



Tenas Project – FINAL DRAFT

Valued Component Scoping Document

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PROJECT #989388-01

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1. INTRODUCTION

Telkwa Coal Limited (TCL) is proposing to develop the Tenas Project (the Project), a surface coal mine designed to produce approximately 15.0 million tonnes of washed metallurgical coal product, used in the manufacture of steel. The mine life of the Project will be approximately 25 years, including the construction, operation and reclamation phases. The Project will deliver approximately CDN\$250 million in government tax revenues, plus employment and other economic opportunities to Indigenous groups, the Bulkley Valley and the surrounding region.

The proposed Project is approximately 25 kilometres south of Smithers and 7 kilometres southwest of the Village of Telkwa in northwestern British Columbia (BC) (**Figure 1**). The Project is located on provincial Crown Land, three freehold land parcels owned by TCL, and nine coal licences held by TCL and Bulkley Valley Collieries Ltd. (who have agreed to allow TCL to access their licenses for mine infrastructure).

TCL acknowledges the unceded rights of the Wet'suwet'en to 22,000 square kms of traditional territory within which the Project sits. The Project minesite area is within the traditional territory of the Cas'Yex (Grizzly House) of the Gitdumden clan of the Wet'suwet'en. TCL also recognizes that the Project rail loadout is located within Laksilyu territory of the Wet'suwet'en.

The Project will be a conventional shovel and truck operation. To develop the mine pit, TCL will salvage topsoil, excavate overburden, and drill and blast the rock in horizontal layers (or benches). Coal will be extracted using heavy machinery and trucked to an on-site coal processing plant north of the pit (**Figure 2**). The proposed coal processing plant will include a crushing station and two circuits: heavy media cyclones for coal larger than 0.5 millimetres and froth flotation for smaller coal. The coal will then be dewatered using centrifuges and belt filter presses and stockpiled, ready for shipping.

In addition to the mine pit and the coal processing plant, the Project will include the following components:

- ▶ Rock, overburden, plant rock, and topsoil storage piles
- ▶ Materials handling systems for raw coal, coarse and fine rock, and washed product coal (including plant conveyors, storage bins and stockpiles)
- ▶ Administration, first aid, maintenance, bath house, coal and rock laboratory, and warehouse buildings
- ▶ Surface water management features (including ditches, sedimentation and storage ponds)
- ▶ Propane storage facilities
- ▶ Water supply wells, storage, and distribution system
- ▶ Fuel and lube storage facilities
- ▶ Explosives magazine, storage silos, and vehicle wash facilities
- ▶ Mine haul roads and access roads within the mine site
- ▶ 3.5 km long 25 kV power line and a 25 kV to 600V substation adjacent to the processing plant
- ▶ Rail loadout facility and an approximately 2.5 km rail loop connecting to the existing main Canadian National Railway line
- ▶ Steel girder bridge over Goathorn Creek
- ▶ 11 km dedicated coal haul road and improvements to approximately 6.5 km of existing road

Figure 1: Project Location

Figure place holder

Figure 2: Project Layout

Figure place holder

1.1 Regulatory Context

The Project's proposed production capacity exceeds the threshold under provincial Environmental Assessment (EA) regulations which require projects over certain thresholds to undergo an EA. A Section 10 Order was issued on November 6, 2018 by the EAO under Section 10(1)(c) of the BCEAA (2002a) which stipulates that the Project requires an EA Certificate to proceed. The Project also requires permits under the *Mines Act* and *Environmental Management Act* (EMA) to develop and operate the Project.

1.2 Purpose

The purpose of this document is to present the methodology and rationale for the selection of proposed Valued Components (VC), intermediate components (IC), and indicators for the Project. Selected VCs, ICs, indicators (i.e. measurable variables) will be included in the Application Information Requirements (AIR) for the Project and provide the basis for the Environmental Assessment (EA) in application for an Environmental Assessment Certificate (EAC). The provincial Environmental Assessment Office (EAO) requires proponents set out proposed VCs and a rationale for their selection as part of the EA, as described in *Guidelines for the Selection of Valued Components and Assessment of Potential Effects* (EAO 2013), and defines a VC as follows:

“For environmental assessments in BC, Valued Components (VCs) are components of the natural and human environment that are considered by the proponent, public, Aboriginal groups, scientists and other technical specialists, and government agencies involved in the assessment process to have scientific, ecological, economic, social, cultural, archaeological, historical or other importance (EAO 2013).”

The VCs proposed in this document reflect TCL's understanding of the potential effects associated with the construction, operation and decommissioning of the Project. VC selection occurs during the EA scoping phase. During this phase, important issues that should be addressed and indicators that should be measured in an EA are considered to focus on relevant issues, concerns, and components of the natural and human environment that may be adversely affected by the Project. The scoping phase provides opportunities for input from and participation by Indigenous groups and government regulatory agencies to refine the list of proposed VCs. The selected VCs determine what will be assessed in the EA and inform baseline data collection and analysis, including defining the spatial boundaries for assessment. The selection of VCs considers the five pillars of effects recommended by EAO for the EA: environmental, economic, social, heritage, and health. The proposed VCs are expected to be reviewed and refined throughout the EA process as the steps for conducting an EA are completed.

1.3 Guidance Documentation

The VCs proposed in this document were identified using the methodology provided in the *Guideline for Selection of Valued Components and Assessment of Potential Effects* (EAO 2013). The Guideline also provides definitions for key terms used in this document, such as sub-components, intermediate components, and indicators; the definitions of these terms are discussed in the following subsections.

1.3.1 Valued Components

Valued Components (VCs) are constituents of the natural and human environment that projects may interact with and are deemed important by a proponent, public, Indigenous groups, scientists and other technical specialists, and government agencies involved in the assessment process (EAO 2013). VCs are used in the EA process to integrate the identification and evaluation of potential adverse environmental,

economic, social, heritage and health effects that may occur during the life of a proposed project. VC selection occurs during the EA scoping phase. During this phase, important issues that should be addressed and indicators that should be measured in an EA are considered, to focus the assessment on relevant issues.

EAO guidance identifies VCs as having the following attributes (EAO 2013):

- ▶ **Relevant** to at least one of the five pillars (**Section 1.2**) and clearly linked to the values reflected in the issues raised with respect to the project
- ▶ **Comprehensive**, so that taken together, the VCs selected for an assessment should enable a full understanding of the important potential effects of the project (including all five pillars)
- ▶ **Representative** of the important features of the natural and human environment likely to be affected by the project
- ▶ **Responsive** to the potential effects of the project
- ▶ **Concise**, so that the nature of the project-VC interaction and the resulting effect pathway can be clearly articulated and understood, and redundant analysis is avoided

In the case where the VC selected is broadly defined, sub-components may be used to describe an individual species or constituent that will be used to facilitate the assessment of the VC. Sub-components have similar attributes or potential project interactions. For example, for a broadly defined VC such as vegetation, individual species or species groups (e.g., old growth forest, wetland etc.) may be identified as sub-components of the vegetation VC. The use of broadly defined VCs minimizes duplication of text in the EA as the discussion of potential effects, mitigation measures and residual effects of one sub-component may overlap or be linked to other sub-components.

Those candidate VCs that meet the above criteria were then evaluated based on other considerations, which included minimizing redundancy and duplication and focusing the assessment on Project-environment interactions that are measurable and informative for decision-makers. Candidate VCs were also evaluated to reduce duplication by determining if the potential effects of the candidate VC could be effectively considered within the assessment of another VC. Where appropriate, candidate VCs were also grouped and combined as sub-components within a more general VC. For example, Parks and Protected Areas are a sub-component of the Land and Resource VC.

Sub-components are defined as components of a VC that will be assessed as part of the VC assessment. As per the VC selection guidance, VCs can be either broadly defined (grouped) or narrowly defined (split). For broadly defined VCs, sub-components and indicators may be used to facilitate the assessment (EAO 2013). For example, sustainable economy, a broadly defined VC, includes marine commercial use as a sub-component.

1.3.2 Intermediate Components

Where information about a constituent of the natural and human environment supports the assessment of potential effects on another VC, these constituents can be identified as Intermediate Components (ICs). ICs are constituents of a larger effects pathway for a related or more appropriate VC. For example, the air quality IC may support the assessment of the wildlife and human health VCs. ICs generally meet the criteria for a VC, and studies and results will be presented in the Application as technical information to inform the assessment of other VCs.

1.3.3 Indicators

Indicators are measurable variables used to quantify and report on the condition and trend of VCs (EAO 2013). The selection of indicators is recommended to allow a clear connection to be made between the selected VC and the potential project effects. To be effective and useful, indicators must have the following attributes (EAO 2013):

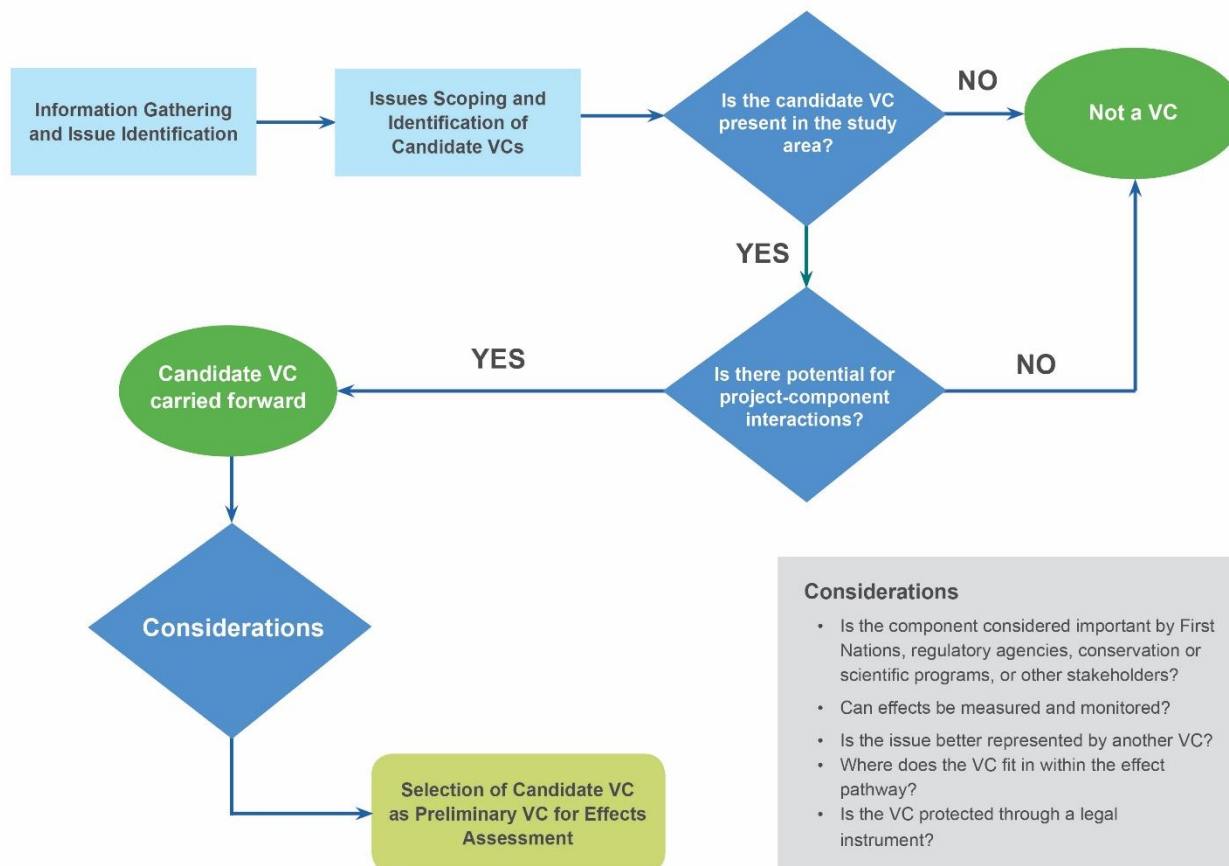
- ▶ **Relevant:** indicators must relate directly or indirectly to the selected VC/IC
- ▶ **Practical:** there must be a practical way to evaluate the indicator, using existing or achievable data, predictive models, or other means
- ▶ **Measurable:** the measurement of the selected indicator must generate useful data that inform our understanding of the potential effect on the VC/IC
- ▶ **Responsive:** to the potential effects of the project
- ▶ **Accurate:** in reflecting changes to the VC/IC
- ▶ **Predictable:** in terms of their response to the project

With appropriate selection of VCs, ICs, and indicators, the EA should provide a focused analysis of the key project-environment interactions, to enable an objective decision to be made regarding the potential for significant effects on VCs.

2. METHODOLOGY

The following sections provide an overview of the VC selection process for the Project, from the scoping of issues for the identification of candidate VCs to the selection of the VCs and indicators. These steps are illustrated in **Figure 3**.

Figure 3 Steps in the Selection of Valued Components¹



¹Figure from EAO 2013

2.1 Issues Scoping

Available information pertaining to the Project, local area and region, Indigenous peoples and coal mining in BC was compiled and analyzed to identify environmental, economic, social, heritage and health issues that may be related to the Project. Table 1 identifies information sources reviewed.

Table 1: Information Sources Reviewed

Document Title	Information Source
Tenas Project Information	
Tenas Project Description (November 2018)	Telkwa Coal Limited
Tenas Project draft baseline study reports including historical baseline data (May 2018)	Telkwa Coal Limited
Project Consultation Records	
Wet'suwet'en Consultation Records	Telkwa Coal Limited
Community and Stakeholder Consultation Records	Telkwa Coal Limited
Historical and Recent EAs in the Local Area	
Telkwa Coal Project: Application for a Project Approval Certificate (Manalta Coal Ltd., January 1997)	https://projects.eao.gov.bc.ca/api/document/5886a859eed3c0016f855d00/fetch
Davidson Project: Application for Environmental Assessment Certificate (Blue Pearl Mining Inc., August 2008)	https://projects.eao.gov.bc.ca/p/davidson/docs?folder=75
Coal Projects in BC	
Bingay Main Coal Project: Draft Valued Component Selection Document (Centermount Coal Ltd., October 2017)	https://projects.eao.gov.bc.ca/api/document/59e0e21426c16f0019926648/fetch
Valued Components for Environmental Assessment of the Coal Mountain Phase 2 Project (Teck Coal Ltd., November 2015)	https://projects.eao.gov.bc.ca/p/coal-mountain-phase-2/docs?folder=3
Crown Mountain Coking Coal Project: DRAFT Valued Components for Environmental Assessment (NWP Coal Canada Ltd., May 2016)	https://projects.eao.gov.bc.ca/p/crown-mountain-coking-coal/docs?folder=3
Application for an Environmental Assessment Certificate/ Environmental Impact Statement for the Murray River Coal Project (HD Mining International Ltd., November 2014)	https://projects.eao.gov.bc.ca/p/murray-river-coal/docs?folder=21

Document Title	Information Source
Environmental Assessment Certificate Application: Sukunka Coal Mine Project (Glencore, August 2015)	https://projects.eao.gov.bc.ca/p/sukunka-coal-mine/docs?folder=33
Applicable Legislation	
<i>Canadian Environmental Assessment Act 2012</i>	https://laws-lois.justice.gc.ca/eng/acts/C-15.21/page-1.html
<i>Environmental Assessment Act (BC) 2002</i>	http://www.bclaws.ca/civix/document/id/complete/statreg/02043_01
<i>Migratory Birds Convention Act (federal) 1994</i>	https://laws-lois.justice.gc.ca/eng/acts/m-7.01/page-1.html
<i>Species at Risk Act (federal) 2002</i>	http://laws-lois.justice.gc.ca/eng/acts/s-15.3/
<i>Water Sustainability Act 2014</i>	http://www.bclaws.ca/civix/document/id/complete/statreg/14015
<i>Wildlife Act (BC) 1996</i>	http://www.bclaws.ca/Recon/document/ID/freeside/00_96488_01
Village of Telkwa bylaws	https://telkwa.civicweb.net/filepro/documents/2525
<i>Agricultural Land Commission Act (BC) 2002</i>	http://www.bclaws.ca/civix/document/id/complete/statreg/02036_01
Regional District of Bulkley-Nechako Floodplain Management Bylaw No. 1300, 2004	https://www.rdbn.bc.ca/application/files/2115/4526/1878/Floodplain_Mgt_Bylaw_No._1300_June_23_2016.pdf
Applicable Government Policies and Plans	
Bulkley Land and Resource Management Plan (LRMP)	https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/land-use/land-use-plans-objectives/skeena-region/bulkley-lrmp
Bulkley Valley Sustainable Resource Management Plan	https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/land-use/land-use-plans-objectives/skeena-region/bulkley-lrmp/bulkleyvalley-srmp
Order – Wildlife Habitat Area # 6-333 Northern Caribou – Skeena-Stikine, Morice TSAs	http://bvcrb.ca/images/uploads/documents/WHA6-333_Final_Order.pdf
Telkwa Mountains Caribou Herd Recovery Plan (1998)	http://bvcrb.ca/images/uploads/documents/Telkwa_Mountains_Caribou_Herd_Recovery_Plan_1998.pdf
British Columbia Ministry of Environment and Climate Change. 2018. <i>British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife, and Agriculture</i> . Water Protection & Sustainability Branch	https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/wqg_summary_aquaticlife_wildlife_agri.pdf
Chilibeck, B., G. Chislett, and G. Norris. 1993. <i>Land Development Guidelines for the Protection of Aquatic Habitat</i> . Fisheries and Oceans Canada: Vancouver, BC.	http://www.dfo-mpo.gc.ca/Library/165353.pdf

Document Title	Information Source
Rare or Threatened Ecosystems and Species	
The Committee on the Status of Endangered Wildlife in Canada (COSEWIC)	https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html
BC Conservation Data Centre (BC CDC)	https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre
Indigenous Interests	
Wet'suwet'en Territorial Stewardship Plan	To be reviewed when available
Archaeology Impact Assessment	To be reviewed when available
Heritage Resource Inventory and Impact Assessment, Permit 1990-0011 for Blue Pearl Mining	To be reviewed when available
Wet'suwet'en Sustenance Study	To be reviewed when available
Cas'yex Sustenance Study	To be reviewed when available
Wet'suwet'en Resource Use: An Ethnohistorical Overview of Past and Present.	https://projects.eao.gov.bc.ca/api/document/5887af01a4acd4014b821159/fetch
Wet'suwet'en Title and Rights regarding Canada Department of Fisheries and Oceans and Pacific Trails Pipeline	http://www.wetsuweten.com/files/PTP_FHCP_Response_to_DFO-25Nov13-Final.pdf
Socio-economics	
Health and Medical Services Plan Best Management Guide for Industrial Camps	https://www.northernhealth.ca/sites/northern_health/files/services/office-health-resource-development/documents/industrial-camps-BMG.pdf
Standard Working Group Comments for Environmental Assessments	https://www.northernhealth.ca/sites/northern_health/files/services/office-health-resource-development/documents/standard-working-group-comments.pdf
The Social Determinants of Health Impacts of Resource Extraction and Development in Rural and Northern Communities	https://www.northernhealth.ca/sites/northern_health/files/services/office-health-resource-development/documents/impacts-promising-practices-assessment-monitoring.pdf
Communicable Disease Control Plan Best Management Guide for Industrial Camps	https://www.northernhealth.ca/sites/northern_health/files/services/office-health-resource-development/documents/communicable-disease-control-BMG.pdf
Health and Safety During the Opioid Overdose Emergency: Northern Health's Recommendations for Industrial Camps	https://www.northernhealth.ca/sites/northern_health/files/services/office-health-resource-development/documents/overdose-prevention-camps.pdf
Bulkley Valley Lakes District Air Management Society Clean Air Plan	https://cleanairplan.ca/
Social Determinants of Health Discussion Guide	http://fnhc.ca/wp-content/uploads/FNHC-Social-Determinants-of-Health-Discussion-Guide.pdf

2.2 Identification of Candidate Valued Components

Issues identified through the issues scoping process were used to identify candidate VCs. The selection of VCs considers all five pillars requiring assessment under the *BCEAA*: environmental, economic, social, heritage and health. The identification of candidate VCs first involves the analysis of available information to identify issues under the five pillars that may be related to a reviewable project. A review of previous EAs in northern BC provided insight as to the issues raised that are generally indicative of the local and regional values held by the public, Indigenous groups and stakeholders in the area. This information also may reflect issues of concern to the scientific community and to government.

The following information was considered during the initial scoping process:

- ▶ The physical works and activities associated with the proposed Project
- ▶ The available information regarding the type of project being proposed, including, but not limited to, research publications and previous environmental assessments
- ▶ The available information regarding the local area and region within which the Project is proposed, including, but not limited to, research publications and previous environmental assessments
- ▶ Legislative or regulatory requirements or government management priorities (e.g., species at risk)
- ▶ The existing baseline data and regional information available for the Project
- ▶ Guidance from EAO, as well as other provincial and federal agencies
- ▶ Information collected during engagement with Indigenous groups, stakeholders, and the general public.

The VC selection document reflects issues raised by government agencies, Indigenous groups, the public and other interested parties during consultation activities that have occurred to date. This information, where available, was used to inform the VC selection process. Issues raised by these groups during Project consultation will continue to be recorded and considered throughout the EA process. As part of this review and consultation a list of candidate VCs was compiled.

Candidate VCs were screened to identify those candidate VCs that are not relevant to the Project, are not present in the Project area, or could be better represented by, or included in, the assessment of another VC. These candidate VCs were not carried forward.

2.3 Evaluation of Candidate Valued Components

Candidate VCs that were carried forward were further screened by values in one or more of the following four values categories:

- ▶ **Regulatory Importance** – Candidate VC is associated with regulatory requirements. Agency input for VC selection is ongoing and additional input is anticipated during the period before the Application for and Environmental Assessment Certificate (Application) is formally submitted
- ▶ **Indigenous group consideration** – Candidate VC has been identified by Indigenous groups of importance or concern. Input from Indigenous groups is ongoing
- ▶ **Conservation or scientific importance** – Candidate VC is identified in federal or provincial databases or legislation applies to species and guild

- ▶ **Significance to other stakeholders, including local government** – Candidate VC identified based on professional experience and expressed through consultation programs

Candidate VCs that have the potential to interact with the Project and are likely to be present near the Project were screened based on discipline-specific filters to identify those that represent the key values and priorities of government, Indigenous groups, the public and other stakeholders.

Candidate VCs were screened to select those VCs likely to represent the key values and priorities of government, Indigenous groups, the public and stakeholders. For instance:

- ▶ Does the component pertain to Indigenous interests?
- ▶ Is there potential for significant adverse cumulative effects? What known stressors are already occurring on the land base?
- ▶ Is the component itself or the potential adverse effect of concern to the public, Indigenous groups, or government?
- ▶ Is the component particularly sensitive or vulnerable to disturbance?

Where applicable, screening also removed candidate VCs for which a regulatory framework exists that includes legally binding government requirements to address the candidate VC (e.g., worker safety is managed under the BC *Occupational Health and Safety Regulation* and therefore may not need to be considered as a candidate VC (EAO 2013)). The following question was applied:

- ▶ Does a legally binding government requirement (e.g., regulation, management framework) exist to protect the component?

2.4 Selection of Valued Components and Indicators

Selection of VCs and ICs was determined by considering the following questions:

- ▶ Is the candidate VC important culturally and economically, and likely to be found or important to ecosystem or human health in the Project area?
- ▶ Can the potential effects of the Project on the VC be measured and monitored?
- ▶ Is the candidate VC better represented by another VC?
- ▶ Can the potential effects on the candidate VC be effectively considered within the assessment of another VC?
- ▶ Is information about the candidate VC needed to support the assessment of potential effects on another VC?

Where candidate VCs were components in an effects pathway and considered to be of public interest or could experience adverse Project-related effects, they were selected as VCs. If such candidate VCs were not selected as VCs but are needed to support the assessment of a VC, they were selected as an IC. Where appropriate, candidate VCs/ICs were grouped and combined as sub-components within a more general VC (e.g., groundwater quality and groundwater quantity as sub-components of the Groundwater VC).

3. SELECTION OF VALUED COMPONENTS FOR THE TENAS PROJECT

3.1 Issues Related to the Tenas Project

Table 2 summarizes issues related to the Project, as identified through a review of project-related consultation records, regional information and comparable project EAs.

Table 2: Issues Identified during Issues Scoping

Issue	Topic	Environment	Economic	Social	Heritage	Health	Sources
Potential effects on air quality from dust	Air quality	✓		✓		✓	- Telkwa Coal Project Application (1997) - Davidson Project Application (2008)
Potential noise and vibration	Noise	✓		✓		✓	- Telkwa Coal Project Application (1997) - Davidson Project Application (2008)
Potential effects on water quantity and quality, including Bulkley River and tributaries, Telkwa River and tributaries, valley bottom lakes	Surface water	✓		✓		✓	- Telkwa Coal Project Application (1997) - Office of Wet'suwet'en, Meeting Dec 1, 2016 - Bulkley LRMP - Bulkley Valley Stewards - Presentation (January 15, 2018) - Davidson Project Application (2008)
Potential effects on groundwater levels, including effects on water well users	Groundwater	✓		✓		✓	- Telkwa Coal Project Application (1997) - Davidson Project Application (2008)
Potential effects on fisheries, including in the Bulkley and Telkwa Rivers	Fish	✓		✓		✓	- Telkwa Coal Project Application (1997) - Office of Wet'suwet'en, Meeting Dec 1, 2016 - Bulkley LRMP - Davidson Project Application (2008)
Potential effects on plants and ecosystems, including Red and Blue listed plant species and ecosystems, core ecosystems, invasive species, and medicinal plant species important to Wet'suwet'en people	Plants and ecosystems	✓		✓	✓	✓	- Bulkley LRMP - Stakeholder Consultation Records, April 2017-January 2018 (Village of Telkwa/Regional District of Bulkley-Nechako) - Davidson Project Application (2008)

Issue	Topic	Environment	Economic	Social	Heritage	Health	Sources
Potential effects on wildlife, including caribou, winter habitat for ungulates, migratory birds, landscape corridors	Wildlife	✓	✓	✓		✓	- Telkwa Coal Project Application (1997) - Office of Wet'suwet'en, Meeting Dec 1, 2016 - Bulkley LRMP - Stakeholder Consultation Records, April 2017-January 2018 - Davidson Project Application (2008)
Potential effects on housing	Housing			✓			Telkwa Coal Project Application (1997)
Potential effects on agricultural land, including agricultural land reserve. Potential effects on grazing licences and grazing permits. Potential effects on livestock due to traffic.	Commercial land and resource use		✓				- Telkwa Coal Project Application (1997) - Bulkley LRMP - Davidson Project Application (2008)
Potential effects on forestry activities due to timber removal, including in Enhanced Timber Development Areas (as defined in the Bulkley LRMP)	Commercial land and resource use		✓				- Telkwa Coal Project Application (1997) - Bulkley LRMP
Potential effects on licenced guide outfitters, trappers and angling guides. Potential effects on tourism operators, related businesses and agencies	Commercial land and resource use		✓				Davidson Project Application (2008)
Potential increased traffic and associated noise, dust, safety concerns, and accessibility concerns in communities, including Telkwa	Traffic; Health	✓		✓		✓	- Telkwa Coal Project Application (1997) - Stakeholder Consultation Records, April 2017-December 2018 - Davidson Project Application (2008)
Potential effects on tenure holders, including mineral, grazing, agriculture, public and commercial and recreation	Commercial land and resource use; recreation		✓	✓			Davidson Project Application (2008)
Concerns regarding re-installation and use of bridge spanning Goathorn Creek	Community infrastructure	✓					Stakeholder Consultation Records, April 2017-December 2018 (Pacific Inland Resources Forestry)
Potential direct benefits or improvements to the Village of Telkwa	Community infrastructure		✓	✓			Stakeholder Consultation Records, December 2018
Potential effects to health services	Community infrastructure			✓			Northern Health, March 2019
Potential effects to childcare services	Community infrastructure			✓			Northern Health, March 2019

Issue	Topic	Environment	Economic	Social	Heritage	Health	Sources
Potential effects on recreation, including Hunter Basin and Telkwa River	Recreation			✓			- Telkwa Coal Project Application (1997) - Bulkley LRMP - Stakeholder Consultation Records, April 2017-December 2018
Potential interaction with Backcountry Horseman Society activities	Recreation			✓			Stakeholder Consultation Records, April 2017-December 2018 (Backcountry Horseman Society)
Potential effects on local hiring	Employment		✓				Interior News (2017)
Potential effects post closure and potential economic downturn	Employment		✓				Northern Health, March 2019
Potential alteration of the viewscape, including views from Highway 16, Bulkley River, Telkwa High Road	Visual aesthetic			✓			- Telkwa Coal Project Application (1997) - Bulkley LRMP - Davidson Project Application (2008)
Interest in local and Wet'suwet'en employment, training and contracts	Economic		✓				Davidson Project Application (2008)
Interest in benefits for Wet'suwet'en	Economic; Indigenous rights and interests		✓	✓			Davidson Project Application (2008)
Distribution of provincial revenues from industry	Economic benefits		✓				Stakeholder Consultation Records, April 2017-December 2018 (Northwest BC Resource Benefits Alliance)
Potential effects related to income, cost of living, etc.	Economic benefits		✓				Northern Health, March 2019
Potential effects on archaeological, historical and cultural sites	Archaeology and history			✓	✓		- Office of Wet'suwet'en (Meeting Dec 1, 2016) - Bulkley LRMP
Potential effects on hunting in the Project Area and consumption of country foods	Indigenous interests			✓		✓	Stakeholder Consultation Records, April 2017-December 2018
Desire for Wet'suwet'en to be consulted and to participate in land and resource and fisheries decisions. Interest in Wet'suwet'en Chiefs having a say on the Project. Potential effects on Wet'suwet'en culture.	Indigenous interests			✓			Davidson Application (2008)
Potential exclusion of Wet'suwet'en from Project benefits	Indigenous interests		✓	✓			Davidson Application (2008)

3.2 Candidate Valued Components for the Tenas Project

A full listing of candidate VCs for the Project are provided in Table 3 based on the preliminary results of issues scoping, a literature review and baseline studies conducted in 2017 and 2018. Rationale for exclusion is provided for candidate VC's that are not carried forward for consideration. Candidate VCs were excluded if the Project is unlikely to result in adverse effects and/or the candidate VC can be represented by or included within a selected VC.

3.3 Selection of Valued Components and Indicators for the Tenas Project

Table 3 identifies candidate VCs selected as intermediate and valued components. ICs represent a step along a cause-effect pathway that must be characterized in order to predict potential effects on receptor VCs. Rationale for selecting the VCs and ICs and a listing of indicators proposed to be used to measure potential effects is also provided in Table 3.

Table 3: Proposed Valued Components (VC) and Intermediate Components (IC) for the Tenas Project and Selection Rationale

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
ENVIRONMENTAL PILLAR							
Atmospheric Environment	IC	Air quality	Yes	No	Air quality is a pathway for contaminants to enter the terrestrial and aquatic food chains and is therefore an important factor for human health and safety. Air quality is a fundamental component of the natural ecosystem because of its biological importance to vegetation and wildlife. Air emissions are provincially regulated. Project activities have the potential to change ambient air quality.	Change in air quality parameters: - Sulphur dioxide (SO₂) - Nitrogen dioxide (NO₂) - Inhalable particulate matter (PM10) - Respirable particulate matter (PM_{2.5}) - Total suspended particulate (TSP)	Issues scoping; Tenas baseline studies; comparable EAs, BVLD AMS Clean Air Plan
		Greenhouse gas (GHG) emissions	Yes	No	The consumption of diesel, natural gas, and gasoline will result in direct GHG emission by Project components. Electrical use by Project components will generate indirect GHG emissions through the production of that energy. GHG are linked to climate change, which has been raised a concern provincially. Project activities have the potential to change GHG emissions.	Change in GHG emissions: - Carbon dioxide (CO₂) - Methane (CH₄) - Nitrous oxide (N₂O)	
		Noise	Yes	No	Project activities including machinery use and blasting have the potential to change baseline sound conditions. Noise from equipment and mining activities can create sensory disturbance to human and wildlife receptors and is an effect pathway for wildlife, health, recreation and human health. Project activities have the potential to change ambient noise levels.	Change in noise levels: - Daytime noise levels (Leq,day) - Nighttime noise levels (Leq,night) - Low frequency noise - Percent highly annoyed (%HA)	
		Vibration	No	NA	Sources of vibration are far enough removed from permanent human receptors that there is not anticipated to be any interaction or adverse effects from the Project.	NA	
Terrain and Soils	IC	Soil quality	Yes	No	Soils are part of the effect pathway to the Vegetation VC, Wildlife VC and Health VC. Soil quality is considered during reclamation planning. Soil quality is regulated provincially and federally and knowledge of soil quality is essential for successful reclamation of the Project area. Project activities have the potential to change soil quality.	Change in soil quality	Issues scoping; comparable EAs
		Soil quantity	No	Yes (Vegetation VC)	The areal extent of soil is a component of the effects pathway for the Vegetation VC, and will be assessed as part of the Vegetation VC. The Terrain and Soils VC will present supporting information in the baseline section for the Vegetation VC and for successful reclamation and revegetation. The potential for an interaction with soil quantity (loss of extent) will be addressed in the Vegetation VC.	NA	
		Terrain stability	Yes	No	The Project has the potential to change slope stability and increase the risk of geohazards as a result of mine development. Project activities have the potential to change terrain stability.	Change in: - Terrain stability - Terrain morphology	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
Surface Water	IC	Surface water quantity	Yes	No	Surface water quantity is protected under the <i>Water Sustainability Act</i> . The Project has the potential to interact with surface water quantity as a result of mining activities such as pit dewatering. Surface water quantity is an effect pathway on aquatic resources, fish, wildlife, and land and resource use. Project activities have the potential to change surface water quantity.	Change in surface water flow rates (m³/s)	Issues scoping; comparable EAs
		Surface water quality	Yes	No	Surface water quality is protected under the <i>Environmental Management Act</i> and screened against the BC Approved Water Quality Guidelines. Surface water quality is an effect pathway for aquatic resources, fish, vegetation, wildlife and health. Effects on surface water quality have a link to effects on Indigenous interests Project activities have the potential to change surface water quality.	Change in parameters of interest: ▪ Total and dissolved elements ▪ Anions/ nutrients ▪ Alkalinity/acidity ▪ Hardness ▪ Turbidity ▪ Total suspended solids ▪ pH ▪ Conductivity ▪ Temperature ▪ PAHs	
Groundwater	IC	Groundwater quantity	Yes	No	Groundwater quantity is protected under the BC <i>Water Sustainability Act</i> . The Project has the potential to interact with groundwater quantity as a result of Project-related water management such as pit dewatering. Groundwater quantity is an effect pathway on surface water quantity and quality, aquatic resources, fish, wetlands wildlife and drinking water. Project activities have the potential to change groundwater quantity.	Change in: ▪ Groundwater flow rates (m³/s) ▪ Groundwater elevation (metres below ground surface)	Issues scoping; comparable EAs
		Groundwater quality	Yes	No	Groundwater quality is protected under the BC <i>Environmental Management Act</i> and screened against the BC Contaminated Sites Regulation Groundwater Standards. The Project has the potential to interact with groundwater quality as a result of mine development such as pit dewatering. Groundwater quality is an effect pathway on surface water quality, aquatic resources, fish, wetlands, wildlife and drinking water (health). Project activities have the potential to change groundwater quality.	Change in groundwater quality for parameters of interest: ▪ Total and dissolved elements ▪ Anions/ nutrients ▪ Alkalinity/acidity ▪ Hardness ▪ Turbidity ▪ Total dissolved solids ▪ pH ▪ Conductivity ▪ Temperature	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
Aquatic Resources	IC	Aquatic resources (benthic invertebrates, periphyton, sediment quality)	Yes	No	The Aquatic Resources VC is comprised of periphyton and benthic invertebrates and the benthic habitats in which they reside. Periphyton are an important food source for a variety of aquatic species, including fish, amphibians, and invertebrates. The Project has the potential to interact with periphyton as a result of changes in water quantity and quality, and sediment quality. Benthic invertebrates are small organisms living in sediment or on the bottom of waterbodies that provide a range of important ecological services in aquatic ecosystems. The Project has the potential to interact with benthic invertebrate species and populations as a result of changes in water quantity and quality. Changes in sediment quality as a result of Project activities may impact aquatic organisms living in or on bottom sediments in streams affected by the Project. Project activities have the potential to change aquatic resources function and quality.	Changes in: ▪ Composition, abundance, diversity of periphyton and benthic invertebrates ▪ Concentrations of contaminants of potential concern in sediments relative to toxicological benchmarks	Issues scoping; comparable EAs
Fish and Fish Habitat	VC	Fish habitat	Yes	No	Watercourses potentially affected by the Project provide habitat for several fish species that are part of commercial, recreational, and/or Indigenous (CRA) fisheries and for species that are provincially listed as species of special concern. These species include, but are not limited to, Dolly Varden (<i>Salvelinus malma</i>), Pacific salmon species, steelhead and rainbow trout (<i>Oncorhynchus mykiss</i>). Project activities have the potential to change fish habitat through changes in water quantity and quantity and available aquatic resources.	Change in areal extent permanently altered, destroyed or made inaccessible to fish	Issues scoping; regional information, Tenas baseline studies; BC CDC species of concern
		Fish	Yes	No	The Project has the potential to cause harm to fish through direct injury or by altering water quality. Lamprey (<i>Lampetra</i> spp), Mountain whitefish, and Suckers not listed under COSEWIC or SARA and/or Yellow-listed (secure) in BC CDC and effects on such species covered by selected focal fish species. Effects on fish have a link to effects on Indigenous interests Project activities have the potential to change fish health, abundance and condition.	Change in: ▪ Fish health ▪ Abundance ▪ Condition	
Vegetation	VC	Old growth forest	Yes	No	Old growth forest provide habitat for wildlife including grizzly bear and marten, as well as plant species valued by Indigenous groups. Old growth forest contributes to soil building processes and nutrient cycling, productivity, and carbon storage. Project activities have the potential to interact with old growth forest.	Change in: ▪ Extent ▪ Structural stage	Issues scoping; comparable EAs
		Wetlands	Yes	No	Wetland ecosystems provide habitat for rare plants and play a key role in the maintenance of hydrologic cycles, wildlife habitat, nutrient cycling, water quality, biodiversity, and carbon sequestration. Wetland ecosystems are sensitive to disturbance. Project activities have the potential to interact with wetland ecosystems.	Change in: ▪ Biodiversity (wetland plant, species and ecological communities) ▪ Hydrology ▪ Water quality ▪ Habitat function (from Wildlife and Fish and Fish Habitat VCs) ▪ Extent	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Listed ecological communities	Yes	No	Red and blue-listed ecosystems are rare, threatened, or at-risk components that contribute to regional and/or provincial biodiversity have the potential to occur within the Project area. Project activities have the potential to interact with red and blue-listed ecosystems.	Change in extent, abundance or availability	
		Culturally important species	Yes	No	Harvestable plants are valued by Indigenous groups and local communities and are considered culturally important. Indigenous groups have identified values for harvestable species that have the potential to occur within the Project area. Effects on culturally important species have a link to effects on Indigenous interests Project activities have the potential to interact with culturally important species.		
		Rare plants and lichens	Yes	No	Plant and lichen species that are provincially red or blue listed have the potential to occur with the Project area. Project activities have the potential to interact with rare plants and lichens.	Change in extent for known occurrences	
Wildlife	VC	Furbearers	Yes	No	Furbearers are economically important to trappers and play an important ecological role, as meso-carnivores, in predator-prey relationships of wildlife communities that occur in the region., American marten (<i>Martes americana</i>) and wolverine (<i>Gulo gulo luscus</i>) will be used as focal species to assess this subcomponent. Marten are not listed under COSEWIC or SARA, but Blue-listed (Special Concern) in BC CDC. Wolverine are listed as Special Concern under COSEWIC and Blue-listed (Special Concern) in BC CDC. Both species are known to occur within the Project area. Project activities have the potential to interact with furbearers and their habitat.	Change in: - Habitat and alteration - Sensory disturbance (e.g. light, noise) - Direct and indirect mortality - Movement (as an Indicator for Grizzly Bear, Wolverine, Caribou and Western Toad)	Issues scoping; comparable EAs; regional information including Davidson Project wildlife baseline study and Wet'suwet'en comments and BC CDC
		Beaver (<i>Castor canadensis</i>)	No	Yes (Wetland subcomponent)	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Confined to wetlands, lakes, streams, and other waterbodies. Historic and observed use within portions of the Project area. Potential effects to beaver will be represented through the assessment of effects to the wetland subcomponent.		
		Black bear (<i>Ursus americanus</i>)	No	Yes (Grizzly bear subcomponent)	Not listed under SARA or COSEWIC and Yellow-listed (Secure) in BC CDC. Historic and observed use within portions of the Project area. The Project has the potential to interact with the species and its habitat. Assessed under Grizzly bear subcomponent due to similarities to habitat use and potential interactions.		
		Caribou (<i>Rangifer tarandus</i>) (northern mountain population)	Yes	No	Listed as Threatened under COSEWIC and Schedule 1 of SARA, and Blue-listed (Special Concern) in BC CDC. Project area is within Environment Canada and Climate Change Critical Habitat area and BC Wildlife Habitat Area for caribou. Historic use of portions of the Project area, as well as regional observations, although no observed use of Project area during current baseline program. Project activities have the potential to interact with the species and its habitats.		

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Coyote (<i>Canis latrans</i>)	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Low population density. Historic and observed use within portions of the Project area. Adapts to and tolerates human disturbance and encroachment well. Limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or federally listed and has limited potential for adverse interaction with the Project.		
		Elk (<i>Cervus elaphus</i>)	No	NA	Not listed under SARA or COSEWIC and Yellow-listed (Secure) in BC CDC. Historic and observed use within portions of the Project area. Relatively tolerant to human disturbance, with limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent due to the low potential for interaction with the Project. Potential project effects on ungulates will be assessed through the assessment of effects on caribou and moose.		
		Fisher (<i>Pekania pennanti</i>)	No	Yes (Furbearers subcomponent)	Not listed under COSEWIC or SARA, but Blue-listed (Special Concern) in BC CDC. Low population density. Historic and observed use within riparian portions of the Project area. There is limited potential for interaction and resulting adverse effects from the Project. Potential project effects on furbearers will be assessed through the assessment of effects on American marten and Wolverine.		
		Grey wolf (<i>Canis lupus</i>)	No	NA	Considered not-at-risk under COSEWIC and Yellow-listed (Secure) in BC CDC. Low population density. Historic and observed use within portions of the Project area. Primary effects pathway results from effects to prey, including ungulates and small mammals, that are included in assessment. Not carried forward as a subcomponent because the species is not provincially or federally listed and has limited potential for adverse interaction with the Project.		
		Grizzly bear (<i>Ursus arctos</i>)	Yes	No	Grizzly bear are listed as “Special Concern” under COSEWIC, and are blue listed in the BC CDC. Historic and observed use within portions of the Project area. Project activities have the potential to interact with the species and its habitat.		
		Hoary marmot (<i>Marmota caligata</i>)	No	NA	Considered not-at-risk under COSEWIC and Yellow-listed (Secure) in BC CDC. Low population density. Historic and observed use within portions of the Project area. Primary effects pathway results from effects to prey, including ungulates and small mammals, that are included in assessment. Not carried forward as a subcomponent because the species is an alpine obligate and the project has very limited potential to interact with the species. Not provincially or federally listed.		
		Lynx (<i>Lynx canadensis</i>)	No	NA	Considered not-at-risk under COSEWIC and Yellow-listed (Secure) in BC CDC. Fluctuating population densities depending on snowshoe hare availability. Historic and observed use within portions of the Project area. There is limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent		

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
					because the species is not provincially or federally listed and there is limited potential for adverse interaction with the Project.		
		Mink (<i>Neovison vison</i>)	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Found primarily in riparian habitats at low population densities. Historic and observed use within portions of the Project area. There is limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or federally listed and there is limited potential for adverse interaction with the Project.		
		Moose (<i>Alces americanus</i>)	Yes	No	Moose are identified as a harvested species. Historic and observed use within portions of the Project area. Project activities have the potential to interact with the species and its habitat.		
		Mountain goat (<i>Oreamnos americanus</i>)	No	NA	Not listed under SARA or COSEWIC, although Blue listed (Special Concern) in BC CDC. No mountain goat habitat, known historic or observed use within the Project area. Closest designated mountain goat ungulate winter range is over 10 km away. No predicted project interactions. Not carried forward as a subcomponent because the Project has limited or no potential for interaction with the species or its habitat.		
		Mule deer (<i>Odocoileus hemionus</i>)	No	NA	Not listed under SARA or COSEWIC and Yellow-listed (Secure) in BC CDC. Historic and observed use within portions of the Project area. Relatively tolerant to human disturbance, with limited potential for interaction and resulting adverse effects from the Project. Potential project effects on ungulates will be assessed through the assessment of effects on caribou and moose.		
		Muskrat (<i>Ondatra zibethicus</i>)	No	Yes (Wetland subcomponent)	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Confined to wetlands, lakes, and other waterbodies. Historic and observed use within portions of the Project area. The Project has limited potential for interaction with the species or its habitat. Potential effects to muskrat will be represented through the assessment of effects to the wetland subcomponent.		
		Porcupine (<i>Erithizon dorsatum</i>)	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Historic and observed use within portions of the Project area. There is limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or federally listed and there is limited potential for adverse interaction with the Project.		
		Red fox (<i>Vulpes vulpes</i>)	No	NA	Not listed under COSEWIC and Yellow-listed (Secure) in BC CDC. Low population densities. Historic and limited observed use within portions of the Project area. Adapts to and tolerates human disturbance and encroachment well. There is limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or		

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
					federally listed and there is limited potential for adverse interaction with the Project.		
		Red squirrel (<i>Tamiasciurus hudsonicus</i>)	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Diverse and flexible habitat requirements. Historic and observed use within portions of the Project area. There is a limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or federally listed and there is limited potential for adverse interaction with the Project.		
		River otter (<i>Lontra Canadensis</i>)	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Found primarily in riparian habitats at low population densities. Historic and observed use within portions of the Project area. There is limited potential for interaction and resulting adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or federally listed and there is limited potential for adverse interaction with the Project.		
		Snowshoe hare (<i>Lepus americanus</i>)	No	NA	Not listed under SARA or COSEWIC, Yellow-listed (Secure) in BC CDC. Although high use species by people and predators, unless monitoring is occurring over very large areas to detect population trends, it will be difficult to detect any project related changes in this species. Changes in seral stage distribution in Project area over time will compound monitoring as area becomes more mature, reducing hare populations. Not carried forward as a subcomponent because the species is not provincially or federally listed and there is limited potential for adverse interaction with the Project.		
		Weasel (<i>Mustela frenata</i>)	No	Yes (Furbearers subcomponent)	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Habitat requirements are sufficiently similar to American marten for projected impacts to be equivalent. Furbearers subcomponent is considered to be representative of potential effects on weasel.		
		White-tailed deer (<i>Odocoileus virginianus</i>)	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. There is limited potential for interaction or adverse effects from the Project. Not carried forward as a subcomponent because the species is not provincially or federally listed. Potential project effects on ungulates will be assessed through the assessment of effects on caribou and moose.		
		Wolverine (<i>Gulo gulo luscus</i>)	No	Yes (Furbearers subcomponent)	Listed as <i>Special Concern</i> under COSEWIC and Blue-listed (Special Concern) in BC CDC. Primarily found in higher elevation areas and tending to avoid human settlement and use areas. There is limited potential for interaction or adverse effects from the Project on Wolverine; therefore the species is not carried forward as a subcomponent at the species level. However, wolverine will be considered within the Furbearers subcomponent of the assessment.		

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Bats (Little Brown myotis (<i>Myotis lucifugus</i>), Northern myotis (<i>Myotis septentrionalis</i>))	Yes	No	The assessment focuses on listed species: Northern Myotis and Little Brown Myotis are listed as Endangered under COSEWIC, Schedule 1 of SARA and Blue-listed (Special Concern) in BC CDC. Both of these species have been observed within portions of the Project area. Project activities have the potential to interact with the species and its habitat.		
		Western toad (<i>Anaxyrus boreas</i>)	Yes	No	Western toad is the only listed amphibian species in the Project area. Western toads are provincially Blue-listed and are a species of Special Concern under Schedule 1 of SARA and listed Special Concern under COSEWIC. This species has a priority rating of two for goal two in BC's Conservation Framework, meaning that the province is interested in preventative conservation to keep this species from becoming at risk. Amphibians are sensitive to changes in water quality/quantity and sediment quality, which could potentially occur due to site activities. Project activities have the potential for interaction with the species or its habitat.		
Avian Species	VC	Migratory breeding birds	Yes	No	Migratory birds are protected under the <i>Migratory Birds Convention Act</i> , 1994. Historic and observed use by several migratory bird species within portions of the Project area. Migratory breeding birds will be assessed using three habitat guilds: • Wetlands • Young Forest/Grasslands (Early Seral) • Old/Mature Forest Project activities have the potential to interact with migratory birds and their habitats.	Change in: ▪ Habitat and alteration ▪ Sensory disturbance (e.g. light, noise) ▪ Direct and indirect mortality	Issues scoping; comparable EAs; regional information including Davidson Project wildlife baseline study and Wet'suwet'en comments and BC CDC
		Listed bird species	Yes	No	Several bird species including Olive-Sided Flycatcher and Barn Swallow listed under COSEWIC or by the BC CDC have been identified historically and observed within the Project area. The listed bird species that will be included in the assessment are: ▪ Rusty Blackbird (<i>Euphagus carolinus</i>) ▪ Barn Swallow (<i>Hirundo rustica</i>) ▪ Bank Swallow (<i>Riparia riparia</i>) ▪ Black Swift (<i>Cypseloides niger</i>) ▪ Common Nighthawk (<i>Chordeiles minor</i>) ▪ Olive-sided Flycatcher (<i>Contopus cooperi</i>) ▪ Short-eared owl (<i>Asio flammeus</i>) Project activities have the potential to interact with listed bird species and adversely affect their habitats.		

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Raptors	Yes	No	Active raptor nests are protected under the <i>BC Wildlife Act</i> , and bald eagle nests are protected year-round (i.e. active or inactive). Several raptor species have cultural importance to local First Nations. Raptors historically or currently found in the Project area include Northern goshawk, Red-tailed Hawk, Swainson’s Hawk, Great Horned Owl, Saw-whet Owl and Pigmy Owl. Northern goshawk habitat will be modelled as an indicator species to complete the effects assessment. Potential adverse effects on nesting raptors will be managed using mitigation around identified nests and habitat features. Project activities have the potential to interact with raptors and their habitat.		
		American bittern (<i>Botaurus lentiginosus</i>)	No	Yes (Migratory breeding bird /Wetland subcomponent)	Habitat (primarily wetlands, lakes, ponds, open water) limited to non-existent in Project footprint. Occurrence is very uncommon in the Bulkley Valley. Breeding is considered possible but not probable. Any direct or indirect potential effects to wetland habitat will be captured with wetlands subcomponent. The Project has the potential to interact with the species and its habitat. Not carried forward as a subcomponent because the species is not provincially or federally listed and does not have special cultural or economic importance.	NA	
		American dipper (<i>Cinclus mexicanus</i>)	No	No	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. No historic or observed use within the Project area, although recorded regionally. There is limited potential for the Project to interact with the species. Not carried forward as a subcomponent because there is limited potential for interaction and adverse effects to its habitat will be avoided through mitigation measures related to aquatic habitat.	NA	
		Eared grebe (<i>Podiceps nigricollis</i>)	No	Yes (Migratory breeding bird / Wetland subcomponent)	Habitat (wetlands) is very limited in Project footprint. Occurrence is rare in the Bulkley Valley and breeding is considered possible but not probable. Any direct or indirect potential effects to eared grebe habitat will be captured with wetlands subcomponent. Potential effects to eared grebe will be represented through the assessment of effects to the migratory breeding bird wetland guild subcomponent.	NA	
		Evening grosbeak (<i>Coccothraustes vespertinus</i>)	No	Yes (Migratory breeding bird subcomponent)	Occur in Bulkley Valley with probable and confirmed nesting. Habitat (conifer, mixed, deciduous and riparian forest) assessed with migratory breeding bird subcomponent. Potential effects to evening grosbeak will be represented through the assessment of effects to the migratory breeding bird subcomponent.	NA	
		Great blue heron (<i>Ardea Herodias</i>)	No	Yes (Migratory breeding bird /Wetland subcomponent)	Rare occurrence in Bulkley Valley. Breeding considered unlikely. Nesting habitat (conifer, mixed, deciduous and riparian forest) assessed with migratory breeding bird subcomponent; foraging habitat (wetlands, lakes, ponds, open water) assessed with wetlands subcomponent. Potential effects to great blue heron will be represented through the assessment of effects to the migratory breeding bird wetland guild subcomponent.	NA	
		Grouse spp.	No	NA	Not listed under COSEWIC or SARA (except for greater sage grouse) and Yellow-listed (Secure) in BC CDC (except	NA	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
					for greater sage grouse and sharp-tailed grouse). The species known to occur are ruffed grouse and spruce grouse, neither which are listed. Historic and observed use within the Project area. Adapts to and tolerates human disturbance and encroachment. There is limited potential for adverse effects from the Project given the general wildlife mitigation measures that will be in place to address mortality risk. Not carried forward as a subcomponent due to the limited potential for adverse interactions with the Project.		
		Harlequin duck (<i>Histrionicus histrionicus</i>)	No	No	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. No historic or observed use within the Project area, although recorded regionally. Not carried forward as a subcomponent because there is limited potential for interaction and adverse effects to its habitat will be avoided through mitigation measures related to aquatic habitat.	NA	
		Mallard (<i>Anas platyrhynchos</i>)	No	Yes (Migratory breeding bird / Wetland subcomponent)	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Limited occurrences recorded within the Project area; recorded regionally. Therefore, there is limited potential for interaction or adverse effects from the Project and this species is not carried forward for assessment. Potential effects to mallard will be represented through the assessment of effects to the Migratory Breeding Bird (wetland guild) and wetland subcomponent.	NA	
		Pileated woodpecker (<i>Dryocopus pileatus</i>)	No	Yes (Migratory breeding bird subcomponent)	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Historic and observed use within the Project area. Assessed within migratory breeding bird subcomponent. Potential effects to pileated woodpecker will be represented through the assessment of effects to the migratory breeding bird subcomponent.	NA	
		Ptarmigan spp.	No	NA	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. No historic or observed use within the Project area, although recorded regionally. Primarily found in alpine and sub-alpine habitats, which not present within the Project area, therefore there is limited potential for interaction and the species is not carried forward for assessment. Not carried forward as a subcomponent due to the limited potential for interaction with the Project.	NA	
		Red-winged blackbird (<i>Agelaius phoeniceus</i>)	No	Yes (Migratory breeding bird / Wetland subcomponent)	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Historic and observed use within portions of the Project area. Potential effects to red-winged blackbird will be represented through the assessment of effects to the migratory breeding bird subcomponent wetland guild and wetland subcomponent.	NA	
		Spotted sandpiper (<i>Actitis macularius</i>)	No	No	Not listed under COSEWIC or SARA and Yellow-listed (Secure) in BC CDC. Limited observed occurrence within the Project area, although recorded regionally. Not carried forward as a subcomponent because there is limited potential for interaction and adverse effects to its habitat will be avoided through mitigation measures related to aquatic habitat.	NA	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Peregrine falcon (<i>Falco peregrinus</i>)	No	Yes (Raptors subcomponent)	Listed as “special concern” under SARA and not listed under COSEWIC. No status under BC CDC. No historic or observed use within the Project area, although recorded regionally. Assessed under the Raptors subcomponent. Potential effects to peregrine falcon will be represented through the assessment of effects to the raptor subcomponent.	NA	
Insects	VC	Gypsy cuckoo bumble bee (<i>Bombus bohemicus</i>)	No	NA	While there are various listings under COSEWIC and SARA and BC CDC for these species, there is no historic use within the Project area for all species except Yellow-banded Bumble Bee. Yellow-banded Bumble Bee was observed in 2018. The other species were recorded regionally. Therefore, there is limited potential for interaction and insects are not carried forward for assessment.	NA	Issues scoping; comparable EAs; regional information including Davidson Project wildlife baseline study and Wet'suwet'en comments and BC CDC
		Nine-spotted lady beetle (<i>Coccinella novemnotata</i>)					
		Transverse lady beetle (<i>Coccinella transversoguttata</i>)					
		Western bumble bee, mckayi subspecies (<i>Bombus occidentalis mckayi</i>)					
		Yellow-banded bumble bee (<i>Bombus terricola</i>)					
SOCIAL PILLAR							
Infrastructure and Services	VC	Housing and accommodation	Yes	No	An increase or influx of employees (and their families) for Project construction and operation has the potential to increase demand on local services such as housing, emergency services, education services, child care services, health care services, recreation facilities and other local infrastructure. BCEAA requires consideration of adverse social effects. Regional service providers are interested in the potential Project-related increases in demand in relation to the current capacity for services.	Changes in: ▪ Demand for housing and accommodation ▪ Active residential listings ▪ Housing costs ▪ Property taxes ▪ Vacancy rates	Issues scoping; comparable EAs
		Community infrastructure and Services	Yes	No	Project activities have the potential to increase the demand for local and regional government provided services and increase demand for housing and accommodation.	Changes in: ▪ Supply and demand for all community services (education, child care, health care, and recreation) and community infrastructure ▪ Supply and demand for emergency services (policing, fire, and search and rescue)	
		Transportation	Yes	No	Project-related transportation will increase traffic volumes on access roads to the mine area. In addition, employees not residing locally will increase road or air traffic volumes. Export of product by rail will increase rail traffic. Increased activity has the potential to change road, rail and air traffic patterns.	Change in level of service (change in road, rail and air traffic patterns)	
		Educational services	No	Yes (Community infrastructure subcomponent)	Potential effects on educational services are considered in the of Community Infrastructure subcomponent of the Infrastructure and Services VC.	NA	
		Health care services	No	Yes (Community infrastructure subcomponent)	Health care services are considered in the community infrastructure subcomponent.	NA	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Recreation infrastructure	No	Yes (Community infrastructure subcomponent)	Recreation facilities are considered in the community infrastructure subcomponent.	NA	
		Child care services	No	Yes (Community infrastructure subcomponent)	Child care services are considered in the community infrastructure subcomponent.	NA	
Demographic	IC	NA	Yes	No	Changes in population and demographic structure that could potentially affect community and social dynamics. BCEAA requires consideration of adverse social effects. Project activities have the potential to change local population demographics. Demographics has been identified as an IC to support the assessment of effects for VCs with population-related drivers for changes (Community Health and Well-being, Infrastructure and Services, Labour Market, Local Economy).	Change in: Population Demographic factors	Issues scoping; comparable EAs
Community Well-Being	VC	NA	Yes	No	The Project has the potential to impact various social and economic determinants of health, such as employment, food security and working conditions, income and social status, and culture. Additionally, vulnerable populations (including women and children) may be disproportionately impacted by the Project, and will be specifically considered. Effects on community well-being have a link to effects on Indigenous interests. Project activities have the potential to impact community well-being.	Change in: - Social and economic determinants of health, as defined by Health Canada and including: - Food security - Cost of living - Community cohesion Mental Health	Issues scoping, Health Canada database, comparable EAs, Social Determinants of Health Impacts of Resource Extraction and Development in Rural and Northern Communities
Land and Resource Use	VC	Commercial land use	Yes	No	The Project has the potential to interact with land and resources used for commercial purposes, including mining, mining exploration, forestry, trapping, agriculture (including grazing) and other tenured Crown land uses. Land uses related to tourism and recreation are considered separate subcomponents. BCEAA requires consideration of adverse social effects. Project activities have the potential to change access, availability of land, and the quantity and quality of resources supporting land and resource uses. This assessment will be linked to the assessments of the sensory assessments (noise, air quality, visual resources) and the Vegetation, Fish and Fish Habitat, and Wildlife VCs.	Compatibility with existing land use plans Changes in: - Access to land use areas - Sensory disturbance to existing land and resource uses - Quantity and quality of resources supporting existing land and resource uses	Issues scoping; comparable EAs
		Public Recreation Use	Yes	No	The Project has the potential to interact with community use of the land based, affecting public outdoor recreation activities, recreational fishing and hunting, hiking, camping, horseback riding, winter sports and motorized recreation. BCEAA requires consideration of adverse social effects. Project activities have the potential to change access, availability of land, and the quantity and quality of	Change in: - Access to land use areas - Sensory disturbance - Quantity and quality of resources supporting recreational activities - Interference with recreational infrastructure	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
					resources supporting recreational uses. This assessment will be linked to the assessments of the sensory assessments (noise, air quality, visual resources) and the Vegetation, Fish and Fish habitat and Wildlife VCs.		
		Current use of land and resources for traditional purposes	Yes	No	Current use of lands and resources for traditional purposes, such as resource harvesting and use of cultural and ceremonial sites, are identified as an issue of concern by Wet'suwet'en. BCEAA requires consideration of adverse social effects. Effects on current use of lands and reosurces have a link to effects on Indigenous interests Project activities have the potential to change current use of land and resources for traditional purposes. This assessment will be linked to the assessments of the sensory assessments (noise, air quality, visual resources) and the Vegetation, Fish and Fish Habitat, Wildlife, and Human Health VC.	Change in: ▪ Access to lands and resources ▪ Sensory disturbance ▪ Quantity and quality of resources ▪ Maintenance of preferred methods and timing of land and resource use	
Visual quality	IC	Visual quality	Yes	No	The Project has the potential to interact with scenic resources and visual aesthetics, which have been identified as a high priority in the area. The receptor VCs include Land and Resource Users (Commercial Land Use, Public Recreation Use, Tourism, Current Use of Land and Resources) Project activities have the potential to change visual quality.	Change in: ▪ Visible extent of the Project from selected receptor sites ▪ Visual quality from selected receptor sites	Issues scoping; comparable EAs
ECONOMIC PILLAR							
Labour Market	VC	Labour market	Yes	No	Project-related hiring has the potential to compete with other businesses for skilled labour and increase average wages. Project activities have the potential to change the labour market.	Change in: ▪ Number of workers by occupation, industry affiliation, and region of residence ▪ Participation and unemployment rate ▪ Difference between unemployment rate and natural rate of unemployment ▪ Barriers to Indigenous participation in Project-related economic benefits ▪ Income levels and labour income	Issues scoping; comparable EAs
Local Economy	VC	Cost of living	No	NA	Change in cost of living is anticipated to be negligible given the small workforce and low anticipated population change.	NA	Issues scoping; comparable EAs
		Economic development	No	NA	Considered under the Project Benefits Section of the Application.	NA	
		Employment and income	No	Yes (Labour market VC)	Project effects related to employment and income is considered under the Labour Market VC.	NA	
		Government finances	No	NA	Considered under the Project Benefits Section of the Application	NA	

Candidate			Carried Forward for Assessment?	Represented by Another IC/VC	Rationale for Inclusion or Exclusion	Indicators	Source of Information
Name	IC/VC Status	Subcomponent					
		Local business and industry	Yes	No	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. BCEAA requires assessment of adverse economic effects. Project activities have the potential to change the local economy.	Change in: ▪ Distribution in employment across industries (economic diversity) ▪ Capacity/supply constraints in services and goods supply and contracting (quantitative and qualitative) ▪ Compatibility/consistency of Project with existing economic development plans or strategies of government (qualitative) ▪ Forestry: change in marketable timber volume ▪ Tourism: change in services and revenue ▪ Economy during closure and post-closure, and potential downturns	
		Skills and training	No	Yes (Community infrastructure subcomponent)	Skills and training will be considered in the education component of the community infrastructure subcomponent.	NA	
HERITAGE PILLAR							
Heritage Resources	VC	Archaeological resources	Yes	No	Archaeological, and historical resources may be uncovered or disturbed as a result of ground disturbance during construction and operation. Archaeological sites are protected by the provincial <i>Heritage Conservation Act</i> . Heritage resources are components of an effect pathway for assessing Indigenous interests and rights. BCEAA requires consideration of adverse effects on heritage resources. Changes in archaeological and heritage resources has been identified by local First Nations as a concern. Effects on heritage resources have a link to effects on Indigenous interests. Project activities have the potential to change directly or indirectly effect heritage resources.	Change in presence, number, type, significance of resources	Issues scoping; comparable EAs,
		Historic and cultural sites	Yes	No			
HEALTH PILLAR							
Health	VC	Human health	Yes	No	The Project has the potential to interact with the health of human receptors due to potential changes in noise levels, air quality, drinking water quality, sustenance foods (country foods), and soil quality. BCEAA requires assessment of potential health effects. Effects on human health have a link to effects on Indigenous interests Project activities have the potential to change human health.	Change in food quality by comparison of air and water, predictions to the applicable environmental quality guidelines and/or standards to identify contaminants of potential concern (COPCs) identified through the Human Health Risk Assessment	Issues scoping; comparable EAs, (including the Red Mountain Underground Gold Mine EA); documents listed on NH's Health and Resource Development website
		Terrestrial wildlife health	No	Yes (Community well-being subcomponent and Wildlife VC)	Potential effects of the Project on terrestrial wildlife health are considered under the Wildlife VC, and subsequent effects on country foods are addressed in the community well-being subcomponent.	Assessment of risk to human health for operable exposure pathways and COPCs of potential concern identified through the Human Health Risk Assessment	
						NA	

4. CONCLUSION

This document identifies and outlines the selection rationale of VCs and ICs that will be used in the EA for the proposed Project. VCs and ICs were selected based on the anticipated key issues associated with the potential effects of Project-related activities on environmental, economic, social, heritage and health values. The proposed VCs, ICs, and measurable indicators will be included in the AIR and will be addressed as part of the EAC application. The proposed general methods described in this document will determine the scope of baseline information collection for the EA that will allow for the assessment of the VCs.

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