Scoping

Issues scoping, to understand and identify issues related to the Economic Development VC, considered stakeholder engagement and consultation, collection of secondary data (Statistics Canada and BC Stats), preparation of the BC IOM, and other scientific information and professional expertise. 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.

The main themes of interest as related to the Economic Development VC identified through consultation and review of other information, included; Project-related distribution of revenues and benefits from industry; interest in and business response to procurement opportunities; effects of the Project on other industries including tourism; effects on income and the cost of living; potential of economic downturn associated with Post-closure, and potential barriers to inclusion of Wet'suwet'en in Project benefits.

3.2 Rationale for Selection of Economic Development Valued Component (VC)

Economic Development was selected as a VC 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 utilized 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 Economic Development VC that may be adversely affected by the Project. Baseline study findings; conservation status; review of applicable government legislation, policies, and plans; effects assessments for other relevant projects; 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 VCs and subcomponents.

3.2.1 Valued Component (VC)

The provision of Project employment and contracting opportunities during the Construction, and Operation phases will increase the income of workers and the revenue of businesses. These in turn will have beneficial effects on the income of families, the regional and provincial GDP, as well as government tax and resource royalty revenue. However, Project spending may also negatively affect the makeup of the regional and local economies, increasing the reliance of the communities on the Project. Economic Development was selected as a VC to investigate the potential adverse effects the proposed Project can have on economic development and diversification, local and regional businesses, as well as other sectors in the region.

The Economic Development VC supports (informs) and is dependent on the assessment of other VCs including:

- ▶ **Dependent on:**
 - ▶ **Labour Market VC (S5.0-C1)** – Changes in the labour market (resulting from the provision of employment and income opportunities) can affect existing economic conditions, especially during the Decommissioning and Reclamation, and Post-closure phases, with the reduction in employment opportunities at the Project;
 - ▶ **Demographics VC (S6.0-C1)** – Changes in population may affect economic growth priorities in the region;
 - ▶ **Visual Resources VC (S6.0-C2)** – Visual effects related to the Minesite have the potential to affect enjoyment of outdoor recreation in proximity to the Project, and thus result in changes on tourism-related revenue; and
 - ▶ **Land and Resource Use VC (S6.0-C4)** – The Project is located on forested lands and can have an effect on the timber sector in the region.
- ▶ **Supporting:**
 - ▶ **Labour Market VC (S5.0-C1)** – The Project can have slipover effects on employment in forestry and tourism, and other sectors;
 - ▶ **Demographics VC (S6.0-C1)** – Provision of jobs and procurement opportunities can have indirect effects on in-migration to the region;
 - ▶ **Infrastructure and Services VC (S6.0-C3)** – Provision of employment and procurement can have implications on availability of housing and the provision of public services;
 - ▶ **Land and Resource Use VC (S6.0-C4)** – Economic benefits from the Project can have an effect on current and future land and resource use planning; and
 - ▶ **Community Well-being VC (S6.0-C5)** – There can be unequal distribution of economic benefits from the Project during the Construction, and Operation phases; also, during the Decommissioning and Reclamation, and Post-closure phases, removal of employment and procurement can have adverse effects on the well-being of communities.

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

3.2.2 Subcomponents

The Economic Development VC has one (1) subcomponent: Local Business and Industry. This subcomponent draws attention to the potential effects of Project spending on local businesses, and the existing and potential industry focus (**Table 3.2-1**).

Table 3.2-1: Summary of Rationale for Selection of Economic Development Valued Component (VC) and Subcomponent and Their Linkages

VC or SC	Rationale for Inclusion	Source of Information	VC Linkages	
Economic Development VC Local Business and Industry SC	- Changes in the local economy have been raised as a concern in issues scoping. - The Project has the potential to interact with the factors relating to the local economy. - An assessment is required of potential adverse economic effects, as Project activities have the potential to affect the local/regional economy.	- Regulatory requirements; - Issues scoping; and - Comparable EAs.	Dependent on: - Demographics - Labour Market - Land and Resource Use - Visual Resources	Supporting: - Demographics - Labour Market - Infrastructure and Services - Community Well-being - Land and Resource Use

Notes: EA=Environmental Assessment; SC=subcomponent; Project=Tenas Project; VC= Valued Component

3.2.3 Indicators

Indicators are quantitative or qualitative measures used to describe existing VC and VC subcomponent conditions and trends, and to evaluate potential Project effects and cumulative effects on the VC. Indicators for the Economic Development VC and the rationale for selecting those indicators are summarized in **Table 3.2-2**.

Table 3.2-2: Indicators for Economic Development Valued Component (VC) and Local Business and Industry Subcomponent

Indicator	Rationale for Selection
Distribution in employment across industries (economic diversity)	The Tenas Project (Project) has the potential to increase the economic dependence of local communities on the mining industry, affecting the economic diversity of those communities.

Indicator	Rationale for Selection
Capacity/supply constraints for services and goods and contracting (quantitative and qualitative)	Local and regional businesses have limited business capacity and may not be able to fully participate and benefit from Project procurement opportunities.
Compatibility/consistency of the Project with existing regional economic development plans or strategies (qualitative)	The Project has potential to affect the current economic planning and development for the region if there is a shift regionally from a tourism and forestry based industry towards mining based industry.
Forestry: marketable timber volume	There could be potential effects on forestry activities due to timber removal, including in Enhanced Timber Development Areas (as defined in the Bulkley Land and Resource Management Plan [LRMP]).
Tourism: services and revenue	The Project has the potential to interact with factors related to the tourism sector, including scenic resources which are defined in the LRMP as “critical to the viability of the tourism/recreation sector”.
Economic contributions during Decommissioning and Reclamation and Post-closure phases and potential downturns	The removal of Project employment and procurement opportunities during the Decommissioning and Reclamation, and Post-closure phases have the potential to contribute to higher unemployment, lower spending, lower business revenue, and thus have the potential to cause economic slowdown in the region.

The above indicators are 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 the Economic Development VC. There are no technical boundaries applicable to this VC.

3.2.4.1 Spatial Boundaries

The spatial boundaries for the Economic Development VC include the 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.

Table 3.2-3: Spatial Boundary Definitions for Economic Development Valued Component (VC) and Local Business and Industry Subcomponent

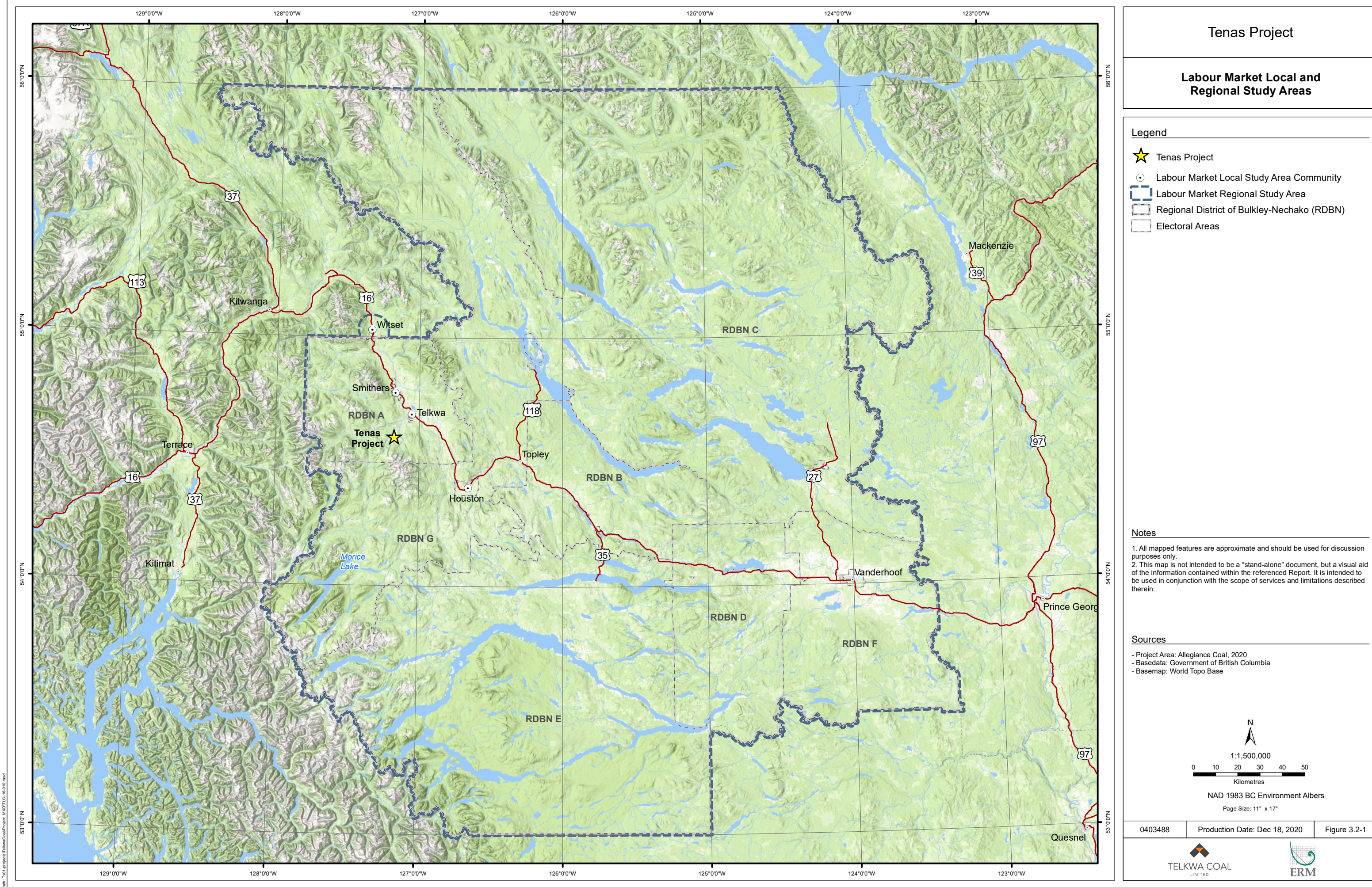
Spatial Boundary	Description of Study Area
Local Study Area (LSA)	Telkwa, Smithers, Houston, and Witset (formerly Moricetown)
Regional Study Area (RSA)	Regional District of Bulkley Nechako and the community of Witset

¹ The community of Witset is located outside of the RDBN.

Where available, data for Witset is based on 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 and economic activities (forestry and tourism) 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 the **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 for the Economic Development VC.

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 Economic Development VC are primarily influenced by local government jurisdiction for the management of economic development. 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 Economic Development VC. OCPs for communities are prepared at the Electoral Area level (RDBN 2020b). As such, the Smithers Telkwa Rural Official Community Plan (Bylaw No 1704 2014; Electoral Area A) covers the communities of Smithers and Telkwa, as well as Witset First Nation, while the Houston, Topley, Granisle Rural Official Community Plan (Bylaw No 1622, 2011; Electoral Area G) covers Houston and several other communities not included in the LSA (RDBN 2020b).

The Government of BC also plays a major role in determining the political and fiscal direction for the Economic Development VC for the province, providing funding, resources, and services to support community economic goals. BC also has sub-regions that help to guide and implement economic development plans. Relevant to the RDBN, Northern Development supports and guides business development, capacity building, and community development programs for the RDBN, as well as for other regions in the north. 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 located in both the Northwest and the Prince George economic regions.

3.2.4.4 Technical Boundaries

Technical boundaries for the Economic Development VC were not identified.

4. EXISTING CONDITIONS

This subsection describes the existing conditions in the LSA and the RSA as related to the Economic Development VC 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.

4.1 Background Information and Studies

4.1.1 Traditional Knowledge (TK)

TK is not applicable to the modern economy; however, TK relevant to the Economic Development VC pertains to the traditional land use in the LSA/RSA and is described in **S11.0 Wet'suwet'en Rights and Interests Assessment** of the **EAC Application**. The **Cultural Use Study (CUS)** (See **Appendix 7.1-B of S7.0-C1 Heritage Resources VC** of the **EAC Application**) was prepared for the Project and was also considered in this assessment, as it informs socio-economic challenges faced by Indigenous groups.

4.1.2 Scientific and Other Information

Scientific information is important to the assessment, as the existing conditions section for the Economic Development VC is primarily based on desktop research that included the review of published studies, databases, news articles, and government publications as referenced throughout this chapter. Key sources of data that describe the existing economic conditions in the LSA/RSA include the 2016 Census Profiles, other 2016 Census data tables, BC Stats data (time series up to 2019 if available), and information from RDBN reports (2017). Data sources and corresponding time periods are indicated throughout this chapter as appropriate.

4.1.3 Baseline Studies

Several desktop and field studies that are of relevance to the Economic Development VC and were considered in the review and assessment process and are summarized in **Table 4.1-1**.

Table 4.1-1: Summary of Desktop and Field Studies Related to the Economic Development Valued Component (VC) and Local Business and Industry Subcomponent

Study Name	Study Purpose, Duration and Spatial Boundaries
Socio-economic Baseline Report (Appendix 5.1-A of S5-C1 Labour Market VC)	This baseline study reports on the regional and local socio-economic conditions in the communities that may be affected by development of the Tenas Project (Project). It supports the assessment of potential economic and social effects to be presented in 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. The study was conducted for the Regional District of Bulkley-Nechako (RDBN), and the communities of Telkwa, Smithers, Houston, and Witset (formerly Moricetown).
Land and Resource Use Baseline Report (Appendix 6.4-A of S6-C4 Land and Resource Use VC)	This baseline report describes the existing non-Indigenous land-based activities and tenures within the designated RSA and LSA of the Project. Data and information included in this report covers various sources available publicly up to and including 2020. The information provided in this document was used to support the assessment of the effects that the Project may have on the economic activities related to resource use.

Study Name	Study Purpose, Duration and Spatial Boundaries
Tenas Project: Cultural Use Study (CUS) (Appendix 7.1-B of S7-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.

Notes: LSA= Local Study Area; Project=Tenas Project; RSA= Regional Study Area; VC=Valued Component

4.2 Description of Existing Conditions

This subsection provides information on pre-Project conditions, derived from desktop research (**Appendix 5.1-A** and **Appendix 7.1-B** of the **EAC Application**). Baseline conditions consider the cumulative effects of past and present projects and activities on the Economic Development VC, prior to and including 2016, as they are incorporated in the most recent 2016 Census data. Other sources cover data and information up to and including 2020. 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 Witset First Nation. The RSA is defined to encompass the RDBN, as well as the community of Witset.

The RDBN's population in 2016 was 37,896, representing a 3.3 percent (%) decrease from 2011, whereas the population of the LSA was 10,352 representing a 1.0% decrease since 2011 (Statistics Canada 2017).

The existing OCPs for RDBN A and RDBN G, and the CCP and LUP for Witset, that cover the LSA communities, contain objectives to guide land use planning and economic development for the region (RDBN 2020b; Witset 2020)². Existing land designations and uses in the region include mining, forestry, oil and gas, energy, agriculture, rail, environmentally sensitive areas, parks and public recreation, agriculture, hunting-trapping-fishing activities, and other urban and commercial uses. The OCPs focus on the facilitation of opportunities for economic development and diversification with the following objectives (RDBN 2020b):

- ▶ Concentrate commercial and light industrial development in existing communities;
- ▶ Increase the attractiveness of the region to new residents, entrepreneurs, and business; and
- ▶ Support local/regional businesses that fit within the rural character of the area and do not adversely affect quality of life.

The OCPs also state: “the opportunity to establish home-based business with a personal service, retail, or industrial character shall be limited in order to protect rural residential areas from effects associated with noise and traffic, and to help protect the integrity of existing commercial and industrial areas” (RDBN 2020b).

The CCP for Witset recognizes that economic development is a top priority for the community. The CCP indicates that the community is working to prepare the economic development strategy to identify priorities and opportunities. Opportunities for economic development for the community are directly linked to the LUP for the community given Witset's focus on the forestry and tourism sectors (Witset 2020). Statistical data for Witset is based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17 as those Indian Reserves have residences; however, the Witset First Nation also has two (2) other Indian Reserves, Oschawwinna 3 and Jean Baptiste 28, that are mostly undeveloped and forested areas, with some land used for agricultural uses (Witset 2020).

² Smithers Telkwa Rural Official Community Plan Bylaw No. 1704, 2014 Schedule “A”; Houston, Topley, Granisle Rural Official Community Plan Bylaw No. 1622, 2011 Schedule “A”; and Witset's Comprehensive Community Plan and Land Use Plan.

Tourism and the service sector in the LSA (including RDBN A and RDBN G) are becoming increasingly important components of the economy, with significant monetary contributions. OCPs' objectives and policies are aimed at improving outdoor recreational opportunities to enhance tourism potential, and protect lands with significant recreational potential (cultural, archeological, and environmental) (RDBN 2020b). Tourism in the region is primarily focused on various recreation pursuits, such as hunting, fishing, and hiking. In 2015, Smithers and Telkwa saw a combined total of 124,100 tourists, totalling \$28.7 million in annual direct visitor expenditures (RDBN 2017). Total visitations in 2015 to the RDBN were estimated at 250,400 tourists, with spending of \$58.7 million in the region (RDBN 2017).

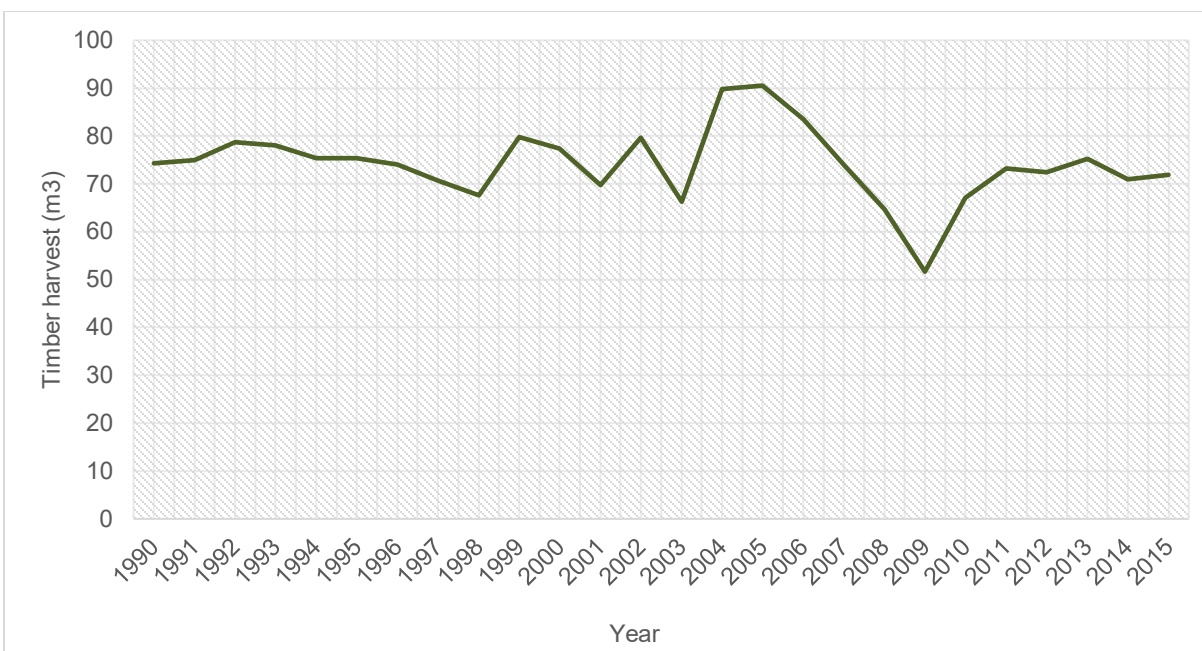
In 2016, 12.7% of the LSA labour force was associated with the retail industry, 9.5% worked in accommodation and food services, and 15% in entertainment and recreation (**Table 4.2-1**). In general, in BC, retail trade, accommodation and food services, arts, entertainment, and recreation account for 9.2% of provincial GDP (Statistics Canada 2020).

Resource-based industries are important drivers of the local and regional economy. Forestry, agriculture, and grazing are important in the region. In 2016, 8.7% of the LSA and 14.7% of RDBN labour force was associated with agriculture, forestry, fishing, and hunting (**Table 4.2-1**). However, at a provincial level, forestry and logging, as a proportion of GDP, decreased from 0.9% of provincial GDP in 2015 to 0.6% in 2019, whereas crop and animal production remained relatively stable at 1.3% (Statistics Canada 2020).

The region has high timber values; the OCPs designate “enhanced timber zones” to increase timber development areas, available timber supply and quality, and timber-related revenue and employment (RDBN 2020b). While forestry is also an important economic sector in Witset, the community is focused on managing this resource in a sustainable way. The LUP for Witset includes objectives to maintain ecological integrity of forested areas and limited timber harvesting (Witset 2020). The most recent data on timber harvest for BC is provided in **Figure 4.2-1** and suggest that timber production averaged 74 million cubic metres (m³) per year between 1990 and 2015, with lower production leading up to and in 2009 as a result of the financial downturn that year, and recovering thereafter (British Columbia Ministry of Forests, Lands and Natural Resource Operations and Rural Development [BC MFLNRORD] 2018). In the 2010/11 fiscal year, the Government of BC collected \$433 million in direct government revenue derived from the use of forest and land resources (British Columbia Forests, Lands, and Natural Resources [BC FLNRORD] 2012).

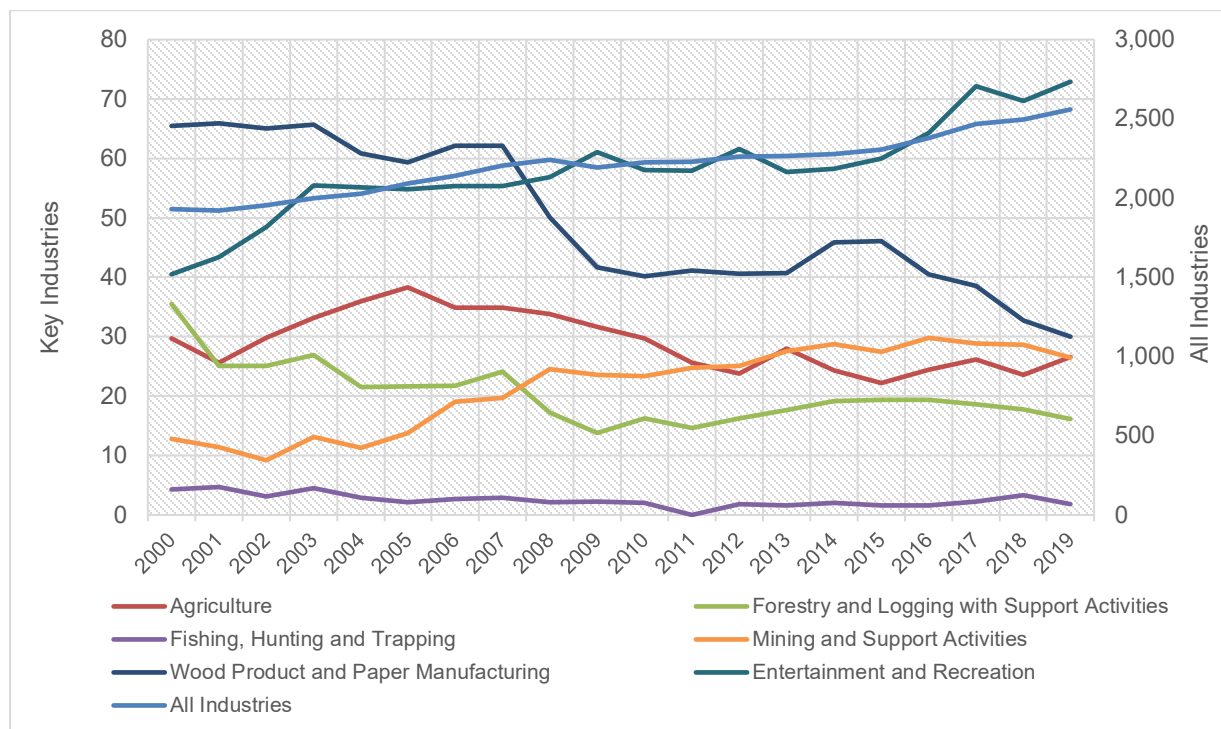
However, the forestry/timber industry in the region is struggling. In Houston, Houston Forest Products closed in 2014, leading to a removal of 225 direct jobs and 75 indirect jobs (**Appendix 5.1-A of the EAC Application**). In 2019, mills in Fraser Lake and Smithers were temporarily shutdown, and the Houston mill experienced production cuts (**Appendix 5.1-A of the EAC Application**). Fort St. James had a closure and sale of its largest sawmill that employed 1,600 people locally (**Appendix 5.1-A of the EAC Application**). However, prospects to diversify and support the forestry sector arise from the Mountain Pine Beetle infestation that affected forests in the RDBN; new opportunities opened up in bio-energy, biomass, and value-added manufacturing (RDBN 2020a).

In general, BC accounts for 70% of Canada's wood products. Manufacturing of wood-related products is important to the economy, though with a decreasing share of the economy. In BC, manufacturing of wood products and paper products represented about 1.9% of the provincial GDP in 2015 and 1.4% of the provincial GDP in 2019 (Statistics Canada 2020). Further, employment in logging and wood product manufacturing has been decreasing, partially as a result of improved labour productivity resulting from technological advances, and also as a reflection of the struggles the sector is facing (**Figure 4.2-2**). After the financial downturn of 2009, while timber harvest has bounced back to its average annual production, employment in wood manufacturing has not fully recovered.



Source: British Columbia Ministry of Forests, Lands and Natural Resource Operations and Rural Development (BC MFLNRD) 2018

Figure 4.2-1: Total timber harvest in British Columbia (BC) (millions cubic metres [m³])



Source: BC Stats (2020)

Figure 4.2-2: British Columbia (BC) job trend in selected industries (annual averages, thousands of persons)

Natural resource extraction and mineral exploration are also important to the regional economy, with an increase in these activities in recent years. In 2016, 4.7% of the LSA and 3.7% of the RSA labour force was associated with the mining industry, compared to only 1.1% in the province; this reflects an overall upward trend in mining-related employment (**Table 4.2-1, Figure 4.2-2**). In 2015, mining, quarrying, and oil and gas extraction accounted for 4.2% of the provincial GDP increasing to 4.3% in 2019 (Statistics Canada 2020). There are currently 20 operating mines in BC, seven (7) in care and maintenance (C&M), and one (1) in construction (BC Mine Information 2020). Of those, Endako (in C&M) and Huckleberry (in C&M) are in the RDBN (BC Mine Information 2020). There are currently no operating mines in the RDBN A and RDBN G.

Table 4.2-1: Labour Force by Industry, 2016

	Telkwa	Smithers	Houston	Witset	Total LSA	RDBN A	RDBN G	RDBN	RSA	BC
Total Labour Force	735	2,965	1,615	285	5,600	3,060	510	20,180	20,465	2,471,665
Industry – NAICS 2012 - Not Applicable	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%
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, 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 2017.

Notes: %=percent; LSA=Local Study Area; NAICS=North American Industry Classification System; RDBN= Regional District of Bulkley-Nechako. Data presented for total labour force population aged 15 years and over by Industry-NAICS 2012-25% sample data (households that received long questionnaire). Data for Witset based on data for Moricetown 1, Coryatsaqua (Moricetown) 2, Bulkley River 19, and Babine 17; Estimates in table may not add up due to random rounding applied by Statistics Canada. All estimates rounded either up or down to a multiple of 5 or 10. This is done to ensure confidentiality. Labour force by industry is shown in percentages—as a proportion of all industry jobs.

Specific to the LSA communities, Smithers and Houston are business hubs. Smithers has a stable and diverse economy balanced between the public sector, mining, agriculture, forestry, and tourism, while Houston is an industrial centre dependent on forestry and mining. Telkwa is a bedroom community to Smithers, and both Telkwa and Witset rely on businesses and services provided in Smithers and Houston.

As the regional service center, Smithers has a range of businesses, including a variety of retail stores, gas stations, restaurants, health services, and wholesale trade. The community has a shopping mall; a number of banks; apparel, sporting and recreation shops; and key support service businesses, including tool and die companies, machine shops, welders, office equipment firms, and transportation related businesses (**Appendix 5.1-A** of the **EAC Application**). The main employers in Smithers include:

- ▶ School District No. 54;
- ▶ Provincial Government of BC;
- ▶ Pacific Inland Resources;
- ▶ Hy-Tech Diamond Drilling;
- ▶ Bulkley Valley Credit Union;
- ▶ Safeway;
- ▶ Town of Smithers; and
- ▶ Canadian National Railway (CNR).

There is also an airport in Smithers. Consultation conducted for **Appendix 5.1-A** of the **EAC Application** revealed that Smithers has a large number of restaurants that have challenges finding staff, as they compete with higher paying projects.

In Houston, the main employers include:

- ▶ Canadian Forest Products;
- ▶ Wilson Bros Enterprises;
- ▶ DH Manufacturing;
- ▶ School District No. 54;
- ▶ Groot Bros Contracting Ltd.;
- ▶ Tom Neufeld Trucking;
- ▶ Sullivan Motor Products; and
- ▶ Buy Low.

Houston, despite both the Endako and Huckleberry mines being recently placed in C&M, and the local economy losing timber-related business, is seeing direct and spin-off economic benefits from the Coastal GasLink project and associated construction of camps to accommodate 500 to 800 workers (**Appendix 5.1-A** of the **EAC Application**).

Employment in Witset is primarily in timber and wood manufacturing, with 31.5% of the labour force in the community associated with those industries (**Table 4.2-1**). Kyahwood Forest Products, a lumber remanufacturing company located in Witset, and Kyah Resources Ltd., a forest harvesting business, provide most jobs in the community, in addition to jobs available in public administration, healthcare, and education (**Appendix 5.1-A**). Kyahwood Forest Products (the mill, assets, plant, and equipment) owns the

lease on Lot 53-1 CLSR 77829; the community also has Kyah Industries Ltd., a logging company, and owns 10% of Houston Pellet Limited Partnership, and a gas station and store. Witset has also engaged with the Coastal GasLink and Pacific Trails Pipeline projects (**Appendix 7.1-B** of the **EAC Application**). Witset is focusing on investing in tourism. The community has its own museum (Widzin Kwah Canyon House) that displays Wet'suwet'en artifacts up to 6,000 years old and provides access to the canyon via stairs; the museum had close to 3,300 visitors in 2018, being five (5) times busier as compared to 2016. The community also has a Witset Community Tourism Development Plan to guide growth of the Witset tourism economy and the development of tourism-associated infrastructure (**Appendix 7.1-B** of the **EAC Application**).

Telkwa does not have any major industries in the community, with some businesses specializing in natural resource contracting (e.g., forestry and resource extraction), tourism, accommodation, food and hospitality, health and fitness, and esthetics, with a number of those businesses being home-based. Major employers in the community include Castle Building, West Fraser Concrete, and the Village of Telkwa, with the largest employer being Pro-Tech, a forestry company that has about 40 staff (**Appendix 5.1-A** of the **EAC Application**).

The overall number of businesses in the RDBN by business size is provided in **Table 4.2-2**; the data is for 2019, and also shows the change in business counts over the previous decade. This data confirms the economic trends in the region discussed above, and the overall decrease in business activity related to forestry and wood product manufacturing. Over the last decade, there was an overall decrease in small businesses with less than 20 employees (a loss of 52 businesses), and an increase in the number of larger businesses (an addition of 13 businesses). In general, over the last decade the total employment in businesses in the RDBN has increased substantially with an addition of 1,550 jobs and the overall growth in business counts. However, this growth has not been in primary or secondary industries but focused on the tertiary sector.

Table 4.2-2: Business Count by Industry for Regional District of Bulkley-Nechako (RDBN) as of December 2019

NAICS Description	2019				Change 2010 to 2019			
	Number of Employees	Less than 20	20 to 49	50+	Number of Employees	Less than 20	20 to 49	50+
Total, All Industries	5,788	1,599	137	66	1,550	15	11	4
Agriculture, Forestry, Fishing, and Hunting	1,270	291	23	9	-52	-18	-5	3
Mining and Oil and Gas Extraction	51	24	1	2	25	11	-4	0
Utilities	6	7	0	0	4	3	0	0
Construction	390	197	7	3	36	11	3	0
Manufacturing	104	40	9	13	20	-10	3	0
Wholesale Trade	50	31	4	2	-4	-9	1	1
Retail Trade	288	177	22	7	50	0	6	0
Transportation and Warehousing	172	141	6	2	-11	21	3	0
Information and Cultural Industries	29	23	1	0	16	1	1	0
Finance and Insurance	153	30	4	2	96	-8	-3	-1
Real Estate and Rental and Leasing	1,233	61	0	0	342	15	0	0
Professional, Scientific, and Technical Services	427	102	4	1	131	-5	0	-1
Management of Companies and Enterprises	14	4	0	1	-53	-13	0	1
Administration and Support, Waste Management, and Remediation	357	48	1	1	220	1	-3	-1
Educational Services	105	10	3	3	85	-2	-1	1
Health Care and Social Assistance	213	89	13	5	70	-8	4	0
Arts, Entertainment and Recreation	105	23	3	0	49	-4	-1	-1
Accommodation and Food Services	121	90	20	5	36	-21	-2	1
Other Services (excluding Public Administration)	401	138	5	2	192	-14	4	2
Public Administration	2	6	9	8	1	-3	3	-1

*Source: BC Stats 2020**Notes: NAICS=North American Industry Classification System. Data is summarized for selected industries.*

5. ASSESSMENT OF PROJECT-RELATED EFFECTS

Assessment of Project-related effects involves the following:

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

5.1 Potential Project-related Interactions with the Economic Development Valued Component (VC)

The potential for interactions between the Economic Development VC and identified Project activities are considered, with focus on those interactions with potential to adversely affect the Economic Development VC. Where no interaction between the Project and the Economic Development VC is anticipated, or the interaction is considered minor (i.e., not expected to have a substantive influence on the short- or long-term integrity of the VC), 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 the Economic Development Valued Component (VC) and the Tenas Project

Term	Definition
No Interaction	Project activity will not interact with the Economic Development VC, no adverse effect is expected; no further consideration is warranted.
Interaction	Interaction between the Project activity and the Economic Development 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.

Notes: Project=Tenas Project; VC=Valued Component

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

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

Table 5.1-2: Interactions between Economic Development Valued Component (VC), Local Business and Industry Subcomponent, and the Tenas Project

Project Activities	Local Business and Industry Subcomponent
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)	

Project Activities	Local Business and Industry Subcomponent
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	
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	

Project Activities	Local Business and Industry Subcomponent
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 or detectable 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 the Economic Development 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. Project benefits on economic activity (including the BC IOM results) are summarized in **5.2.1 Project Economic Benefits**, while **5.2.2 Local Business and Industry** describes the potential adverse effects of the Project on the Economic Development Local Business and Industry subcomponent.

The potential adverse Project-related effects on the Economic Development VC include:

- ▶ decrease in economic diversity (Construction, and Operation phases);
- ▶ change in the capacity of local or regional businesses to supply goods or services (Construction, and Operation phases);
- ▶ change that affects development plans or strategies of government (Construction, and Operation phases);
- ▶ decrease in local and regional marketable timber (Construction, and Operation phases);
- ▶ decrease in local or regional tourism (Construction, Operation, and Decommissioning and Reclamation phases); and
- ▶ decrease in economic activity (Decommissioning and Reclamation, and Post-closure phases).

5.2.1 Project Economic Benefits

Through Project employment and procurement, the Project is anticipated to provide significant economic benefits to the LSA, RSA, and the provincial economy. Employment and income benefits of the Project, and those resulting from spin-off opportunities are described in **S5.0-C1-5.2.1 Economic Effects Assessment - Labour Market VC - Beneficial Effects on the Project on Employment and Income**. This subsection focusses on Project procurement, GDP, and tax revenue effects.

5.2.1.1 Construction Phase

During the Construction Phase, the Project is projected to spend an estimated \$123.5 million on labour, equipment, and supplies (**Table 5.2-1**). By category, the largest spending is expected to include the purchase of heavy equipment and plant construction. Of the total \$107.3 million anticipated to be spent on equipment and supplies, an estimated \$34.2 million is expected to be spent in the RDBN and \$26.7 million is expected to be spent in the rest of BC (**Table 5.2-2**). The estimated spend by category is provided in **Table 5.2-1**.

Table 5.2-1: Total Direct Project Spend During the Construction Phase (Million Canadian Dollars, by Total Spending)

Spend Category	Contractors (Labour Costs)	TCL Employees	Equipment and Parts (Without Contractors)	Total
Heavy Equipment	\$1.11	-	\$32.55	\$33.66
Coal Processing Plant (CPP)	\$1.71	\$0.55	\$20.04	\$22.30
Maintenance Facility	\$1.05	\$3.20	\$15.47	\$19.72

Spend Category	Contractors (Labour Costs)	TCL Employees	Equipment and Parts (Without Contractors)	Total
Water Management	\$1.31	-	\$8.69	\$10.00
Tenas Access Corridor	\$1.05	-	\$8.21	\$9.26
Minesite Development	\$2.89	-	\$4.70	\$7.59
Rail Loop	\$1.19	-	\$6.13	\$7.32
Light Equipment	\$0.40	-	\$3.80	\$4.21
Powerline	\$0.46	-	\$2.85	\$3.31
Maintenance Facility	\$0.29	-	\$1.47	\$1.76
Explosive Infrastructure	\$0.16	-	\$1.14	\$1.30
Rail Loadout	-	-	\$1.20	\$1.20
Administration Building including Mine Dry	\$0.54	-	\$0.46	\$1.00
Coal Lab	\$0.18	-	\$0.17	\$0.35
Technical Equipment	-	-	\$0.30	\$0.30
Light Vehicle Maintenance Building	\$0.09	-	\$0.11	\$0.20
Total	\$12.43	\$3.75	\$107.30	\$123.47

Notes: \$=dollar; - =no spending; TCL=Telkwa Coal Limited

Table 5.2-2: Sourcing of Equipment and Supplies by Spend Category (Million Canadian Dollars, by Size of Spending in Regional District of Bulkley-Nechako [RDBN])

Spend Category	RDBN	BC	Canada (Alberta)	International
Maintenance Facility	\$12.38	\$3.09	-	-
Tenas Access Corridor	\$5.34	\$2.05	\$0.82	-
Water Management	\$4.34	\$4.34	-	-
Minesite Development	\$3.76	\$0.94	-	-
Light Equipment	\$3.42	\$0.19	\$0.19	-
CPP	\$2.00	\$7.01	\$1.20	\$9.82
Rail Loop	\$0.92	\$1.84	\$0.61	\$2.76
Powerline	\$0.86	\$2.00	-	-
Heavy Equipment	\$0.65	\$1.63	-	\$30.27
Explosive Infrastructure	\$0.29	\$0.57	\$0.29	-
Maintenance Facility	\$0.15	\$0.96	\$0.37	-
Administration Building including Mine Dry	\$0.07	\$0.39	-	-
Light Vehicle Maintenance Building	\$0.03	\$0.03	\$0.06	-

Spend Category	RDBN	BC	Canada (Alberta)	International
Coal Lab	-	\$0.12	-	\$0.05
Rail Loadout	-	\$1.20	-	-
Technical Equipment	-	\$0.30	-	-
Total	\$34.20	\$26.66	\$3.54	\$42.90

Notes: \$=dollar; - =no spending; BC=British Columbia; RDBN=Regional District of Bulkley-Nechako. Estimates are rounded.

Additional economic benefits are expected to be realized in supplier industries and through workers spending their income. In general, for the purposes of analysis, we distinguish between the following effects of the Project:

- ▶ Direct effects are the GDP and tax revenue generated directly by the Project, including the effects generated by industries directly contracted to supply the onsite goods and services used by the Project;
- ▶ Indirect effects are the GDP and tax revenue 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 GDP and tax revenue associated with economic activity since workers are 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 economic effects of the Project. Related to the Construction Phase, the direct, indirect, and induced effects on GDP and tax revenue are summarized in **Table 5.2-3**.

In general, the total GDP benefit of the Project in BC, resulting from direct, indirect, and induced activities, is estimated at \$65.2 million for the Construction Phase, of which \$25.4 million is anticipated to be realized in the RDBN (**Table 5.2-3**). Total tax revenue for the phase is estimated at \$19.8 million for BC, with \$9.5 million from provincial tax payments and \$1.3 million from payments of regional district and municipal taxes (**Table 5.2-3**).

In the rest of Canada (excluding BC), the additional GDP effects are estimated at \$15.5 million, including \$9.2 million in indirect and \$6.3 million in induced effects. Tax revenue effects in the rest of Canada are estimated at \$1.3 million, including \$0.4 million in indirect and \$0.8 million in induced tax revenue (both federal and provincial).

Table 5.2-3: Gross Domestic Product (GDP) and Tax Revenue Impact During the Construction Phase (Million Canadian Dollars)

	RDBN				Rest of BC				TOTAL BC
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	
GDP	\$19.83	\$3.53	\$2.07	\$25.43	\$18.73	\$15.07	\$5.99	\$39.78	\$65.21
Total Taxes	\$8.04	\$0.69	\$0.83	\$9.56	\$4.52	\$3.32	\$2.35	\$10.18	\$19.75
Total Federal Taxes	\$2.89	\$0.34	\$0.35	\$3.58	\$2.62	\$1.76	\$0.99	\$5.37	\$8.96
▪ GST	\$0.17	\$0.01	\$0.17	\$0.36	\$0.00	\$0.05	\$0.49	\$0.54	\$0.89
▪ Personal Income Taxes	\$2.25	\$0.23	\$0.12	\$2.60	\$2.11	\$1.28	\$0.33	\$3.72	\$6.32
▪ Corporate Income Taxes	\$0.38	\$0.08	\$0.04	\$0.51	\$0.45	\$0.37	\$0.12	\$0.94	\$1.44
Total Provincial Taxes	\$4.92	\$0.28	\$0.34	\$5.54	\$1.71	\$1.30	\$0.96	\$3.97	\$9.51
▪ Environmental Tax	\$0.06	\$0.03	\$0.01	\$0.10	\$0.09	\$0.08	\$0.03	\$0.20	\$0.30
▪ Trading Profits Tax	\$0.00	\$0.00	\$0.04	\$0.05	\$0.01	\$0.01	\$0.11	\$0.13	\$0.18
▪ Gas Tax	\$0.08	\$0.03	\$0.01	\$0.12	\$0.09	\$0.08	\$0.03	\$0.20	\$0.32
▪ PST	\$3.50	\$0.04	\$0.14	\$3.68	\$0.13	\$0.23	\$0.39	\$0.75	\$4.42
▪ Indirect Taxes on Production	\$0.10	\$0.03	\$0.06	\$0.19	\$0.09	\$0.12	\$0.18	\$0.39	\$0.58
▪ Personal Income Taxes	\$0.90	\$0.09	\$0.05	\$1.03	\$0.88	\$0.51	\$0.13	\$1.52	\$2.56
▪ Corporate Income Taxes	\$0.28	\$0.06	\$0.03	\$0.37	\$0.33	\$0.27	\$0.09	\$0.69	\$1.06
Total Municipal/RD Taxes	\$0.23	\$0.07	\$0.14	\$0.44	\$0.19	\$0.25	\$0.39	\$0.84	\$1.28
▪ Municipal Sales Tax	\$0.01	\$0.00	\$0.01	\$0.02	\$0.01	\$0.01	\$0.02	\$0.03	\$0.05
▪ Property, Business, and Other Municipal Taxes	\$0.22	\$0.07	\$0.13	\$0.42	\$0.18	\$0.25	\$0.38	\$0.81	\$1.22

Notes: \$=dollar; BC=British Columbia; GDP=Gross Domestic Product; GST=Goods and Services Tax; Prov=Provincial; PST=Provincial Sales Tax; RD=Regional District; RDBN=Regional District of Bulkley-Nechako. Estimates are rounded.

5.2.1.2 Operation Phase

Over the Operation Phase, Project spending is predicted to be an estimated \$1.18 billion on labour, equipment, and supplies (**Table 5.2-4**). By category, the largest spending will include the purchase of heavy equipment, and plant construction. Of the total \$558.1 million spend on equipment, parts, and consumables. Based on the sourcing of equipment, parts, and consumables, of the total \$838.3 million, \$675.5 million is predicted to be spent in the RDBN, and \$135.7 million spent in the rest of BC (**Table 5.2-5**). Spend by category is provided in **Table 5.2-4**.

Table 5.2-4: Total Direct Tenas Project Spend During the Operation Phase (Million Canadian Dollars)

Spend Category	Equipment and Parts	Consumables	TCL Employees	Contractors	Total
Coal Processing Plant (CPP) and Maintenance Facility	\$35.65	\$328.72	\$211.88	\$0.83	\$577.08
Rail Loadout	\$167.87	\$123.69	\$30.55	\$31.30	\$353.41
CPP	\$10.73	\$81.46	\$56.36	\$0.89	\$149.44
Heavy Equipment	\$32.98	-	-	\$1.01	\$33.99
Rail Loop	\$2.96	\$16.73	\$2.67	\$0.57	\$22.94
Water Management	\$7.20	\$7.48	-	\$0.30	\$14.98
Minesite Development	\$10.95	-	-	\$1.80	\$12.74
Light Equipment	\$7.09	-	-	\$0.70	\$7.79
Maintenance Facility	\$4.65	-	-	\$0.74	\$5.39
Powerline	\$0.18	-	-	\$0.03	\$0.21
Total	\$280.26	\$558.08	\$301.47	\$38.16	\$1,177.97

Notes: \$=dollar; - =no spending; \$=dollar; TCL=Telkwa Coal Limited. Estimates are rounded.

Table 5.2-5: Sourcing of Equipment, Parts and Consumables by Spend Category (Million Canadian Dollars)

Spend Category	RDBN	BC	Canada (Alberta)	International	Total
Maintenance Facility	\$327.93	\$36.44	\$0.00	\$0.00	\$364.36
Rail Infrastructure	\$262.41	\$29.16	\$0.00	\$0.00	\$291.56
CPP	\$38.72	\$35.03	\$12.91	\$5.53	\$92.19
Heavy Equipment (Minesite Operations, Technical, and Maintenance)	\$6.60	\$21.44	\$0.00	\$4.95	\$32.98
Rail Loop	\$8.66	\$8.96	\$0.59	\$1.48	\$19.69
Water Management	\$12.47	\$1.47	\$0.75	\$0.00	\$14.68
Minesite Development	\$8.76	\$2.19	\$0.00	\$0.00	\$10.95
Light Equipment	\$5.67	\$0.71	\$0.71	\$0.00	\$7.09

Spend Category	RDBN	BC	Canada (Alberta)	International	Total
Maintenance Facility	\$4.19	\$0.23	\$0.23	\$0.00	\$4.65
Powerline	\$0.09	\$0.09	\$0.00	\$0.00	\$0.18
Total	\$675.49	\$135.71	\$15.19	\$11.96	\$838.34

Notes: \$=dollar; BC=British Columbia; \$=dollar; RDBN= Regional District of Bulkley-Nechako. Estimates are rounded.

Figure 5.2-1 shows the estimated annual Project spend by category for the Operation Phase. The average annual spend on employees and contractors is estimated at respectively \$13.7 and \$1.7 million per year, with the average spend on consumables of \$25.4 million, and \$12.7 million for equipment and parts.

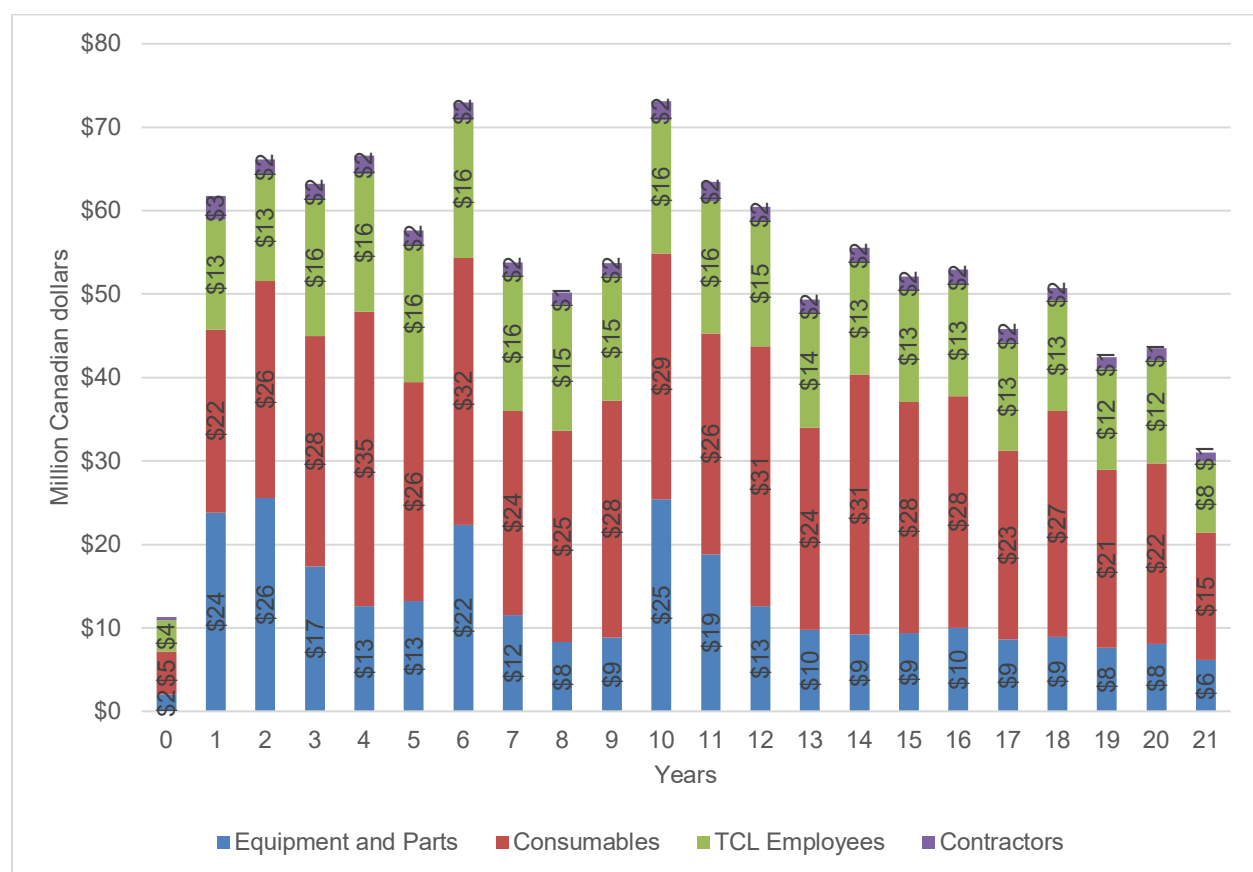


Figure 5.2-1: Operating costs by category and by year (million Canadian dollars)

Notes: There will be some operating expenditures during the Construction Phase (shown in Year 0 on the figure).

Additional economic benefits are anticipated in supplier industries and through workers spending their income. In general, the total GDP benefit of the Project in BC, resulting from direct, indirect, and induced operating activities, is estimated at \$1.96 billion over the Operation Phase, with the majority being realized in the RDBN (**Table 5.2-6**). Total tax revenue for the phase is estimated at \$1.57 billion for BC, of which

\$1.32 billion is anticipated to be paid in provincial tax payments and \$20.9 million originate from payments of regional district and municipal taxes (**Table 5.2-6**). The annual distribution of municipal and provincial taxes paid in BC is shown in **Table 5.2-7** with up to \$1.2 million in annual municipal taxes in BC and up to \$71.6 million in annual provincial tax revenue to the Government of BC.

In the rest of Canada (beyond BC), additional GDP benefits are estimated at \$61.3 million, including \$35.4 million in indirect and \$25.9 million in induced effects. Tax revenue in the rest of Canada are estimated at \$5.2 million, including \$1.7 million in indirect and \$3.5 million in induced tax revenue (both federal and provincial). In addition, TCL is anticipated to pay an estimated \$660,450 in coal lease payments over the Operation Phase, and \$2.0 million in BC inspection costs.

Table 5.2-6: Gross Domestic Product (GDP) and Tax Revenue Impact During the Operation Phase (Million Canadian Dollars)

	RDBN				Rest of BC				TOTAL BC
	Direct	Indirect	Induced	TOTAL	Direct	Indirect	Induced	Total	
GDP	\$1,629.47	\$48.53	\$26.03	\$1,704.03	\$0.00	\$190.37	\$67.28	\$257.65	\$1,961.68
Total Taxes	\$1,466.49	\$15.09	\$10.20	\$1,491.78	\$0.00	\$52.72	\$26.79	\$79.51	\$1,571.29
Total Federal Taxes	\$187.24	\$6.05	\$4.31	\$197.61	\$0.00	\$23.77	\$11.32	\$35.10	\$232.71
▪ Gasoline Tax	\$6.05	\$0.09	\$0.06	\$6.20	\$0.00	\$0.34	\$0.15	\$0.48	\$6.68
▪ Excise Duties	\$0.01	\$0.01	\$0.05	\$0.07	\$0.00	\$0.03	\$0.13	\$0.16	\$0.22
▪ Air Transport Tax	\$0.02	\$0.00	\$0.04	\$0.07	\$0.00	\$0.02	\$0.11	\$0.13	\$0.20
▪ Import Duties	\$0.42	\$0.04	\$0.05	\$0.50	\$0.00	\$0.10	\$0.12	\$0.23	\$0.72
▪ GST	\$0.01	\$0.01	\$2.14	\$2.15	\$0.00	\$0.23	\$5.61	\$5.84	\$7.99
▪ Personal Income Taxes	\$51.23	\$5.02	\$1.44	\$57.68	\$0.00	\$18.96	\$3.77	\$22.73	\$80.42
▪ Corporate Income Taxes	\$129.51	\$0.89	\$0.53	\$130.93	\$0.00	\$4.08	\$1.40	\$5.48	\$136.41
Total Provincial Taxes	\$1,265.83	\$8.71	\$4.18	\$1,278.72	\$0.00	\$27.94	\$10.98	\$38.92	\$1,317.64
▪ Environmental Tax	\$896.81	\$0.20	\$0.12	\$897.12	\$0.00	\$0.75	\$0.31	\$1.06	\$898.18
▪ Trading Profits Tax	\$0.04	\$0.02	\$0.50	\$0.56	\$0.00	\$0.11	\$1.31	\$1.42	\$1.98
▪ Gas Tax	\$9.35	\$0.21	\$0.13	\$9.69	\$0.00	\$0.78	\$0.34	\$1.11	\$10.80
▪ PST	\$136.00	\$0.79	\$1.68	\$138.48	\$0.00	\$2.49	\$4.42	\$6.90	\$145.38
▪ Indirect Taxes on Production	\$0.29	\$0.42	\$0.78	\$1.49	\$0.00	\$1.02	\$2.05	\$3.08	\$4.57
▪ Royalties/Resource Taxes	\$130.27	\$0.00	\$0.00	\$130.27	\$0.00	\$0.00	\$0.00	\$0.00	\$130.27
▪ Personal Income Taxes	\$22.26	\$2.07	\$0.58	\$24.91	\$0.00	\$7.75	\$1.52	\$9.26	\$34.17
▪ Corporate Income Taxes	\$70.81	\$4.99	\$0.39	\$76.19	\$0.00	\$15.05	\$1.03	\$16.07	\$92.27
Total Municipal/RD Taxes	\$13.42	\$0.32	\$1.70	\$15.44	\$0.00	\$1.01	\$4.49	\$5.50	\$20.95
▪ Municipal Sales Tax	\$0.96	\$0.01	\$0.07	\$1.03	\$0.00	\$0.02	\$0.18	\$0.21	\$1.24
▪ Property, Business, & Other	\$12.46	\$0.32	\$1.63	\$14.41	\$0.00	\$0.99	\$4.31	\$5.29	\$19.70

Notes: \$=dollar; BC=British Columbia; Fed=Federal; GDP=Gross Domestic Product; GST=Goods and Services Tax; Prov=Provincial; PST=Provincial Sales Tax; RD=Regional District; RDBN=Regional District of Bulkley-Nechako. Estimates are rounded.

Table 5.2-7: Total Municipal and Provincial Tax Revenue Impact (Direct, Indirect, and Induced) by Year (Millions of Dollars)

Year	Municipal Taxes		Provincial Tax - BC
	RDBN	Rest of BC	
-0.5	\$0.93	\$0.07	\$15.24
1	\$0.94	\$0.30	\$58.45
2	\$0.92	\$0.29	\$54.58
3	\$0.89	\$0.29	\$62.30
4	\$0.87	\$0.31	\$60.57
5	\$0.82	\$0.27	\$58.91
6	\$0.83	\$0.35	\$63.79
7	\$0.77	\$0.26	\$64.70
8	\$0.73	\$0.24	\$61.34
9	\$0.72	\$0.25	\$58.68
10	\$0.73	\$0.34	\$62.42
11	\$0.69	\$0.32	\$64.83
12	\$0.66	\$0.28	\$63.57
13	\$0.63	\$0.22	\$62.42
14	\$0.62	\$0.25	\$71.57
15	\$0.59	\$0.24	\$67.79
16	\$0.58	\$0.24	\$67.09
17	\$0.55	\$0.21	\$63.00
18	\$0.54	\$0.23	\$63.38
19	\$0.51	\$0.19	\$62.20
20	\$0.50	\$0.20	\$60.06
21	\$0.45	\$0.14	\$50.74
Total	\$15.44	\$5.50	\$1,317.64

Notes: \$=dollar; BC=British Columbia; RDBN=Regional District of Bulkley-Nechako. Estimates are rounded.

5.2.1.3 Decommissioning and Reclamation Phase

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

The total cost of Decommissioning of the Minesite, to be completed over one (1) year, is estimated at \$5.6 million, including \$3.4 million in labour cost (TCL employees and contractors). The total cost of Reclamation of the Minesite, to be completed over three (3) years, is estimated at \$25.5 million, including \$5.9 million in labour cost (TCL employees only).

Total GDP benefit in BC for the Decommissioning and Reclamation Phase is estimated at \$21.5 million, with total federal, provincial, and regional tax revenue estimated at \$7.0 million (**Table 5.2-8**). Additionally, in the rest of Canada, total GDP benefit for the Decommissioning and Reclamation Phase is estimated at \$2.2 million with \$0.2 million generated in total federal, provincial, and municipal taxes.

Table 5.2-8: Gross Domestic Product (GDP) and Tax Revenue Impact during the Decommissioning and Reclamation Phase (Million Canadian Dollars)

	RDBN				Rest of BC				TOTAL BC
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	
Decommissioning									
GDP	\$3.72	\$0.06	\$0.18	\$3.96	\$0.17	\$0.18	\$0.55	\$0.89	\$4.85
Total Taxes	\$1.22	\$0.01	\$0.07	\$1.31	\$0.04	\$0.04	\$0.21	\$0.30	\$1.60
▪ Total Federal Taxes	\$0.58	\$0.01	\$0.03	\$0.61	\$0.02	\$0.02	\$0.09	\$0.14	\$0.75
▪ Total Provincial Taxes	\$0.30	\$0.00	\$0.03	\$0.34	\$0.02	\$0.02	\$0.09	\$0.12	\$0.46
▪ Total Municipal/RD Taxes	\$0.34	\$0.00	\$0.01	\$0.36	\$0.00	\$0.00	\$0.04	\$0.04	\$0.40
Reclamation									
GDP	\$7.82	\$0.40	\$0.66	\$8.88	\$4.37	\$1.76	\$1.61	\$7.74	\$16.62
Total Taxes	\$2.90	\$0.09	\$0.26	\$3.25	\$1.08	\$0.40	\$0.64	\$2.12	\$5.37
▪ Total Federal Taxes	\$1.20	\$0.04	\$0.11	\$1.35	\$0.64	\$0.21	\$0.27	\$1.11	\$2.46
▪ Total Provincial Taxes	\$1.29	\$0.04	\$0.11	\$1.43	\$0.40	\$0.16	\$0.26	\$0.82	\$2.25
▪ Total Municipal/RD Taxes	\$0.41	\$0.01	\$0.04	\$0.47	\$0.04	\$0.04	\$0.11	\$0.19	\$0.66

Notes: \$=dollar; BC=British Columbia; GDP=Gross Domestic Product; RD=Regional District; RDBN=Regional District of Bulkley-Nechako. Estimates are rounded.

5.2.1.4 Post-closure Phase

For the purpose of 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 total cost of Active Post-closure of the Minesite is estimated at \$1.5 million, plus \$74,000 each year in labour cost (TCL employees), for a total of about \$2.2 million in expenditures. The total cost of Passive Post-closure of the Minesite is estimated at \$1.5 million, plus \$37,000 in labour cost each year during the phase (TCL employees only), for a total of about \$2.0 million in expenditures.

Total GDP benefit in BC for the Post-closure Phase is estimated at \$3.0 million, with federal, provincial, and regional tax revenue estimated at \$1.8 million (**Table 5.2-9**). Additionally, in the rest of Canada, total GDP for Active and Passive Post-closure is estimated at \$0.3 million with \$0.03 million generated in total federal, provincial, and municipal taxes.

Table 5.2-9: Gross Domestic Product (GDP) and Tax Revenue Impact During Active and Passive Post-closure (Million Canadian Dollars)

	RDBN				Rest of BC				TOTAL BC
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	
Active Closure									
GDP	\$0.90	\$0.04	\$0.06	\$1.01	\$0.32	\$0.14	\$0.16	\$0.62	\$1.63
Total Taxes	\$0.71	\$0.01	\$0.03	\$0.74	\$0.08	\$0.03	\$0.06	\$0.18	\$0.92
▪ Total Federal Taxes	\$0.14	\$0.00	\$0.01	\$0.15	\$0.05	\$0.02	\$0.03	\$0.09	\$0.24
▪ Total Provincial Taxes	\$0.24	\$0.00	\$0.01	\$0.26	\$0.03	\$0.01	\$0.03	\$0.07	\$0.33
▪ Total Municipal/RD Taxes	\$0.32	\$0.00	\$0.00	\$0.33	\$0.00	\$0.00	\$0.01	\$0.02	\$0.35
Passive Closure									
GDP	\$0.72	\$0.04	\$0.06	\$0.81	\$0.32	\$0.14	\$0.14	\$0.60	\$1.41
Total Taxes	\$0.65	\$0.01	\$0.02	\$0.68	\$0.08	\$0.03	\$0.06	\$0.17	\$0.85
▪ Total Federal Taxes	\$0.11	\$0.00	\$0.01	\$0.12	\$0.05	\$0.02	\$0.02	\$0.09	\$0.21
▪ Total Provincial Taxes	\$0.30	\$0.00	\$0.01	\$0.31	\$0.03	\$0.01	\$0.02	\$0.06	\$0.37
▪ Total Municipal/RD Taxes	\$0.24	\$0.00	\$0.00	\$0.25	\$0.00	\$0.00	\$0.01	\$0.02	\$0.26

Notes: \$=dollar; BC=British Columbia; \$=dollar; GDP=Gross Domestic Product; RD=Regional District; RDBN=Regional District of Bulkley-Nechako. Estimates are rounded.

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

Project financial data and estimated monetary effects are provided in 2020 Canadian Dollars and do not take into account inflation or discount rates.

The BC IOM can 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. As it is assumed 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 can be used to predict how an increase or decrease in demand for the products of one industry will have an effect on other industries and, therefore, on the entire economy.

It should be noted that if a change in demand is met by increasing imports from other jurisdictions, there is no net effect on domestic production. All of 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 effect 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.

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.

5.2.2 Local Business and Industry Subcomponent

Project effects in this section are assessed individually for each phase of the Project (i.e., Construction, Operation, Decommissioning and Reclamation, and Post-closure) as this distinction is necessary to understand the assessed effect. In some instances, assessment of effects is conducted collectively for two (2) or more phases to avoid repetition if the predicted effect has analogous assessment and interpretation across those phases. Assessed phases are stated in subheadings relevant to each effect.

5.2.2.1 Decrease in Economic Diversity

Resource-based industries (tourism, forestry, agriculture, and mining) are important drivers of the local and regional economy (**4.2 Description of Existing Conditions**) and the provision of Project-related employment and procurement opportunities during the Construction, and Operation phases could increase the reliance of the LSA and RSA on the mining industry.

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

5.2.2.1.1 Construction Phase

As noted in **4.2 Description of Existing Conditions**, 6.8% of the LSA labour force and 7.1% of the RSA labour force was associated with the construction industry in 2016. Construction of the Project will span a period of less than two (2) years and while there are expected to be up to 186 jobs created during peak activities (with 58.1% of those jobs filled by workers from the LSA, RDBN A and RDBN G), most of those jobs would be short-term, some lasting only a few weeks or months, as described in **S5.0-C1-5.2.1 Beneficial Effects of the Project on Employment and Income** of the **EAC Application**. Furthermore, most fabrication activities are expected to take place offsite, with complete modules and equipment already assembled and brought to the Minesite. Thus, in general, the onsite construction workforce at any one (1) time is anticipated to be typically small (around 70 people or less), varying dependent on the specific scheduled construction requirements.

Regarding contracting opportunities, an estimated 31.9% of all capital spending or \$34.2 million (not related to labour cost) would be sourced from the RDBN businesses over the Construction Phase (**5.2.1.1 Construction Phase**). Additional benefits would be also realized in supplier industries directly supplying the Project and further down in the supply chain. Workers spending their income earned at the Project and in supplier industries would also contribute to the economic activity in the LSA and RSA through the purchase of goods and services. With higher procurement from construction businesses, there would be an increased focus on the provision of construction-related services in the LSA and RSA.

An increased demand for skilled Project construction workforce (assessed in **S5.0-C1-5.2.2.1 Increase in Competition for Skilled Local and Regional Workforce** of the **EAC Application**), the provision of

contracting opportunities to businesses specializing in construction and heavy machinery, the indirect and induced benefits of the Project as described in **5.2.1.1 Construction Phase**, as well as other currently underway construction Projects in the region, such as construction of the Coastal GasLink project, have the potential to decrease the economic diversity of the region, shifting its focus towards the construction industry.

The Project is relatively small compared to other similar developments. Furthermore, as previously mentioned, a substantial portion of fabrication activities for the Project will take place offsite, with complete modules and equipment brought to the Minesite. Thus, while the Project is unlikely to result in a sizable change to the makeup of the regional economy, a decrease in economic diversity during the Project Construction Phase is expected for business hubs such as Smithers and Houston.

5.2.2.1.2 Operation Phase

As noted in **4.2 Description of Existing Conditions - Local Business and Industry**, 4.7% of the LSA labour force and 3.6% of the RSA labour force was associated with the mining industry in 2016. During the Operation Phase, the Project would provide up to 166 jobs for TCL employees and contractors, as described in the Labour Market VC (**S5.0-C1-5.2.1 Beneficial Effects of the Project on Employment and Income of the EAC Application**), with 90% of those jobs filled by workers from the LSA, RDBN A, and RDBN G. Assuming the size for the labour force does not change, this would increase the share of mining and related activities, as a percentage of total labour force by industry, from 4.7% to 6.5% for the LSA³, and from 3.6% to 4.4% for the RSA (**4.2 Description of Existing Conditions**). In addition, Project-related direct spending on equipment, parts, and consumables would total \$675.5 million in the RDBN during the Operation Phase, or an average of \$32.2 million per year to businesses in the RDBN; this would be in addition to income earned by Project workers. Additional benefits would also be realized in supplier industries and through workers spending their earned income. These activities have the potential to increase the dependence of the region on the mining industry.

The LSA and RSA economy is primarily based on timber harvesting and manufacturing of wood-related products, agriculture, tourism (recreation, accommodation, and retail) and resource extraction, as well as currently being driven by construction of the Coastal GasLink project. Thus, the addition of mining and supporting industries will strengthen the local economy. This is especially true in the face of two (2) mines recently entering C&M in the region, as well as recent challenges faced by the forestry sector (see **4.2 Description of Existing Conditions**). As discussed previously, the resource sector has not seen economic growth in the RSA over the last decade, while other sectors of the economy have seen growth. The Project is relatively small compared to other similar projects, with a projected onsite workforce at any time of around 70 workers (resulting from shift changes). However, the long-term nature of the Project, and the provision of jobs and contracting opportunities are expected to result in a decrease in economic diversity, emphasising the importance of the mining sector to the LSA communities and the RSA.

5.2.2.1.3 Decommissioning and Reclamation Phase

The decrease in economic diversity is not expected for the Decommissioning and Reclamation Phase as economic benefits during this phase to the LSA and RSA will be very limited.

³ This calculation includes RDBN A and RDBN G.

5.2.2.1.4 Post-closure Phase

Similar to the Decommissioning and Reclamation Phase, the decrease in economic diversity is not expected for the Post-closure Phase.

5.2.2.2 Change in the Capacity of Local or Regional Businesses to Supply Goods and Services

The Project is predicted to procure goods and services from local and regional businesses. These planned expenditures have an opportunity to contribute to an increased capacity and growth of local and regional businesses. Most of the key equipment and service providers are located in either the RDBN or in BC in general, and it is believed that these businesses have sufficient capacity to supply the Project. However, in addition to these suppliers, there will be other contracting opportunities at the Project for which various local and regional businesses will be able to submit a bid. The Project will have a TCL Buyer with this role who will follow a procurement policy focussed on obtaining goods and services from local and regional businesses, if required services exist in the region, and will work with groups to ensure that barriers of application for contracting opportunities are reduced for LSA and RSA businesses. TCL's focus will be on hiring regional suppliers if they are assessed as qualified and as having prices competitive with others. However, it is expected that some local and regional businesses have limited business capacity, face growth constraint issues, or may fail to meet qualifying requirements to provide the Project and, thus, may not be able to fully participate and benefit from Project's procurement opportunities. This would contribute to unequal distribution of economic benefits from the Project, although it is expected that over the duration of the Construction, and Operation phases, both the experience and the capacity of local and regional businesses to supply the Project, will increase.

Business hubs in Smithers and Houston are expected to have the largest selection of potential contractors to provide goods and services during Project activities and, thus, are more likely to have businesses affected by the Project. Limited effects would be expected for Telkwa businesses. No businesses in Witset were identified that could provide construction or mining services; however, the community could provide some services such as logging and grubbing to clear/prepare forested areas of the Minesite or other Project-related infrastructure.

5.2.2.2.1 Construction Phase

During the Construction Phase, the Project is predicted to spend \$34.2 million on the purchase of equipment and supplies from the LSA and RSA⁴. Some LSA and RSA businesses may fail to meet qualifying requirements to bid for Project opportunities and be excluded from Project economic opportunities. This may affect the future business growth potential for those businesses and their ability to supply goods and services. Therefore, a change in the capacity of local or regional businesses to supply goods and services is expected during the Construction Phase.

5.2.2.2.2 Operation Phase

During the Operation Phase, Project-related spend on equipment, parts, and consumables would be \$32.2 million per year⁵, or \$675.5 million in expenditure. Some LSA and RSA businesses may fail to meet qualifying requirements to bid for Project opportunities and be excluded from Project economic opportunities. This may affect the future business growth potential for those businesses and their ability to

⁴ This effect would take place over a 1.5 year period, with estimated average annual spending of \$20.9 million.

⁵ This being comparable to annual spending in the RDBN during the Construction Phase.

supply goods and services. Thus, a change in the capacity of local or regional businesses to supply goods and services is expected during the Operation Phase.

5.2.2.2.3 *Decommissioning and Reclamation Phase*

Contracting opportunities during the Decommissioning and Reclamation Phase will be very limited. A change in the capacity of local or regional businesses to supply goods and services is not expected during the Decommissioning and Reclamation Phase.

5.2.2.2.4 *Post-closure Phase*

Contracting opportunities during the Post-closure Phase will not be substantial and, thus, the change in the capacity of local or regional businesses to supply goods and services is not expected during the Post-closure Phase.

5.2.2.3 *Change that Affects Development Plans or Strategies of Government*

5.2.2.3.1 *Construction, and Operation Phases*

The Project Construction, and Operation phases have the potential to affect development plans or strategies of local or regional priorities at or near the Project Minesite if Project activities are not aligned with such plans and strategies. Potential changes that could affect development plans or strategies of government are assessed jointly for the Construction, and Operation phases as this potential effect would have comparable assessment and interpretation resulting from the land disturbance and lack of public access to the Minesite during the two (2) phases.

As described in **4.2 Description of Existing Conditions**, the current focus of existing OCPs⁶ regarding the Economic Development VC is on improving outdoor recreational opportunities to enhance tourism potential and enhancing timber development by improving timber supply and quality. The OCPs focus on improving economic diversity of the region and increasing the attractiveness of the region to new residents, entrepreneurs, and business. The LUP for Witset also includes objectives to maintain ecological integrity of forested areas and limited timber harvesting (Witset 2020).

The Project falls within the Bulkley Land and Resource Management Plan (LRMP). The Bulkley LRMP directs and guides management of biodiversity, access, timber, water quality, fish and wildlife habitat, visual resources, range, outdoor recreation and tourism, subsurface resources, cultural heritage resources, and future planning processes (**Land Use Baseline Report [Appendix 6.4-A] of the EAC Application**). The Bulkley LRMP establishes six (6) resource management zones. The Project is located within the Private Zone and the Integrated Resource Management Zone, in Planning Unit 11 (Telkwa) and Sub-Unit 11-4 (Goathorn Creek). The intent of this zone is to “recognize a full range of resource values and activities, including timber harvesting, mining, grazing, tourism, wildlife and recreation” and to “maintain opportunities for coal exploration and extraction” (**Appendix 6.4-A of the EAC Application**). As such, the Project fits within the objectives of the Bulkley LRMP and its sub-surface resource goal of providing opportunity for coal extraction in the area.

The Project is located on two (2) land designations that include agricultural uses and rural resources. More specifically, the Minesite is found on private parcels, the Rail Infrastructure is located within the agriculture designation, and the haul road is within both agriculture and rural resources land designations. Although

⁶ Smithers Telkwa Rural Official Community Plan Bylaw No. 1704, 2014 Schedule “A”; Houston, Topley, Granisle Rural Official Community Plan Bylaw No. 1622, 2011 Schedule “A”; and CCP for Witset.

the Project may not fully meet the intended land use, the Project will support an industrial land use and economic growth, both of which are overall goals of the OCPs (**Appendix 6.4-A** of the **EAC Application**).

As such, the development of the Project is not expected to affect current development plans or strategies of the regional government. An adverse effect is not expected, and it is not carried forward for assessment.

5.2.2.3.2 *Decommissioning and Reclamation, and Post-closure Phases*

The Project is not expected to affect development plans or strategies of government during the Decommissioning and Reclamation, and Post-closure phases as during those phases Project Minesite will be decommissioned and reclaimed in accordance with local and regional priorities at the time of closure.

5.2.2.4 *Decrease in Local and Regional Marketable Timber*

5.2.2.4.1 *Construction, and Operation Phases*

The Project Construction, and Operation phases have the potential to decrease local and/or regional marketable timber because trees will be removed from the Minesite to allow for Project-related activities. Project activities that could affect marketable timber are assessed jointly for the Construction, and Operation phases as this potential effect would have comparable assessment and interpretation related to the removal of trees and the inability to reforest the Minesite for the duration of the two (2) phases.

The Project is located in the Bulkley Valley Timber Supply Area (TSA), which covers approximately 736,000 hectares (ha) with 283,510 ha (38.5% of total) available for timber harvesting (**Appendix 6.4-A** of the **EAC Application**). The Bulkley Valley TSA's annual allowable timber cut is 852,000 m³, representing about 1.2% of average annual timber harvest in BC (**4.2 Description of Existing Conditions**). Fraser Mills Ltd. owns a Forest License which covers sections of the Minesite, and TCL owns an Occupant License to Cut, short form L51262, which expires on March 31, 2022 (**Appendix 6.4-A** of the **EAC Application**). In addition, Wetzin'kwa Community Forest Corporation operates a Community Forest License in the Bulkley Valley, to the north of the Project (**Appendix 6.4-A**).

The Project tenure (coal license) and freehold land covers 3,116 ha (**S1-C1**). This represents less than 0.4% of the entire Bulkley Valley TSA. The Project will be a conventional shovel and truck operation, similar to other rock quarry and surface mine operations in the region. This means that all operations will take place on the surface. Forested areas will be cleared where mining will take place and for placement of Project infrastructure (e.g., Coal Processing Plant [CPP], Minesite facilities, Tenas Access Corridor [TAC]). At the end of the Operation Phase, the area of the proposed open pit will be 286 ha. The estimated total area disturbed by the Project (i.e., the area containing all Project components) will be approximately 864 ha (**S1.0**). This represents only 0.1% of the total Bulkley Valley TSA. The actual forested area is expected to be less than 750 ha due to previous forestry activities, and agricultural and rural resources land use designations in the Project Area (**Appendix 6.4-A** of the **EAC Application**).

Where forested areas will be cleared for Project activities, timber from those areas is planned to be sold to mills in the region for processing, and therefore no timber volume is expected to be lost as a result of Construction, or Operation phases. However, while immediate timber volume would not be lost, there would be an approximate 30 year delay in regrowth and re-entry into marketable timber. The Decommissioning and Reclamation Phase will result in revegetation of the Minesite. Given that the Project tenure represents a very small share of the total BVTSA, and that there other areas under the BVTSA available for harvest, the Project is not expected to have an adverse effect on local and regional marketable timber.

S6.0-C4 Land and Resource Use VC of the **EAC Application** provides assessment of Project effects and recommended mitigation measures on Land and Resource Use VC; these measures are applicable to reducing effects on forested areas.

5.2.2.4.2 Decommissioning and Reclamation, and Post-closure Phases

The Project is not expected to affect local and regional marketable timber during the Decommissioning and Reclamation, and Post-closure phases as during those phases the Minesite will be decommissioned and reclaimed in accordance with local and regional priorities at the time of closure. Reclamation activities will include revegetation and reforestation with native plant species appropriate for the target ecosystems.

5.2.2.5 Decrease in Local or Regional Tourism

5.2.2.5.1 Construction, Operation, and Decommissioning and Reclamation Phases

Project Construction, Operation, and Decommissioning and Reclamation phases have the potential to decrease local and regional tourism to the LSA and/or RSA if Project-related disturbances such as noise, dust or visual aesthetics (including real or perceived effects) discourage visitations to the region. Potential effects on tourism are assessed jointly for the Construction, Operation, and Decommissioning and Reclamation phases as this potential effect would have comparable assessment and interpretation resulting from overall environmental disturbances and the removal of public access to the Minesite during these phases.

Recreational activities in the RSA include hunting, fishing, and hiking. As described in **4.2**, in 2015, Smithers and Telkwa benefited with \$28.7 million in tourist-related revenue, and \$58.7 million was reported for the RDBN in general. A reduction in visual or environmental quality near the Minesite have the potential to reduce enjoyment of those areas and deter visitors to other recreational destinations, thus reducing tourism and its share of economic benefits for LSA communities.

Project Construction, and Operation phases have the potential to decrease visual aesthetics near the Minesite. Effects on visual aesthetics and resources are assessed in **S6.0-C2 Visual Resources VC**; corresponding mitigation measures are also identified in that chapter. The Visual Resources VC assessment concluded that the Project is expected to have an effect on the Visual Resources VC of the landscape during the Construction, and Operation phases of the Project due to Project activities and the overall disturbed area; similar disturbances, but to a lesser degree would be expected during the Decommissioning and Reclamation Phase. The Post-closure Phase is expected to have little physical activity and partial to complete revegetation and, thus, visual effects are expected to be negligible. The OCPs do not identify any specific recreational sites near the Minesite; however, it is expected that some hiking, hunting, trapping, and fishing could take place nearby. Visual disturbances, as well as noise, vibration, and dust from the Project can reduce the enjoyment of those activities near the Project. **S4.0-C1 Atmospheric Environment VC** assesses the effects of the Project related to noise and dust; corresponding mitigation measures are also identified in that chapter to reduce the expected disturbances.

The potential for Project activities to change or increase light pollution around the Minesite, roadways, and rail load out facility has been incorporated into the assessments of the Wildlife, Visual Resources and Community Well-being VCs as these are the ultimate receptors of these effects. TCL has already mitigated for potential light impacts by utilizing lighting designs that incorporate horizontal cut-off fixtures to eliminate light trespass, sky glow, and glare. Additionally, all lighting at the Minesite, roadways, and load-out facility will be operated as per the **Air Quality Management Plan (S13.0-C2) (AQMP)** that are aligned with BMPs to optimize efficiency and minimize sensory disturbance.

S6.0-C4 Land and Resource Use VC of the **EAC Application** assesses effects of the Project on changes in access, sensory disturbances, and quantity and quality of resources as related to public use and recreation. The Construction, Operation, and Decommissioning and Reclamation phases will restrict access to the Minesite, Bypass Road, and Rail Loop for recreational users; public access to the Goathorn Creek Bridge will be escorted; while some trails connecting to Hunter Basin will be removed by the Minesite but will be replaced by opening up alternate trails. Access to other popular recreational areas in the local area are not expected to be affected. Regarding sensory disturbances, noise, light, and emissions will be kept to relatively low and acceptable levels for recreational users at a 10 kilometre (km) distance. The Minesite will be visible from popular recreational areas and trailheads surrounding the Project; however, use of recreational areas is not expected to change. There will also be a reduction in land and resources that could be used for competing land and resource use, although recreational land uses will continue to be viable in the area.

Thus, a decrease in recreational activities could be expected near the Minesite during Project Construction, Operation, and Decommissioning and Reclamation phases, and this could consequently have an adverse effect on economic benefits derived from local tourism. The LSA, plus RDBN A and RDBN G, and the RSA have a large selection of alternative hiking, hunting, trapping, and fishing locations that can be accessed in lieu. It is, therefore, challenging to assess the specifics of this effect as there is no information on how many people use the area near the Minesite for recreational activities. To provide a conservative assessment of potential effects, an adverse effect on local/regional tourism is therefore expected.

5.2.2.5.2 Post-closure Phase

The Project is not expected to have an adverse effect on local and regional tourism during the Post-closure Phase as during that phase the Minesite will be fully decommissioned and reclaimed and most or all Project-related disturbances that could affect local and regional tourism would cease.

5.2.2.6 Decrease in Economic Activity

The removal of employment and contracting opportunities after the Project ceases operations can lead to lower economic activity in the LSA and RSA.

5.2.2.6.1 Construction and Operation Phases

Project Construction and Operation phases are expected to drive economic activity in the LSA and the RSA through the provision of jobs, business contracts, and the payments of taxes, thus the effect of the decrease in economic activity is not expected for those phases.

5.2.2.6.2 Decommissioning and Reclamation Phase

At the end of the Operation Phase, there will be a loss of Project-related employment (estimated at 166 jobs at peak operations, decreasing to 85 jobs in Year 21, the last year of the Operation Phase). Employment for Decommissioning (one (1) year duration) is estimated at 30.6 full-time equivalent (FTE) and employment for reclamation (three [3] years duration) is estimated at 18.2 FTEs⁷ (**S5.0-C1-5.2.1 Beneficial Effects of the Project on Employment and Income** of the **EAC Application**). While some indirect and induced employment will continue after the Operation Phase ceases, there will be a decrease in the size of workforce at the Decommissioning and Reclamation Phase compared to the Operation Phase.

⁷ Thereafter, there will be one (1) full-time job created during Active Post-closure and one (1) part-time job created during Passive Post-closure.

Decreases in the workforce will lead to an increase in the local/regional unemployment rates, reduction in personal income due to the loss of jobs, and a decrease in spending on goods and services in the region.

With the reduction in Project spending, businesses that are direct and indirect suppliers to the Project are likely to experience some negative effects, as are businesses that provide goods and services to workers and their families. During the Operation Phase, Project spending on equipment and supplies is estimated at \$32.2 million per year for businesses in the RDBN, decreasing to \$2.2 million per year for Decommissioning and \$6.5 million during Reclamation, with spending thereafter being negligible. Businesses whose operations benefit substantively from the existence of the Project may experience a decrease in business revenue potentially leading to decreased business capacity and a loss of workforce.

Additional effects are expected through the loss of government tax revenue and other contributions earned by municipal and provincial governments. Government tax revenue is used to finance public goods and services such as healthcare, infrastructure, policing and emergency, parks and recreation, and other municipal services. Regional and provincial governments also finance programs to support and enhance economic growth and development. While during the Operation Phase, the Project is anticipated to pay up to \$72.4 million per year in regional and provincial taxes, these contributions will substantially decrease as Project enters the Decommissioning and Reclamation Phase. The removal of this revenue can, therefore, affect the regional and provincial provision of public goods and services, and efforts related to economic development.

While the Project is relatively small, compared to other similar mine operations, a decrease in economic activity in the region is expected as a result of the end of the Operation Phase. This effect is expected for the Decommissioning and Reclamation Phase only.

5.2.2.6.3 Post-closure Phase

The decrease in economic activity is not predicted for the Post-closure Phase as all economic changes associated with the conclusion of mining operations will take place during the Decommissioning and Reclamation Phase.

5.3 Mitigation Measures

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

TCL has incorporated several mitigation measures in the Project 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**. There are no specific Project design measures to mitigate effects of the Project on Economic Development as related to effects of the Project on the following economic activity:

- ▶ Decrease in economic diversity: Economic diversity is determined by range of economic activities in a community and region, often depending on the availability of or access to resources that support the specific industries and is beyond the control of the Project. However, there is mitigation that can partially reduce the Magnitude of this effect (see **5.3.7** below). The effect of a decrease in economic diversity will be carried forward for assessment (see **5.4.2.1**);
- ▶ Change that affects development plans or strategies of government: The Project is not expected to adversely affect development plans and strategies of governments, and there are no mitigation

measures proposed for this effect. Mitigation measures to reduce or remove adverse effects of the Project on the Land and Resource Use VC (as related to land use and planning) are provided in **S6.0-C4 Land and Resource Use VC** of the **EAC Application**. As there is no expected adverse effect, this potential effect is not carried through for assessment to **5.4 Residual Effects and Significance of Residual Effects**; and

- ▶ Decrease in economic activity during the Decommissioning and Reclamation Phase: The closure of the Project is an event expected to occur once mineable resources are exhausted, and it is characteristic of this type of industry. There are no specific mitigation measures that can be implemented by TCL to eliminate an economic slowdown during the Decommissioning and Reclamation Phase; however, there are measures that can partially reduce the Magnitude of this effect and these are described in **5.3.9** below. The effect will be carried forward for assessment (see **5.4.2.4**).

There are Project design measures to mitigate potential effects of the Project related to the following, and are described below in **5.3.1** to **5.3.6**:

- ▶ decrease in local and regional marketable timber;
- ▶ decrease in local or regional tourism; and
- ▶ change in the capacity of local or regional businesses to supply goods or services.

These measures include mitigation measures proposed for effects related to visual, land use, and environmental disturbances of the Project. While those measures will not be able to fully remove the predicted effects on marketable timber and tourism, they will work cumulatively to reduce the magnitude of those effects. These measures are described in the respective sections of the EAC Application:

- ▶ **Land Use VC (S6.0-C4);**
- ▶ **Visual Resources VC (S6.0-C2);** and
- ▶ **Atmospheric Environment VC (S4.0-C1).**

As not all effects can be addressed through design, additional mitigation measures are described in **5.3.7** and **5.3.10**. Measures to mitigate potential effects on the Economic Development VC have been 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. All mitigation measures for the Economic Development VC are summarized in **Table 5.3-1**.

5.3.1 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 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 (refer to **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 apprenticeship programs both onsite and offsite with other industry partners; and
- ▶ Report progress in implementing these plans annually to designated Indigenous and stakeholder groups.

5.3.2 Limit the Project Footprint and Project Area

Relevant to the effect of a decrease in local regional tourism, the following Project-design measures will be introduced to limit the Project footprint:

- ▶ Cluster Project components, including the pit, stockpiles for run-of-mine (ROM) coal, processed coal and processed rock, CPP, management ponds, and ancillary facilities such as the Maintenance Facility and Administration Building;
- ▶ Align linear Project features (such as powerlines, roads, water distribution) into a common right-of-way (ROW);
- ▶ Place Project features within existing or planned Project component footprints to limit the clearing of vegetation and the salvage of reclamation materials (surface soil, woody debris, and overburden). For example, the Minesite buildings will be built in areas previously cleared by forestry activity;
- ▶ Minimize the length of haul roads, access roads, and rail line where possible. Use or improve existing roads where practical;
- ▶ Utilize a loop design configuration for the rail that requires half the space and subsequent footprint compared to the standard teardrop shape seen at other operating or proposed coal mines in western Canada;
- ▶ Place reclamation material (surface soil and woody debris) stockpiles within development areas such as the open pit and haul roads to avoid disturbance, while overburden is directly placed on Project components for future reclamation activities;
- ▶ Limit the TAC to a single lane width for long distances and utilize existing Forest Service Roads (FSRs) or private roads where appropriate;
- ▶ Backfill approximately 50 percent (%) of non-coal material back into the open pit; and
- ▶ Place processed rock from the CPP within the management ponds versus a separate permanent pile to avoid any potential acid rock drainage (ARD) from this material and reduce Project footprint.

5.3.3 Reclamation Measures

The following reclamation measures have been incorporated into the mine design and are relevant to the effect of a decrease in local regional tourism, and the effect of a decrease in local and regional marketable timber:

- ▶ Use progressive reclamation techniques to limit the amount of disturbance at any given time by sequencing the open pit and stockpiles to the extent feasible, backfilling of open pit where possible, directly placing reclamation materials, and placing excavated materials on previously disturbed areas;
- ▶ Salvage reclamation materials (surface soil, woody debris, and overburden), for later use, in accordance with the **Reclamation and Closure Plan (S13.0-C15) (RCP)**;
- ▶ Vegetate all temporary surface soil and overburden stockpiles to minimize the potential for erosion and sediment generation, to prevent subsequent potential effects on water quality, and to prevent losses of surface soils;
- ▶ Implement progressive reclamation on embankments, buttresses, backfills, TAC cut and fill slopes, and other Project components where possible to minimize fugitive dust emissions and reduce erosion and sediment generation;
- ▶ The reclaimed landscape will be shaped and contoured to achieve variations of slope steepness, slope length, aspect, and form to assist in creating landform diversity suitable for the establishment of varied plant communities and to reduce visual effects;
- ▶ PAG material deposited in the management ponds will be flooded to prevent acid mine drainage but will also be covered with an engineered cover consisting of non-PAG rock, overburden, and surface soils to allow for terrestrial revegetation;
- ▶ Majority of open pit features (e.g., highwalls and footwalls) are covered/resurfaced/recontoured with non-PAG rock and overburden; and
- ▶ Revegetate with native plant species appropriate for the target ecosystems, which will include species for merchantable timber, subsistence foods, and ceremonial purposes in consultation with the Wet'suwet'en.

5.3.4 Forest Management Practices

The following refer to forest management practices and are relevant to the effect of a decrease in local and regional marketable timber:

- ▶ Follow guidelines and requirements for clearing, handling, and hauling any beetle infested wood such as: Guidance on Landscape and Stand-level Structural Retention in Large-scale Mountain Pine Beetle, Salvage Operation (British Columbia Ministry of Land, Natural Resource Operations and Resource Development [BC MFLNRORD] 2005) and Bark Beetle Management Guidebook (BC MFLNRORD 1995), Spruce Beetle Management in BC (BC MFLNRORD n.d.);

5.3.5 Project Component Design

The follow apply to the design of Project components and are relevant to the effect of a decrease in local regional tourism:

- ▶ Select tonal values and low chroma colours to paint buildings and related infrastructure to create low contrast to existing background conditions throughout the spring, summer, and fall months when viewers are more likely to be outdoors;

- ▶ Select tonal values best suited for the dominant building face where visible from the priority viewpoints;
- ▶ Select non-reflective building and infrastructure surfaces to eliminate glare from reflected sunlight;
- ▶ Avoid sharp and linear changes in the slope or aspect of the stockpile, pile, embankment, buttresses, and excavated surfaces;
- ▶ Contour benches within backfilled material and embankments and buttresses to prevent obvious and easily discernable linear shapes;
- ▶ Landscape (e.g., add small hills, swallows) the tops of material stockpiles to create non-linear silhouettes;
- ▶ Manage light effects using acceptable best management practices (BMPs) and engineering design.
- ▶ TCL will also incorporate the following mitigation measures associated with effects from lighting:
 - ▶ For areas visible to the public from sensitive viewpoints investigate eliminating night lighting of buildings and structures and block light from windows where possible considering safety requirements;
 - ▶ Direct lighting shall be directed towards the ground and have appropriate covers to avoid fugitive light emissions; and
 - ▶ Lighting should be sensitive to environmental conditions and automatically shut off during daylight hours.

5.3.6 Blasting Measures

The following apply to blasting and are relevant to the effect of a decrease in local regional tourism:

- ▶ Use best management stemming techniques (e.g., type of material, size consistency, loading method, and thickness) that will minimize effects of noise and fugitive dust from blast patterns and assist in the complete detonation of drill holes to reduce the introduction of nitrogen species into the surrounding rock per the **EMP**;
- ▶ Correctly time blasts to minimize effects of noise, vibration, and fugitive dust from blast patterns;
- ▶ Keep blast patterns small to minimize effects of noise, vibration, and fugitive dust and to reduce the time that patterns need to sleep or wait until they are blasted which reduces the introduction of nitrogen species into the surrounding rock;
- ▶ Monitor actual blast results, and implement improvements as required as per the adaptive management process to reduce effects of noise, vibration, fugitive dust and reduce the introduction of nitrogen species into the surrounding rock;
- ▶ Use electronic detonators to minimize effects of noise, vibration, and fugitive dust from blast patterns and manage misfires to reduce the introduction of nitrogen into the surrounding environment; and
- ▶ Use noiseless lead lines on the surface to minimize the effects of noise from blasts.

5.3.7 Enhance Business Diversity

Economic diversity is determined by a range of economic activities in a community and region, often depending on the availability of or access to resources that support the specific industries and is beyond the control of the Project. However, TCL will investigate providing opportunities to business start-ups by providing funds, training, equipment, and/or in-kind technical expertise.

5.3.8 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.

These mitigation measures will be designed and implemented before the Construction Phase and will continue throughout the three (3) phases of the Project (Construction, Operation, and Decommissioning and Reclamation), to actively engage local and regional businesses to ensure that they are aware of potential procurement opportunities and to increase their participation in bidding for Project contracts. These measures will work to mitigate the effect of the change in the capacity of local or regional businesses to supply goods or services. Procurement strategies are intended to maximize engagement of and benefits to local and regional businesses and are common practise successfully implemented at many mining projects across Canada; they also represent a standard component of issued EAs in BC (e.g., Brucejack Gold Mine; CEAA 2015). Efforts are also often made to incorporate local procurement commitments into community negotiations with mining companies (e.g., Impact Benefit Agreements; Intergovernmental Forum [IGF] 2019).

A well-designed Procurement Program will work to reduce the change in the local and regional business capacity to supply goods and services; however, it will not fully mitigate the predicted effect.

5.3.9 Decommissioning and Reclamation, and Post-closure Program

The closure of the Project is an event expected to occur once mineable resources for the Project are exhausted, and the Decommissioning and Reclamation phase is completed. There are no specific mitigation measures that can be implemented by TCL to eliminate an economic slowdown during the Decommissioning and Reclamation, and Post-closure phases; however, there are measures that can partially reduce the magnitude of this effect.

Mitigation measures related to an economic slowdown once the Project ceases operations will focus on workforce transition to minimize local unemployment. TCL will develop a Decommissioning and Reclamation, and Post-closure Program to help employees identify and secure new employment (refer to **SEMP**). The program will be developed in the early stages of the Operation Phase (by the end of Year 5) to solicit feedback from stakeholders and will be refined halfway through when the actual completion of mining is better understood and defined.

The mitigation measures that will be put in place as part of this program are:

- ▶ identification of employees who are expected to be under the age of 55 at the expected end of the Operation Phase of the Project, and developing a training program for each employee to increase the number of transferrable skills and qualifications to allow for an easier job transition;
- ▶ providing a matching Registered Retirement Savings Plan (RRSP) program to promote employee's saving and getting prepared for retirement;
- ▶ providing financial education programs for employees so that they understand retirement planning and saving;
- ▶ working with other industries in the region, to gain an understanding of what skills and qualifications are lacking, and provide opportunities for TCL employees to attain those skills and qualifications to facilitate employee transition to other industries after their employment ends with TCL;
- ▶ provision of a Legacy Fund to continue to provide donations and sponsorship opportunities for educational programs to former employees, employee spouses and dependents; and
- ▶ work with Indigenous groups to determine if a community forest model is possible for reclamation to provide a lasting employment and funding source to the community.

The strategy for the Project will be based on updated workforce projections, information about economic conditions, and available community resources at the end of the Operation Phase. The Program will describe the actions and resources that will assist Project employees at the end of their employment with the Project. The planning for these measures will begin several years before the end of mining, with the mitigation measures implemented at least two (2) years before the end of the operations. This will be a gradual but continuous effort to help employees understand the skill set, potential job transitions, and career choices as workforce size is gradually reduced to match lower operating activities.

These mitigation measures will end once the Project enters the Post-closure Phase. Transition planning is standard and an essential component in EAs for mining projects. To support planning efforts, the Government of Canada, and Mining Industry Human Resource Council (MiHR) developed a Mining Workforce Transition Kit - A Tool to Support Employees at Mine Closure (MiHR 2020). This tool helps mining companies guide the transition process to closure and includes defining and implementing effective assistance to displaced employees to address a broad range of transition needs.

The above measures will work to prepare the local and regional workforce to find and transition to alternative employment, thereby reducing the potential unemployment rate in the LSA/RSA after the Project transitions to the Decommissioning and Reclamation Phase. Additionally, hiring local and regional business during the Project Decommissioning and Reclamation Phase will help to keep a portion of the spending in the region. The proposed measures will work cumulatively to reduce the potential for economic downturn; however, they will not be able to fully mitigate the predicted effect.

5.3.10 Socio-economic Management Plan (SEMP)

A **SEMP** was developed and is provided in **S13.0-C16** of this **EAC Application**. This purpose of the plan is to 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 and describe reporting requirements and schedule. This includes the consideration of effects related to the Economic Development VC. The **SEMP** will ensure effects of the Project on socio-economics 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 predicted in this EAC Application, and to identify and implement additional mitigation measures, if required.

5.3.11 Summary of Mitigation Measures

A summary of the mitigation measures to avoid or reduce potential Project-related effects on the Economic Development VC, and whether a residual effect is predicted, is provided in **Table 5.3-1**.

Table 5.3-1: Summary of Potential Effects and Mitigation Measures for Economic Development Valued Component (VC) – Local Business and Industry Subcomponent

Potential Effect	Contributing Activities within the Project Phases (C, O, D, P)	Proposed Mitigation Measure	Applicable VC Subcomponent	Residual Effect (Yes/No)
Decrease in Economic Diversity	Project employment and procurement opportunities (C, O)	Enhance business diversity	Local Business and Industry	Yes
Change in the Capacity of Local or Regional Businesses to supply goods or services	Project employment and procurement opportunities (C, O)	- Enhance local and regional benefits including employment - Procurement Program. See Socio-economic Management Plan (S13.0-C16) (SEMP)	Local Business and Industry	Yes
Change that Affects Development Plans or Strategies of Government	Land use disturbance (C, O)	Mitigation measures to reduce or remove effects of the Project on Land and Resource Use VC (as related to land use and planning) are provided in Land and Resource Use VC (S6.0-C4 of the EAC Application).	Local Business and Industry	No
Decrease in Local and Regional Marketable Timber	Land use disturbance (C, O)	- Forest management practices - Reclamation measures. See Reclamation Closure Plan (S13.0-C15) (RCP). - Mitigation measures to reduce or remove effects of the Project on Land and Resource Use VC (as related to forestry resources) are provided in S6.0-C4 Land and Resource Use VC.	Local Business and Industry	No
Decrease in Local or Regional Tourism	Visual disturbances, as well as noise, vibration, and dust from the Project (C, O, D)	- Limit Project footprint and Project Area - Project component design - Blasting measures. See Explosive Management Plan (S13.0-C6) (EMP) - Mitigation measures to reduce effects of the Project on land and resource use to preserve natural resources are described in S6.0-C4 Land and Resource Use VC. - Mitigation measures to enhance visual resources of the Project	Local Business and Industry	Yes

Potential Effect	Contributing Activities within the Project Phases (C, O, D, P)	Proposed Mitigation Measure	Applicable VC Subcomponent	Residual Effect (Yes/No)
		are provided in S6.0-C2 Visual Resources VC . Mitigation measures to reduce noise, vibration, and dust, and improve air quality around the Minesite are provided in the S4.0-C1 Atmospherics VC.		
Decrease in Economic Activity During Decommissioning and Reclamation Phase	Project employment and procurement opportunities (D)	- Procurement Program (SEMP) - Decommissioning and Reclamation, and Post-closure program (see SEMP)	Local Business and Industry	Yes

Notes: C, O, D, P represent Project Phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure
EAC=Environmental Assessment Certificate; Project=Tenas Project; VC=Valued Component

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 Economic Development VC include:

- ▶ decrease in economic diversity (Construction, and Operation phases);
- ▶ change in the capacity of local or regional businesses to supply goods or services (Construction, and Operation phases);
- ▶ decrease in local or regional tourism (Construction, Operation, and Decommissioning and Reclamation phases); and
- ▶ decrease in economic activity during the Decommissioning and Reclamation Phase.

Rationale for phases not considered for the above four (4) effects are provided both in **5.2 Potential Project-related Effects**, and below in the following sections for the respective effect.

There is no residual effect for the following effects as the assessment determined that an adverse effect is not expected:

- ▶ change that affects development plans or strategies of government (assessed in **5.2.2.3 Change that Affects Development Plans or Strategies of Government**); and
- ▶ decrease in local and regional marketable timber (assessed in **5.2.2.4 Decrease in Local and Regional Marketable Timber**).

The effect of the change that affects development plans or strategies of government (assessed in **5.2.2.3 Change that Affects Development Plans or Strategies of Government**) is not carried forward because the Project fits within the objectives of the LRMP and its sub-surface resource goal of providing opportunity for coal extraction in the area, as well as the Project will support an industrial land use and economic growth, both of which are overall goals of the relevant OCPs.

The effect of the decrease in local and regional marketable timber (assessed in **5.2.2.4 Decrease in Local and Regional Marketable Timber**) is not carried forward because where forested areas will be cleared for Project activities, timber from those areas is planned to be sold to mills in the region for processing, and therefore no timber volume is expected to be lost as a result of Construction, or Operation phases. Further, the Project tenure represents a very small share of the total Bulkley Valley TSA and there other areas under the TSA available for harvest.

For the effects that are carried forward, this subsection describes the residual effects of the Project. It determines the Significance of residual effects on the Economic Development VC, 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 the Economic Development VC.

5.4.1 Description of Evaluation Criteria

5.4.1.1 Residual Effects Characteristics

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

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

Residual Effect Characteristic	Definition	Rating
Magnitude	Size or severity of the residual effect measured in terms of the proportion of the VC affected within the LSA, relative to the range of natural variation 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 Economic Development VC 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 plus Witset) : effect occurs in the RDBN and the community of Witset Beyond RSA: effect occurs in the RSA, in the province and the rest of Canada
Duration	Length of time over which the Economic Development VC 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 Economic Development VC 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
Reversibility	Whether or not the Economic Development VC residual effect can be reversed once the activity causing the residual effect ceases.	Fully Reversible: effect can be reversed Partially Reversible: effect can be partially reversed Irreversible: effect cannot be reversed

Residual Effect Characteristic	Definition	Rating
	Irreversible effects are considered to be permanent.	
Context	The extent to which Economic Development VC 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 environment or population has a high natural resilience to imposed stresses, and can respond and adapt to the effect Moderate: the receiving environment or population has a neutral resilience to imposed stresses and may be able to respond and adapt to the effect High: the receiving environment or population has a low resilience to imposed stresses, and will not easily adapt to the effect

Notes: BC=British Columbia; LSA=Local Study Area; RDBN=Regional District of Bulkley-Nechako; RSA=Regional Study Area; VC=Valued Component

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, Irreversible, and of Low Context. Effects are characterised as **Significant** if they are likely to cause structural and functional changes in the Economic Development VC. 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, the Level of Confidence in the assessment includes the following ratings: Low, Moderate, and High, and informs of the Level of Confidence in 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 regarding the effectiveness of mitigation measures and certainty of the predicted outcome are all considered. Confidence estimates allow 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 the Economic Development VC 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 the Economic Development VC 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 the Economic Development VC, 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 review of 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 Local Business and Industry Subcomponent

5.4.2.1 Decrease in Economic Diversity

5.4.2.1.1 Residual Effect Characteristics

A residual effect for the decrease in economic diversity is expected because the proposed mitigation measure is not expected to mitigate the effect fully or partially. The economies of the LSA and the RSA are currently based on the timber industry, agriculture, tourism, and public administration. Other economic activity in the RSA includes two (2) mines in C&M, and the current ongoing construction of the Coastal GasLink project. The Project is expected to contribute to economic growth and prosperity in the region through the provisions of jobs and procurement opportunities resulting from both the Construction, and Operation phases. While this effect is considered to be a beneficial effect of the Project, an increase in economic dependence on the mining sector could be expected given the long-term nature of the Project (1.5 years in Construction Phase and 21 years in the Operation Phase), the expected provision of jobs and contracts, and/or if other sectors in the region decrease in importance (e.g., additional closures of mills in the region).

Assessment in **5.2.1 Project Economic Benefits** suggests that close to 60% of Construction Phase and most Operation Phase jobs will be filled by workers from the LSA, RDBN A and RDBN G, and that procurement spending will total \$34.2 million during the Construction Phase (1.5 years) and \$32.2 million per year during the Operation Phase (for 21 years) for businesses from the RDBN. These benefits will continue throughout the Construction and Operation phases; however, once the Project ceases operation, the economy would be expected to return to its pre-Project condition (all else being equal).

Table 5.4-2 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, economic activity of the Project continuously spans the Construction, and

Operation phases, and are inherently related and overlapping, making meaningful separation difficult to justify for the effects assessment. That is, while different activities will take place during the Construction, and Operation phases, some workers will have transferable and applicable skills to both phases as well as some business will be able to provide services during both phases. This effect of the decrease in economic activity is not predicted for the Decommissioning and Reclamation, and Post-closure phases because the provision of economic benefits will be very limited to negligible during those two (2) phases thus there will be no effect on economic diversity.

Table 5.4-2: Summary of Effect Characteristics Ratings for the Decrease in Economic Diversity

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	The Project is relatively small compared to other similar developments. While the Project is expected to strengthen the LSA/RSA economy during the Construction and Operation phases through the provision of jobs and contracts, some loss of economic diversity is possible with shifting focus on mining-related support industries.
Geographic Extent	RSA	Close to 60% of Construction Phase and most Operation Phase jobs will be filled by workers from the LSA, RDBN A and RDBN G. However, procurement for the Project will be regional with an estimated \$34.2 million during the Construction Phase over the 1.5 year period (32% of Construction Phase spending) and \$32.2 million per year during the Operation Phase (80% of Operation Phase spending).
Duration	Long-term	The Construction Phase of the Project will take place over the 1.5 year period while the Operation Phase of the Project is predicted to last for 21 years.
Frequency	Continuous	Economic benefits derived from the Project (employment, income, procurement) are predicted throughout the Construction and Operation phases; thus, an effect on economic diversity is expected to be Continuous.
Reversibility	Fully Reversible	Once the Project no longer contributes to the local/regional economy, economic conditions are expected to recover to pre-Project conditions. Thus, this effect is Fully Reversible.
Context	Low	There is high resilience for the Economic Development VC to recover from this effect. Economic diversity depends on the prevalence of industries that exist at any given time. Once the Project ceases operations, existing or new industries will materialize in the LSA/RSA.

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

5.4.2.1.2 Likelihood

While the Project is relatively small, its long-term nature and the provision of jobs and contracts are Likely to decrease economic diversity in the RSA. Given that there are no specific mitigation measures that can be implemented to reduce the decrease in economic diversity, it is Likely that this residual effect will occur. 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 Significance in 5.4 Residual Effects and Significance of Residual Effects), the residual effect of the decrease in economic diversity 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, and to provide contracting opportunities to local and regional businesses; thus, the affected area is the RSA. This effect is predicted to be Long-term as it will be Continuous throughout the Construction, and Operation phases. However, given that the Project is relatively small compared to other similar developments, decrease in economic diversity is predicted to be of Low Magnitude. This effect is expected to be Fully Reversible and of Low Context once the Project ceases operations.

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 during the Project Construction, and Operation phases is unclear at this point and cannot be predicted with certainty. Further, there is uncertainty around the total procurement effect of the Project during both the Construction, and Operation phases and the number of local/regional business that will qualify as suppliers.

5.4.2.2 Change in the Capacity of Local or Regional Businesses to Supply Goods or Services

5.4.2.2.1 Residual Effect Characteristics

A residual effect for the change in the capacity of local or regional businesses to supply goods or services is expected because proposed mitigation measures will not be able to fully mitigate the predicted effect. An estimated \$34.2 million will be spent on contracts with local and regional businesses during the Construction Phase over the 1.5 year period, and \$32.2 million per year will be spent during the Operation Phase over the 21 year period. Some local and regional businesses may not be fully equipped to successfully participate in bidding for Project contracts. Lost contracts and revenue may limit the ability of those businesses to thrive in the long-term. While TCL will undertake measures, such as implementing the procurement program and creating a Buyer role (**SEMP**), to improve to the ability of smaller businesses to obtain Project-related contracts, such measures will only partially address this effect. The inability to win business contracts can result in reduced growth for some businesses, potentially causing long lasting or determinant changes to business capacity.

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. This is done because the predicted characteristics are expected to have parallel rationale and importance and, therefore mirroring ratings between the two (2) phases. Furthermore, provision of contracting opportunities by the Project continuously span the Construction, and Operation phases, being inherently related and overlapping, making meaningful separation difficult to justify for the effects assessment. This effect is not predicted for the Decommissioning and Reclamation, and Post-closure phases because the provision of contracting opportunities will be very limited to negligible during those two (2) phases, and thus there will be no effect on the capacity of local and regional businesses to supply goods and services.

Table 5.4-3: Summary of Effect Characteristics Ratings for the Change in the Capacity of Local or Regional Businesses to Supply Goods or Services

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Moderate	While the Project is expected to provide procurement opportunities, some local and regional businesses may fail to meet qualifying requirements to win contracts. This would contribute to unequal distribution of economic benefits from the Project and result in potential future business capacity issues.

Residual Effects Characteristic	Rating	Rationale for Rating
Geographic Extent	RSA	Procurement for the Project will be regional, with an estimated \$34.2 million spent during the Construction Phase over the 1.5 year period (32% of Construction Phase spending) and \$32.2 million per year spent during the Operation Phase (80% of Operation Phase spending).
Duration	Long-term	The Construction Phase of the Project will take place over the 1.5 year period while the Operation Phase of the Project is predicted to last for 21 years.
Frequency	Continuous	Procurement opportunities are predicted throughout the Construction and Operation phases; therefore, potential changes in the capacity of local and regional businesses is expected to be Continuous.
Reversibility	Partially Reversible	The inability to win business contracts can result for some businesses in stunted growth or can affect the ability of those businesses to survive long term.
Context	Moderate	There is Moderate resilience for the Economic Development VC to recover from this effect, provided that some businesses will be excluded from economic benefits of the Project and as a result, may face long lasting or determinant changes to business capacity.

Notes: \$=dollar; %=percent; Project=Tenas Project; RSA=Regional Study Area; VC=Valued Component

5.4.2.2.2 Likelihood

While the Project is relatively small, its long-term nature and the provision of contracts are Likely to change the capacity of local and regional businesses. Despite the proposed mitigation measures, it is Likely that this residual effect will occur. 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 Significance in 5.4 Residual Effects and Significance of Residual Effects, the residual effect of change in the capacity of local or regional businesses to supply goods or services is rated as **Not Significant**. TCL will focus on maximizing contracting opportunities for local and regional businesses; thus, the affected area is the RSA. While the provision of contracts will be Long-term and will be Continuous throughout the Construction, and Operation phases, some businesses may fail to meet qualifying requirements to provide services to the Project and thus face future capacity issues. The Magnitude of this effect is therefore Moderate, as not all businesses will be able to take advantage of the economic opportunities of the Project. This effect is Partially Reversible and of Moderate resiliency, provided that inability to win business contracts result in reduced growth and long lasting changes to business capacity.

There is Moderate Confidence in the assessment and the rating, as there is uncertainty around the total procurement effect of the Project during both Construction, and Operation, and the number of local/regional business that will or will not qualify as suppliers.

5.4.2.3 Decrease in Local or Regional Tourism**5.4.2.3.1 Residual Effect Characteristics**

A residual effect for the decrease in local or regional tourism is expected because proposed mitigation measures will not be able to fully mitigate the predicted effect. Visitors to recreational areas near the Minesite are expected to have reduced enjoyment of outdoor spaces and activities resulting from reduced visual resources, potential noise and vibration disturbances, and reduced air quality.

Visual and environmental disturbances will be associated with activities of the Construction, Operation, and Decommissioning and Reclamation phases, and are expected to continuously occur throughout those phases.

The LSA communities and businesses, however, have a broad selection of tourism attractions (e.g., hiking, hunting, trapping, and fishing locations) and are not exclusively dependent on use of the lands where the Minesite is located or on locations in the immediate vicinity of the Minesite. Following the end of the Decommissioning and Reclamation Phase, visual resources will be partially reclaimed; however, permanently altered and disturbances such as noise, vibrations and dust will mostly cease. Much of the reclaimed Minesite will become open to other land uses.

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, Operation, and Decommissioning and Reclamation phases. This is done because the predicted characteristics are expected to have parallel rationale and importance, therefore mirroring ratings between the phases. The predicted effect of the Project on tourism is expected to continuously span the three (3) phases as they will all result in visual and environmental disturbances that can affect regional visitation and enjoyment of outdoor spaces. Meaningful separation would be difficult to justify for this effect. This residual effect is not predicted for the Post-closure Phase because at that time, the Minesite will have little physical activity and partial to complete revegetation and, thus, visual and environmental effects are expected to be Negligible.

Table 5.4-4: Summary of Effect Characteristics Ratings for Decrease in Local or Regional Tourism

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	The LSA communities have a broad selection of tourism attractions (e.g., hiking, hunting, trapping, and fishing locations) and are not exclusively dependent on use of the lands where the Minesite is located, or locations in the immediate vicinity.
Geographic Extent	LSA	Tourism-related business effects are expected to be limited to LSA communities, and directly related to localized physical effects of the Minesite.
Duration	Long-term	This effect is predicted for the Construction, Operation, and Decommissioning and Reclamation phases.
Frequency	Continuous	Visual and environmental disturbances will be associated with activities of the Construction, Operation, and Decommissioning and Reclamation phases, and are expected to Continuously occur throughout those phases.
Reversibility	Partially Reversible	Visual resources will be reclaimed, though there is some permanent alteration expected. Environmental disturbance

Residual Effects Characteristic	Rating	Rationale for Rating
		such as noise, vibration, and dust will mostly end following the Decommissioning and Reclamation Phase of the Project. Much of the reclaimed Minesite area will become open to other land uses and may serve as a tourist attraction.
Context	Low	The region has wide selection of alternative recreational areas thus there is high resilience for the Economic Development VC to recover from this effect.

Notes: LSA=Local Study Area; VC=Valued Component

5.4.2.3.2 *Likelihood*

There can be a decrease in tourist visitations and tourism-related revenue as a result of the Project. Despite the implemented mitigation measures, it is Likely that this residual effect will occur. This determination is based primarily on professional judgement.

5.4.2.3.3 *Significance Determination*

Based on the above (**Table 5.4-4** and the definition of Significance in **5.4 Residual Effects and Significance of Residual Effects**, the residual effect of a decrease in local or regional tourism is rated as **Not Significant**. This rating follows from the fact that the region has a wide selection of alternative recreational areas thus the Magnitude of the effect is Low and is within the LSA extent. This effect will be Long-term and Continuous because it will span the activities of the Construction, Operation, and Decommissioning and Reclamation phases. Finally, this effect will be Partially Reversible as some visual resources will be permanently altered, though of Low Context given existence of alternative recreational locations and the possibility that the reclaimed Minesite can serve as a tourist attraction.

There is Moderate Level of Confidence in the assessment and the rating because current use of the Minesite and its vicinity for recreational uses is not fully understood. Thus, it is challenging to estimate the number of visitations or the tourism revenue that would be affected by the Project.

5.4.2.4 *Decrease in Economic Activity During Decommissioning and Reclamation Phase*

5.4.2.4.1 *Residual Effect Characteristics*

A residual effect for the decrease in economic activity during the Decommissioning and Reclamation Phase is expected because proposed mitigation measures will not be able to fully mitigate the predicted effect on the Economic Development VC. Economic benefits derived from the Project (employment, income, procurement, and tax revenue) will be gradually removed as the Project approaches the end of the Operation Phase and enters the Decommissioning and Reclamation Phase. The removal of jobs and business contracts at the Decommissioning and Reclamation Phase will result in regional effects on local/regional unemployment rates, personal income, and spending on goods and services in the region. Additional loss of economic activity would be realized through the loss of government revenue.

TCL will implement measures to help workers find and transition to new employment following the end of the Operation Phase to reduce potential unemployment. TCL will also continue to hire local and regional business during the Project Decommissioning and Reclamation Phase to support reclamation activities; however, such measures will not be able to fully address this effect.

Table 5.4-5 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**. This effect is only predicted for the Decommissioning and Reclamation Phase. This effect is not predicted for the Post-closure Phase as all economic changes will take place during the Decommissioning and Reclamation Phase.

Table 5.4-5: Summary of Effect Characteristics Ratings for Decrease in Economic Activity

Residual Effects Characteristic	Rating	Rationale for Rating
Magnitude	Low	The Project is relatively small in terms of expenditures and employment compared to other similar developments.
Geographic Extent	RSA	Most operating jobs will be from the LSA, RDBN A and RDBN G, and 80% of operating purchases will be from the RDBN. The removal of those benefits at the Decommissioning and Reclamation Phase will result in regional effects.
Duration	Medium-term	This effect is expected to take place during the Project Decommissioning and Reclamation Phase with the removal of most jobs and procurement opportunities.
Frequency	Continuous	Economic benefits derived from the Project (employment, income, procurement) will be gradually removed as the Project approaches the end of the Operation Phase and enters the Decommissioning and Reclamation Phase.
Reversibility	Fully Reversible	Once the Project no longer contributes to the local/regional economy, economic conditions are expected to recover to pre-Project conditions.
Context	Moderate	There is Moderate resilience for the Economic Development VC to recover from this effect as it is challenging to predict the economic conditions that will accompany the Decommissioning and Reclamation Phase of the Project.

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

5.4.2.4.2 Likelihood

There will be a reduction in regional employment levels and spending once Project operations cease and enter the Decommissioning and Reclamation Phase, and therefore it is Likely that this residual effect will occur despite the implemented mitigation measures.

5.4.2.4.3 Significance Determination

Based on the above (**Table 5.4-5** and the definition of Significance in **5.4 Residual Effects and Significance of Residual Effects**), the residual effect of a decrease in economic activity during the Decommissioning and Reclamation Phase is rated as **Not Significant**. The relatively small size of the Project determines the Low Magnitude of the effect. The Geographic Extent focuses on the RSA as there will be reductions in local/regional unemployment levels and regional spending. This effect is Medium-term and Continuous because it will span the activities of the Decommissioning and Reclamation Phase. Finally, this effect is Fully Reversible as once the Project no longer contributes to the local/regional economy,

economic conditions are expected to recover to pre-Project conditions. Context is Moderate given the future uncertainty regarding economic conditions in the region.

There is Moderate Level of Confidence in the assessment and the rating, as there is uncertainty around the number of jobs that will be lost to residents from the LSA, RDBN A and RDBN G, and the number and value contracts lost to local/regional business.

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 Economic Development VC and provides Significance and Level of Confidence ratings. After assessing the effectiveness of the proposed mitigation measures, four (4) residual effects were predicted: decrease in economic diversity, change in the capacity of local or regional businesses to supply goods or services, decrease in local or regional tourism, and decrease in economic activity during the Decommissioning and Reclamation Phase. Residual effects of the Project on the Economic Development VC are rated as **Not Significant** with a Moderate Level of Confidence in the ratings and the assessment. Therefore, the residual effects of the Project on the Economic Development VC are expected to be **Not Significant**. Residual effects are carried forward into the CEA.

Table 5.5-1: Summary of Residual Effects for Economic Development Valued Component (VC) – Local Business and Industry Subcomponent

Residual 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
Decrease in Economic Diversity	Provision of Project employment and procurement opportunities (C, O)	Enhance business diversity	L	RSA	LT	CF	FR	L	L	NS	M
Change in the Capacity of Local or Regional Businesses to Supply Goods or Services	Provision of Project employment and procurement opportunities (C, O)	- Enhance local and regional benefits including employment - Procurement Program (See Socio-Economic Management Plan (S13.0-C17) (SEMP))	M	RSA	LT	CF	PR	M	L	NS	M
Decrease in Local or Regional Tourism	Visual and environmental disturbances of Project activities (C, O, D)	- Limit Project footprint and Project Area - Project component design - Blasting measures. See Explosive Management Plan (S13.0-C6) (EMP) - Mitigation measures to reduce effects of the Project on land and resource use to preserve natural resources are described in S6.0-C4 Land and Resource Use VC. - Mitigation measures to enhance Visual resources of the Project are provided in S6.0-C2 Visual Resources VC. - Mitigation measures to reduce noise, vibrations, and dust, and improve air quality around the Minesite are provided in the S4.0-C1 Atmospheric Environment VC	L	LSA	LT	CF	PR	L	L	NS	M

Residual 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
Decrease in Economic Activity During the Decommissioning and Reclamation Phase	Provision of Project employment and procurement opportunities (D)	- Procurement Program (SEMP) - Decommissioning and Reclamation, and Post-closure Program (see SEMP)	L	RSA	MT	CF	FR	M	L	NS	M

Notes: C, O, D, P represent Project phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure
EAC=Environmental Assessment Certificate

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

Geographic Extent: Local (LSA), RDBN A and RDBN G, Regional (RSA), 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) based on professional judgement

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 Economic Development 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 on the Project;
- ▶ That 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 the Economic Development VC.

A Project and Activity Inclusion List is provided in **S3.0-C1 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 Economic Development VC. See **Figure 6-1**. The potential cumulative effects, in consideration of Project's residual effects in **Table 5.5-1**, include:

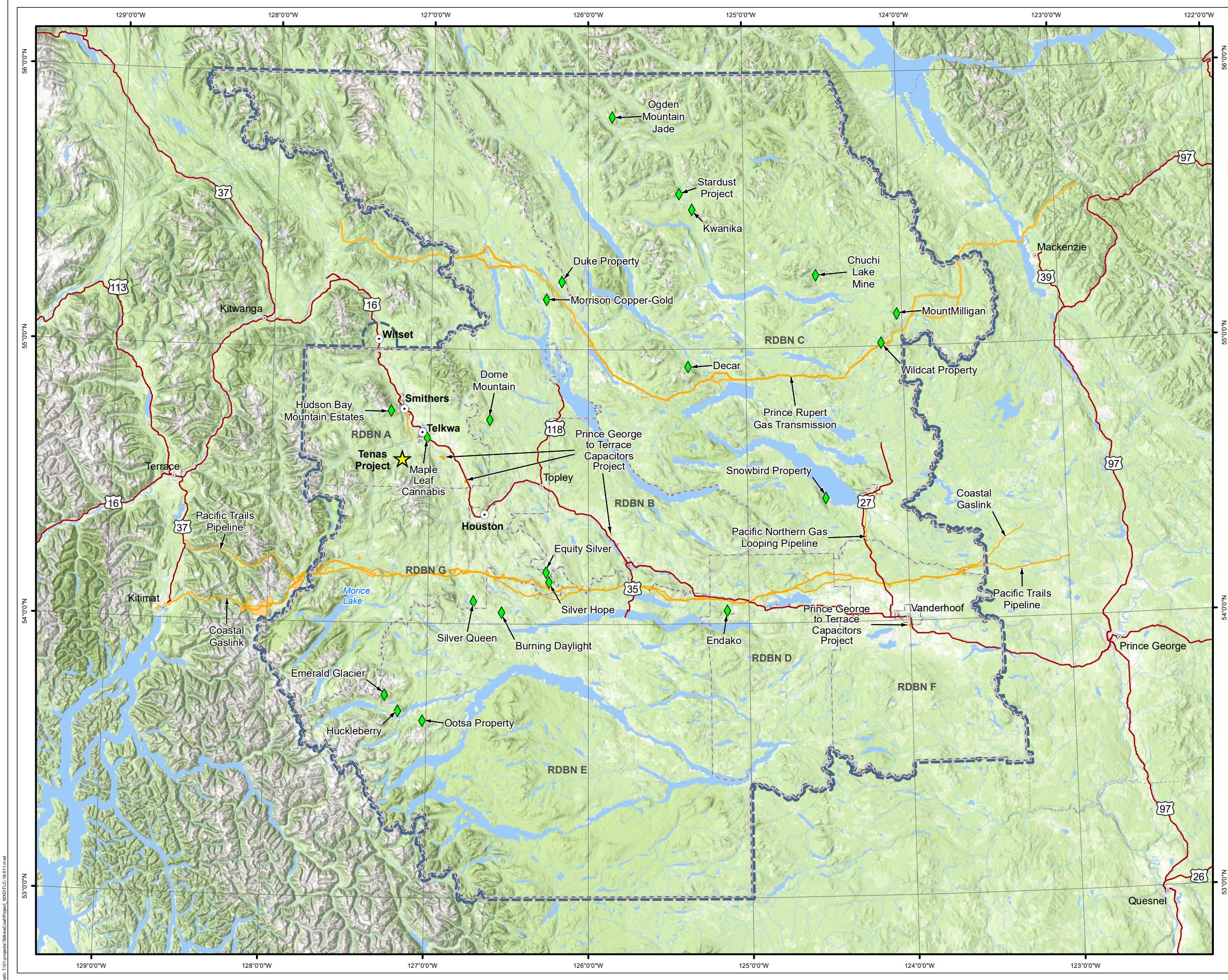
- ▶ decrease in economic diversity;
- ▶ change in the capacity of local or regional businesses to supply goods or services;
- ▶ decrease in local or regional tourism; and
- ▶ decrease in economic activity during the Decommissioning and Reclamation Phase.

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 the Economic Development VC were addressed in **5. Residual Effects and Significance of Residual Effects**);
- ▶ Use assumptions of spatial and temporal boundaries based on 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: Projects Included in the Assessment of Economic Development Valued Component (VC) Based on Spatial and Temporal Interaction

Project/Activity Name	Interacts with Project-related Effects on the Valued Component (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
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
General recreation	Yes	Yes
Telkwa to Smithers Bike Trail	No	Yes
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



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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6.1 Cumulative Effects Assessment (CEA) - Local Business and Industry Subcomponent

As described in **3.2.4.1 Spatial Boundaries**, the spatial boundaries of the CEA for the Economic Development VC include the LSA defined to include Village of Telkwa, Town of Smithers, District of Houston, and the community of Witset; and the RSA defined to encompass the RDBN plus Witset. Electoral Areas RDBN A and RDBN G, while formally 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 in RDBN G, this is specified. If these projects and activities are outside the LSA, RDBN A, or RDBN G, it is stated they are located in the RDBN/RSA.

Temporal boundaries within which cumulative effects will be considered are defined as those overlapping with the Construction, Operation, Decommissioning and Reclamation, and Post-closure phases of the Project as provided in **Table 3.2-4**. For determining the potential for temporal overlap with other projects and activities, Project: The Construction Phase is expected to take place in early 2020s, followed by the Operation, Decommissioning and Reclamation phases planned for late 2040s, and Post-closure thereafter over a 25-year period. There are no residual effects of the Project identified for the Post-closure Phase.

Table 6.1-1 and **Figure 6-1**⁸ identify projects and activities likely to interact with the Economic Development VC, as well as the spatial and temporal (past, present, and reasonably foreseeable future) context of those projects and activities. Various projects and activities are considered to interact with the Economic Development VC if they are expected to have past and present spatial and temporal overlap, or a future spatial and temporal overlap, or both. Projects and activities are likely to interact with the Economic Development VC when they can cumulatively affect economic development and diversification, local and regional businesses, as well as key sectors in the region.

Projects and activities are likely to interact with the Economic Development VC when they provide employment and procurement opportunities to workers and businesses from the LSA/RSA. The project inclusion map is provided in **Figure 6-1**. Past and present project-related effects on the Economic Development VC were addressed within **5. Assessment of Project-related Effects** as the existing conditions accounted for these past and present effects. The reasonably foreseeable future projects and activities will now be considered.

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 operating, under 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 or suppliers. Regional recreation activities and projects (e.g., the Telkwa to Smithers Bike Trail), because of their role in tourism, also have the potential to act cumulatively on the Economic Development VC. All other projects and activities are not considered as interacting with the effects of the Project on the Economic Development VC because they will not affect economic diversity in the same way as the Project; they are not expected to require workforce with skills transferable to the construction, mining, or reclamation, and they will not require suppliers and

⁸ Forestry activities are not identified on **Figure 6-1** as this would make the map difficult to read. Similarly, recreational sites are not identified on the map. Reasonably foreseeable future developments in Smithers, Houston, Telkwa and Witset are only identified as "LSA Community".

contractors in services related to construction, mining, or reclamation; they will not contribute to visual or environmental disturbances that could cumulatively reduce tourism to the region; and finally, they will not have overlapping decommissioning or reclamation activities.

6.1.1 Potential Cumulative Effects

Baseline conditions represent past and present projects and activities, including all effects that have occurred to date. Present and reasonably foreseeable future projects and activities are likely to interact with the Economic Development VC because they will provide employment and contracting opportunities to workers and businesses in the LSA and RSA, contributing to the decrease in economic diversity in the region and having an effect on local/regional businesses. Decreases in tourism trends and tourism-related revenue in the region could also be expected due to cumulative visual and environmental disturbances of various projects and activities.

While specific temporal boundaries for the Project have not been set, with likely construction 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/RSA (temporal boundaries for projects and activities as well as expected job and spend effects are specified if data was available):

- ▶ Maple Leaf Cannabis Production Facility: The construction of the facility is in progress in Telkwa and may overlap with the construction activities at the Project. The operation of the CPP planned for 2020/21 will provide 20 permanent and 50 temporary or seasonal jobs (Barker 2019). Additional effects could be expected on LSA/RSA businesses resulting from procurement opportunities;
- ▶ Hudson Bay Mountain Estates: This development is in progress in RDBN A, with phased construction of the chairlift and runway, and development of 148 residential lots; construction jobs and procurement activities are not specified, but these activities may overlap with construction activities at the Project (Hudson Bay Mountain 2020);
- ▶ Smithers, Houston, Telkwa, Witset, Hudson's Bay Estates, and any miscellaneous developments: Some community developments/projects may require local workforce and construction-related services; this interaction would be expected during the construction of the Project, as construction activities have transferable skills and shared services between industries;
- ▶ Burning Daylight Quarry: This operational quarry is in the RDBN;
- ▶ Chuchi Lake Mine: Exploration and drilling took place in 2019 at this gold and copper property in the RDBN, with reasonably foreseeable 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 Operation phases could overlap with the Project and its effects on the Economic Development 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 et al. 2020);
- ▶ Dome Mountain: Dome Mountain includes a past producing gold-silver mine and one (1) mining lease totaling 10,970 ha, located approximately 38 km east Smithers (RDBN A); \$28 million was spent on the mine in the past 12 years to (Blue Lagoon Resources 2020). The mine is projected to have a 12-year mine life, with already existing infrastructure in place and requiring 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: This old mine, located in the RDBN, is under C&M. No exploration has been undertaken since 2012 (British Columbia Ministry of Energy and Mines [BC MEM] 2015). 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: Endako, a molybdenum mine, is in the RDBN and is currently under C&M, with no exploration conducted since 2015 (Centerra Gold 2020);
- ▶ Equity Silver: A silver, copper and gold mine, Equity Silver is in the RDBN, and is currently under C&M;
- ▶ Huckleberry: This is a copper mine, located in the RDBN, and under C&M since 2016; in 2020 drilling was done to check the extent of copper mineralization to the extend the mine life (Mineral Development Office [MDO] 2020);
- ▶ Kwanika: Kwanika is an advanced stage copper-gold exploration project located in the RDBN that signed an agreement with Takla Nation. Recent exploration occurred in 2020 and a feasibility study is being prepared (Sereneti Resources 2020);
- ▶ Morrison Copper/Gold: This is a proposed copper and gold mine located 65 km northeast of Smithers in RDBN G. The project was refused certification in 2012 but was issued an opportunity to 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: This copper and gold mine in the RDBN has been in production since 2013. The estimated mine life is 22 years. Mount Milligan 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: Located in the RDBN and in production for over 30 years, this jade mine is currently under C&M (Green Mountain Jade 2015);
- ▶ Ootsa Property: Located in the RDBN, this property has ongoing exploration, with most recent drilling activities occurring in 2020 (Surge Copper Corp 2020);
- ▶ Silver Hope: This silver property is 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 NI 43-101 Mineral Resource Estimate was prepared in 2019 (Equity Metals Corp. 2020);
- ▶ Snowbird Property: Snowbird Property is a gold resource in the RDBN, with promising prospects for development with most recent exploration conducted in 2017 (Junior Mining Network 2020b);
- ▶ Stardust Project: This high-grade copper-gold deposit is in the RDBN. Exploration occurred in 2020, and a future exploration program is estimated at \$3.8 million (Sunmetals 2020);
- ▶ Wildcat Property: This gold and copper deposit in the RDBN had recent drilling done in 2018 (Newsfile 2018);
- ▶ Recreation: Reductions in visual or environmental quality near the Minesite, in addition to other projects and activities, have the potential to reduce enjoyment of those areas and deter visitors to other recreational destinations, thus reducing tourism to the region and its share of economic benefits;

- ▶ Telkwa to Smithers Bike Trail: This trail between Telkwa and Smithers is in planning, to be located off the highway along a ROW (12 km stretch). Among other things, the purpose of the trail is to promote non-motorized tourism. The cost of construction is predicted at \$3.4 million to \$5.3 million, depending on the selected option. The construction of the trail could overlap with the Construction Phase of the Project, thus requiring construction workforce and services. During the Construction, and Operation phases, increased traffic could be on the highway, reducing the enjoyment of the trail and tourism-related activities;
- ▶ Coastal Gaslink: Coastal Gaslink is an approximately 650-km, 48-inch diameter natural gas pipeline located in the RDBN G. 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 the 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 located in RDBN A and RDBN G (PNG 2013);
- ▶ Pacific Trails Pipeline: This proposed 463-km, 42-inch natural gas pipeline will deliver gas from Summit Lake, BC to the proposed Kitimat liquified 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 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 located in RDBN A and RDBN G; and
- ▶ Prince Rupert Gas Transmission: This proposed 900 km natural gas pipeline project, in RDBN G, was granted an EAC five (5)-year extension in 2019 (BC OGC 2020b).

Present or reasonably foreseeable future projects have the potential to interact with the Project and the Economic Development VC if they have defined or likely overlapping spatial and temporal boundaries; can contribute to the loss of economic diversity (are classified as mining projects) or provide unequal access to business opportunities; can increase environmental and visual disturbances that could reduce tourism to the region; or have end of operations coinciding with the cessation of operations at the Project, potentially contributing to economic slowdown in the region. All other projects and activities are not considered as interacting with the effects of the Project on the Economic Development VC. Projects not considered in the CEA include:

- ▶ Agriculture, forestry, and sustenance and traditional land activities are not likely to interact with the Economic Development VC as they will not decrease economic diversity in the region, they will not have effects on business capacity, and they will not reduce tourism to the region, or have overlapping closure dates with that of the Project;
- ▶ 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 m) at the Runway 15 end and 1,132 feet (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. This project is not expected to interact with any of the identified effects of the Project;
- ▶ 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. The property was optioned to Surge Copper in December of 2020 (Centerra Gold 2021);

- ▶ Big Onion Project (Mining): The property consists of 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 of gold and lead 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 B.C. The project is in exploration and currently unlikely to proceed. The Project is not expected to interact with activities of this development;
- ▶ 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 it is uncertain if this project would be developed. 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. The original Fran Property consisted of eight (8) 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. 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 (7) claims. The project is in exploration, and it is uncertain if this project would be developed. The Project is not expected to interact with activities of this development;
- ▶ Lennac Lake (Mining): This copper porphyry project is in exploration and it is uncertain if this project would be developed. 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 it is uncertain if this project would be developed. 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 9,500 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 as proposed measures are believed to be comprehensive and exhaustive, to the extent that is realistically achievable by the Proponent. It is also expected that other present and reasonably foreseeable future projects and activities would have similar mitigation measures in place, to those implemented by the Project, to cumulatively reduce or remove the potential cumulative effects on the Economic Development VC. A **SEMP** was also developed and is included in **S13.0-C16**.

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 RSA has several exploration/drilling activities and mining projects in various stages of development. The Huckleberry mine that is currently under C&M might have an operational extension that could increase the dependence of the region on the mining sectors. Similarly, there are several advanced exploration activities with possibility of advancement to a mine construction and operating stages, again potentially contributing to the dependence of the region on the mining sector. Temporal boundaries for such projects, however, are not defined. The number of jobs that could be created is also unknown, along with realized expenditures, and the monetary effect of those projects. As such, the cumulative effect of the decrease in economic diversity is characterised to be of Moderate Magnitude and to take place in the RSA. The effect will be Long-term and Continuous as it will span Construction, and Operation phases. The cumulative effect is expected to be Fully Reversible, provided that once economic contributions to the local/regional economy cease, economic conditions are expected to return to pre-Project conditions. The effect also has a Low Context characterisation, as once the Operation Phase of the Project ends the economy is expected to adjust in the LSA/RSA. The cumulative effect is Likely to take place. As a result, the effect is rated as **Not Significant**, with Moderate Level of Confidence in the assessment and the rating given the uncertainty associated with future mining developments.

Similarly, a change in the capacity of local or regional businesses to supply goods or services would be expected if the various exploration/drilling activities and mining projects advance to construction and operation stages. While an increased demand for supplier goods and services is likely to increase the number of businesses to benefit from the arising opportunities, some businesses may be excluded from those benefits if they have limited business capacity, face growth constraint issues, or fail to meet qualifying requirements to provide services. Therefore, the cumulative effect of the change in the capacity of local or regional businesses to supply goods or services is characterised to be of Moderate Magnitude, and to take place in the RSA as regional business will be affected by this effect. This effect will be Long-term and Continuous as it will span Project Construction and Operation phases. The effect will be Partially Reversible and of Moderate Context provided that the inability to win business contracts results in reduced growth and long-term effects for some businesses. The effect is Likely to take place and is rated as **Not Significant**. The Level of Confidence is Moderate in the assessment and the rating as there is uncertainty around the number of businesses and the value of businesses contracts that would be awarded to RSA businesses, and the ability of RSA businesses to qualify and win contracts with various projects.

Various community, commercial, or utility developments, as well as mining and exploration projects have the potential to alter the natural landscape of the RSA in ways that cumulatively affect recreational activities in the region and reduce tourism-related revenue. Visual disturbance, in addition to noise, dust, and

vibration from the various developments have the potential to reduce enjoyment derived from sightseeing, hiking, hunting, and fishing. A cumulative effect on local or regional tourism would be expected and noted in visitations to the region, as well as the overall amount spent on recreation, accommodation, retail and food services. While this effect is expected to be partially offset with the development of other tourism infrastructure and attractions in the region, such as the Telkwa to Smithers Bike Trail, which is expected to increase tourism in the RSA, the cumulative effect of the decrease in local and regional tourism is characterised to be of Moderate Magnitude and to take place in the RSA, provided that the various projects and activities in the RSA can cumulatively affect the profitability of regional tourism businesses. The effect will be Long-term and Continuous as it will span the Construction, Operation, and Decommissioning and Reclamation phases of the Project. The visual characteristics will be reclaimed, although permanently altered, while environmental disturbances will cease, thus the cumulative effect is Partially Reversible. The cumulative effect is rated to be of Moderate Context as multiple recreational sites across the RSA could be affected with the implementation of reasonably foreseeable future activities. The effect is Likely to take place and is rated as **Not Significant**. The Level of Confidence in the assessment and rating is Moderate as there is uncertainty associated with the number of projects that will take place in the future and their expected effect on recreation sites.

Finally, an economic downturn could be expected if there are coinciding closures with that of the Project. The review of past, present, and reasonably foreseeable future projects and activities in **6.1.1 Potential Cumulative Effects** did not reveal any projects to have overlapping temporal boundaries for the Decommissioning and Reclamation Phase. However, there is substantial lack of approximated temporal boundaries for the reasonably foreseeable future projects and activities, and, while low⁹, there is potential for some decommissioning activities to overlap. Thus, the cumulative effect of the decrease in economic activity during the Decommissioning and Reclamation Phase is characterised to be of Low Magnitude and to take place in the RSA. The effect will be Medium-term and Continuous as it will span the Decommissioning and Reclamation Phase of the Project. The effect is Fully Reversible as removal of economic benefits of the various projects will return the local/regional economy to pre-Project conditions. However, the effect is rated to be of Moderate Context as it is challenging to predict the economic conditions that will accompany the Decommissioning and Reclamation Phase of the Project overlapping with the end of life of other projects. The effect is Likely to take place and is rated as **Not Significant**. The Level of Confidence in the assessment and rating is Moderate as there is uncertainty around the number of jobs lost and the number and value contracts lost in the RSA.

Table 6.1-1: Summary of Cumulative Effects for Economic Development Valued Component (VC) – Local Business and Industry Subcomponent

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
Decrease in Economic Diversity	Provision of employment and procurement opportunities (C, O)	M	RSA	LT	CF	FR	L	L	NS	M
Change in the Capacity of Local or	Provision of employment and	M	RSA	LT	CF	PR	M	L	NS	M

⁹ This comes from the fact that most exploration and drilling activities are in very early stages.

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
Regional Businesses to Supply Goods or Services	procurement opportunities (C, O)									
Decrease in Local or Regional Tourism	Visual and environmental disturbances of projects and activities (C, O, D)	M	RSA	LT	CF	PR	M	L	NS	M
Decrease in Economic Activity During the Decommissioning and Reclamation Phase	Provision of employment and procurement opportunities (D)	L	RSA	MT	CF	FR	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, Regional (RSA), 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 the Economic Development VC and provides the Significance of these cumulative effects on the Economic Development VC. Overall, cumulative effects on the Economic Development VC is rated as **Not Significant**.

Table 6.2-1: Summary of Cumulative Effects on Economic Development Valued Component (VC)

VC Subcomponent	Potential Cumulative Effect	Contributing Activities within the Project Phases (C, O, D, P)	Cumulative Effect (Yes/No)	Significant (Yes/No)
Local Business and Industry	Decrease in economic diversity	Provision of employment and procurement opportunities (C, O)	Yes	No
Local Business and Industry	Change in the capacity of local or regional businesses to supply goods or services	Provision of employment and procurement opportunities (C, O)	Yes	No

VC Subcomponent	Potential Cumulative Effect	Contributing Activities within the Project Phases (C, O, D, P)	Cumulative Effect (Yes/No)	Significant (Yes/No)
Local Business and Industry	Decrease in local or regional tourism	Visual and environmental disturbances of projects and activities (C, O, D)	Yes	No
Local Business and Industry	Decrease in economic activity during the Decommissioning and Reclamation Phase	Provision of employment and procurement opportunities (D)	Yes	No

Notes: C, O, D, P represent Project phases: (C)onstruction, (O)peration, (D)ecommissioning and Reclamation, (P)ost-closure
VC=Valued Component

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 THE ECONOMIC DEVELOPMENT VALUED COMPONENT (VC)

The assessment identified six (6) potential adverse effects on the Economic Development VC and the Local Business and Industry subcomponent. These effects include the following:

1. **Decrease in economic diversity:** Through the provision of Project employment and procurement, the Project has the potential to increase the reliance of the economy on the mining industry during Project Construction and Operation phases (reduction in economic diversity);
2. **Change in the capacity of local and regional businesses:** Local and regional businesses may have limited business capacity and not be able to fully participate and benefit from Project's procurement opportunities during Construction and Operation phases;
3. **Change that affects development plans or strategies of government:** The Project has potential to affect the development plans and strategies of governments during Construction and Operation phases;
4. **Decrease in local and regional marketable timber:** There could be potential effects on local and regional marketable timber due to Project activities and removal of trees with the construction of the Minesite and other Project infrastructure (all phases of the Project);
5. **Decrease in local or regional tourism:** Project activities have the potential to interact with factors related to the tourism sector by affecting visual resources of recreational sites and resulting in noise increase or loss of air quality during Construction, Operation, and Decommissioning and Reclamation phases; and
6. **Decrease in economic activity:** Project activities have the potential to affect the economy during the Decommissioning and Reclamation Phase, resulting in potential for economic downturn.

To reduce the effect of a decrease in economic diversity, TCL will investigate opportunities to provide business start-ups with providing funds, training, equipment, and/or in-kind technical expertise. Mitigation measures for the change in local and regional business capacity include a procurement policy focussed on obtaining goods and services from the local/regional businesses, including Indigenous-owned businesses; a Buyer role to develop local opportunities; improve understanding of the local/regional market, and assess the availability of goods and services that could be sourced locally; and early advertisement of contracting opportunities (See **SEMP**).

There are no mitigation measures suggested for development plans and strategies of governments. However, related to this effect, mitigation measures to reduce or remove adverse effects of the Project on Land and Resource Use VC (as related to land use and planning) are provided in **S6.0-C4 Land and Resource Use VC** of the **EAC Application**. Similarly, no specific mitigation measures are proposed to reduce effects on local or marketable timber, but mitigation measures to reduce or remove adverse effects of the Project on the Land and Resource Use VC (as related to forestry resources) are also provided in **S6.0-C4 Land and Resource Use VC** of the **EAC Application**.

Mitigation measures for the decrease in local or regional tourism include measures that enhance visual resources of the Project, or reduce Project related disturbances (noise, vibration and dust). Mitigation measures that enhance the visual resources of the Project (as related to tourism) are provided in **S6.0-C2 Visual Resources VC** of the **EAC Application**. Mitigation measures to reduce noise, vibrations, and dust and improve air quality around Minesite are provided in the **S4.0-C1 Atmospherics VC** of the **EAC**

Application. Mitigation measures to reduce effects of the Project on land and resource use to preserve natural resources are described in **S6.0-C4 Land and Resource Use VC** of the **EAC Application**.

Finally, mitigation measure to reduce the effects of an economic downturn at the Decommissioning and Reclamation Phase include a Decommissioning and Reclamation, and Post-closure Program to help employees identify and secure new employment, and the provision of contracts to local and regional business during the Decommissioning and Reclamation Phase to continue the provision of economic benefits in the region.

After the implementation of identified mitigation measures, four (4) residual effects were predicted for the Economic Development VC that included:

- ▶ decrease in economic diversity;
- ▶ change in the capacity of local or regional businesses to supply goods or services;
- ▶ decrease in local or regional tourism; and
- ▶ decrease in economic activity during the Decommissioning and Reclamation Phase.

After characterisation, all adverse residual effects of the Project were predicted to be **Not Significant**, and therefore, the residual effects of the Project on the Economic Development VC were 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 going forward, there is uncertainty surrounding the number of reasonably foreseeable future projects that could take place, with additional uncertainty around scope and timing of those projects. Thus, while all four (4) cumulative effects are predicted, they are rated as **Not Significant**, and therefore, the cumulative effects of the Project on the Economic Development VC were predicted to be **Not Significant**.

8. FOLLOW-UP STRATEGY

A **SEMP** was developed and is provided in **S13.0-C16** of the **EAC Application**. It describes the initial components and contents of the Project **SEMP**. A final **SEMP** will be developed in compliance with issued Conditions of the EAC and prior to the start of the Construction Phase. The purpose of the **SEMP** is to 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 as to describe reporting requirements and schedule. This includes the consideration of effects related to the Economic Development VC such as provision of job, contracts and the payments of taxes and other contributions.

The **SEMP** will work 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. The following information would be included in the final **SEMP**:

- ▶ a description of the social and economic opportunities related to the Project, including employment, procurement, 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 to enhance local and regional benefits;
- ▶ information about the Project schedule, progress, and plans for employee and contractor transportation through regional hubs, to be provided to local government and service providers, to reduce potential risks or effects associated with the Project; and
- ▶ roles and responsibilities, monitoring and reporting requirements, and points of contact.

In the long-term, the annual **SEMP** report will:

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

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