EAO | Environmental Assessment Office

# Application Information Requirements

## *Tenas Project*

**Proposed by:**

**Telkwa Coal Limited**

**Draft May 2020**

*Pursuant to the Environmental Assessment Act, S.B.C. 2002, c.43*

BRITISH COLUMBIA

# PREFACE TO THE AIR

The Application Information Requirements (AIR) specifies the information that Telkwa Coal Limited (the Proponent) is required to provide in their Application for an Environmental Assessment Certificate (Application) under section 16(2) of the British Columbia (BC) *Environmental Assessment Act, 2002* (Act).

The Proponent is proposing to develop the Tenas Project (the ~~proposed~~ Project), as described in the initial Project Description https://projects.eao.gov.bc.ca/api/document/5be1e5e7c4337d0024da316e/fetch and as shown in [**Figure 1**]. The ~~proposed~~ Project is a surface coal mine approximately 25 kilometres (km) south of Smithers and 7 km southwest of the Village of Telkwa in northwestern BC. Since the ~~proposed~~ Project is a new mine facility that, during operations, will have a production capacity of 775,000 to 825,000 tonnes per annum of coal, it is subject to a provincial environmental assessment (EA) review under Part 3 of the Reviewable Projects Regulation (BC Reg 370/02) of the Act.

The BC Environmental Assessment Office (EAO) issued a Section 10 Order to the Proponent on November 6, 2018 confirming that the proposed Project requires an Environmental Assessment Certificate (EAC), pursuant to Section 10(1)(c) of the Act, before it may receive provincial permits to construct and operate the proposed Project. On June 25, 2019, the EAO issued a Section 11 Order to the Proponent establishing the formal scope, procedures and methods concerning the Environmental Assessment (EA) for the Project.

On November 27, 2018, the Province of BC passed a new *Environmental Assessment Act, 2018*. This Act was brought into force on December 16, 2019. Proponents with a Section 11 Order under the 2002 Act may specify whether they wish to continue their EA under the former Act or transition the EA proceedings to the new Act. Notice must be provided by June 16, 2020. On March 4, 2020, the Proponent submitted a letter to the EAO specifying its intent to continue under the previous Act.

*Canadian Environmental Assessment Act, 2012 Applicability*

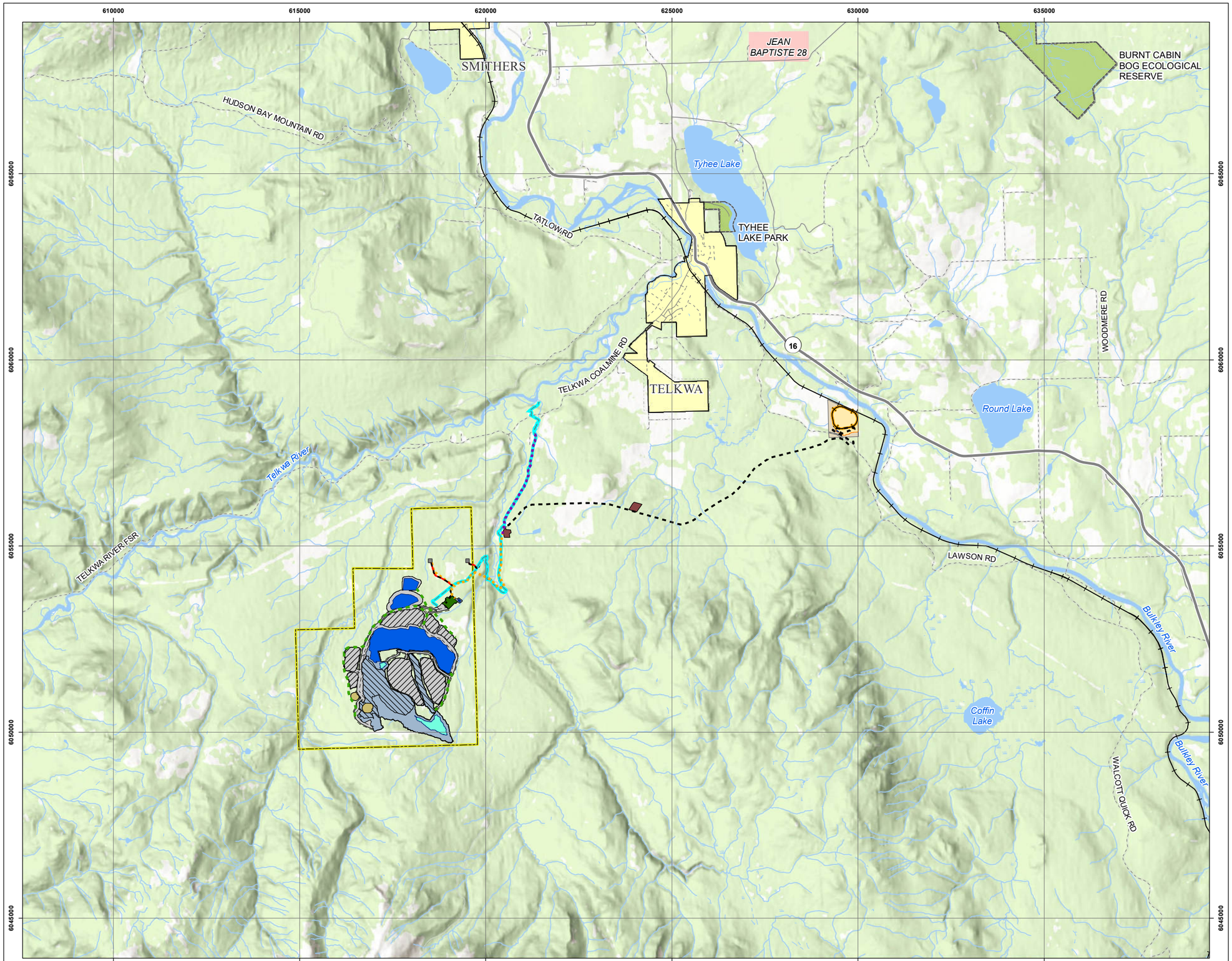
An environmental assessment as described in the Canadian *Environmental Assessment Act*, 2012 (CEAA 2012) is not required for the proposed Project because the proposed production capacity is under the 3,000 tonnes per day threshold for a designated project, as specified in the Regulations Designating Physical Activities. The Proponent received a letter from the CEAA on December 12, 2018 determining that the physical works associated with the Project are not described in the Regulations.

*Impact Assessment Act, 2019 Applicability*

On August 28, 2019, the *Impact Assessment Act, 2019* (IAA 2019) came into force. The IAA 2019 creates the new Impact Assessment Agency of Canada (IAAC) and repeals the CEAA 2012. EA under the IAA is not required for the proposed Project because the proposed production capacity is under the 3,000 tonnes per day coal production threshold for the construction, operation, decommissioning and abandonment of a new coal mine as defined in 16(d) of the Regulations Designating Physical Activities. The Proponent contacted IAAC to confirm that the Project is not reviewable under the IAA and was informed on April 23, 2020 that comments will be received in a few weeks.

Telkwa Coal AIR
Northern British Columbia

**Tenas Project**




Legend

- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- First Nation Reserve
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Backfill
- Explosives Storage
- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
- Railway Loop
- Rock Pile
- Top Soil Pile
- Ultimate Pit

## 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

- Mine Features: ERM, 2019
- Basedata: Government of British Columbia
- Basemap: ESRI World Topographic Map

N

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Kilometres

NAD 1983 UTM Zone 9N

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| 989388-01 | Production Date: Sep 26, 2019 | Figure 1 |
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Hemmera
An Ausenco Company

TELKWA COAL LIMITED

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*List of Reviewing Agencies*

The following government agencies, municipal and regional agencies, Indigenous Groups and the public have had the opportunity to review and comment on the Valued Component Selection Document or the draft AIR:

Provincial Agencies:

- BC Ministry of Agriculture;
- BC Ministry of Energy, Mines and Petroleum Resources;
- BC Environmental Assessment Office;
- BC Ministry of Environment and Climate Change Strategy;
- BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development;
- BC Ministry of Indigenous Relations and Reconciliation;
- BC Ministry of Jobs, Trades and Technology;
- BC Ministry of Municipal Affairs and Housing;
- BC Ministry of Transportation and Infrastructure; and
- Provincial Agricultural Land Commission.

Federal Agencies:

- Fisheries and Oceans Canada; and
- Environment and Climate Change Canada.

Municipal and Regional Agencies:

- Buckley Valley Community Resources Board;
- Northern Health;
- Regional District of Bulkley-Nechako;
- Town of Smithers; and
- Village of Telkwa.

Indigenous Groups identified in the Section 11 Order issued June 25, 2019:

- Wet'suwet'en (Office of the Wet'suwet'en Hereditary Chiefs); and
- Wet'suwet'en First Nation.

# TABLE OF CONTENTS

## List of Tables

## List of Figures

# TABLE OF CONCORDANCE

A Table of Concordance will be included in the Application. The Table of Concordance will demonstrate where the requirements in the AIR are found in the Application, with volume, section, and page references and following the format of **Table 1**. A well-constructed Table of Concordance will assist in a timely application evaluation to determine whether the application contains the required information.

### Table 1: Example Table of Concordance between AIR and Application

| AIR Section and Page No. | AIR Title | AIR Section Language | Application Section Title | Application Volume Section, Sub-Section, Page Number | Relevant Appendix |
|---|---|---|---|---|---|
| | | | | | |

# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| Act | British Columbia *Environmental Assessment Act 2002, 2018* |
| AIR | Application Information Requirements |
| ALR | Agricultural Land Reserve |
| Application | Application for an Environmental Assessment Certificate |
| ASTM | American Society for Testing and Materials |
| BC | British Columbia |
| BMPs | best management practices |
| CCME | Canadian Council of Ministers of the Environment |
| CEAA | Canadian Environmental Assessment Agency |
| CEAA 2012 | *Canadian Environmental Assessment Act, 2012* |
| COPC | Contaminants of Potential Concern |
| EA | Environmental Assessment |
| EAC | Environmental Assessment Certificate |
| EAO | British Columbia Environmental Assessment Office |
| GHG | Greenhouse Gas |
| HHRA | Human Health Risk Assessment |
| IAA 2019 | *Impact Assessment Act, 2019* |
| IAAC | Impact Assessment Agency of Canada |
| IC | Intermediate Component |
| IFM | Instream Flow Monitoring |
| km | kilometres |
| Leq | Noise Levels |
| LRMP | Land and Resource Management Plan |
| LSA | Local Study Area |
| m | metre |
| ML/ARD | Metal Leaching/Acid Rock Drainage |
| NA | Not applicable |
| $PM_{2.5}$ | Respirable Particulate Matter |
| $PM_{10}$ | Inhalable Particulate Matter |
| Project | Tenas Project |
| Proponent | Telkwa Coal Limited |
| RSA | Regional Study Area |
| SARA | *Species at Risk Act* |
| SIL | Survey Intensity Level |
| TEK | Traditional Ecological Knowledge |
| TEM | Terrestrial Ecosystem Mapping |
| VC | Valued Component |

# APPLICATION SUMMARY

The Application will include a summary, including the following:

- A summary of the proposed Project including the project scope, project benefits and applicable permits. If the proponent has already requested or intends to request concurrent permitting, this will also be stated;
- A brief overview of the assessment process including project reviewability, and the pre-application and application review stages of the EA;
- A brief overview of consultation approaches with Indigenous Groups, the public and government agencies to date;
- A summary of the key issues raised by Indigenous Groups, the public and government agencies;
- A summary of key adverse effects on Indigenous Interests and mitigation measures;
- A summary of key effects, proposed mitigation measures and residual and cumulative effects on Valued Components; and
- Proponent's conclusions regarding the potential for significant adverse effects on Valued Components.

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# Application Information Requirements

## *Part A - Introduction*

BRITISH COLUMBIA

# PART A - INTRODUCTION

## 1.0 OVERVIEW OF PROPOSED PROJECT PROPONENT DESCRIPTION

A description of the Proponent is included in the Project Description at https://projects.eao.gov.bc.ca/api/document/5be1e5e7c4337d0024da316e/fetch.

The Application will:

- Describe the Proponent, including history, type of company or organization, affiliations;
- Provide contact information for the Proponent; and
- Include a list of parties involved in the preparation of the Application, their qualifications, and the section(s) for which they were responsible.

### 1.1 Description of Proposed Project

A description of the proposed Project is included in the Project Description at https://projects.eao.gov.bc.ca/api/document/5be1e5e7c4337d0024da316e/fetch.

The Application will:

- Describe the purpose of the proposed Project from the perspective of the Proponent, and identify whether the objectives of the proposed Project relate to any broader private or public sector policies, plans, or programs;
- Describe the location of the proposed Project and the latitude and longitude coordinates of the site and include maps showing both regional context (identifying nearby communities and geographic features) and the specific location of the proposed project;
- Describe the location of the proposed Project relative to Indigenous Groups' asserted traditional territories, and/or Treaty Nation territories;
- Describe all phases of the proposed Project, including their duration and proposed scheduling;
- Describe all on-site and off-site components associated with the proposed Project, with figures;
- Describe the activities associated with the components and phases of the proposed Project, with figures;
- Discuss the relevant history of the proposed Project, including exploratory or investigative history;

- Summarize existing and planned land and water use that overlaps or may be potentially impacted by the proposed Project components and activities, including:
    - Land ownership [e.g., private land, provincial Crown land, federal land (including Indian Reserves), Indigenous title];
    - Local government zoning or plans;
    - Tenures (municipal, provincial, federal), licenses, permits or other authorizations;
    - Non-tenured current land uses;
    - Current and planned land use plans;
    - Provincial land use plans (e.g., Land and Resource Management Plans) and provincial land use designations (e.g., Agricultural Land Reserve (ALR), Old Growth Management Areas, *Forests and Range Practices Act* designations) and provincial land use management objectives
    - Any other development or activities, whether or not directly related to the proposed Project;
    - Maps showing location of other uses referenced above in relation to the proposed Project; and
    - References to the Application section that assesses land use and potential overlaps/impacts in more detail.
- Describe the project's economic benefits.
    - Capital construction cost estimates, including:
        - Breakdown of costs (e.g., land, buildings, equipment) associated with the proposed Project;
        - Estimated operating costs over the life of the proposed Project, including breakdown of costs by category (e.g., labour, supplies and materials, administration); and
        - Estimated costs for decommissioning/closure/abandonment/reclamation.
    - Employment estimates including:
        - Direct employment to be created, by job category by project phase, in number of person year jobs for construction and decommissioning and full-time equivalent jobs for operations. Direct employment estimates will be broken down into full-time, part-time and seasonal job categories;

- Average wages, by major job category, for the construction and operating periods;
- Breakdown of jobs that will be filled from local, provincial, national or international labour markets;
- Indirect and induced employment to be generated, by project phase; and
- Information about an employment strategy, if any.

- Contractor supply services estimates including:
  - List of the major types of businesses/contractors to be used, broken down at the local, provincial, and national level, by project phase;
  - Value of supply of service contracts expected, by project phase; and
  - Information about a local purchasing strategy, if any.
- Annual government revenues, by type (e.g., income tax, licence rent, property tax, mineral tax) and jurisdiction (e.g., local, provincial, federal), for all phases of the proposed Project;
- Any benefits the project may have to the five pillars of assessment (Environmental, Economic, Social, Health and Heritage);
- All Canadian dollar estimates will be provided in real dollars, with an explanation of how they are measured (e.g., discount rates); and
- State all assumptions and references for the above information.

## 1.2 Applicable Authorizations

A list of required authorizations, to the extent that was known at the time, is available in Section 5.6 Federal, Provincial, and Municipal Authorizations of the Project Description, available at https://projects.eao.gov.bc.ca/api/document/5be1e5e7c4337d0024da316e/fetch.

The Application will:

- List in table format (see example below) all applicable licenses, permits and/or approvals that are already received or required for the phases of the proposed Project, and the associated responsible regulatory body; and
- State if the proponent has or intends to request concurrent permitting under the Act pursuant to the Concurrent Approval Regulation (BC Reg. 371/2002).

Proponent will seek concurrent permitting under the Act pursuant to the Concurrent Approval Regulation (BC Reg. 371/2002).

### Table 2: Authorization Table

| Name of Authorization | Statute and Authorizing Agency | Description Need for Authorization |
|---|---|---|
| [Name] | [Statute, Level of Government] | [Description] |
| [Name] | [Statute, Level of Government] | [Description] |
| [Name] | [Statute, Level of Government] | [Description] |

## 1.3 Project Design and/or Alternative Means of Carrying out the Project

The Application will include:

- An assessment of the alternative means of carrying out the proposed Project that are technically and economically feasible including, but not limited to, the alternatives identified in the AIR;
- The rationale and criteria used to select the proposed means of undertaking the proposed project; and
- The methodology and criteria used in the assessment of alternatives ~~including those environmental effects listed under section 5 of CEAA 2012~~.

Project components have been designed to minimize potential impacts on the environment and nearby communities. Further alternatives may be identified and reviewed during the EA process.

The following criteria were considered when assessing alternatives:

- Environmental impacts;
- Feasibility;
- Costs;
- Community impacts; and
- Health impacts.

Alternative means of carrying out the proposed Project that will be considered in the Application include:

- Mining Method
  - Underground room and pillar; or
  - Surface
- Surface Mining Method
- Production Rate
- Equipment Size
- Plant Location
- Plant Location on West Side
- Plant Flowsheet
- Processed Rock
- Coal Transport to Port
- Coal Transport from Plant to Rail Infrastructure
- Mine Access
- Rail Infrastructure
- Coal Storage
- PAG Management Plan
- Water Cover Methodology
- Water Sourcing for Raw Water
- Office and Dry Location
- Potable Water
- Sewage Treatment Plant and Potable Water
- Employee Transport

- Parking Lot Location

Many of these alternatives have already been evaluated, at least initially, as part of conceptual mine planning activities during preparation of the pre-feasibility study. Additional alternatives, if identified, will be discussed in the Application. The Application will include relevant figures illustrating alternatives evaluated for the Project.

## 1.4 Alternatives to the Proposed Project

The Application will include:

- An assessment of the alternatives to the proposed Project that were technically and economically feasible, including, but not limited to, the alternatives identified in the AIR.

Because Telkwa Coal is a junior mining company with very limited project holdings, there are no viable technically and economically feasible projects available to Telkwa Coal within Canada. The following alternatives were examined to reach this conclusion.

Telkwa Coal has evaluated several Projects in Canada such as three properties in northeast BC and at this time, TCL views the Tenas Project as superior to these options or the owners were not willing to agree to a commercial agreement.

The other option considered was a “no project” option and based on the overall result of the effects assessment not highlighting and significant impacts due to the Project and the employment and revenue benefits of the Project, TCL feels the Project go forward case is recommended.

The Application will also include a description of project purpose and rationale within the context of the global steelmaking market. In short, the Proponent is not aware of any commercially viable method of extracting iron from its ore to produce pig iron and ultimately steel, without the use of steelmaking coal such as the coal from the Tenas deposit.

# 2.0 ENVIRONMENTAL ASSESSMENT PROCESS

## 2.1 Provincial EA Process

The Application will include:

- A statement that the proposed Project is subject to review under the Act, identifying the trigger(s) for the review under the Act;
- A statement that the Application has been developed pursuant to the AIR approved by EAO and complies with relevant instructions provided in the section 11 Order and any other direction provided by EAO;
- A table documenting applicable milestones, including, but not limited to, issuance of section 10 and 11 Orders, working group meetings, any public comment periods or open houses and the issuance of the AIR), including links to documents on EAO's public website;
- A list of the government agencies and Indigenous Groups that participated in the EA; a summary of their participation; and, a list of the key issues raised by each party and the status of issue resolution. (The Proponent will cross-reference, as appropriate, other sections of the Application that deal further with consultation and issues raised); and
- A summary of public participation in the EA, a list of the key issues raised, and the status of issue resolution (with cross-references, as appropriate, to other sections of the Application that deal further with consultation and issues raised).

## 2.2 Federal EA Process

The CEAA 2012 does not apply to the proposed Project because the proposed production capacity is under the 3,000 tonnes per day threshold for a designated project, as specified in the Regulations Designating Physical Activities. Confirmation was received from the CEAA on December 12, 2018 (CEAA 2018).

On August 28, 2019, the IAA 2019 came into force. The IAA 2019 creates the new Impact Assessment Agency of Canada and repeals the CEAA 2012. Environmental Assessment under the IAA is not required for the proposed Project because the proposed production capacity is under the 3,000 tonnes per day coal production threshold for the construction, operation, decommissioning and abandonment of a new coal mine as defined in 16(d) of the Regulations Designating Physical Activities. The Proponent contacted IAAC to confirm that the Project is not reviewable under the IAA and was informed on April 23, 2020 that comments will be received in a few weeks.

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# Application Information Requirements

## *Assessment of Environmental, Economic, Social, Heritage and Health Effects*

BRITISH COLUMBIA

# PART B - ASSESSMENT OF ENVIRONMENTAL, ECONOMIC, SOCIAL, HERITAGE AND HEALTH EFFECTS

## 3.0 ASSESSMENT METHODOLOGY

This section of the Application will describe the methods used to assess the potential adverse effects of the Project. The assessment methodology will be based on the EAO's Guideline for the Selection of Valued Components and Assessment of Potential Effects (September 2013).

### 3.1 Issues Scoping and Selection of Valued Components

During initial issues scoping, the Proponent compiled a list of candidate Valued Components (VCs) that considered the five pillars requiring assessment under the Act: environmental, economic, social, heritage and health. Identifying candidate VCs involved the analysis of available information to identify issues under the five pillars that may be related to a reviewable project. Previous EAs in northern BC were reviewed and provided insight to the issues, that are generally indicative of the local and regional values of interest to the public, Indigenous groups and stakeholders in the area.

Candidate VCs were screened to exclude potential 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. 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 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.

Table 3 identifies the VCs and subcomponents that will be assessed for potential Project-induced adverse effects.

## Table 3: Valued Components and Subcomponents for the Tenas Project

| Pillar | Valued Component | Subcomponents |
|---|---|---|
| Environment Pillar | Fish and fish habitat | Fish habitat |
| | | Fish |
| | Vegetation | Old growth forest |
| | | Wetlands |
| | | Listed ecological communities |
| | | Culturally important species |
| | | Rare plants and lichens |
| | Wildlife | Furbearers: American marten (*Martes americana*), Wolverine (*Gulo gulo*) |
| | | Caribou (*Rangifer tarandus*) (northern mountain population) |
| | | Grizzly bear (*Ursus arctos*) |
| | | Moose (*Alces americanus*) |
| | | Bats (Little Brown myotis (*Myotis lucifugus*), Northern myotis (*Myotis septentrionalis*) |
| | | Western toad (*Anaxyrus boreas*) |
| | Avian Species | Migratory breeding birds |
| | | Listed bird species |
| | | Raptors |
| Economic Pillar | Labour market | NA |
| | Economic development | NA |
| Social Pillar | Infrastructure and Services | Housing and accommodation |
| | | Community infrastructure and services |
| | | Transportation |
| | Land and resource use | Commercial Land Use |
| | | Public Recreation |
| | | Current use of land and resources for traditional purposes |
| | Community well-being | NA |
| Heritage Pillar | Heritage resources | Archaeological resources |
| | | Historic and cultural sites |
| Health Pillar | Human Health | NA |

In addition, the following environmental components that are not the ultimate receptors of potential Project-related effects but are part of the effects pathways, will be studied as Intermediate Components (ICs) to inform the assessment of the VCs listed above (see **Table 4**). Because an assessment is completed for a VC, the receptor for the effects, an assessment of an IC is not completed to avoid redundancy in the assessments.

**Table 4: Intermediate Components and Subcomponents for the Tenas Project**

| Pillar | Intermediate Component | Subcomponents |
|---|---|---|
| Environment Pillar | Atmospheric Environment | Air quality |
| | | Greenhouse gas (GHG) emissions |
| | | Noise |
| | Terrain and Soils | Soil quality |
| | | Terrain stability |
| | Surface Water | Surface water quantity |
| | | Surface water quality |
| | Groundwater | Groundwater quantity |
| | | Groundwater quality |
| | Aquatic Resources | NA |
| Social Pillar | Demographic | NA |
| | Visual Resources | NA |

The process used to select the VCs and the supporting rationale, and the methodology for assessing potential Project-related effects on the existing condition of each VC and IC, as appropriate, is provided in the Valued Component Selection and Rationale Document.

The VC Selection and Rationale Document was submitted in draft to the EAO on December 28, 2018. Changes were made based on EAO input and the revised draft was distributed to the Advisory Working Group members on February 26, 2019 for review and comment. Comments received from EAO and the Advisory Working Group members informed the refinement of the VCs in **Table 3** and the ICs in **Table 4**. The selected VCs and ICs in this AIR represent the input provided through this consultation however may be modified based on additional input through ongoing consultation and engagement.

The Application will summarize the process and methodologies used to identify and select the VCs for assessment. The Application will also include the rationale for any differences in the list of VCs presented in the Application from those listed in the final AIR.

## 3.2 Assessment Boundaries

### *3.2.1 Spatial, Temporal, Administrative and Technical Boundaries*

The Application will describe the methods used in identifying spatial, temporal, administrative and technical boundaries. Information on spatial, temporal, administrative and technical boundaries for specific VCs will be included in the appropriate VC sections of this document and will encompass all relevant project phases, components and activities. The Application will include the rationale for any differences in boundaries from those presented in the final AIR.

Assessment boundaries define the limits of the change analysis for ICs and effects assessment for VCs. Boundaries encompass areas within and times when the Project is expected to interact with the ICs/VCs, as well as any constraints due to political, social, and economic realities, and limitations in predicting or measuring changes. Each change analysis and effects assessment section of the Project describes spatial and temporal boundaries and the rationale for their selection, as well as any applicable administrative and technical boundaries.

Spatial assessment boundaries are identified for each IC/VC based on the spatial characteristics of the Project and the component (e.g., location, distribution, range), as well as the areas within which Project IC/VC interactions are expected to occur. When determining the spatial boundary, where available and applicable, community knowledge and Indigenous Traditional Ecological Knowledge (TEK), information on current land and resource use by Indigenous groups, and other pertinent ecological, technical, social, and cultural considerations, as well as input from government, and the public will be considered.

Temporal boundaries will be identified for the IC analyses and VC assessments and will encompass periods when the Project is expected to affect ICs/VCs. Temporal boundaries should reflect those periods during which planned Project activities are reasonably expected to potentially affect a VC. These boundaries are adjusted as appropriate to reflect seasonal and annual variations or biophysical constraints related to a VC. Proposed temporal boundaries are based on the timing of the different phases of the proposed Project.

As appropriate, the Application will identify the relevant administrative and technical boundaries for each IC/VC and provide an explanation of their relevance to the assessment boundaries. Administrative boundaries arise when political, economic, or social issues, as well as fiscal or other resourcing issues influence the environmental assessment. Administrative boundaries do not apply to every assessment, but where identified, the nature of the administrative boundaries and their effect on the assessment is documented.

Technical boundaries arise when there is a limit in the ability to predict a project's effects. This may occur when sampling is constrained by legal restrictions, when large geographical settings limit the ability of proper sampling, or when modelling constraints impose limitations on the analysis. Technical boundaries do not apply to every assessment, but in cases where technical boundaries have been identified, the nature of the technical boundaries and their effect on the assessment are documented.

## 3.3 Existing Conditions

For each VC section, (Environmental, Economic, Social, Heritage and Health), the Application will include: A description of the existing (or baseline) conditions within the study area in sufficient detail to enable potential project-VC interactions to be identified, understood, and assessed:

- A description of the quality and reliability of the existing (or baseline) data and its applicability for the purpose used, including any gaps, insufficiencies and uncertainties, particularly for the purpose of monitoring activities;

- Reference to natural and/or human-caused trends that may alter the environmental, economic, social, heritage and health setting, irrespective of the changes that may occur as a result of the proposed Project or other project and/or activities in the area;
- An explanation of if and how other past and present projects and activities in the study area have affected or are affecting each VC;
- Documentation of the methods and data sources used to compile information on existing (or baseline) conditions, including any standards or guidelines followed;
- Where additional project and VC-specific field studies are conducted, the scope and methods to be used will follow published documents pertaining to data collection and analysis methods, where these are available. Where methods used for the assessment deviate from applicable published guidance, the rationale for the variance will be provided in the Application; and
- Description of what TEK, including Indigenous Traditional Knowledge, was used in the VC assessment.

The Application will contain the existing (or baseline) technical reports in the Appendices and will summarize key findings contained in these technical reports directly in the Application, in a manner that allows the reader to understand each VC's effects assessment.

## 3.4 Potential Effects

The Application will summarize the overall process and methodologies used to identify and assess the potential effects of the proposed Project on the identified VCs.

For each VC/IC section, the Application will:

- Identify the potential interactions of the proposed Project and the considered and selected VCs/ICs;
- Identify and describe the potential adverse effects resulting from the proposed Project;
- Demonstrate how feedback from Indigenous Groups, the public, stakeholders and government agencies on VC/IC selection and assessment was incorporated, as appropriate.

The Application will identify any project activity-VC/IC interactions that were excluded from further assessment, including the methods and criteria used to justify the exclusion and input received from EAO, government agencies, Indigenous Groups and the public regarding the exclusion.

Expected Project interactions with each IC or VC, that may result in a change or effect, will be described within each IC and VC section. In the Application, these interactions will be presented in an interactions table and matrix format for ease of viewing, and to help ensure adequate identification of likely Project IC/VC interactions. The interactions table lists the various Project activities according to Construction, Operation, Decommissioning and Reclamation, and Post-Closure phases, indicates whether there is likely to be an interaction with each IC/VC, and describes the nature of the interaction. The interaction matrix

applies a likelihood of interaction to filter the Project components and activities that will or will not result in potential effects.

All Project components and activities that did not interact with an IC or VC, and will not result in a potential effect, are not considered further in the assessment. Where interaction is identified as possible, a potential effect is identified and considered in the assessment. Assumptions regarding the potential effects are documented in each effects assessment section and margins of error, or degrees of uncertainty, are provided. Project activity - IC or VC interactions that were identified but excluded from further assessment are clearly identified in the potential effects section of the IC or VC section and will include the rationale to justify the exclusion.

## 3.5 Mitigation Measures

For each VC/IC section, the Application will:

- Describe the approach to identify and analyze mitigation measures, including any management and compensation plans proposed by the Proponent, which will be implemented to address potential effects;
- Describe the mitigation measures incorporated into the project, including site and route selection, project scheduling, project design (e.g., equipment selection, placement, emissions abatement measures), and construction and operation procedures and practices;
- Describe any standard mitigation assumed or proposed to be implemented, including consideration of best management practices, environmental management plans, environmental protection plans, contingency plans, emergency response plans, and other general practices;
- Clearly indicate how the mitigation measures will mitigate the potential adverse effects on the VC/IC;
- Provide the rationale for the proposed mitigation measures, including why further avoidance or reduction measures for adverse effects may not be considered feasible, and the need for and scope of any proposed compensation or offset;
- Evaluate the anticipated success of each mitigation measure and describe rationale and analysis for these evaluations. If there is little relevant/applicable experience with a proposed mitigation measure and there may be some question as to its effectiveness, describe the potential risks and uncertainties associated with use of the mitigation;
- Include the time required for mitigation to become effective, to enable understanding of the duration of residual effects and the temporal characteristics of reversibility; and
- Summarize the mitigation measures for potential Project effects by project phase and identify any mitigation measures that are in management or compensation plans.

Mitigation measures proposed to reduce or eliminate an adverse effect, or enhance a positive effect, are described in the assessment of each IC/VC. Where possible, information is provided on the anticipated time required for mitigation measures to become effective, and the effectiveness of the proposed mitigation measure(s) in terms of the IC/VC indicator for the effect. Mitigation measures may include monitoring to verify results, standard mitigation measures such as best management practices (BMPs) and/or changes to the means in which the Project will be designed, constructed, or operated. Mitigation will also consider TEK, where applicable and available.

## 3.6 Characterization of Residual Effects

The Application will describe, in a table format, the residual effects to VCs using the residual effects criteria context, magnitude, extent, duration, reversibility, and frequency, as defined in EAO's Guideline for the Selection of Valued Components and Assessment of Potential Effects. Where feasible, these criteria will be described quantitatively in the Application for each VC. When residual effects cannot be characterized quantitatively, the Application will characterize these effects qualitatively. Definitions will be provided when qualitative terms are used.

The use of any qualitative terms (e.g., high, moderate, low) will be accompanied by distinct definitions for each of these rankings. An explanation will be included for the conclusion reached for each criterion used to characterize a residual effect.

Potential residual changes and effects that may result from the Project after mitigation measures are implemented, are described in the assessment of each VC. Standardized criteria are used to characterize residual adverse effects: magnitude, geographic extent, duration, frequency, reversibility and context.

The following generalized definitions are used as a guide for establishing specific effects characteristics for each VC:

- **Magnitude:** Refers to the amount of change to the existing condition of a VC, considering factors such as the uniqueness of the effect and the change relative to natural or background variation. Magnitude may be defined as negligible (undetectable or unmeasurable), low (detectable within standards), moderate (detectable approaching exceedance), and high (exceedance of criteria or threshold).

- **Geographic Extent:** Refers to the geographic area over which the residual effect will occur. The geographic extent of effects may be none, negligible (site), low (within the Local Study Area (LSA)), regional (Regional Study Area (RSA)), or provincial.

- **Duration:** Refers to the length of time for a VC/IC to return to its existing condition. The duration of an effect may be short-term, medium-term, long-term, or very long-term (irreversible).

- **Frequency:** Refers to the number of times that an effect might occur. The frequency of an effect may be rare, uncommon, common, or continuous.

- **Reversibility:** Refers to the degree to which existing conditions can be regained after the factors causing the effect are removed. Effects can be reversible or permanent.

- **Context:** Primarily refers to the sensitivity and resilience of the VC to change caused by the Project. Context draws on the descriptions of the existing conditions for the VC, which reflect the cumulative effects of other Projects and activities, and on information about the natural or human-caused trends in the condition of the VC. Context will be described qualitatively.

Where feasible, these criteria are described quantitatively in each VC section. When residual effects cannot be characterized quantitatively, the effects are characterized qualitatively. Definitions are provided for all effects criteria in each VC section. The characterization of effects will inform the determination of significance of each potential residual adverse effect.

### *3.6.1 Likelihood*

The Application will assess the likelihood for all residual adverse effects using appropriate quantitative or qualitative terms and sufficient description to understand how the conclusions were reached. Definitions of any qualitative terms, such as 'likely', or 'unlikely' will be provided.

Each VC section describes the basis for the determination of likelihood, including the use of appropriate quantitative or qualitative terms with sufficient rationale for the conclusions. A variety of factors may influence likelihood or the probability of an adverse residual effect, such as how probable it is that a disturbance will be caused by the Project or that a specific mitigation will be successful. The residual effects described in each VC section represent the best prediction of what is likely to occur based on knowledge of the Project components and activities, the pathways of effect, and the mitigation proposed.

Where qualitative relative terms for likelihood such as low, moderate, or high are used, they will be clearly defined with the intent to avoid varying interpretations by different readers.

## 3.7 Proponent's Determination of Significance

The Application will present the process and methodology used to define and evaluate the significance of residual effects, including how the term "significance" has been used in relation to each VC using quantitative and qualitative thresholds.

Each VC section discusses the potential for significant adverse residual effects that may occur after mitigation measures are implemented. The approach to determining significance includes a comparison of the current state of the VC, relative to a scenario where it is assumed the Project does not proceed, with the predicted state of the VC if the Project does proceed. The assessment describes the level of confidence in the significance determination and provides a clear rationale for the overall level of adverse residual effect determined, based on the criteria for characterization of residual effects.

Where possible, the determination of significance considers one or more management standard; where thresholds do not exist, significance criteria are based on an applied process, including guidance established from a review of literature, precedents, learned persons, panels, professional judgements.

A conclusion of significance of residual adverse effects will be provided for each VC and residual effects will be rated as not significant or significant, each of which is defined for each VC in the relevant section.

### *3.7.1 Confidence and Risk*

The Application will summarize the process and methodology used to evaluate the levels of confidence associated with residual effects predictions and in particular, how any identified uncertainty may affect either the likelihood or the significance of the predicted residual effect. The Application will also describe any measures to reduce uncertainty through monitoring, adaptive management or other follow-up programs.

The Application will summarize the process and methodology used to determine if additional risk analysis is required. If additional risk analysis is required, the Application will summarize the process and methodology used for this analysis and the conclusions, including the range of likely, plausible and possible outcomes with respect to likelihood and significance.

Each VC section includes a consideration of the level of confidence associated with the effects assessment.

Determination of the level of confidence considers:

- Scientific certainty regarding quantification of effect, including the quality and quantity of data and understanding of effect mechanisms;
- Scientific certainty relative to effectiveness of proposed mitigation and assumptions made; and
- Professional judgment from prior experience predicting effects and developing proven mitigation measures.

Confidence predictions are defined as high, moderate and low, and may be adjusted for some VC assessments where quantitative data and methods are available. Definitions are provided in each VC section.

## 3.8 Cumulative Effects Assessment

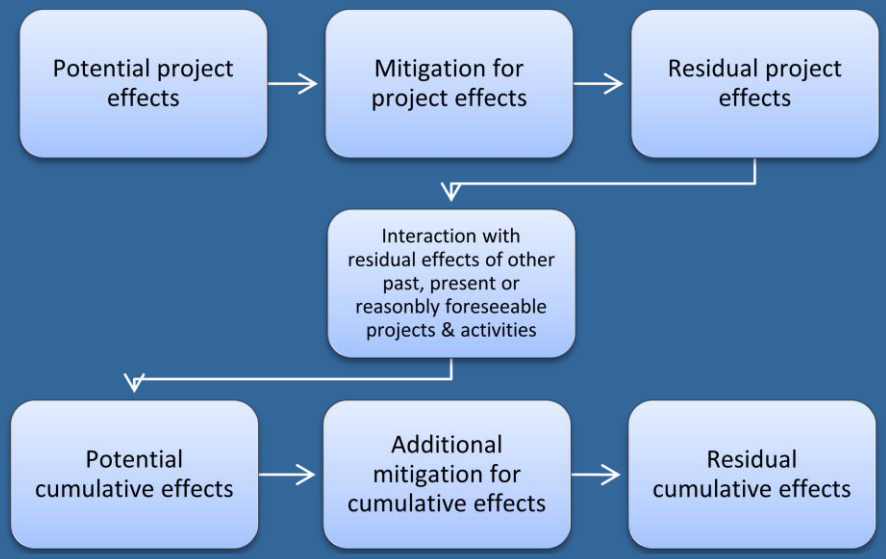
The Application will assess cumulative effects on VCs for which residual Project effects are predicted. This assessment will be conducted in accordance with EAO's Guideline for the Selection of Valued Components and Assessment of Potential Effects (September 2013).

### *3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities*

The Application will determine residual project and cumulative effects using the steps identified in **Figure 2.**

As identified in *EAO's Guideline for the Selection of Valued Components and Assessment of Potential Effects*, the Application will use the steps outlined in the figure below to determine residual project effects and the subsequent cumulative effects assessment:

**Figure 2 Steps to Determine Residual Project & Cumulative Effects**




The following development categories will be considered in the Application:

- Projects or activities that have already been built or conducted for which the environmental effects overlap with those of the proposed Project (i.e., certain); and
- Projects that are either proposed (public disclosure) or have been approved to be built, but are not yet built, for which the environmental effects overlap the proposed Project (i.e., reasonably foreseeable).

The following major Projects and activities have been preliminarily identified as possible candidates for inclusion in the assessment of cumulative effects effects in consideration of the potential for their residual effects to interact with the residual effects of the Project. The list includes other projects and activities within the largest proposed RSA plus a buffer to accommodate projects that may be located outside the RSA but have influence within the RSA. This list will be tailored for each VC-specific cumulative effects assessment. The list will be refined based on input from the Working Group, EAO and public consultation.

- Cheslatta Green Energy Project;
- Kenney Dam Cold Water Release Facility;
- Nulki Hills Wind Project;
- Fort St. James Green Energy;
- Lorraine-Jajay Copper Mine;
- Huckleberry Copper-Silver Molybdenum Mine;

- Emerald Glacier Project;
- Ootsa Property;
- Equity Silver Mine;
- Endako Mine;
- Mount Milligan Mine;
- Decar Project;
- Kwanika Project;
- Ogden Mountain Jade Project;
- Chuchi Lake Mine;
- Burning Daylight Quarry;
- Stardust Project;
- Fran Property;
- Wildcat Property;
- Snowbird Property;
- Duke Property;
- Buck Project;
- Holy Cross Project;
- Hanson Project;
- Blackjack Mineral;
- Davidson Project;
- Smithers Regional Airport Runway Expansion;
- Morrison Copper/Gold Project;
- Berg Copper-Molybdenum-Silver Mine;
- Hudson Bay Mountain Estates;
- Coastal GasLink Pipeline;
- Pacific Northern Gas Looping Pipeline;
- Pacific Trails Pipeline;
- Prince Rupert Gas Transmission ;
- Dome Mountain Mine;
- Prince George to Terrace Capacitors Project;
- Telkwa to Smithers Bike Trail;
- Silver Queen Property;
- Fenton Creek Project;
- Big Onion Project;
- Lennac Lake Project;
- Silver Hope Project; and
- Maple Leaf Cannabis Production Facility.

The proposed cut-off date for incorporating any new, reasonably foreseeable future developments in the Application's cumulative effects assessment will be six months prior to the submission of the Application. The rationale is that after this date authors do not have time to reconsider, update, and report on the potentially altered cumulative effects.

The Application will describe the methodology for identifying potential interactions between residual project effects and the effects of other developments, including a description of the following:

- The spatial boundaries for the cumulative effects assessment for each VC/IC, including maps;
- The spatial and temporal boundaries of other developments; and
- The potential for interaction (spatial and temporal) and linkages (overlap) of VCs/ICs with other developments.

The Application will include:

- A table of all past, present and reasonably foreseeable developments that will be included in the cumulative effects assessment, should one be required for a particular VC or IC;
- A general description of the information sources used to identify reasonably foreseeable developments and activities; and
- A map showing the location of the projects and activities.

### *3.8.2 Conducting a Cumulative Effects Assessment*

The Application will summarize the process and methodology used to conduct the cumulative effects assessment, including the identification of potential cumulative effects, identification of additional mitigation measures, and evaluation of any (residual) cumulative effects using the same methodology described above in sections 3.6 to 3.9 of this AIR template.

## 3.9 Follow-up Strategy

Where a residual adverse effect and/or cumulative effect has been identified for a specific VC, the Application will include a description of a follow-up strategy, where appropriate, that:

- Identifies the measures to evaluate the accuracy of the original effects prediction;
- Identifies the measures to evaluate the effectiveness of proposed mitigation measures; and
- Proposes an appropriate strategy to apply in the event that original predictions of effects and mitigation effectiveness are not as expected. This includes reference to further mitigation, involvement of key stakeholders, Indigenous Groups, government agencies and any other measures deemed necessary to manage the issue.

Each IC and VC section will describe the approach to identifying and developing a monitoring and adaptive management strategy or provide a rationale where no strategy is needed (e.g., where confidence in the effects assessment is high or there is an existing monitoring program).

# 4.0 ENVIRONMENTAL EFFECTS ASSESSMENT

The Application will include an assessment of Environmental Effects VCs identified in the AIR. The assessment will be conducted in accordance with the methodology specified in section 3.0 Assessment Methodology of the AIR, using the organizational structure demonstrated in this section.

## 4.1 Atmospheric Environment Intermediate Component

The Project has the potential to influence the atmospheric environment that includes air quality, GHG emissions and noise due to emissions from Construction, Operation, and Decommissioning and Reclamation, and Post-Closure activities. This section of the Application will present the subcomponents, key indicators, boundaries of the assessment for the Atmospheric IC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Atmospheric IC will include the following subcomponents and associated indictors:

| Subcomponent | Indicators |
|---|---|
| Air quality | Change in air quality parameters:<br>• Sulphur dioxide<br>• Nitrogen dioxide<br>• Inhalable particulate matter ($PM_{10}$)<br>• Respirable particulate matter ($PM_{2.5}$)<br>• Total suspended particulate |
| GHG emissions | Change in GHG emissions:<br>• Carbon dioxide<br>• Methane<br>• Nitrous oxide |
| Noise | Change in noise levels:<br>• Daytime noise levels (Leq,day)<br>• Nighttime noise levels (Leq,night)<br>• Low frequency noise<br>• Percent highly annoyed |

Although vibration has been screened out as a subcomponent, a qualitative discussion will be included in the Application.

As project-related effects to this IC comprise one of the steps along the pathways of effects of the Project, with other VCs being the ultimate receptors of those effects, Atmospheric Environment will be studied as an IC in the context of effects of the Project on selected VC/ICs such as Terrain and Soils, Surface Water, Vegetation, Wildlife ,Avian Species , Land and Resource Use, Community Well-being and Human Health.

### *4.1.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Atmospheric Environment IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Atmospheric Environment IC are described below and are illustrated in **Figure 3** and **Figure 4**. Air quality boundaries are based on modelling guidance and expected emissions, primarily fugitive dust. Potential effects of GHGs are global in nature and thus the assessment area follows provincial and federal boundaries. Noise boundaries are based on the expected extent of noise emissions that would attenuate to background levels:

- LSA:
    - Air quality: 35 km by 35 km area including a 10 km buffer around proposed infrastructure. This represents an area within which potential effects on Telkwa and Smithers are captured.
    - GHG emissions: Not applicable.
    - Noise: Extends 3 km from project boundaries and activities, including the haul road.
- RSA:
    - Air quality: Not required as the LSA is large enough to include local and potential effects in more regional areas such as Smithers.
    - GHG emissions: The RSA includes provincial and federal boundaries.
    - Noise: Extends 5 km from project boundaries and activities, including the Bypass Road and minesite haul road.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

Telkwa Coal AIR
Northern British Columbia

# Air Quality Local and Regional Study Areas

## Legend

- Dustfall Station
- Meteorological Station
- Particulate Monitoring Station
- Air Quality Local and Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- First Nation Reserve
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Backfill
- Explosives Storage
- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
- Railway Loop
- Rock Pile
- Top Soil Pile
- Ultimate Pit

## 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

- Mine Features: ERM, 2019
- Basedata: Government of British Columbia
- Basemap: ESRI World Topographic Map

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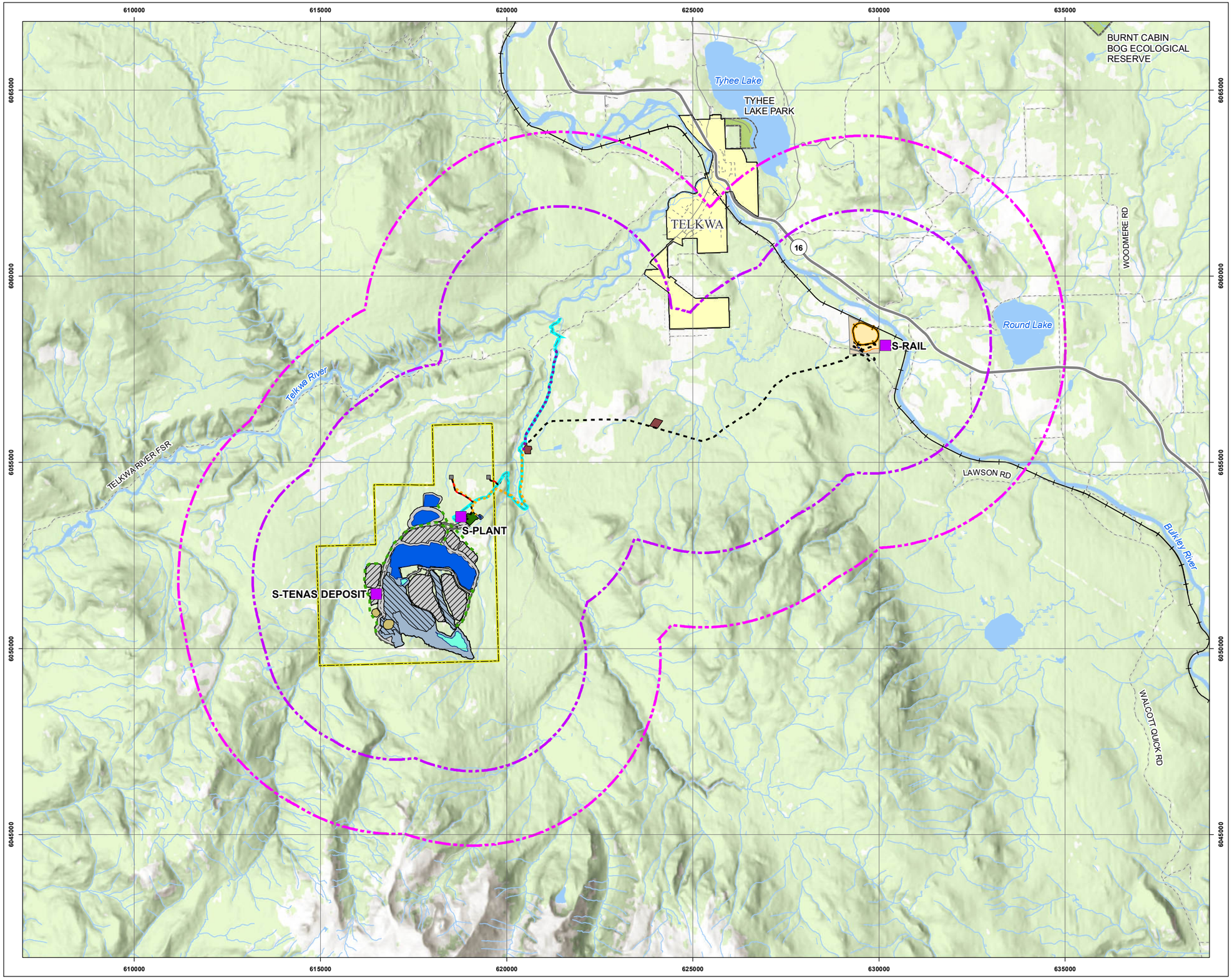
# Telkwa Coal AIR
# Northern British Columbia

## Noise Local and Regional Study Areas




Legend

- Noise Monitoring Location
- Noise Local Study Area
- Noise Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
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### *4.1.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the IC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and descriptions of field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Atmospheric Environment IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC.

The following general approach is being taken to develop existing conditions for the Atmospheric Environment IC:

- Air Quality
  - Dustfall was monitored during consecutive periods of approximately 30 days each, beginning in September/October 2017 until February 2018.
  - At the end of each sampling period, dustfall canisters were collected and analyzed for particulates (total, soluble, and insoluble), anions and nutrients (sulphate, nitrate, chloride, and ammonia), and metals.
  - A Partisol station to measure $PM_{10}$ and $PM_{2.5}$ was installed in November 2018.
  - A meteorological station was installed at the Tenas Deposit in September 2017.
- Noise
  - Noise was monitored at three stations, and measurements were collected.
  - Noise measurements were logged once every minute at approximately 1.5 metre (m) above ground. Measurements were taken for approximately 24 hours at each sampling season and each location.

The following technical reports will be reviewed as part of the Application. Where historic technical reports from unrelated projects are used as supporting information, the Application will include context relevant to the Project:

- Davidson Project
  - Application for Environmental Assessment Certificate (Blue Pearl Mining Inc. 2008).
  - Davidson Project Meteorology, Air Quality and Noise Baseline Study (Environmental Services Ltd 2006).

- Dome Mountain Project
    - Dome Mountain Project: 2009/10 Meteorology and Air Quality Baseline Report.
- Telkwa Coal Project
    - Application for a Project Approval Certificate – Volumes I-V (Manalta Coal Ltd 1997).
    - BC Air Data Archive website (BC Ministry of Environment and Climate Change 2019).
    - BC State of the Air Reports (BC Lung Association 2018).

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs, and guidance documents related to the Atmospheric Environment IC. These will include:

- Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2016)
- *Environmental Management Act.* SBC 2003. Chapter 53 (Province of BC 2003).
- Air Quality Objectives & Standards (BC AQO) (BC Ministry of Environment & Climate Change Strategy 2018).
- Canadian Ambient Air Quality Standards (Canadian Council of Ministers of the Environment (CCME) 2017).
- National Ambient Air Quality Objectives (CCME 1974).
- The Village of Telkwa's Noise Control Bylaw No. 495, 2001 (The Village of Telkwa 2001).
- Noise Control Best Practices Guidelines (BC Oil & Gas Commission 2009).
- Environmental Code of Practice for Metal Mines (Environment Canada 2009).
- Night Noise Guidelines for Europe (World Health Organization 1999).
- Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter), American Society for Testing and Materials (ASTM) D1739 98 (ASTM International 2017).
- Standard Guide for Selection Environmental Noise Measurements & Criteria, ASTM E1686-03 (ASTM International 2008).
- Useful Information for Environmental Assessments (Health Canada 2010).
- Guideline for Air Quality Dispersion Modelling in BC (Ministry of Environment 2015).
- Guidance for Evaluating Human Health Impacts in Environmental Assessments: Noise (Health Canada 2017).

The following Atmospheric Environment IC technical reports will be provided with the Application:

- Tenas Project: 2017 to 2018 Baseline Report (ERM 2019).
- Data from BC Ministry of Environment and Climate Change monitoring stations (BC Ministry of Environment and Climate Change 2018).

### *4.1.3 Potential Effects*

The Application will identify potential adverse effects to the Atmospheric Environment IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Atmospheric Environment IC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Atmospheric Environment IC will be summarized.

The following potential effects will be assessed:

- Fugitive dust emissions from material handling, blasting, vehicles, and processing can result in increases in ambient particulate matter concentrations (total suspended particulate, $PM_{10}$, and $PM_{2.5}$) that can affect human and wildlife health and increases in dust fall deposition that can affect vegetation and waterbodies.
- Combustion emissions from vehicles and equipment can result in increases in ambient concentrations of nitrogen dioxide, sulphur dioxide, and other contaminants that can negatively affect human health and vegetation.
- The nature and extent of potential increases in ambient noise levels resulting from mining and rail loadout activities during the Operation phase of the Project for Leq,day and Leq,night at receptor locations, as well as HA and low frequency noise.
- Increases in GHG emissions and comparisons to provincial and federal emissions.

### *4.1.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Atmospheric Environment IC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.1.5 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

### *4.1.6 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR; and
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR.

### *4.1.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.2 Terrain and Soils Intermediate Component

The Project has the potential to change slope stability and increase the risk of geohazards along Goathorn Creek during the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases for the access road to the pit area. There is also the potential to interact with soil quantity and quality as a result of mine development. Soils are included in the effects pathway on the Vegetation and Land and Resource Use VCs. Soil quantity and quality will be considered during reclamation planning. This section of the Application will present the subcomponents, indicators, and boundaries of the assessment for the Terrain and Soils IC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Terrain and Soils IC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Soil quality | Change in physical and chemical properties of soil in context of land use capability |
| Terrain stability | Change in:<br>• Terrain stability<br>• Terrain morphology |

The Terrain and Soils IC will be supported by the Atmospheric Environment IC assessment. Project-related effects to the Terrain and Soils IC comprise one of the steps along the pathways of effects for the Project, with other VCs being the ultimate receptors of those effects; therefore, Terrain and Soils will be studied as an IC in the context of effects of the Project on the following VC/ICs:

- Surface Water;
- Groundwater;
- Aquatic Resources;
- Fish and Fish Habitat;
- Vegetation;
- Wildlife;
- Avian Species;
- Visual Resources;
- Land and Resource Use; and
- Human health.

### *4.2.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Terrain and Soils IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

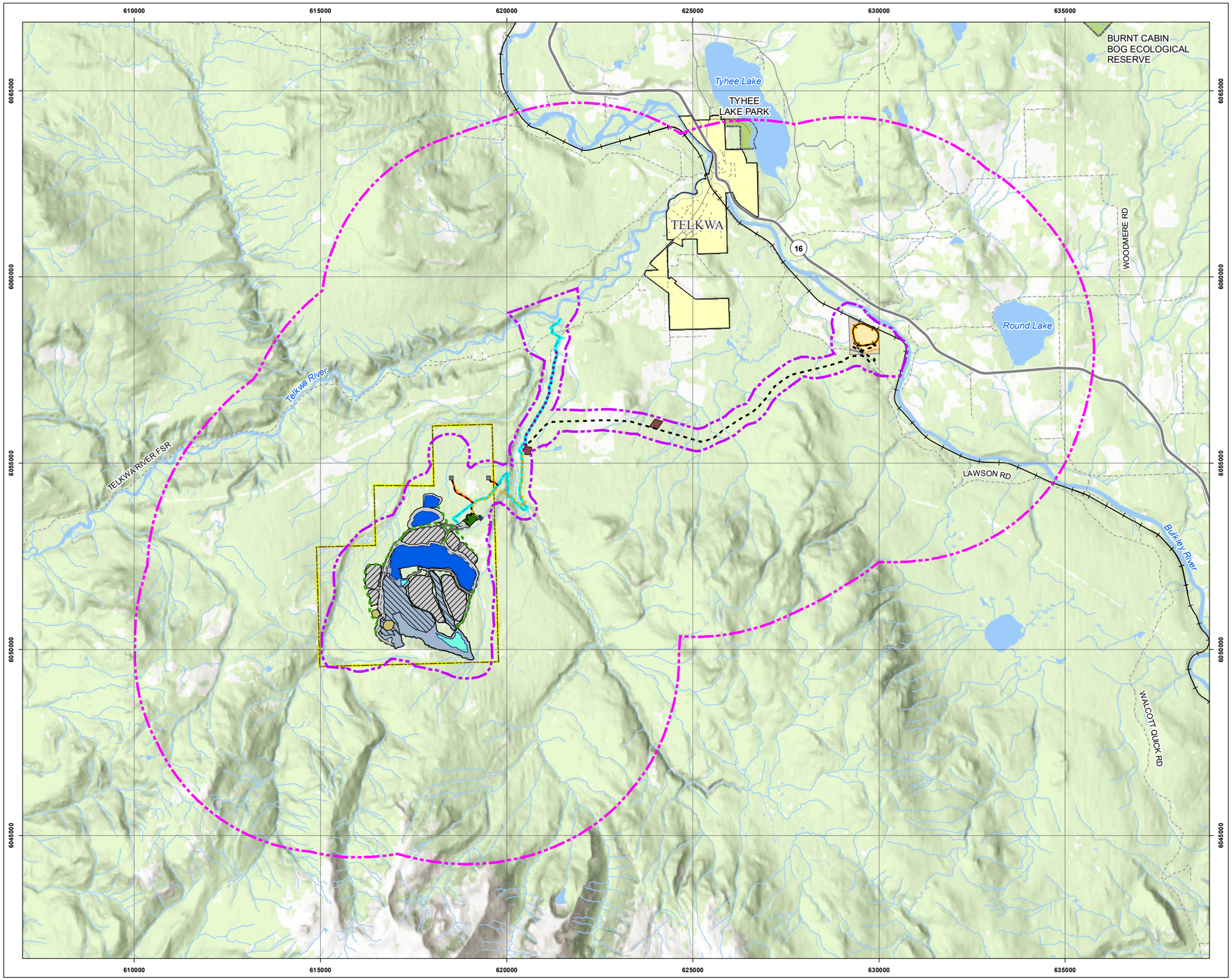
The proposed LSA and RSA for the Terrain and Soils IC are described below and are illustrated in **Figure 5**.

- The LSA includes the Project Footprint with a 250 m buffer on gravel quarries and linear infrastructure outside of the rail loop, minesite and Mine Infrastructure Complex (i.e., roads, powerlines, pipelines), and a 500 m buffer around all other infrastructure (e.g., rail loop, explosives facility and magazine, pit) to capture direct and indirect effects of project construction and operations on soils and terrain.
- The RSA includes the LSA with a minimum additional 5 km buffer to describe regionally available soils and terrain resources.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and the Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative and technical boundaries. If there are no other relevant boundaries, this will be stated.

# Telkwa Coal AIR
# Northern British Columbia

## Terrain and Soils Local and Regional Study Areas




## Legend

- Terrain and Soils Local Study Area
- Terrain and Soils Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

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### *4.2.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the IC, including literature reviews and desktop studies, list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Terrain and Soils IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Terrain and Soils IC:

- Desktop studies using publicly available information will be completed. Information sources may include but are not limited to existing terrain, soils, and geology mapping, reports completed from previous projects and the scientific literature.
- Terrain will be mapped within the Terrain and Soils LSA following the *Terrain Classification System for British Columbia* (Howes and Kenk 1997), the *Guidelines and Standards to Terrain Mapping in British Columbia* (Resources Inventory Committee 1996).
- Terrain mapping will be completed at the 1:10,000 scale, which indicates that 26 to 75% of the polygons will be verified in the field.
- Field methodology will follow the *Field Manual for Describing Terrestrial Ecosystems* (BC Ministry of Forests and Range and BC Ministry of Environment 2010).
- Soils will be described using detailed soil surveys within any ALR areas and using terrestrial ecosystem mapping (TEM) in non-ALR areas.
- Soil quality will be assessed in the context of land capability classification for agriculture.
- Any TEK will be included where relevant and available.

The Application will identify applicable provincial and federal legislation, policies, BMPs and guidance documents related to Terrain and Soils IC. These will include:

- *Mines Act*. RSBC 1996. Chapter 293 (Province of BC 1996).
- Health, Safety and Reclamation Code for Mines in British Columbia. Ministry of Energy and Mines (Province of BC 2017a).
- *Forest and Range Practices Act.* SBC 2002. Chapter 69 (Province of BC 2002)
- *Environmental Assessment Act.* SBC 2002. Chapter 43 (Province of BC 2002).

- Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME 2007).
- Bulkley Land and Resource Management Plan (Province of BC 1998).
- *Agricultural Land Commission Act* and Agricultural Land Reserve Use Regulation (Province of BC 2019).

The following Terrain and Soils IC technical reports will be referenced in the Application:

- Soil Survey and Land Capability Evaluation of the Telkwa Coal Project (Pedology Consultants 1984);
- Geochemical Evaluation of Soils and Overburdens for Crowsnest Resources, Ltd. Telkwa Coal Project (Sturm Environmental Sciences 1985.

The following Terrain and Soil IC technical report will be provided as an appendix to the Application:

- Tenas Project: Terrain and Soils Baseline Studies (pending).

### *4.2.3 Potential Effects*

The Application will identify potential adverse effects to the Terrain and Soils IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Terrain and Soils IC resulting from activities within each phase of the Project. Interactions between project components and activities and the Terrain and Soils IC will be summarized.

The following potential effects will be assessed:

- Loss of soils and changes to terrain from vegetation and rock removal during construction and operations phases of the mine; and
- Changes to soil quality due to changes in chemical and physical characteristics during construction, operations, and decommissioning and reclamation phases of the mine.

### *4.2.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Terrain and Soils IC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.2.5 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

### *4.2.6 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR; and
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR.

### *4.2.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.3 Surface Water Intermediate Component

Project design and implementation may affect surface water quantity and quality in the Project area. Instream and near-stream construction/demolition activities have the potential to produce elevated suspended solids in surface water and increase sediment deposition in sensitive habitats. This section of the Application will present the subcomponents, key indicators, boundaries of the assessment for the Surface Water IC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Surface Water IC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Surface water quantity | Change in surface water flow rates (cubic metre per second) |
| Surface water quality | • Total and dissolved elements<br>• Anions/ nutrients<br>• Alkalinity/acidity<br>• Hardness<br>• Turbidity<br>• Total suspended solids<br>• pH<br>• Conductivity<br>• Temperature<br>• Polycyclic aromatic hydrocarbons |

Project-related effects to this IC comprise one of the steps along the pathways of effects of the Project, with other VCs with the ultimate receptors of those effects; therefore, the Surface Water IC will be studied as an IC in the context of effects of the Project on:

- Groundwater;
- Aquatic Resources;
- Fish and Fish Habitat;
- Vegetation;
- Wildlife;
- Avian Species;
- Land and Resource Use; and
- Human Health.

### *4.3.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Surface Water IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

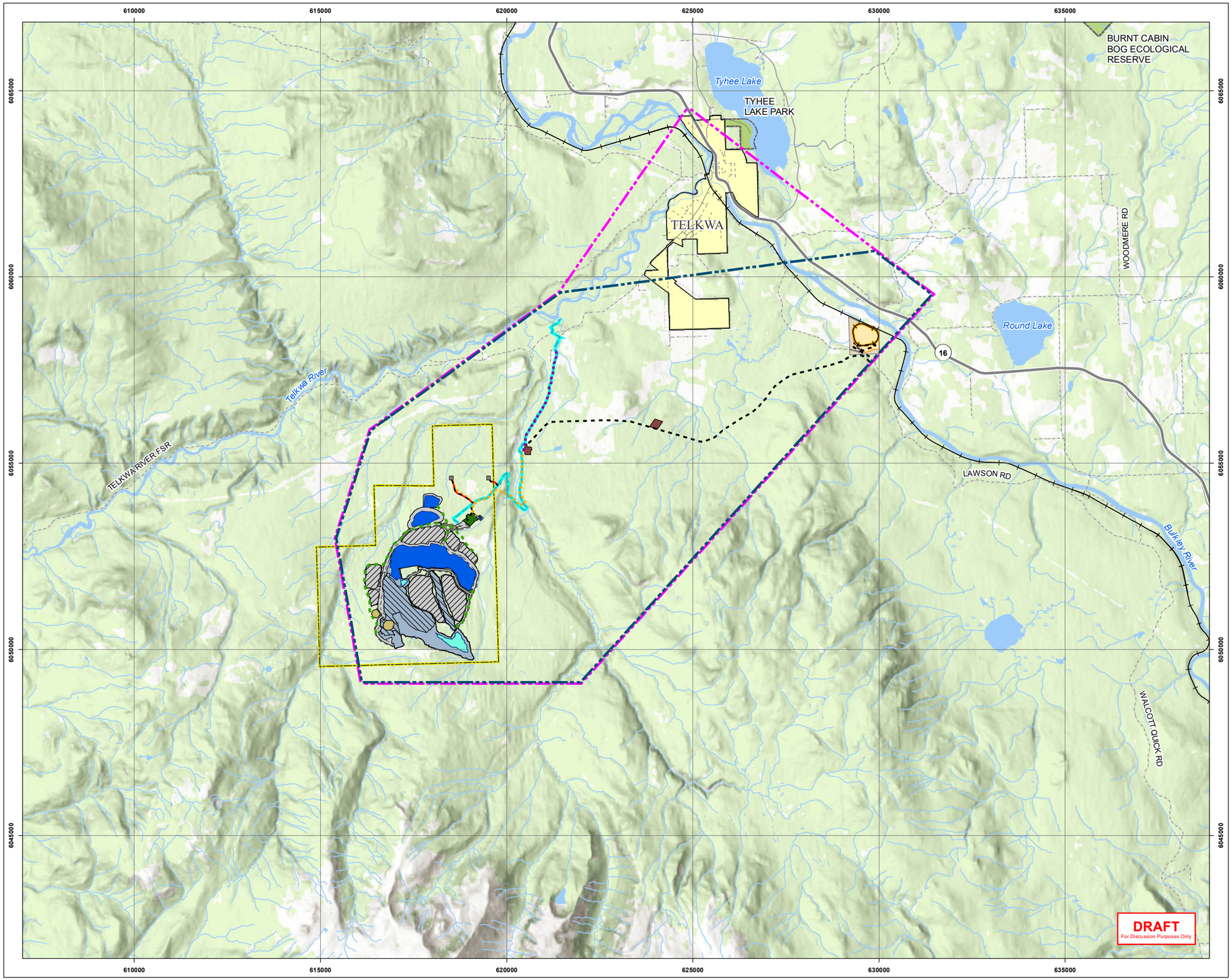
The proposed LSA and RSA for the Surface Water IC are described below and are illustrated in **Figure 6**. The water study boundaries are selected to account for near and far-field changes to surface water quantity and quality:

- The LSA is defined where direct discharges occur to water courses within the vicinity of the mine (e.g., Tenas Creek, Four Creek, and Goathorn Creek), to the edge of the mixing zone in the Telkwa River, and downstream of the rail loadout in the Bulkley River.
- The RSA is assumed to extend to monitoring location WQS-12 in the Bulkley River, downstream of the confluence with the Telkwa River. The extent of the RSA will be confirmed through modelling.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project, including a Post-Closure monitoring plan. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

Telkwa Coal AIR
Northern British Columbia

# Surface Water Local and Regional Study Areas




## Legend

- Surface Water Local Study Area
- Surface Water Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Backfill
- Explosives Storage
- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
- Railway Loop
- Rock Pile
- Top Soil Pile
- Ultimate Pit

## 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

- Mine Features: ERM, 2019
- Basedata: Government of British Columbia
- Basemap: ESRI World Topographic Map

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### *4.3.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the IC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Surface Water IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Surface Water IC:

- Surface water hydrology
    - Hydrometric monitoring stations were set up at Tenas Creek, Goathorn Creek, and Telkwa River. At each station, pressure transducers were installed as deep in the channel as possible to allow for continuous monitoring of water levels at all ranges of flows. Pressure transducers continuously recorded water level at a ten-minute interval.
    - Manual flow measurements were completed during each site visit during the 2017 to 2019 monitoring period to obtain a range of measured discharges under varying conditions.
    - To provide a continuous record of the discharge at hydrometric monitoring sites, empirical relationships between measured stage and discharge (i.e., rating curves) were developed (ISO 2010). Once the rating curve is established for a monitoring site, continuous stage data can be converted into continuous discharge data by applying the rating curve equation to the recorded stage values. Data are then presented as discharge hydrographs.
    - Annual hydrographs, presented as mean daily discharge, were generated for each hydrometric monitoring station operated in 2017.
    - Observed and calculated discharge values were used to generate a series of hydrologic indices including annual runoff, mean annual discharge, seasonal runoff distribution, and annual peak and low flows.
- Surface water quality
    - Water samples were collected in Tenas Creek, Goathorn Creek, Four Creek, Helps Creek, Telkwa River, and Bulkley River.
    - Samples were analyzed by ALS Environmental Laboratories.

  - Water-quality parameters were compared to their respective BC Ministry of Environment and Climate Change Strategy and CCME water quality guidelines for the protection of freshwater aquatic life.

- Telkwa River Below Tsai Creek, Bulkley River at Quick, and Bulkey River Near Smithers Real-time Hydrometric Data (extracted from Water Survey of Canada web site).
- Goathorn Creek Near Telkwa Historical Hydrometric Data (extracted from Water Survey of Canada web site).
- Final Project Report Specifications for Manalta Coal Ltd.'s Proposed Telkwa Coal Project (Tewalk Coal Project Committee 1997).
- Telkwa Coal Project: Application for a Project Approval Certificate – Volumes I-V (Manalta Coal Ltd 1997).
- Application for Environmental Assessment Certificate (Blue Pearl Mining Inc. 2008).
- Davidson Project Meteorology and Hydrology Baseline report 2006-2008 (Rescan Environmental Services Ltd 2009).
- Water Management for the Telkwa Coal Project (Piteau Engineering Ltd. August 1998).
- Ambient Water Quality Objectives for the Bulkley River Basin: Overview Report. B.C. Ministry of Environment (R. Nijman 1986).
- Ambient Water Quality Objectives for the Bulkley River Basin: Technical Appendix. B.C. Ministry of Environment (R. Nijman 1986).
- Telkwa Coal Mine Surface Water Monitoring Program 1998. (AGRA Earth & Environmental Ltd. 1999).
- Telkwa Coal Project 1999 Baseline Surface Flow and Water Quality Final Data Report (AGRA Earth & Environmental Ltd. 2000).
- Drinking Water Source Quality Monitoring 2002-03; Bulkley Valley Surface Water Sources: Smithers Lakes, Kirby Lake, Chicago Creek, Bulkley River, Tobaggan Creek, and Thompson Creek (BC MOE 2006).
- Skeena-Nass Area Bulkley River Basin Water Quality Assessment and Objectives (BC Ministry of Environment 1986).
- Report to Stephen Day: BC Research Selenium Results (Frontier Geosciences 1999).
- Baseline Data, Surface Water and Groundwater, Telkwa Coal Project (Piteau Engineering 1994).

- Summary of Fisheries, Aquatic Habitat and Water Quality Information for the Telkwa Project Area: A Literature Review (SRK Consultants 1996).
- Telkwa Coal Project Approval Certificate Application: Environmental Baseline.
- Suspended Sediment: Telkwa River Watershed (Beaudry, P.G., J.W. Schwab and D. Septer 1991).
- Telkwa Project: Stage I Application (Crows Nest Resources and READ Environmental & Planning Associates 1983).
- Water Quality Investigation: Telkwa Coal Project (MacLaren Plansearch Services 1985).
- Water Quality Summaries for Eight Rivers in the Skeena River Drainage, 1983 – 1987: the Bulkley, Upper Bulkley, Morice, Telkwa, Kispiox, Skeena, Lakelse, and Kitimat Rivers (Wilkes, B. and R. Lloyd 1990).
- TEK where relevant and available

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Surface Water IC. These will include:

- *Water Sustainability Act*. Chapter 15 (Province of BC 2014).
- *Canada Water Act. R.S.C.* 1985 (Government of Canada 1985).
- *Fisheries Act. R.S.C.* 1985 (Government of Canada 1985).
- *Canadian Environmental Protection Act. S.C.* 1999 (Government of Canada 1999).
- *Mines Act.* Chapter 293. 1996 (Province of BC 1996).
- *Environmental Management Act*. Chapter 53. 2003 (Province of BC 2003).
- Manual of British Columbia Hydrometric Standards (Ministry of Environment 2009).
- Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2016).
- British Columbia Environmental Laboratory Manual (Ministry of Environment 2015).
- British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (Ministry of Environment 2019).
- CCME guidelines (CCME2018).
- BC Field Sampling Manual (Clare 2002, 2013 edition).
- Guidelines for Metal Leaching and Acid Rock Drainage at Mine Sites in British Columbia (Ministry of Energy, Mines & Petroleum Resources 1998).

The following Surface Water IC technical reports will be provided with the Application:

- Baseline Hydrological Conditions in the Telkwa Coal Project.
- Tenas Project: 2017 to 2018 Baseline Report.

### *4.3.3 Potential Effects*

The Application will identify potential adverse effects to the Surface Water IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Surface Water IC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Surface Water IC will be summarized.

The following potential effects will be assessed for all mine phases:

- Annual runoff;
- Seasonal distribution of flow;
- Timing and magnitude of peak and low flow events;
- Changes to groundwater-surface water interactions;
- Evaluation of the metal leaching and acid rock drainage (ML/ARD) potential of mined materials (e.g., mined rock and processed rock) and influence of ML/ARD on surface water quality; and
- Changes to surface water quality.

### *4.3.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Surface Water IC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.3.5 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

### *4.3.6 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR; and
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR.

### *4.3.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.4 Groundwater Intermediate Component

Groundwater is protected under the *BC Water Sustainability Act*. The Project has the potential to interact with groundwater quantity and quality as a result of Project-related water management, and mine development. This section of the Application will present the subcomponents, key indicators, boundaries of the assessment for the Groundwater IC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The following indicators are proposed for the Groundwater IC:

| Subcomponent | Indicators |
|---|---|
| Groundwater quantity | Change in<br>• Groundwater discharge rates to surface water features (e.g., streams and creeks)<br>• Groundwater levels |
| Groundwater quality | Change in groundwater quality for parameters of interest:<br>• Dissolved elements<br>• Anions/nutrients<br>• Alkalinity/acidity<br>• Hardness<br>• Total dissolved solids<br>• pH<br>• Conductivity<br>• Temperature |

Project-related effects to this IC comprise one of the steps along the pathways of effects of the Project, with other VCs the ultimate receptors of those effects. Therefore, the Groundwater IC will be studied as an IC in the context of effects of the Project on:

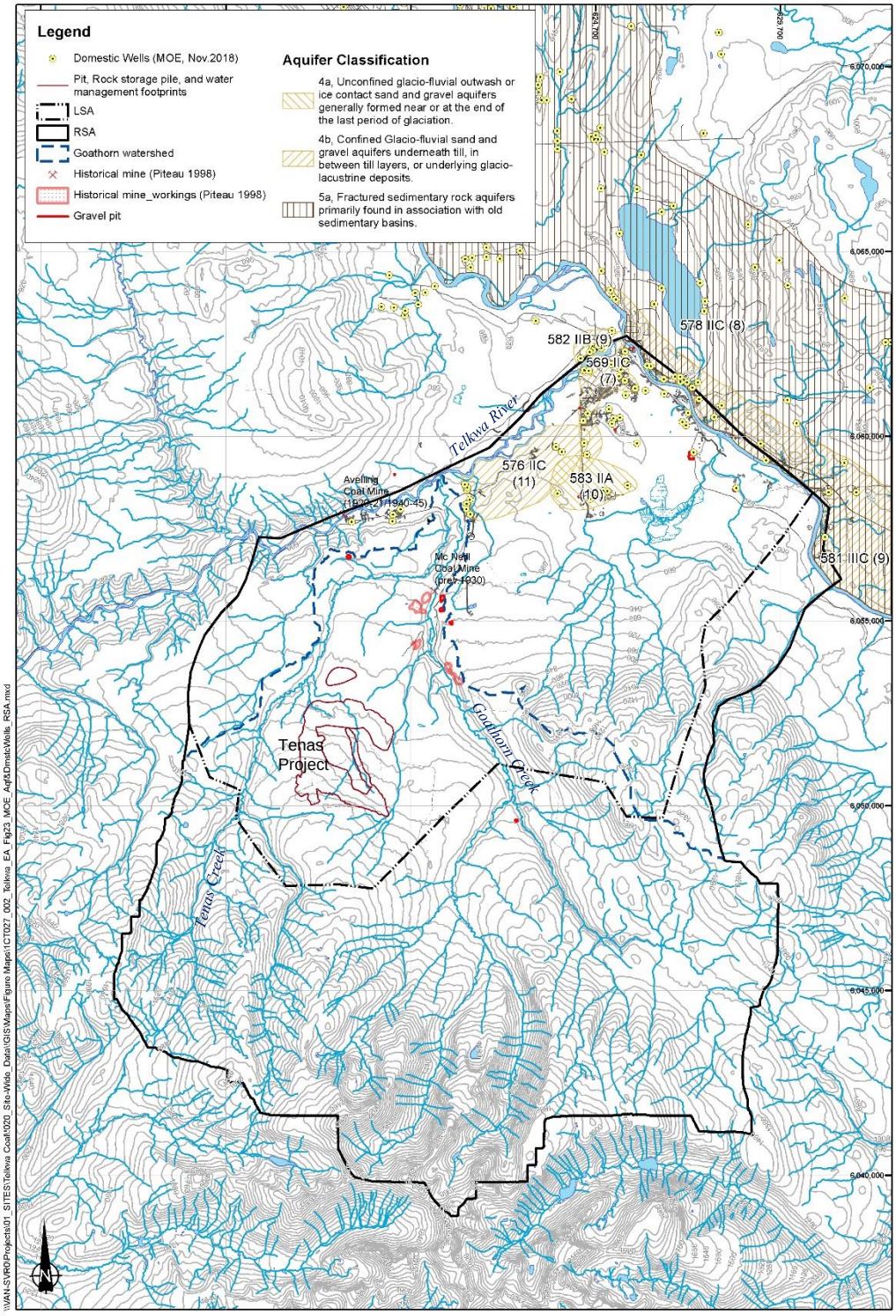
- Surface Water;
- Aquatic Resources;
- Fish and Fish Habitat;
- Vegetation
- Wildlife;
- Avian Species; and
- Human Health.

Context and Boundaries

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Groundwater IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Surface Water IC are described below and are illustrated in **Figure 7**. The LSA corresponds to the Project footprint with a buffer of 200m; it represents the area where immediate adverse effects may occur. The RSA is based on groundwater sheds (which are assumed to reasonably match the surface watersheds) and encompasses the full watershed of Goathorn Creek and a portion of the Bulkley watershed. The RSA is intended to provide a larger geographical context to the assessment of potential Project effects, and to evaluate potential cumulative effects.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project, including a Post-Closure monitoring plan. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

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| srk consulting | TELKWA COAL LIMITED | FS Groundwater Technical Report |
| | | **Aquifers and domestic wells identified within the RSA** |
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### *4.4.1 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Groundwater IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Groundwater IC:

The characterization of groundwater has generally followed the Regulatory and Policy Framework, and provincial and regional best management practices and guidance documents, applicable to the Groundwater IC. References include:

- Joint Application Requirements for *Mines Act* and *Environmental Management Act* Permits (BC Ministry of Energy and Mines, and BC Ministry of Environment 2016).
- Groundwater Protection Regulation, *Water Sustainability Act*. Chapter 15. 2016. (Province of BC 2014)
- Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities (BC Ministry of Environment 2012).
- Framework for a Hydrogeologic Study in support of an Application for an Environmental Assessment Certificate under the *Environmental Assessment Act* and Regulations (BC Ministry of Environment, Water Stewardship Division 2019).
- Draft Guidelines for the Preparation of an Environmental Impact Statement (CEAA 2015).

The Application will describe the existing (or baseline) groundwater conditions within the study area in sufficient detail to enable potential Project- IC interactions to be identified, understood, and assessed, including:

- A description of the literature reviews, desktop studies, and field programs, with reference to applicable assumptions, standards, methods, dates, analyses, and margins of error or degree of uncertainty;
- Available traditional ecological or community knowledge; and
- Natural and/or human-caused trends that may have altered the IC as a result of the proposed Project or other project and/or activities in the area.

The baseline groundwater conditions will be characterized based on the relevant documentation produced specifically for the proposed Project, as well as publicly available studies for the study area or other projects in central BC. The key findings will be summarized directly in the Application and the full description of the study will be documented in two technical reports contained in Appendices:

- Baseline Data – Surface Water and Groundwater, Telkwa Coal Project; and
- Groundwater Assessment Technical Report for the Tenas Coal Project, Telkwa.

The information specific to the Project will include:

- The groundwater field investigations completed by the prior owners (Manalta Coal Ltd.);
- The groundwater field investigations completed since 2017 to compliment the historical studies (i.e. Installation of 5 monitoring wells and 1 pumping well, Hydraulic tests, installation of 10 transducer dataloggers, groundwater level and sampling campaigns and analyses of groundwater quality); including most recently, 5 sampling periods in 2019; and
- Comparisons of groundwater quality at the Project with BC Ministry of Environment approved and working water quality guidelines - freshwater aquatic life.

### *4.4.2 Potential Effects*

The Application will identify potential adverse effects to the Groundwater IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will identify and evaluate the anticipated interactions between the proposed Project and the IC being assessed. The following proposed project components or activities are anticipated to interact with the hydrogeology aspects of the Project area:

- Mining (i.e., changes to ground surface and subsurface characteristics, pit dewatering,) and development of water management components may change groundwater levels and discharge rates to creeks; and
- The potential loads associated with the weathering of pit walls, waste facilities, and Control Ponds can migrate via groundwater and change the groundwater quality.

These interactions will be assessed using groundwater numerical models that follow the Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities, prepared by BC Ministry of Environment (2012). The models will be calibrated to groundwater levels, climate, and stream flow data, and the sensitivity of model parameters will be tested. Results will be provided in the Groundwater Assessment Technical Report included as an appendix to the Application. All primary effects pathways will be carried forward for further evaluation of the residual effects.

### *4.4.3 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Groundwater IC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant

management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.4.4 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

### *4.4.5 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR; and
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR.

### *4.4.6 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.5 Aquatic Resources Intermediate Component

The Project has the potential to affect aquatic resources in sub basins of the Telkwa River over which the Project is located (i.e., Tenas Creek, Goathorn Creek, and Four Creek), and in aquatic habitats downstream of proposed diversions and contact water discharge locations (including the Telkwa River). Construction and operation of the mine may have adverse effects on aquatic resources through changes in water quality and in concentrations of contaminants in sediments that may affect the abundance, diversity, richness, and evenness of benthic invertebrates and periphyton.

As project-related effects to this IC comprise one of the steps along the pathways of effects of the Project, with other VCs with the ultimate receptors of those effects, Aquatic Resources will be studied as an IC in the context of effects of the Project on Fish and Fish Habitat, Wildlife, and Avian Species. The Aquatic Resources IC will include the following subcomponents and associated indictors:

| Subcomponent | Indicators |
|---|---|
| Aquatic resources (benthic invertebrates, periphyton, sediment quality) | Changes in:<br>• Composition, abundance, diversity of periphyton and benthic invertebrates<br>• Concentrations of contaminants of potential concern in sediments relative to toxicological benchmarks |

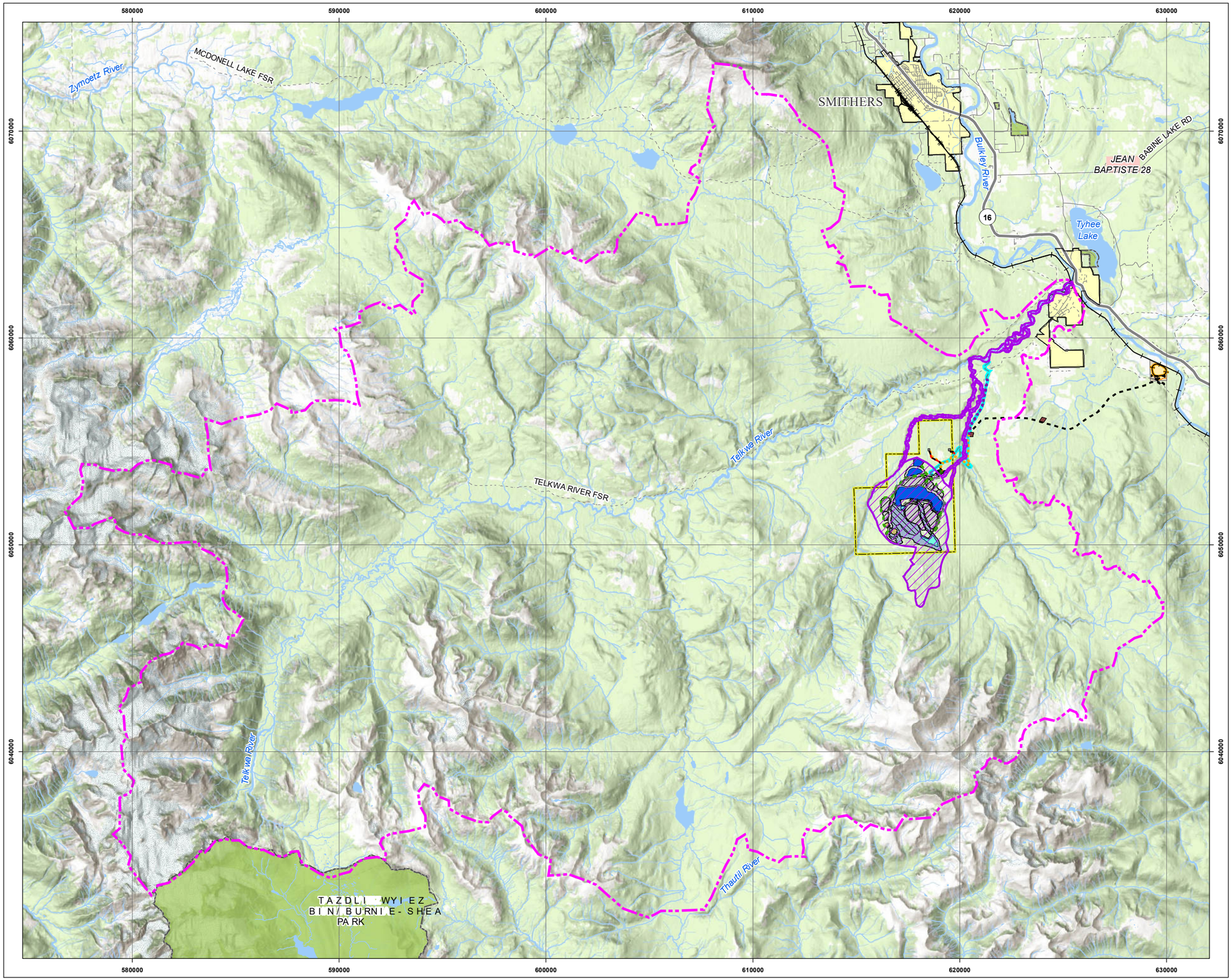
### *4.5.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Aquatic Resources IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Aquatic Resources IC are described below and are illustrated in **Figure 8**. The boundaries of the LSA and RSA encompass those instream areas that are likely influenced by Project-related habitat disturbance, water quality effects, and sedimentation.

- LSA: Aquatic habitats potentially influenced by the Project in Four Creek, Tenas Creek, and Goathorn Creek downstream of the mine footprint.
- RSA: Aquatic habitats in the Telkwa River watershed.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative and technical boundaries. If there are no other relevant boundaries, this will be stated.




Telkwa Coal AIR
Northern British Columbia

## Aquatic Resources Local and Regional Study Areas

### Legend

- Aquatics Resources Local Study Area
- Aquatics Resources Regional Study Area
- CN Rail Line
- Highway
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- Watercourse
- Waterbody
- Wetland
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- Tenas Block Outline
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- Private Land

**Mine Features**

- Existing 25 kV Power Line
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- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
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- Backfill
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- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
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- Rock Pile
- Top Soil Pile
- Ultimate Pit

### Notes

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

### Sources

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- Basedata: Government of British Columbia
- Basemap: ESRI World Topographic Map

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### *4.5.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the IC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Aquatic Resources IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC.

The following general approach is being taken to develop existing conditions for the Aquatic Resources IC:

- Summarize available existing aquatic resource information for the Project study areas including the historical surveys of water quality, sediment quality, and abundance, diversity, and richness of benthic invertebrates and periphyton.
- Sampling of sediments
    - Sediment samples were collected from six sites in the Project area in September 2017.
    - Sediment samples were collected from existing sites and four new sites in 2019.
    - Whole sediment samples from streams were analyzed for pH, particle size, nutrients, total organic compounds, and metals.
    - Sediments were compared to the current BC Ministry of Environment and Climate Change Strategy working sediment quality criteria (BC Ministry of Environment and Climate Change Strategy 2018) and sediment quality guidelines (CCME 2018).
- Sampling of periphyton
    - Periphyton biomass (as chlorophyll *a*) was sampled from six stream sites in 2017.
    - Periphyton samples were collected from existing sites and four new sites in 2019.
    - Periphyton density was calculated by dividing the total number of cells counted by the area sampled and corrected for subsampling.
- Sampling of benthic invertebrates
    - Kick net sampling was conducted once at each site in 2017.
    - Invertebrates were sorted and identified to the lowest possible taxonomic level (usually genus).

- Instream Flow Monitoring (IFM)
    - Three IFM field surveys were conducted in 2019 to capture seasonal flows;
    - Overwintering surveys in 2019 and 2020 will complement IFM surveys; and
    - Desktop level outfall location analysis.
- Compilation of TEK where relevant and available.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Aquatic Resources IC. These will include:

- Surface Water Quality Guidelines for the Protection of Aquatic Life in BC (Ministry of Environment 2018)
- *Water Sustainability Act*. SBC 2014. Chapter 15 (Province of BC 2014).
- *Canada Water Act*. RSC 1985 (Government of Canada 1985)
- *Mines Act.* RSBC 1996. Chapter 293 (Province of BC 1996).
- *Environmental Management Act*. SBC 2003. Chapter 53 (Province of BC 2003).
- Manual of British Columbia Hydrometric Standards (Ministry of Environment 2009).
- *Fisheries Ac*t. RSC 1985 (Government of Canada 1985).
- *Canadian Environmental Protection Act.* SC 1999 (Government of Canada 1999).
- CCME guidelines (CCME 2018).
- Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (Ministry of Environment 2016).
- BC Field Sampling Manual (Clark 2002, 2013 edition).
- *Riparian Areas Protection Act.* SBC 1997. Chapter 21 (Province of BC 1997).
- *Species at Risk Act* (SARA). SC 2002 (Government of Canada 2002).
- *Canadian Environmental Assessment Act*. 2012 (Government of Canada 2012).
- British Columbia Conservation Data Centre (Ministry of Environment 2015).
- Fisheries and Oceans Canada Protection Policy Statement (Fisheries and Oceans Canada 2013).

- BC Water and Sediment Quality Guidelines (Ministry of Environment 2006).
- Canadian Sediment Quality Guidelines (CCME 2011).
- Canadian Tissue Residue Guidelines (CCME 2001).

The following Aquatic Resources IC technical reports will be provided with the Application:

- Telkwa Coal Project Aquatic Resources Assessment (Bustard 1985).
- Assessment of Benthic Invertebrate and Juvenile Fish Populations in Goathorn and Tenas Creeks and the Lower Telkwa Rivers (Bustard 1984).
- Tenas Project: 2017 to 2018 Baseline Report (ERM 2018).

### *4.5.3 Potential Effects*

The Application will identify potential adverse effects to the Aquatic Resources IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Aquatic Resources IC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Aquatic Resources IC will be summarized according to the following:

- Changes in water quality due to releases of suspended sediments, mine contact water, blast residues, and flow alterations;
- Changes in sediment quality due to releases of suspended sediments, mine contact water, blast residues, and flow alterations; and
- Changes in the abundance and community structure of aquatic biota.

### *4.5.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Aquatic Resources IC in a manner consistent with Section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application will be identified.

### *4.5.5 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in Section 3.6 Characterization of Residual Effects of this AIR .

### *4.5.6 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with Section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;

- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;

- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and

#### *4.5.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.6 Fish and Fish Habitat Valued Component

The Project has the potential to affect fish and fish habitat in sub-basins of the Telkwa River in which the Project is located (i.e., Tenas Creek, Goathorn Creek, and Four Creek), and in aquatic habitats downstream of proposed diversions and contact water discharge locations (including the Telkwa River). Construction and operation of the mine may have adverse effects on fish and fish habitat through direct mortality of fish, alterations or destruction of fish habitat, changes in base flows, and in the degradation of water quality. Due to their position as a top predator in the aquatic food chain, fish are important as an indicator of overall aquatic health. They are also important for their recreational, ceremonial, and food value to both First Nations and other users.

The Fish and Fish Habitat VC will include the following subcomponents and associated indictors:

| Subcomponent | Indicators |
|---|---|
| Fish habitat | Change in areal extent permanently altered, destroyed or made inaccessible to fish |
| Fish | Change in:<br>• Fish health<br>• Abundance<br>• Condition |

This VC assessment may support and be supported by the following IC and VC assessments:

- Wildlife;
- Avian Species;
- Land and Resource Use; and
- Human Health.

### *4.6.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Fish and Fish Habitat VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

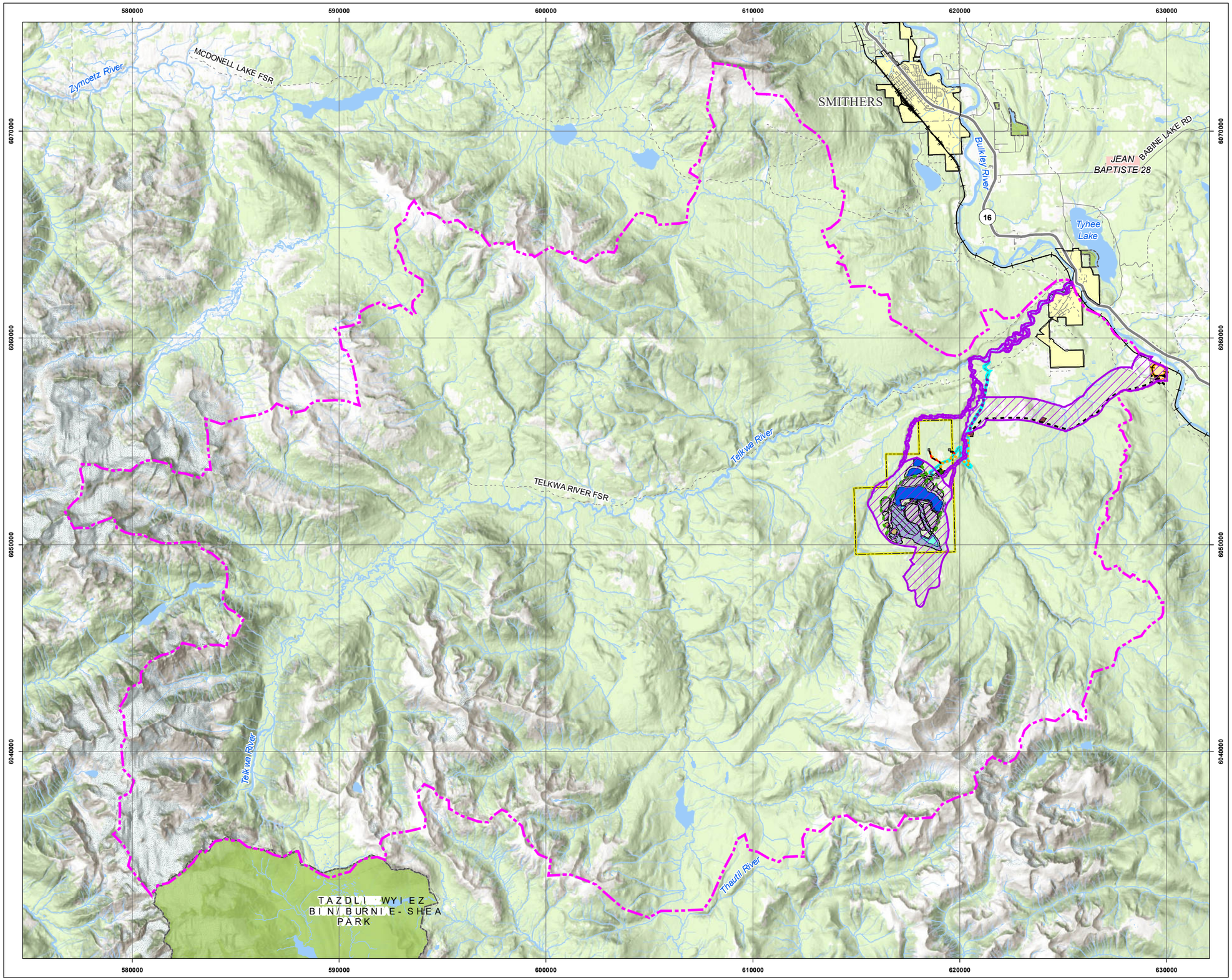
The proposed LSA and RSA for the Fish and Fish Habitat VC are described below and are illustrated in **Figure 9**. The LSA includes instream and riparian areas that are likely to be influenced by Project-related habitat disturbance, water quality effects, and sedimentation. The RSA includes those instream and riparian areas in which project-related effects may interact with effects from other projects.

- LSA: Fish habitats within the Project footprint, Four Creek, and Tenas and Goathorn Creeks downstream of the mine footprint; and from 100 m upstream to 300-1000 m downstream on watercourses crossed by the proposed haul road.
- RSA: Fish habitats in the Telkwa River watershed and in the tributaries to the Bulkley River crossed by the haul road.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative and technical boundaries. If there are no other relevant boundaries, this will be stated.

# Telkwa Coal AIR
# Northern British Columbia

## Fish and Fish Habitat Local and Regional Study Areas




### Legend

- Fish and Fish Habitat Local Study Area
- Fish and Fish Habitat Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Water body
- Wetland
- Park or Protected Area
- First Nation Reserve
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25 kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Backfill
- Explosives Storage
- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
- Railway Loop
- Rock Pile
- Top Soil Pile
- Ultimate Pit

### Notes

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

### Sources

- Mine Features: Allegiance Coal, 2018
- Basedata: Government of British Columbia
- Basemap: ESRI World Topographic Map

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### *4.6.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Fish and Fish Habitat VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC.

The following general approach is being taken to develop existing conditions for the Fish and Fish Habitat VC:

- Summarize available existing fisheries inventory and habitat use information for the Project study areas including the occurrence and distribution of indicators, as well as information on habitat use.
- Sampling for fish to determine fish presence, species composition and distribution, and to collect fish tissue for metals analysis at receiving and reference sites.
- Identification of species and maturity for captured fish and measurement of length, weight, condition, and age.
- Assessment of stream habitat for indicator species within the LSA based on known species distributions and species captured during fish sampling.
- Compilation of TEK where relevant and available.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Fish and Fish Habitat VC. These will include:

- *Fisheries Act* RSC 1985 (Government of Canada 1985).
- *Water Sustainability Act*. SBC 2014. Chapter 15 (Province of BC 2014).
- *Species at Risk Act* (SARA). SC 2002 (Government of Canada 2002).
- *Navigation Protection Act*. RSC 1985 (Government of Canada 1985).
- *Mines Act.* RSBC 1996. Chapter 293 (Province of BC 1996).

- *Environmental Management Act*. SBC 2003. Chapter 53 (Province of BC 2003).
- Metal Mining Environmental Effects Monitoring Technical Guidance Document (Environment Canada 2011).

The following Fish and Fish Habitat VC technical reports will be provided with the Application:

- 1982 Investigations of Adult Coho Salmon in the Telkwa River (Bustard 1983).
- Assessment of Benthic Invertebrate and Juvenile Fish Populations in Goathorn and Tenas Creeks and the Lower Telkwa River (Bustard 1984).
- Tenas Project: 2017 to 2018 Baseline Report (ERM 2019).

### *4.6.3 Potential Effects*

The Application will identify potential adverse effects to the Fish and Fish Habitat VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Fish and Fish Habitat VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Fish and Fish Habitat VC will be summarized.

The following potential effects will be assessed:

- Changes in the aerial extent of available fish habitat due to destruction, alteration, changes in baseflows, degradation of water quality, or creation of barriers to fish passage.
- Changes in health, abundance, or condition of fish due to direct impacts, stranding, or degradation of water quality.

### *4.6.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Fish and Fish Habitat VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application will be identified.

### *4.6.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.6.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.6.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.7 Vegetation Valued Component

The landscape where the proposed Project is located is primarily sub-boreal spruce forest that has experienced forest harvesting over the last 40 years, creating a mosaic of young to mature forest types. The proposed project has potential to alter forests, wetlands, ecological communities, culturally important plant species and rare plants or lichens. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Vegetation VC, potential Project-related effects, and analysis of potential residual effects. There will be cross references to other relevant IC/VC assessment sections.

The Vegetation VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Old growth forest | Change in:<br>• Extent<br>• Structural stage |
| Wetlands (including biodiversity, water quantity and quality, and habitat function) | Change in extent of wetland communities |
| Listed ecological communities | Change in extent |
| Culturally important species | |
| Rare plants and lichens | Change in extent of known occurrences |

This VC assessment may support and be supported by the following IC and VC assessments:

- Aquatic Resources;
- Fish and Fish Habitat;
- Wildlife;
- Avian Species;
- Visual Resources;
- Land and Resource Use;
- Heritage Resources; and
- Human Health.

### *4.7.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Vegetation VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Vegetation VC are described below and are illustrated in **Figure 10**. The Vegetation LSA includes all areas that have potential for direct and indirect effects on vegetation resources as a result of the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. The RSA is designed to provide context for regionally available vegetation resources for the assessment of both residual and cumulative effects. The boundaries are consistent with the extent of Predictive Ecosystem Mapping (PEM; at a regional scale), and Terrestrial Ecosystem Mapping (TEM; at a local scale):

- Vegetation LSA includes the Project Footprint with a 250 m buffer on gravel quarries and linear infrastructure outside of the rail loop, minesite and Mine Infrastructure Complex (i.e., roads, powerlines, pipelines), and a 500 m buffer around all other infrastructure (e.g., rail loop, explosives facility and magazine, pit). A wetland complex located downgradient from the proposed Project was also included within the Vegetation LSA to encompass potential indirect effects on wetlands.

- Vegetation RSA includes a minimum of a 5 km buffer around the Project Footprint.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and the Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative and technical boundaries. If there are no other relevant boundaries, this will be stated.

# Telkwa Coal ALR
Northern British Columbia

## Vegetation Local and Regional Study Areas

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BURNT CABIN BOG ECOLOGICAL RESERVE
Tyhee Lake
TYHEE LAKE PARK
TELKWA
16
WOODMERE RD
Round Lake
Telkwa River
TELKWA RIVER FSR
LAWSON RD
Bulkley River
WALCOTT QUICK RD

### Legend

- Vegetation Local Study Area
- Vegetation Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25 kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Backfill
- Explosives Storage
- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
- Railway Loop
- Rock Pile
- Top Soil Pile
- Ultimate Pit

### Notes

1. All mapped features are approximate and should be used for planning purposes only.
2. This map is not intended to be a "stand-alone" product. The reader is referred to the report for a complete description of the information contained within the referenced Report. This figure should be used in conjunction with the scope of services and limitations described therein.

### Sources

- Mine Features: ERM, 2019
- Base data: Government of British Columbia
- Base map: ESRI World Topographic Map

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### *4.7.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the timeframe and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. Where available and appropriate, the Application will describe available traditional ecological or community knowledge related to the Vegetation VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following approach is being taken to develop existing conditions for the Vegetation VC:

- Desktop studies using publicly available information will be completed. Information sources may include but are not limited to existing TEM, PEM, Vegetation Resources Inventory, records of occurrences of species and ecosystems at risk according to the BC Conservation Data Centre, reports completed for relevant previous projects, and the scientific literature.
- TEM will be completed for the LSAs according to the *Standard for Terrestrial Ecosystem Mapping in British Columbia* (Resources Inventory Committee 1998) at the 1:5,000 scale and survey intensity level (SIL 1) within the mine pit area and rail loadout, which indicates that 76 – 100% of the polygons will be inspected in the field to verify mapping accuracy. The remainder of the LSAs will be mapped at the 1:10,000 scale (SIL 2), which indicates that 26 to 75% of the polygons will be field verified.
- Field methodology will follow the *Field Manual for Describing Terrestrial Ecosystems* (BC Ministry of Forests and Range and BC Ministry of Environment 2010).
- Ecosystems will be classified according to the Biogeoclimatic Ecosystem Classification system and applicable site identification field guides (e.g., Banner et al. 1993).
- Wetlands will be classified according to *Wetlands of British Columbia: A Guide to Identification* (MacKenzie and Moran 2004).
- Wetland functions (e.g., hydrologic, biochemical, ecological and habitat) will be assessed in the field using an adapted protocol following *Wetland Ecological Functions Assessment: An Overview of Approaches* (Hanson et al. 2008).
- Invasive plants will be inventoried in the field and classified according to the *BC Weed Control Act* (Province of BC 2011).
- Provincially and federally-listed rare plants and lichens will be surveyed according to the *Protocols for Rare Plant Surveys* (Penny and Klinkenberg 2018).

- Culturally important species will be identified through literature research and consultation with First Nations.
- Where available and appropriate, TEK will be incorporated.

The Application will identify applicable provincial and federal legislation, policies, BMPs and guidance documents related to the Vegetation VC. These will include:

- *Forest and Range Practices Act*. SBC 2002. Chapter 69 (Province of BC 2002).
- SARA. SC 2002 (Government of Canada 2002).
- *Mines Act.* RSBC 1996. Chapter 293 (Province of BC 1996).
- *Health, Safety and Reclamation Code for Mines in British Columbia* (Province of BC 2017).
- *Weed Control Act*. RSBC 1996. Chapter 487 (Province of BC 1996b) and Weed Control Regulations (Province of BC 2011).
- Bulkley Land and Resource Management Plan (Province of BC 1998).
- Standard for Terrestrial Ecosystem Mapping in British Columbia (Resources Inventory Committee 1998).
- The Federal Policy on Wetland Conservation (Government of Canada 1991).
- Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia. Wetland Stewardship Partnership (Province of BC 2009).
- *Environmental Management Act.* SBC 2003. Chapter 53 (Province of BC 2003).
- *Water Sustainability Act*. Chapter 15 (Province of BC 2014).
- North West Invasive Plant Council (http://nwipc.org/).

The following Vegetation VC technical report will be provided as an appendix to the Application:

- Tenas Project: Vegetation Baseline Report. 2020.

### *4.7.3 Potential Effects*

The Application will identify potential adverse effects to the Vegetation VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Vegetation VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Vegetation VC will be summarized.

The following potential effects will be assessed for all phases of the proposed Project:

- Alteration and/or loss of vegetation, ecosystems and wetlands from land clearing and mine construction and operation; and
- Deposition of trace metals on plants and soil, which can result in uptake by plants during construction and operation.

### *4.7.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Vegetation VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.7.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.7.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.7.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.8 Wildlife Valued Component

The landscape where the proposed Project is located primarily sub-boreal spruce forest that has experienced forest harvesting over the last 40 years creating a mosaic of young to mature forest types. There is a range of mixed and coniferous forested ecological communities, small wetlands, and open water areas. The disturbed nature of the landscape influences the type and abundance of wildlife present. Wildlife species identified as having historic or current use, include ungulates (caribou, moose, mule deer, white-tailed deer and elk), bears (black and grizzly), furbearers (wolf, lynx, coyote, fisher, marten, ermine), small mammals (squirrels, voles, mice), bats, reptiles (common garter snake) and amphibians (western toad, Columbia spotted frog, long-toed salamander). This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Wildlife VC, potential Project-related effects, and analysis of potential residual effects. There will be cross references to other relevant VC/IC assessment sections.

The Wildlife VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Furbearers (American marten (*Martes americana*); Wolverine (*Gulo gulo*) - change in movement | Change in:<br>• Habitat, including direct and indirect disturbance<br>• Sensory disturbance<br>• Mortality<br>• Movement (as an Indicator for Grizzly Bear, Caribou, Wolverine, and Western Toad) |
| Caribou (*Rangifer tarandus*) (northern mountain population) | |
| Grizzly bear (*Ursus arctos*) | |
| Moose (*Alces americanus*) | |
| Bats (Little Brown myotis (*Myotis lucifugus*), Northern myotis (*Myotis septentrionalis*) | |
| Western toad (*Anaxyrus boreas*) | |

This VC assessment may support and be supported by the following IC and VC assessments:

- Avian Species;
- Land and Resource Use;
- Heritage Resources; and
- Human Health.

### *4.8.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Wildlife VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Wildlife VC are described below and are illustrated in **Figure 11**.

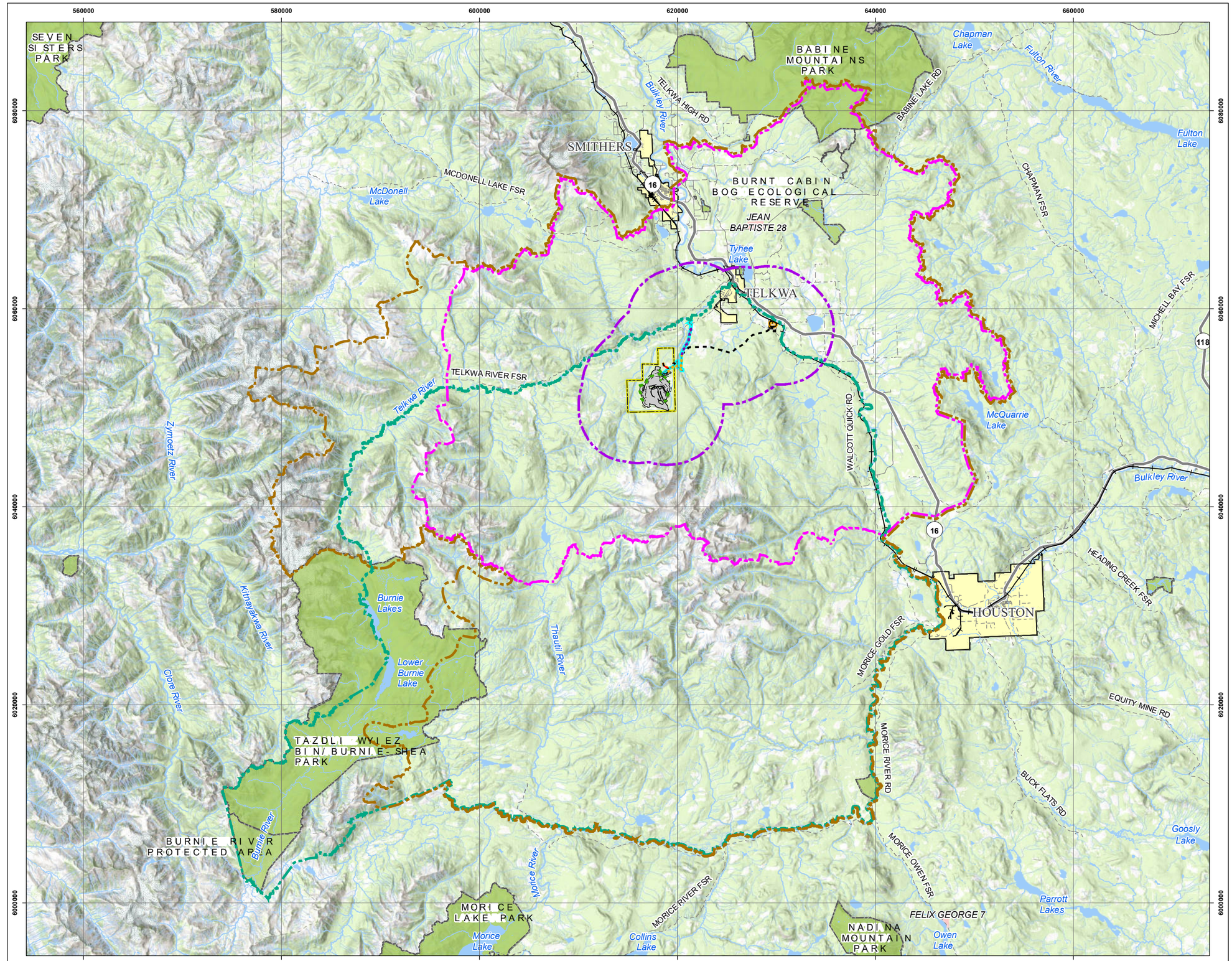
The LSA is designed to capture potential direct and indirect effects of Project construction, operation and decommissioning. It includes the Project footprint plus a minimum of a 5 km buffer.

- The RSA is designed to include regionally available habitat for wildlife species that have been selected as Subcomponents. Three separate RSAs are proposed relative to species' range:
    - Generalized wildlife RSA: Intersection of all watersheds that overlap a 10 km buffer around the Project footprint;
    - Grizzly and moose RSA: Bulkley watershed excluding biogeoclimatic zones that are associated with coastal ecosystems; and
    - Caribou RSA: 2014 Environment and Climate Change Canada Critical Habitat and 2019 BC Critical Habitat

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

# Telkwa Coal A l R
# Nor t her n Br it is h Colu mbia

## Wildlife Local and Regional Study Areas




### Legend

- Wildlife Local Study Area
- Caribou Regional Study Area
- Generalized Wildlife Regional Study Area
- Wide Ranging Wildlife Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- First Nation Reserve
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Mine Disturbance

### Notes

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

### Sources

- Mine Features: Allegiance Coal, 2018
- Base data: Government of British Columbia
- Base map: ESRI World Topographic Map

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### *4.8.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Wildlife VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Wildlife VC:

- Desktop studies using publicly available information will be completed. Information sources may include but are not limited to available existing wildlife inventory and habitat use information for the Project study areas including occurrence, distribution and population status as well as travel corridors and potential breeding areas where available.
- Habitat suitability following Provincial standards will be modeled and results will be incorporated into the assessment of potential effects on habitat availability for subcomponent species.
- Project-related field studies will be summarized, including habitat assessment, species-specific and generalized wildlife surveys.
- Element occurrence records from sources such as the BC Conservation Data Centre and the BC Wildlife Species Inventory Database will be summarized.
- TEK will be incorporated where relevant and available.

The Application will identify applicable provincial and federal legislation, policies, BMPs and guidance documents related to the Wildlife VC. These will include, among others:

- *Forest and Range Practices Act.* SBC 2002. Chapter 69 (Province of BC 2002).
- *Species at Risk Act* (SARA). S.C. 2002 (Government of Canada 2002).
- *Wildlife Act.* RSBC 1996. Chapter 488 (Province of BC 1996).
- *Canada Wildlife Act.* RSC 1985 (Government of Canada 1985).
- Telkwa Mountains Caribou Herd Recovery Plan (BC Ministry of Environment, Lands and Parks 1998).
- Grizzly Bear Population Inventory and Monitoring Strategy for British Columbia (Apps 2010).
- Guidelines for Amphibian and Reptile Conservation during Urban and Rural Land Development in British Columbia (BC Ministry of Environment 2014).

- BC Furbearer Management Guidelines (BC Ministry of Forests Lands and Natural Resource Operations 2003).
- Management Plan for the Western Toad (*Anaxyrus boreas*) in Canada [Proposed] (Environment and Climate Change Canada 2016).
- Management Plan for the Western Toad (*Anaxyrus boreas*) in British Columbia (Provincial Western Toad Working Group 2014).
- A Future for Grizzly: British Columbia Grizzly Bear Management Strategy (BC Ministry of Environment, Lands and Parks 1995a).
- Conservation of Grizzly Bears in British Columbia. Background Report (BC Ministry of Environment, Lands and Parks 1995b).
- Grizzly Bears in British Columbia: Ecology, Conservation and Management (BC Ministry of Environment, Lands and Parks 2002).
- Provincial Caribou Recovery Program. 2017/18 Annual Report (BC Ministry of Environment, Lands and Parks 2019).
- Recovery Strategy for the Woodland Caribou, Southern Mountain population (*Rangifer tarandus caribou*) in Canada [Proposed] (Environment Canada 2014).
- Provincial Framework for Moose Management in British Columbia (BC Ministry of Forests, Lands and Natural Resource Operations 2015).
- A Strategy to Help Restore Moose Populations in British Columbia (BC Ministry of Forests, Lands and Natural Resource Operations 2016).

The following Wildlife VC technical reports will be referenced in the Application:

- Telkwa Project: Vegetation – Forestry – Wildlife. Stage II Report for Crows Nest Resources Ltd. 1985.
- Wildlife North of the Telkwa River: A Stage II Assessment for the Proposed Telkwa Project. 1990.
- Moose Habitat Capability/Suitability Mapping. Telkwa Coal Project. 1998.
- Wildlife Assessment. Telkwa Coal Project. 1998.
- Habitat selection and calf survival in the Telkwa caribou herd, British Columbia. 2000.

The following Wildlife VC technical report will be provided as an appendix to the Application:

- Tenas Project: WildlifeBaseline Studies. 2020.

### *4.8.3 Potential Effects*

The Application will identify potential adverse effects to the Wildlife VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Wildlife VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Wildlife VC will be summarized.

The following potential effects will be assessed for all phases of the proposed Project:

- Alteration and/or loss of habitat;
- Change in mortality; and
- Change in movement patterns.

### *4.8.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Wildlife VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.8.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.8.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and

- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

#### *4.8.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 4.9 Avian Species Valued Component

The landscape where the proposed Project is located is primarily sub-boreal spruce forest that has experienced forest harvesting over the last 40 years, creating a mosaic of young to mature forest types. The mixed and coniferous forests provide nesting and foraging habitat for a range of migratory bird species and raptors typical for those forest types, as well as the cultivated land along the access road and rail loadout areas.

This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Wildlife VC, potential Project-related effects, and analysis of potential residual effects. There will be cross references to other relevant VC/IC assessment sections.

The Avian Species VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Migratory breeding birds | Change in:<br>• Habitat, including direct and indirect disturbance<br>• Sensory disturbance<br>• Mortality |
| Listed bird species | |
| Raptors | |

This VC assessment may support and be supported by the following IC and VC assessments:

- Wildlife;
- Land and Resource Use;
- Heritage Resources; and
- Human Health.

### *4.9.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable of the Avian Species VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Avian Species VC are described below and are illustrated in **Figure 12**.

- The LSA is designed to capture all potential direct and indirect effects resulting from all phases of the proposed Project, the and is the same as the wildlife LSA. It includes the Project Footprint with a minimum of a 5 km buffer.
- The RSA is designed to capture the extent of indirect effects resulting from the proposed Project, and home ranges of species that could overlap with the direct or indirect effects. The avian species RSA is the same as the generalized wildlife RSA.

The Application will include analyses for all phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

# Telkwa Coal A I R
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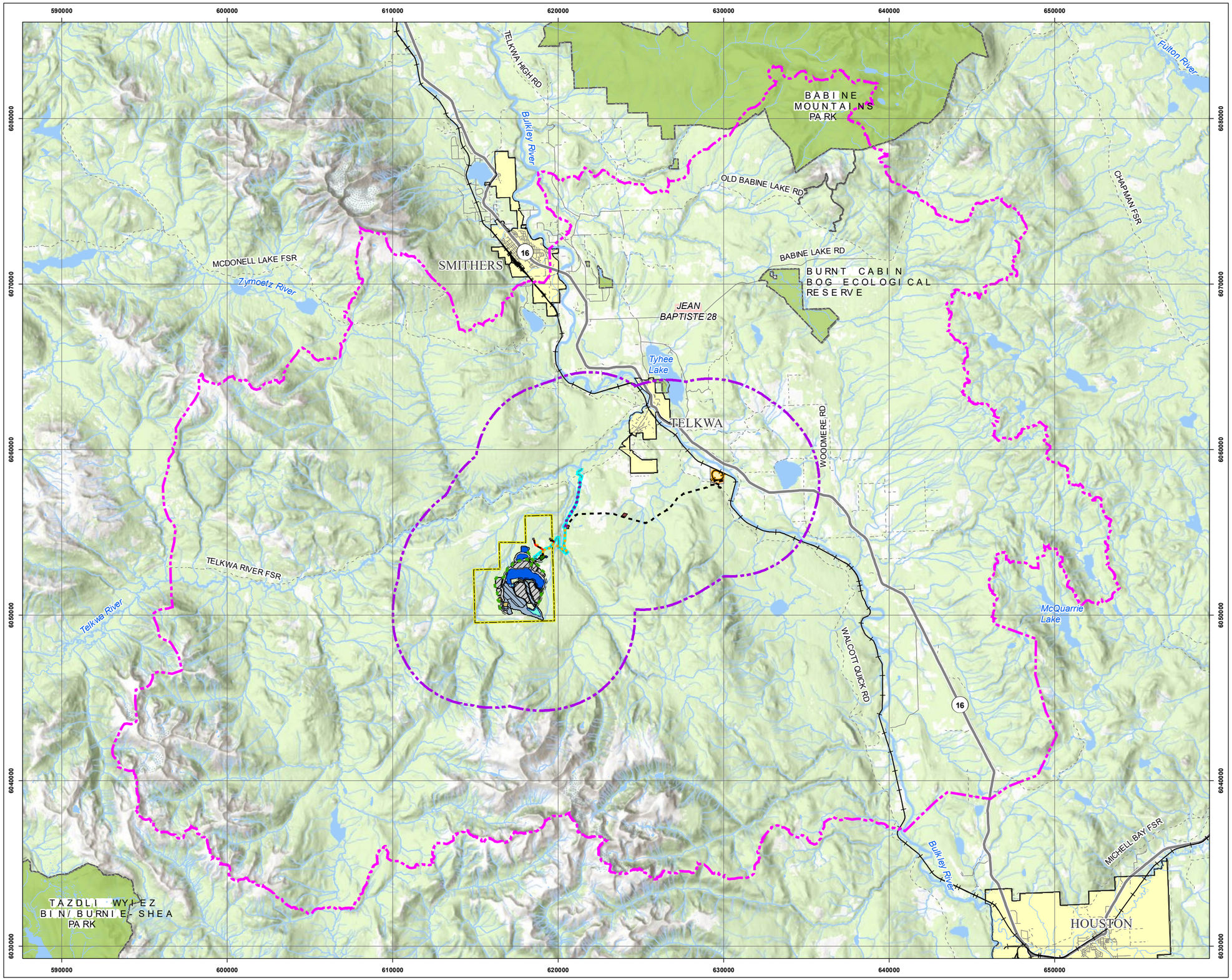
## Avian Species Local and Regional Study Areas




### Legend

- Avian Species Local Study Area
- Avian Species Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- First Nation Reserve
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Backfill
- Explosives Storage
- Mine Disturbance
- Pit Lake
- Plant and Maintenance Area
- Pond
- Quarry
- Railway Loop
- Rock Pile
- Top Soil Pile
- Ultimate Pit

### Notes

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

### Sources

- Mine Features: Allegiance Coal, 2018
- Basedata: Government of British Columbia
- Basemap: ESRI World Topographic Map

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### *4.9.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Avian Species VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC.

The following general approach is being taken to develop existing conditions for the Avian Species VC:

- Desktop studies using publicly available information will be completed. Information sources may include but are not limited to available existing wildlife inventory and habitat use information for the Project study areas including occurrence, distribution and population status as well as travel corridors and potential breeding areas where available.
- Modelling of habitat suitability for focal species following Provincial standards.
- Summary of project-related field studies including habitat assessment, species-specific and breeding bird surveys.
- Summary of element occurrence records from sources such as the BC Conservation Data Centre, the BC Breeding Bird Atlas, the BC Christmas Bird Count Database and eBird.
- TEK will be incorporated where relevant and available.

The Application will identify applicable provincial and federal legislation, policies, BMPs and guidance documents related to Avian Species VC. These will include:

- *Forest and Range Practices Act*. SBC 2002. Chapter 69 (BC Ministry of Attorney General, Office of Legislative Counsel 2002).
- *Species at Risk Act*. SC 2002 (Government of Canada 2002).
- *Migratory Birds Convention Act.* SC 1994. c. 22 (Government of Canada 1994).
- *Mines Act.* RSBC 1996. Chapter 293 (Province of BC 1996b).
- Health, Safety and Reclamation Code for Mines in British Columbia (Province of BC 2017).

- Bulkley Land and Resource Management Plan (Province of BC 1998).
- Any applicable COSEWIC (Committee on the Status of Endangered Wildlife in Canada) status reports or recovery plans.
- *Environmental Management Act*. SBC 2003. Chapter 53 (Province of BC 2003).
- *Water Sustainability Act*. SBC 2014. Chapter 15 (Province of BC 2014).
- *Wildlife Act*. RSBC 1996. Chapter 488 (Province of BC 1996).
- Any TEK where relevant and available.

The following Avian Species VC technical reports will be referenced in the Application:

- Telkwa Project: Vegetation – Forestry – Wildlife. Stage II Report for Crows Nest Resources Ltd. (1985).
- Wildlife North of the Telkwa River: A Stage II Assessment for the Proposed Telkwa Project (1990).
- Wildlife Assessment. Telkwa Coal Project (1998).

The following Avian VC technical report will be provided as an appendix to the Application:

- Tenas Project: Avian Baseline Report (2020).

### *4.9.3 Potential Effects*

The Application will identify potential adverse effects to the Avian Species VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to assess the potential effects on the Avian Species VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Avian Species VC will be summarized.

The following potential effects will be assessed:

- Alteration and/or loss of habitat as a result of Project construction; and
- Change in mortality as a result of Project construction and operation.

### *4.9.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Avian VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *4.9.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.9.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *4.9.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

# 5.0 ECONOMIC EFFECTS ASSESSMENT

The Application will include an assessment of economic VCs identified in the AIR. The assessment will be conducted in accordance with the methodology specified in section 3.0 Assessment Methodology of this AIR and reported using the organizational structure demonstrated in the section 4.0 Environmental Effects Assessment.

## 5.1 Labour Market Valued Component

Project employment, contracting, and procurement may have an effect on the availability of workers within the local and regional labour market and cost of labour. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Labour Market VC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Labour Market VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| N/A | Change in:<br>• Number of workers by occupation, industry affiliation, and region of residence<br>• Participation and unemployment rate<br>• Difference between unemployment rate and prevailing regional rate of unemployment<br>• Potential barriers to Indigenous participation in Project-related economic benefits<br>• Income levels and labour income |

This VC assessment may support and be supported by the following IC and VC assessments:

- Economic Development;
- Demographics;
- Infrastructure and Services; and
- Community Well-being.

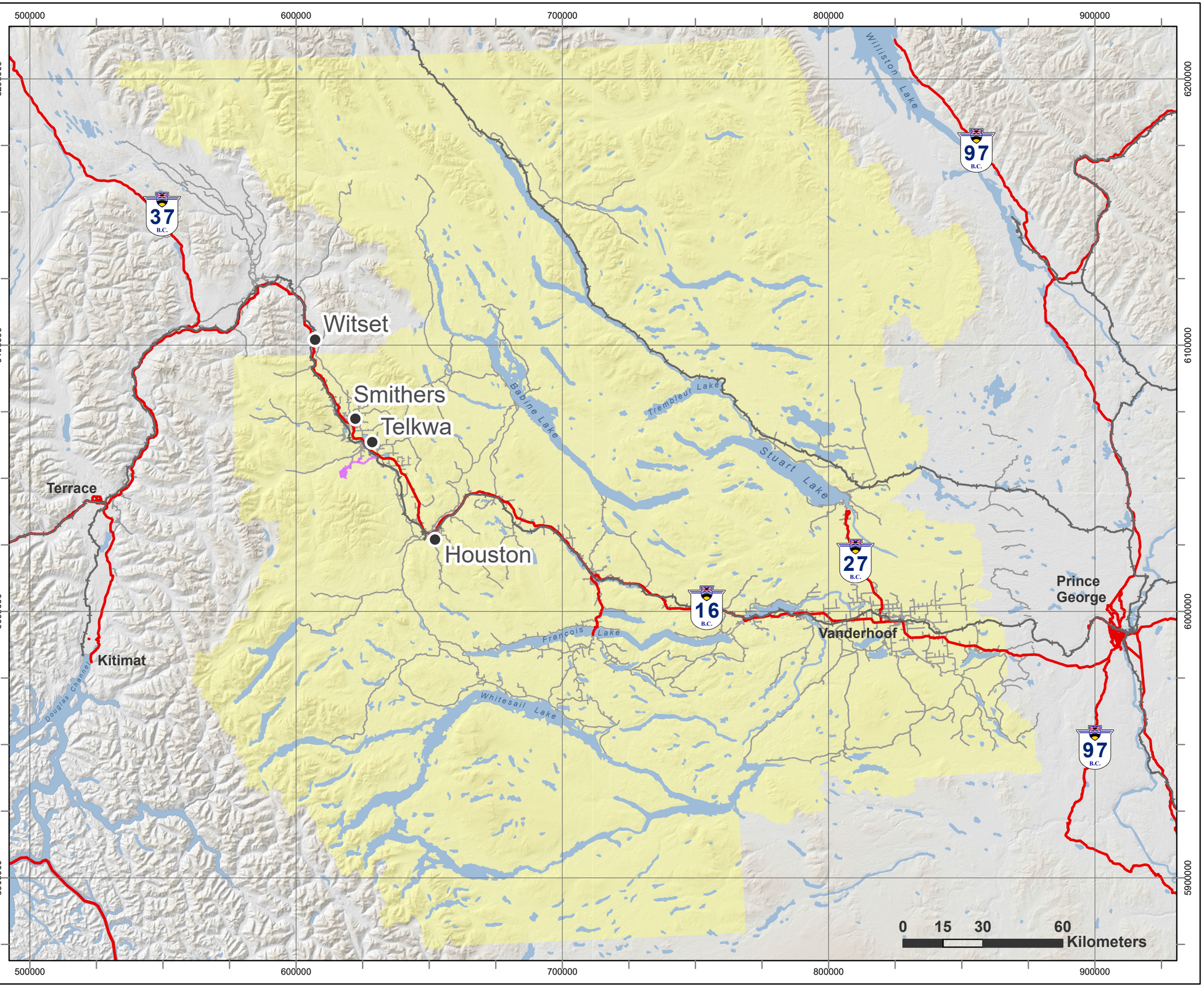
### *5.1.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Labour Market VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Labour Market VC are described below and are illustrated in **Figure 13**:

- LSA: includes the communities of Telkwa, Smithers, Houston and Witset.
- RSA: includes the Regional District of Bulkley Nechako.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

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# Socio-Economic Study Areas

- Project Area
- Socio-Economic RSA (Regional District of Bulkley-Nechako)
- Socio-Economic LSA
- Highway
- Roads
- Rail

*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:*

*Mine Features: Telkwa Coal, 2020*
*Basedata: Government of British Columbia*
*Basemap: SRTM 90m Digital Elevation Database*

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*Last Updated: May 01, 2020*

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### *5.1.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to Labour Market VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Labour Market VC:

- Interviews conducted during baseline data collection;
- Collection and review of publicly-available sources of information, including Statistics Canada and BC Stats labour force data (e.g., 2016 Canada Census; 2011 National Household Survey; 2018 BC Stats Labour Market Statistics) and information from other relevant projects; and
- Review of socio-economic existing conditions studies for the Project.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Labour Market VC. These will include:

- *Local Government Act*, Chapter 1. 2015.

The following Labour Market VC technical reports will be provided with the Application:

- BC Input-Output Economic Modelling Report

### *5.1.3 Potential Effects*

The Application will identify potential adverse effects to the Labour Market VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Labour Market VC resulting from Project activities within each phase of the Project. Interactions between Project components and activities and the Labour Market VC will be summarized.

The following potential effects will be assessed:

- Change in competition for skilled local and regional workforce;
- Change in labour costs; and

- Barriers to Indigenous employment and participation in Project-related economic benefits.

### *5.1.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Labour Market VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *5.1.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *5.1.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *5.1.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 5.2 Economic Development Valued Component

During construction and operations, the Project may affect the number and diversity of retail and commercial businesses and industrial sectors represented in the local and regional economies. This section

of the Application will present the subcomponents, indicators, boundaries of the assessment for the Economic Development VC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Economic Development VC will include the following subcomponents and their associated indicators:

| Valued Component | Indicators |
|---|---|
| Economic Development | Change in:<br>• Distribution in employment across industries (economic diversity)<br>• Capacity/supply constraints in services and goods supply and contracting (quantitative and qualitative)<br>• Compatibility/consistency of Project with existing regional economic development plans or strategies (qualitative)<br>• Forestry: change in marketable timber volume<br>• Tourism: change in services and revenue<br>• Economy during Decommissioning and Reclamation and Post-Closure phases and potential downturns |

This VC assessment may support and be supported by the following IC and VC assessments:

- Labour Market;
- Demographics;
- Infrastructure and Services; and
- Community Well-being.

### *5.2.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Economic Development VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Economic Development VC are described below and are illustrated in **Figure 13**:

- LSA: includes the communities of Telkwa, Smithers, Houston and Witset.
- RSA: includes the Regional District of Bulkley Nechako.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

### *5.2.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to Economic Development VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC: The following general approach is being taken to develop existing conditions for the Economic Development VC:

- Interviews conducted during baseline data collection;
- Collection and review of Statistics Canada and BC Stats data (e.g., 2016 Canada Census; 2011 National Household Survey; 2018 BC Stats Labour Market Statistics) and information from other relevant projects; and
- Review of socio-economic existing conditions studies for the Project.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Economic Development VC. These will include:

- *Local Government Act*. RSBC 2015. Chapter 1 (Province of BC 2015).

The following Economic Development VC technical reports will be provided with the Application:

- BC Input-Output Economic Modelling Report.

### *5.2.3 Potential Effects*

The Application will identify potential adverse effects to the Economic Development VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Economic Development VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Economic Development VC will be summarized.

The following potential effects will be assessed:

- A change in economic diversity (Construction / Operations);

- A change in the capacity of local or regional businesses to supply goods or services (Construction / Operations);
- A change that impacts development plans or strategies of government (Construction / Operations);
- A change in local and regional marketable timber (Construction / Operations);
- A change in local or regional tourism; and
- An economic change during Decommissioning and Reclamation and Post-Closure.

### *5.2.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Economic Development VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *5.2.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *5.2.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance

with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *5.2.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

# 6.0 SOCIAL EFFECTS ASSESSMENT

The Application will include an assessment of social VCs identified in the AIR. The assessment will be conducted in accordance with the methodology specified in section 3.0 Assessment Methodology of this AIR and reported using the organizational structure demonstrated in the section 4.0 Environmental Effects Assessment.

## 6.1 Demographic Intermediate Component

Project employment, contracting and procurement and other induced local and regional economic effects may contribute to changes in local and regional demographics. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Demographic IC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

Project-related effects to this IC comprise one of the steps along the pathways of effects of the Project, with other VCs with the ultimate receptors of those effects, therefore demographic will be studied as an IC in the context of effects of the Project on:

- Labour Market;
- Economic Development;
- Infrastructure and Services;
- Land and Resource Use; and
- Community Well-Being.

The Demographic IC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| NA | Change in:<br>• Population<br>• Demographic factors |

### *6.1.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable of the Demographic IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Demographic VC are described below and are illustrated in **Figure 13**:

- LSA: includes the communities of Telkwa, Smithers, Houston and Witset.

- RSA: includes the Regional District of Bulkley Nechako.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

### *6.1.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the IC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to Demographic IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Demographic IC:

- Interviews conducted during baseline data collection;
- Collection and review of Statistics Canada and BC Stats data (2016 Census (Statistics Canada 2018a); 2011 National Household Survey (Statistics Canada 2018b); BC Labour Market Statistics (Province of BC 2019) and information from other relevant projects;
- Review of socio-economic existing conditions studies for the Project; and
- Review and integration of any relevant demographic data on affected Indigenous communities with the LSA.

### *6.1.3 Potential Effects*

The Application will identify potential adverse effects to the Demographic IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Demographic IC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Demographic IC will be summarized.

The following potential effects will be assessed:

- Change in populations in affected LSA or RSA communities in relation to:
  - Infrastructure and Services;
  - Land and Resource Use;
  - Community Well-Being;
  - Labour Market; and
  - Economic Development.

### *6.1.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Demographic IC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *6.1.5 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

### *6.1.6 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR; and
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR.

### *6.1.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 6.2 Visual Resources Intermediate Component

The aesthetic value of a landscape is largely determined by the character of the natural landforms and the proximity to and number of viewers of that landscape. The Project's proximity to the towns of Telkwa and Smithers, along with the recreation and tourism opportunities in the surrounding area, suggests that the Project has the potential to adversely affect the visual resources of the landscape. A visual resources effects assessment will be undertaken to establish the existing visual character of the landscape and examine the potential for the Project to alter that character in the context of who is viewing the landscape. This section of the Application will present the indicators and boundaries of the assessment for the Visual Resources IC, and pathways along which potential Project-related effects could occur, with cross references to other supporting VC/IC assessment sections.

Project-related effects to this IC comprise one of the steps along the pathways of effects of the Project, with other VCs as the ultimate receptors of those effects; therefore, Visual Quality will be studied as an IC in the context of effects of the Project on:

- Wildlife;
- Avian Species;
- Economic Development;
- Land and Resource Use; and
- Community Well-Being.

The Visual Resources IC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Visual Quality | Change in:<br>• Visual disturbance from selected receptor sites |
| Ambient Light | Change in:<br>• Light trespass<br>• Glare<br>• Sky glow |

### *6.2.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable of the Visual Resources IC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Visual Resources IC are described below and are illustrated in **Figure 14** Both study areas are based on the locations where the Project is expected to be visible from and the Bulkley LRMP Landscape Unit plan boundaries. The LRMP delegates specific guidance regarding visual quality to the individual Landscape Unit plans, which typically focus on the management of landscapes that can be seen from within the Unit, including the identification of specific viewpoints that are considered particularly important. The study areas are determined as follows:

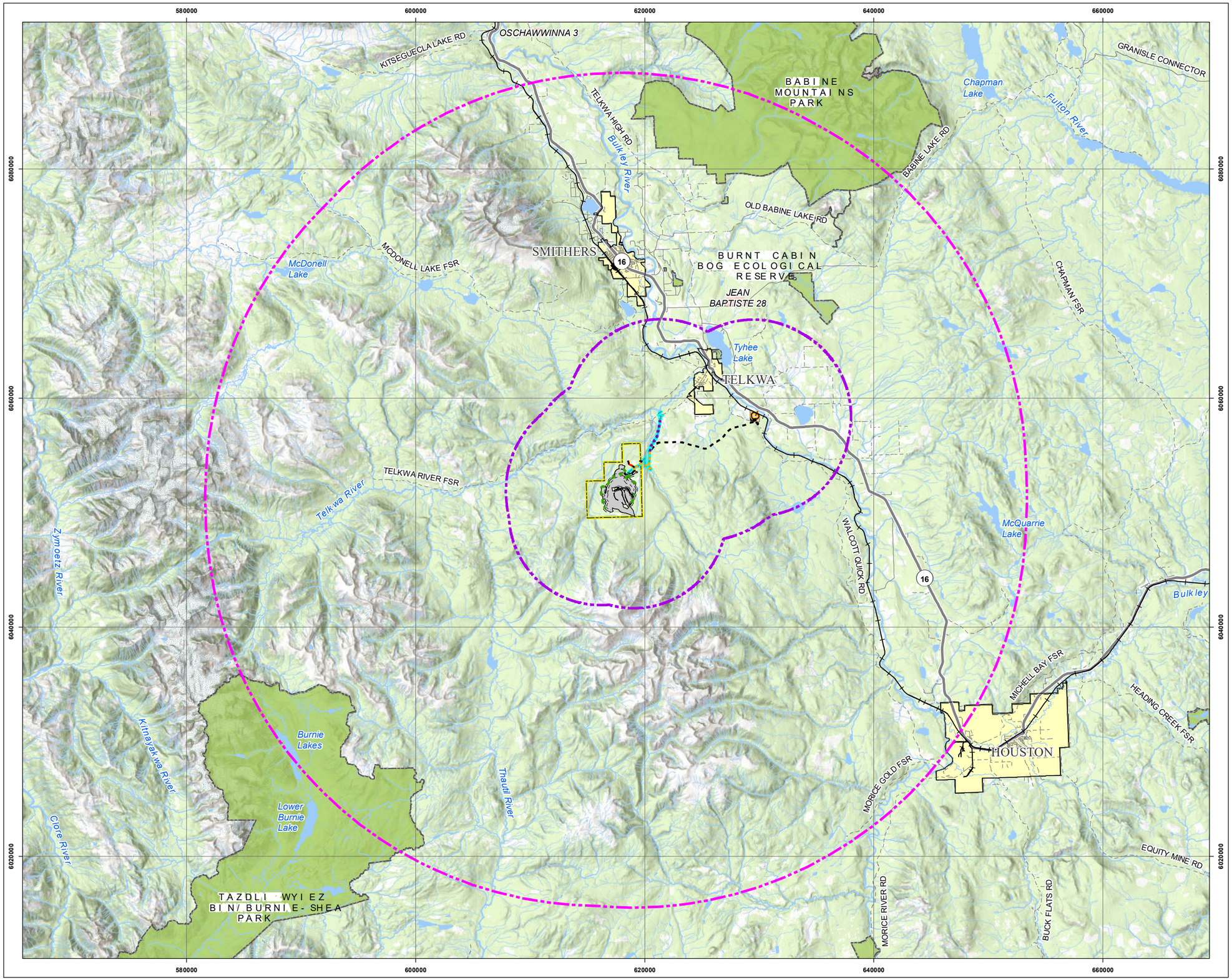
- LSA: Includes any Bulkley LRMP Landscape Unit that has a potential view of the Project as determined by a conservative viewshed analysis, limited to a maximum distance of 35 km away from the mine site, beyond which the Project is not expected to be discernable from the background landscape (World Meteorological Organization, 2014).

- RSA: Includes any Bulkley LRMP Landscape Unit that has a potential view of the Project as determined by a conservative viewshed analysis.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

# Telkwa Coal ALR
# Northern British Columbia

## Visual Resources Local and Regional Study Areas




### Legend

- Visual Resources Local Study Area
- Visual Resources Regional Study Area
- CN Rail Line
- Highway
- Road
- Resource Road
- Watercourse
- Waterbody
- Wetland
- Park or Protected Area
- First Nation Reserve
- Tenas Block Outline
- Municipal Area
- Private Land

**Mine Features**

- Existing 25kV Power Line
- Proposed 25 kV Power Line
- Proposed Dedicated Coal Haul Road
- Proposed Diversion Ditch
- Proposed Explosive Facility Road
- Proposed Pit Haul Road
- Proposed Rail Infrastructure
- Proposed Water Pipeline
- Mine Disturbance

### Notes

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

### Sources

- Mine Features: Allegiance Coal, 2018
- Base data: Government of British Columbia
- Base map: ESRI World Topographic Map

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### *6.2.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the Visual Resources IC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Visual Resources IC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Visual Resources IC:

- Review provincially established field methodologies for assessing visual quality as per the Visual Impact Assessment Guidebook (BC Ministry of Forests 2001).
- Review relevant resource management plans (i.e., the Bulkley Land and Resource Management Plan and the Bulkley Valley Sustainable Resource Management Plan) to determine what areas are considered important for visual resources. This includes all Landscape Unit plans contained within the Bulkley Valley LRMP.
- Pre-field preparation:
    - Line-of-sight modelling to determine the viewshed of the Project (i.e., sum total of areas that have a view of the Project);
    - Consultation with local stakeholders around areas of potential concern for adverse effects on visual quality, including the incorporation of TEK; and
    - Selection of viewpoints reflecting the distribution of different viewing angles, land uses, and stakeholder concerns within the viewshed.
- Reconnaissance visits to each selected viewpoint to document current visual quality conditions by taking photographs in the direction of the Project.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Visual Resources IC. These will include:

- Visual Impact Assessment Guidebook, Second Edition (BC Ministry of Forests 2001) for guidance on measuring visual disturbance.
- Bulkley Land and Resource Management Plan (Province of BC 1998) and the Bulkley Valley Sustainable Resource Management Plan (Province of BC 2005) for guidance on visual quality targets or objectives.

- Guide to Preparing Mine Applications for Aggregate Pit and Quarries in British Columbia (BC Ministry of Energy, Mines & Petroleum Resources 2010) for general guidance on preparing the assessment.

The following Visual Resources IC technical reports will be provided with the Application:

- Tenas Project: 2017 to 2019 Baseline Report (ERM and Cassiar 2019).

### *6.2.3 Potential Effects*

The Application will identify potential adverse effects to the Visual Resources IC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Visual Resources IC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Visual Resources IC will be summarized.

The following potential effects will be assessed:

- Change in visual quality in the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases; and
- Change in ambient light conditions in the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases.

### *6.2.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Visual Resources IC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *6.2.5 Residual Effects*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.2.6 Cumulative Effects*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.2.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 6.3 Infrastructure and Services Valued Component

The Project, located on provincial Crown land, freehold land parcels and coal licenses approximately 25 km south of Smithers and 7 km southwest of Telkwa in northwestern BC, within Wet'suwet'en traditional territory, will require changes and additions to roads, and has the potential to affect the use of local infrastructure and community services. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Infrastructure and Services VC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections

The Infrastructure and Services VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Housing and accommodation | Changes in:<br>• Demand for housing and accommodation<br>• Active residential listings<br>• Housing costs<br>• Property taxes<br>• Vacancy rates |
| Community infrastructure and services | Changes in:<br>• Supply and demand for all community services (education, child care, health care, and recreation) and community infrastructure<br>• Supply and demand for emergency services (policing, fire, and search and rescue) |
| Transportation | Change in level of service (change in road, rail and air traffic patterns and infrastructure) |

This VC assessment may support and be supported by the following IC and VC assessments:

- Community Well-Being.

### *6.3.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Infrastructure and Services VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The LSA and RSA have been selected to include communities potentially directly and indirectly affected within the Project area (**Figure 13)**:

- LSA: includes the communities of Telkwa, Smithers, Houston and Witset.
- RSA: includes the Regional District of Bulkley Nechako.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

### *6.3.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterizing the existing conditions of the VC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to any applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented, and margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to Infrastructure and Services VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Infrastructure and Services VC:

- Interviews conducted during baseline data collection;
- Collection and review of publicly-available sources of information, including information from other relevant projects
- Review of socio-economic existing conditions studies for the Project.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Infrastructure and Services VC. These will include:

- *Water Sustainability Act*. SBC 2014. Chapter 15 (Province of BC 2014).
- *Agricultural Land Commission Act*. SBC 2002. Chapter 36 (Province of BC 2002).
- Regional District of Bulkley-Nechako Floodplain Management By-law No. 1300 (Regional District of Bulkley-Nechako 2016).
- Village of Telkwa bylaws (Village of Telkwa 2015).
- Bulkley Land and Resource Management Plan (LRMP) (Province of BC 1998).
- Bulkley Valley Sustainable Resource Management Plan (Province of BC 2005).
- Health and Medical Services Plan Best Management Guide for Industrial Camps (Northern Health 2014).
- Standard Working Group Comments and Recommendations for Provincial Environmental Assessments in Northern British Columbia (Northern Health 2015).
- The Social Determinants of Health Impacts of Resource Extraction and Development in Rural and Northern Communities (Northern Health and Provincial Health Services Authority 2018).
- Communicable Disease Control Plan Best Management Guide for Industrial Camps (Northern Health 2017).

- Health and Safety During the Opioid Overdose Emergency: Northern Health's Recommendations for Industrial Camps (Northern Health 2018).
- Social Determinants of Health Discussion Guide (First Nations Health Council 2017).

The following Infrastructure and Services VC technical reports will be provided with the Application:

- Traffic Count.

### *6.3.3 Potential Effects*

The Application will identify potential adverse effects to the Infrastructure and Services VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Infrastructure and Services VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Infrastructure and Services VC will be summarized.

The following potential effects will be assessed:

- Change in cost or availability of housing and accommodations (Construction / Operations);
- Change in use of community services, including education, childcare, healthcare and recreation (Construction / Operations);
- Change in use of emergency services including policing, fire and search and rescue (Construction / Operations); and
- Change in use of roads and related increases in traffic (Construction / Operations).

### *6.3.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Infrastructure VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *6.3.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.3.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.3.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 6.4 Land and Resource Use Valued Component

The Project includes construction undertakings and operations that may result in local adverse effects to land and resource use, including current use for traditional purposes. Potential pathways for adverse effects include either reduced access to or reduced availability of land and resources used for traditional, residential, recreational or commercial purposes. In addition to the Project footprint, potential factors within the surrounding area include noise, dust levels and/or diminished visual quality or sense of place. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Land and Resource Use VC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Land and Resource Use VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| Commercial land use | Compatibility with existing land use plans<br>Changes in:<br>• Access to land use areas<br>• Sensory disturbance to existing land and resource uses<br>• Quantity and quality of resources supporting existing land and resource uses |
| Public Recreation Use | Change in:<br>• Access to land use areas<br>• Sensory disturbance<br>• Quantity and quality of resources supporting recreational activities<br>• Interference with recreational infrastructure |
| Current use of land and resources for traditional purposes | Change in:<br>• Access to lands and resources<br>• Sensory disturbance<br>• Quantity and quality of resources<br>• Maintenance of preferred methods and timing of land and resource use |

This VC assessment may support and be supported by the following IC and VC assessments:

- Community Well-Being; and
- Human Health.

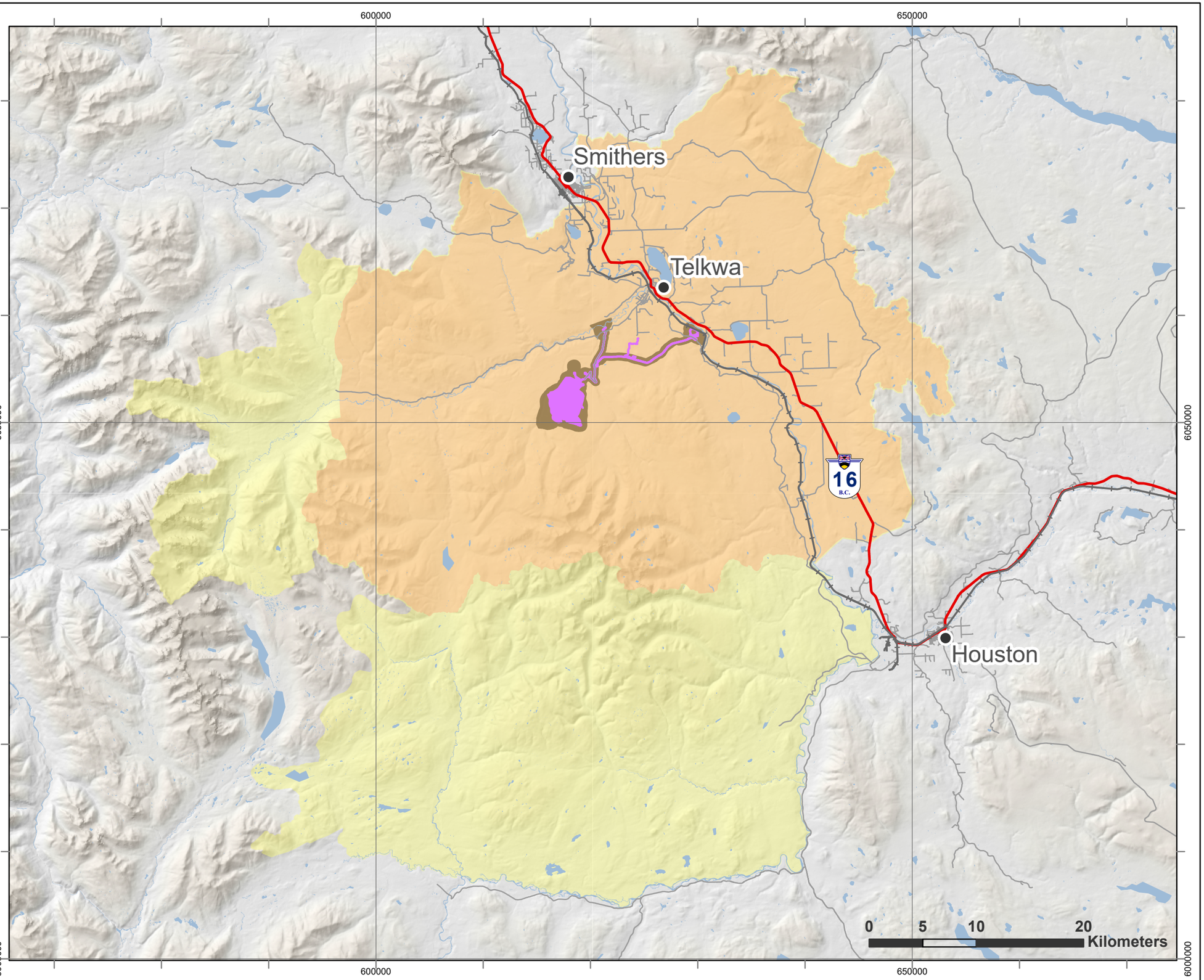
### *6.4.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Land and Resource Use VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The proposed LSA and RSA for the Land and Resource Use VC are described below and are illustrated in **Figure 15**:

- LSA: Same as the Vegetation LSA.
- RSA: Same as the Generalized Wildlife RSA or, in the case of Guide Outfitters, the Wide-ranging Wildlife RSA.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

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# Land Use Study Areas

- Project Area
- Vegetation LSA
- Generalized Wildlife RSA
- Wide Ranging Wildlife RSA (Guide Outfitters only)
- Highway
- Roads
- Rail

*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:*

*Mine Features: Telkwa Coal, 2020*
*Basedata: Government of British Columbia*
*Basemap: SRTM 90m Digital Elevation Database*

*Page Size: 11" x 17"* *NAD 1983 UTM Zone 9N*

*Date Created: April 29, 2020*

*Last Updated: May 01, 2020*

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### *6.4.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to Land and Resource Use VC. The Application will use relevant associated documents produced for the Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Land and Resource Use VC:

- Interviews conducted during baseline data collection;
- Collection and review of publicly-available sources of information, including information from other relevant projects;
- Review of socio-economic existing conditions studies for the Project; and
- Review and integration of all relevant and available sources of TEK or Land Use information.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Land and Resource Use VC. These will include:

- *Local Government Act*. RSBC 2015. Chapter 1 (Province of BC 2015).
- *Forest and Range Practices Act*. SBC 2002. Chapter 69. (Province of BC 2002).
- *Forest Act*. RSBC 1996. Chapter 157 (Province of BC 1996).
- *Land Act*. RSBC 1996. Chapter 245 (Province of BC 1996).
- *Mineral Tenure Act*. RSBC 1996. Chapter 292 (Province of BC 1996).
- *Mining Right of Way Act*. RSBC 1996. Chapter 294 (Province of BC 1996).
- *Wildlife Act*. RSBC 1996. Chapter 488 (Province of BC 1996).
- *Parks Act*. RSBC 1996. Chapter 344 (Province of BC 1996).
- *Protected Areas of British Columbia Act*. SBC 2002. Chapter 17 (Province of BC 2002).
- *Tourism Act*. RSBC 1996. Chapter 453 (Province of BC 1996).

- Mackenzie LRMP (BC Ministry of Forests 2000).
- British Columbia's Mineral Exploration and Mining Strategy (BC Ministry of Mineral Exploration & Mining 2012).

The following Land and Resource Use VC technical reports will be provided with the Application:

- Traditional Land Use studies; and
- TEK studies.

### *6.4.3 Potential Effects*

The Application will identify potential adverse effects to the Land and Resource Use VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Land and Resource Use VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Land and Resource Use VC will be summarized.

The following potential effects will be assessed:

- Change in access to or availability of land and resources for traditional, residential, recreational or commercial purposes (Construction / Operations)
- Change in quantity or quality of land and resources for traditional, residential, recreational or commercial purposes (Construction / Operations)
- Change in traditional, residential, recreational or commercial uses due to sensory disturbance (e.g., emissions, noise or light) (Construction / Operations)
- Change in visual quality or sense of place (Construction / Operations)

### *6.4.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Land and Resource Use VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *6.4.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.4.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.4.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

## 6.5 Community Well-Being Valued Component

The Project has the potential to adversely affect community well-being related to changes in population, employment and income, land and resource use, and use of infrastructure, roads and community services. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for Community Well-Being, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Community Well-Being VC will include the following subcomponents and their associated indicators:

| Subcomponent | Indicators |
|---|---|
| NA | Change in social and economic determinants of health, as defined by Health Canada and including:<br>• Food security<br>• Cost of living<br>• Community cohesion<br>• Mental health |

This VC assessment will be supported by the following IC and VC assessments:

- Infrastructure and Services;
- Land and Resource Use;
- Labour Market;
- Economic Development; and
- Demographics.

### *6.5.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Community Well-Being VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

The LSA and RSA have been selected in order to include communities potentially directly and indirectly affected within the Project area (**Figure 13)**:

- LSA: includes the communities of Telkwa, Smithers, Houston and Witset.
- RSA: includes the Regional District of Bulkley Nechako.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.

### *6.5.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterizing the existing conditions of the VC, including literature reviews and desktop studies, a list of the information provided in the baseline report, and field programs or modelling undertaken with reference to any applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented, and margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to Community Well-Being VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC: The following general approach is being taken to develop existing conditions for the Community Well-Being VC:

- Interviews conducted during baseline data collection;
- Collection and review of Statistics Canada and BC Stats data (2016 Census (Statistics Canada 2018a); 2011 National Household Survey (Statistics Canada 2018b)) and information from other relevant projects;
- Review of background information and literature describing community health and well-being in the local and regional study areas;
- Review of socio-economic existing conditions studies for the Project; and
- Review and integration of available and appropriate sources of TEK or Land Use information.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Community Well-Being VC. These will include:

- *Environmental Management Act*. SBC 2003. Chapter 53 (Province of BC 2003).
- *Water Sustainability Act*. SBC 2014. Chapter 15 (Province of BC 2014).
- *Agricultural Land Commission Act.* SBC 2002. Chapter 36 (Province of BC 2002).
- Regional District of Bulkley-Nechako Floodplain Management Bylaw No. 1300, 2004 (Regional District of Bulkley-Nechako 2016).
- Village of Telkwa bylaws (Village of Telkwa 2015).
- Bulkley Land and Resource Management Plan (LRMP; Province of BC 1998).
- Bulkley Valley Sustainable Resource Management Plan (Province of BC 2005).

- Health and Medical Services Plan Best Management Guide for Industrial Camps (Northern Health 2014).
- Standard Working Group Comments and Recommendations for Provincial Environmental Assessments in Northern British Columbia (Northern Health 2015).
- The Social Determinants of Health Impacts of Resource Extraction and Development in Rural and Northern Communities (Northern Health and Provincial Health Services Authority 2018).
- Communicable Disease Control Plan Best Management Guide for Industrial Camps (Northern Health 2017).
- Health and Safety During the Opioid Overdose Emergency: Northern Health's Recommendations for Industrial Camps (Northern Health 2018).
- Social Determinants of Health Discussion Guide (First Nations Health Council 2017).

The following Community Well-Being VC technical reports will be provided with the Application:

- Traffic Count.

### *6.5.3 Potential Effects*

The Application will identify potential adverse effects to the Community Well-Being VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Community Well-Being VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Community Well-Being VC will be summarized.

The following potential effects will be assessed:

- A change in food security (Construction / Operations);
- A change in the cost of living (Construction / Operations);
- A change in community cohesion (Construction / Operations); and
- A change in the indicators of community and/or mental health (Construction / Operations).

### *6.5.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Community Well-Being VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *6.5.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.5.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *6.5.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

# 7.0 HERITAGE EFFECTS ASSESSMENT

The Application will include an assessment of heritage VCs identified in the AIR. The assessment will be conducted in accordance with the methodology specified in section 3.0 Assessment Methodology of this AIR and reported using the organizational structure demonstrated in section 4.0 Environmental Effects Assessment.

## 7.1 Heritage Resources Valued Component

The Project area has been identified as an area of archaeological potential and heritage sensitivity. Heritage Resource VC subcomponents are known to occur in the Project area and are currently protected under the provincial *Heritage Conservation Act*. This section of the Application will present the subcomponents, indicators, boundaries of the assessment for the Heritage Resources VC, and pathways along which potential Project related effects could occur, with cross references to other supporting VC/IC assessment sections.

The Heritage Resources VC will include the following subcomponents and associated indicators:

| Subcomponent | Indicators |
|---|---|
| Archaeological resources | Change in presence, number, type, significance of resources |
| Historic and cultural sites | |

This VC assessment may support and be supported by the following IC and VC assessments:

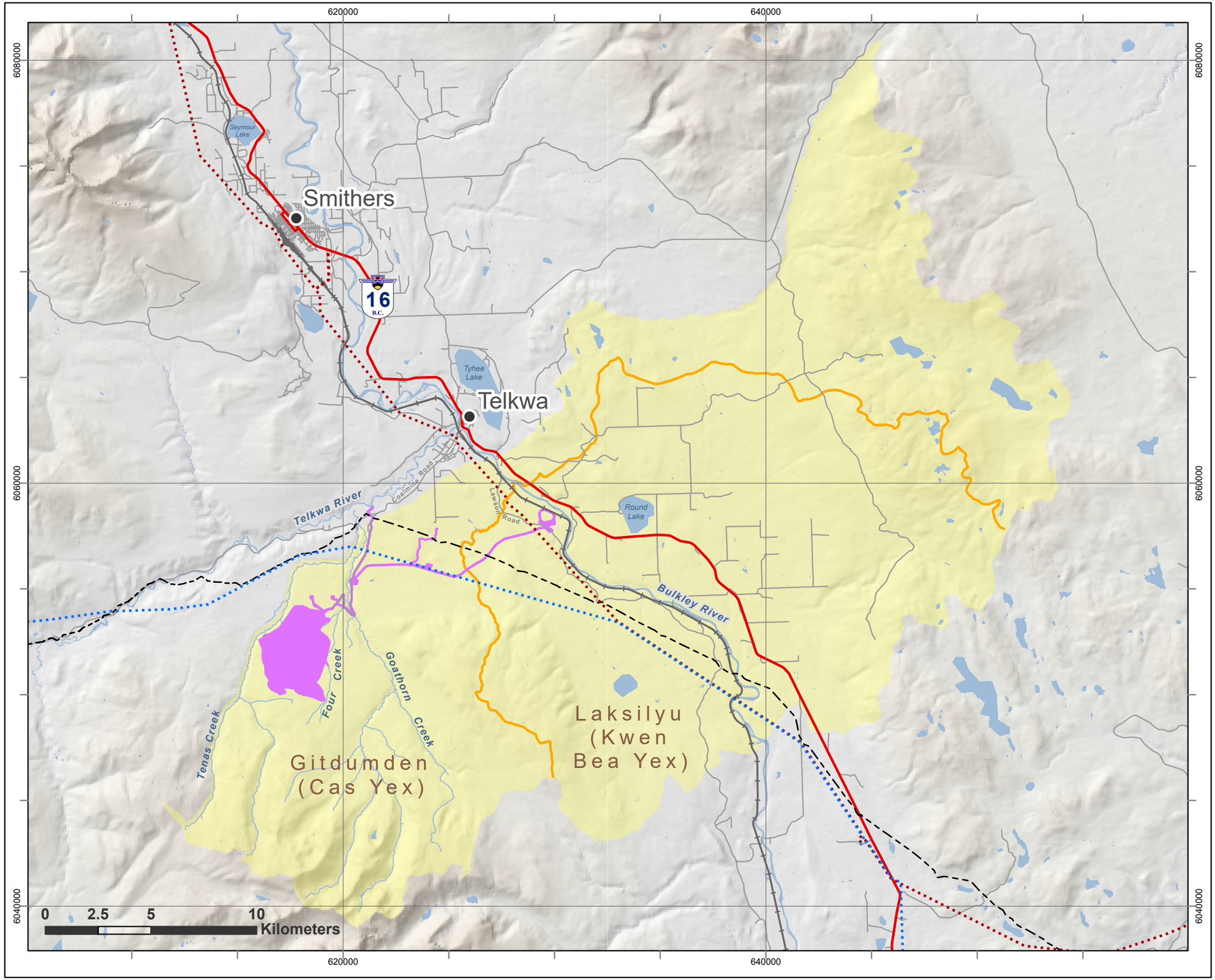
- Land and Resource Use.

### *7.1.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable for the Heritage Resources VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

Proposed boundaries for the LSA and RSA include areas that may be affected by Project-related activities (**Figure 16**). The Heritage Resources LSA includes the Project footprint with a 100 m buffer, since effects on this VC can only arise through direct ground disturbance. The RSA boundary has been defined by the House boundaries of the Gitdumden and Laksiliyu Wet'suwet'en Clans.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and the Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative and technical boundaries. If there are no other relevant boundaries, this will be stated.




# TELKWA COAL LIMITED

*Tenas Project*

## Cultural Study Areas

- Cultural LSA (Project Area)
- Cultural RSA
- Highway
- Roads
- Rail
- 500 kV Transmission Line
- 138 kV Transmission Line
- PNG Pipeline

*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:*

*Mine Features: Telkwa Coal, 2020*
*Basedata: Government of British Columbia*
*Basemap: SRTM 90m Digital Elevation Database*

*Page Size: 11" x 17"* *NAD 1983 UTM Zone 9N*

*Date Created: April 29, 2020*

*Last Updated: May 04, 2020*

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20200429_Cultural_04
Created by: NB

### *7.1.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC, including literature reviews and desktop studies, list of the information provided in the baseline report, field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported where appropriate. The Application will describe available traditional ecological or community knowledge related to the Heritage Resources VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC.

The following general approach is being taken to develop existing conditions for the Heritage Resources VC:

- Review Existing Information:
    - Previously completed archaeological assessments (Impact Assessment, Heritage Overview Assessment, and Archaeological Overview Assessment), including subsequent mapping information, to determine terrain within the LSA that has potential to contain precontact archaeological sites (pre-dating AD 1846) within the LSA; this guides the in-field archaeological assessment;
    - Review of archaeological site forms to determine regional site type(s), artifact assemblages, and condition of previously recorded archaeological sites within the LSA; and
    - Available Traditional Use Studies and TEK.
- Conduct Planned Activities:
    - Completion of an Archaeological Impact Assessment, including in-field studies based on results of the Archaeological Overview Assessment to confirm/refute the presence of precontact archaeological material and officially record previously undocumented precontact archeological sites with the Archaeology Branch;
    - Include Wetsuwet'en participation and knowledge in heritage assessments; expert input into relative importance of affected resources; and
    - Determine potential impacts to archaeological sites and materials and provide recommendations to prevent or reduce impacts to archaeological sites.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Heritage Resources VC. These will include:

- Provincial Guidelines:

- *Heritage Conservation Act.* RSBC 1996, Chapter 187 (Province of BC 1996).
- British Columbia Archaeology Inventory Guidelines (Archaeology Branch 2000).
- Archaeology Impact Assessment Guidelines (Archaeology Branch 1989 [revised 1998]).
- Indigenous Guidelines:
- Applicable documents shared by the Wetsuwet'en will be included in this assessment.

The following Heritage Resources VC technical reports may be provided with the Application if they do not contain confidential information:

- Manalta Archaeology Impact Assessment (Hewer 1998).
- Heritage Resources Review of the Bulkley Timber Supply Area (Rabnett 2000).
- Archaeological Overview Assessment: Tenas Project (Crossroads 2018).
- Archaeological Impact Assessment (TBC).

### *7.1.3 Potential Effects*

The Application will identify potential adverse effects to the Heritage Resources VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Heritage Resources VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Heritage Resources VC will be summarized.

### *7.1.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Heritage Resources VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *7.1.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *7.1.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *7.1.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

# 8.0 HEALTH EFFECTS ASSESSMENT

The Application will include an assessment of health VCs identified in the AIR. The assessment will be conducted in accordance with the methodology specified in section 3.0 Assessment Methodology of this AIR and reported using the organizational structure demonstrated in section 4.0 Environmental Effects Assessment.

## 8.1 Human Health Valued Component

Physical determinants of health comprise environmental conditions that have the potential to affect human health through biophysical media, including water quality, soil quality, air quality and dust, quality of sustenance foods, and changes in noise levels. This section of the Application will present the subcomponents, indicators, and boundaries of the assessment for the Human Health VC, and pathways along which potential Project-related effects could occur, with cross references to other supporting VC/IC assessment sections. The Human Health VC will include the following indicators:

| Valued Component | Indicators |
|---|---|
| Human Health | Change in human health from biophysical determinants of health |

This VC assessment may support and be supported by the following IC and VC assessments:

- Land and Resource Use; and
- Community Well-being.

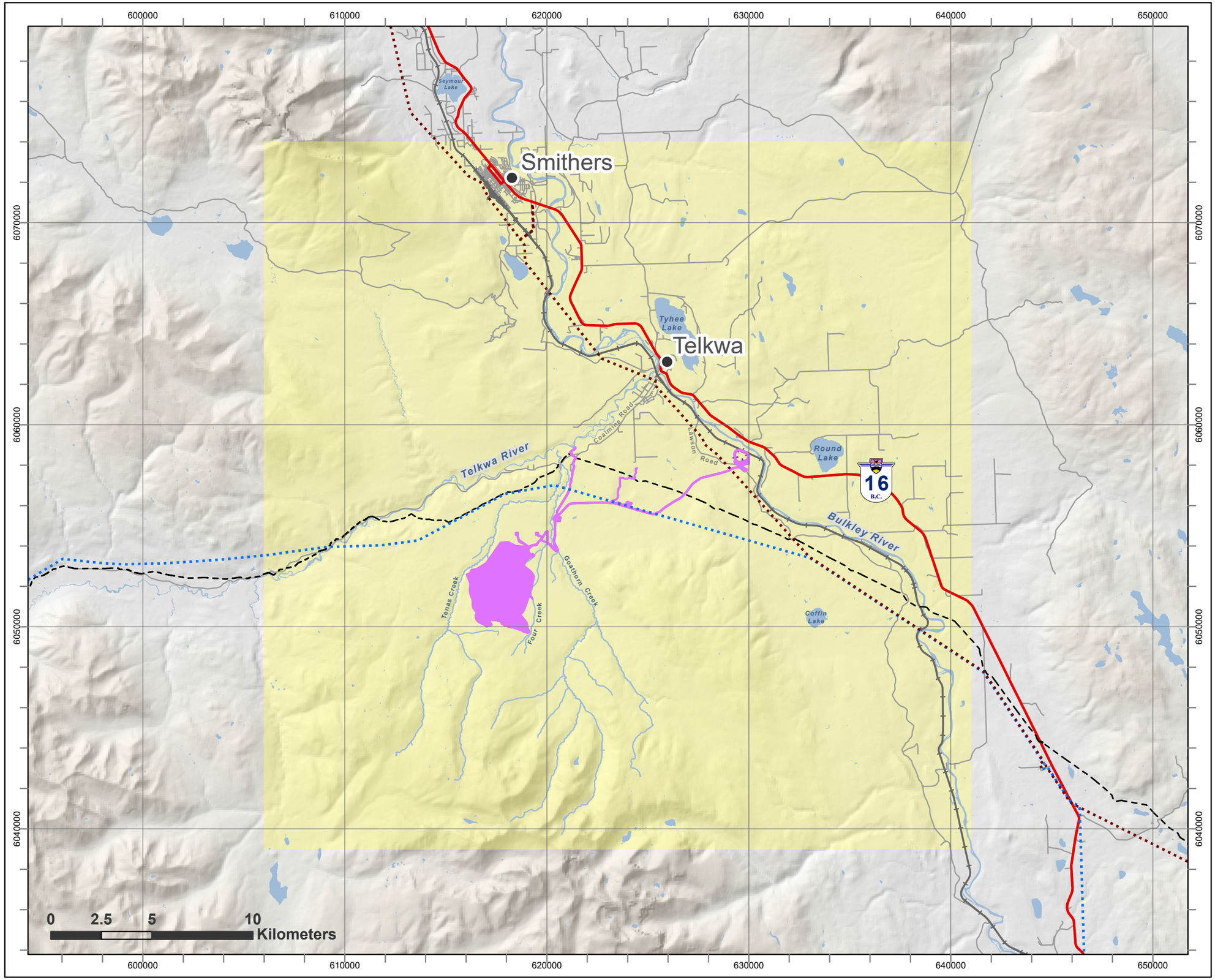
### *8.1.1 Context and Boundaries*

The Application will identify the spatial, temporal, administrative and technical study area boundaries, as applicable of the Human Health VC, including maps, in a manner consistent with 3.2 Assessment Boundaries of the AIR.

Human health boundaries are based on boundaries of VCs, ICs, or subcomponents that support the Human Health VC (**Figure 17**). The air quality subcomponent boundaries (modeling domain boundaries, Section 4.1) will be used primarily as the Human Health boundaries, because they are expected to cover the largest area and therefore include LSA boundaries of other VCs, ICs, or subcomponents

- LSA: The human health risk assessment will be developed to encompass the potential effects for the air quality, noise, surface water quality, groundwater quality, soil quality, and vegetation quality ICs/VCs/subcomponents.
- RSA: The RSA is the same as the LSA.

The Application will include analyses for the Construction, Operation, Decommissioning and Reclamation and Post-Closure phases of the Project. If applicable, other boundaries may be described in the Application. These may include temporal, administrative, and technical boundaries. If there are no other relevant boundaries, this will be stated.




TELKWA COAL
LIMITED

*Tenas Project*

# Human Health Study Areas

- Project Area
- Human Health RSA and LSA[1]
- Highway
- Roads
- Rail
- 500 kV Transmission Line
- 138 kV Transmission Line
- PNG Pipeline

*Notes:*

*1. Final size to be finalized in discussions with BC Ministry of Environment and Climate Change Strategy*
*2. All mapped features are approximate and should be used for discussion purposes only.*
*3. 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:*

*Mine Features: Telkwa Coal, 2020*
*Basedata: Government of British Columbia*
*Basemap: SRTM 90m Digital Elevation Database*

*Page Size: 11" x 17"* *NAD 1983 UTM Zone 9N*

*Date Created: April 27, 2020*

*Last Updated: May 01, 2020*

20200427_HumanHealth_05
Created by: NB

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### *8.1.2 Existing Conditions*

The Application will summarize existing conditions in a manner consistent with section 3.3 Existing Conditions of this AIR.

This section of the Application will describe the approach taken to characterize the existing conditions of the VC (including literature reviews and desktop studies), and list the information provided in the baseline report, and field programs or modelling undertaken with reference to applicable standards or methods. The Application will indicate the sources of the regional and site-specific data, including the time frame and data collection methods, where available. Any assumptions will be documented. Margins of error or degree of uncertainty will be reported, where appropriate. The Application will describe available traditional ecological or community knowledge related to the Human Health VC. The Application will use relevant associated documents produced for the proposed Project and publicly available studies for other projects in central BC. The following general approach is being taken to develop existing conditions for the Human Health VC.

A Baseline Human Health Risk Assessment (HHRA) will be used to characterize baseline human health from biophysical determinants of health. The HHRA, which consists of a problem formulation, an exposure assessment, toxicity assessment, risk characterization, and an uncertainty analysis.

- Problem formulation:
  - Reviews current use of land and resources for traditional purposes, and reviews any TEK where relevant and available;
  - Identifies human receptors of concern;
  - Reviews baseline reports for surface water and groundwater quality, air quality, noise, wildlife, avian species, soil, and vegetation;
  - Compiles baseline concentration datasets for surface water, groundwater, fish tissues, soil, vegetation, air quality, and screens datasets against applicable guidelines to identify contaminants of potential concern (COPCs); and
  - Identifies operable exposure pathways from environmental media to human receptors of concern for identified COPCs and summarizes the information in a conceptual site model.
- Exposure assessment:
  - Uses exposure models to calculate the total exposure concentration for COPCs in environmental media (i.e., surface water, groundwater, air, soil, and sustenance foods (country foods), such as vegetation, wildlife, and avian species.
- Toxicity assessment:
  - Identifies toxicity thresholds from literature review for COPCs for identified receptors.
- Risk characterization:

  - Integrates the exposure and toxicity assessments to produce quantitative risk estimates; and
  - Conclusions regarding risk to human receptors are made.
- Uncertainty analysis:
  - Describes assumptions and uncertainties encountered during the process of risk assessment and whether they could affect the conclusions of the risk assessment.

Inputs, assumptions, and results of the HHRA will be summarized for the existing conditions for the Human Health VC.

The Application will identify and describe applicable provincial and federal legislation, policies, BMPs and guidance documents related to Human Health VC. These will include:

- Useful Information for Environmental Assessments (Health Canada 2010).
- Guidelines for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment (Health Canada 2019a).
- Federal Contaminated Site Risk Assessment in Canada, Supplemental Guidance on Human Health Risk Assessment on Air Quality, Version 2.0 (Health Canada 2017).
- British Columbia Ambient Air Quality Objectives (BC Ministry of Environment and Climate Change Strategy 2018)
- Canadian National Ambient Air Quality Objectives: Process and Status (CCME 1999).
- National Ambient Air Quality Objectives for Particulate Matter (Health Canada 1998).
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air Quality (Health Canada 2016).
- Guidelines for Community Noise (Berglund, Lindvall, Schwela, & World Health Organization 1999).
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise (Health Canada 2016).
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Drinking and Recreational Water Quality (Health Canada 2016).
- Guidelines for Canadian Drinking Water Quality Summary Table (Health Canada 2019b).
- Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Summary Table; CCME 1999).
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Country Foods

(Health Canada 2018).

- Federal Contaminated Site Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment, Version 2.0 (Health Canada 2012).
- Federal Contaminated Site Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values and Chemical-Specific Factors, Version 2.0 (Health Canada 2010).

The following Human Health VC technical reports will be provided with the Application:

- Human Health Risk Assessment Report.

### *8.1.3 Potential Effects*

The Application will identify potential adverse effects to the Human Health VC in a manner consistent with section 3.4 Potential Effects of this AIR.

The Application will describe the analysis, methodology and standards used to determine the potential effects on the Human Health VC resulting from project activities within each phase of the Project. Interactions between Project components and activities and the Human Health VC will be summarized.

The potential for changes in human health will be predicted in the "Human Health Risk Assessment Report" using the same risk assessment approach described in Section 8.1.2 Existing Conditions using predicted (modeled) COPC concentrations in surface water, ground water, dust, soil, and sustenance (country) foods, and predicted air contaminants and noise levels.

The following potential effects will be assessed:

- Change in human health based on changes in:
  - air quality;
  - drinking water quality;
  - soil or vegetation quality (including from dust deposition);
  - sustenance food quality such as plants, fish, animals, or birds; and
  - noise and traffic levels.

The assessment of potential effects on human health will be based on assessment of Construction and Operation phases, as they are considered worst-case-scenarios for Project phases for the Human Health VC.

### *8.1.4 Mitigation Measures*

The Application will identify measures to avoid, manage or otherwise mitigate potential adverse effects to the Human Health VC in a manner consistent with section 3.5 Mitigation Measures of this AIR. Relevant management plans will be referenced. Linkages to other sections in the Application must be identified.

### *8.1.5 Residual Effects and their Significance*

Where an adverse residual effect is identified, the Application will characterize the residual effect based on the context, magnitude, extent, duration, reversibility, and frequency as described in section 3.6 Characterization of Residual Effects of this AIR.

Where an adverse residual effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *8.1.6 Cumulative Effects and their Significance*

If a residual effect is identified, unless stated otherwise by EAO, the Application will:

- Determine whether any cumulative interactions between residual effects of the proposed Project and the potential residual effects of other developments, based on the preliminary list of past, present and reasonably foreseeable developments provided in the AIR, are likely to occur, consistent with section 3.8.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities of this AIR;
- Conduct a cumulative effects assessment consistent with section 3.8.2 Conducting a Cumulative Effects Assessment of this AIR;
- Identify any additional mitigation measures, consistent with section 3.5 Mitigation Measures of this AIR; and
- Where an adverse residual cumulative effect is identified, the Application will also describe the likelihood, Proponent's significance determination and predictive confidence, in accordance with sections 3.6.1 Likelihood, 3.7 Proponent's Determination of Significance and 3.7.1 Confidence and Risk of this AIR.

### *8.1.7 Follow-up Strategy*

Where a residual effect and/or cumulative effect have been identified, the Application will include a description of a follow-up strategy that is consistent with section 3.9 Follow-up Strategy of this AIR.

# 9.0 ACCIDENTS AND MALFUNCTIONS

This section of the Application will present a description of potential credible malfunctions and accidents associated with the Project, and the conditions under which they could occur. Proposed mitigations and contingency plans will be provided in the Application and will reference the appropriate management plans included in the submission. The assessment will focus on bounding conditions to attempt to maintain an appropriate level of conservatism in the assessment. Predicted effects will be evaluated for significance and conclusions of the assessment will be presented. Specifically, the Application will include the following:

- Identification of potential accidents and malfunctions:
- The overall methodology for assessing the potential risk of an event (likelihood and consequence);
- Definitions of each category of likelihood;
- Definitions for each category of consequence;
- An assessment of the likelihood of the event occurring, based on historical trends and predictive models;
- Identification of proposed measures to reduce the likelihood of the event;
- Assessment of consequence of the event, in a manner consistent with the direct effects assessment,
- Identification of measures to mitigate the consequences to valued components; and
- Conclusions on the potential risk (likelihood multiplied by consequence) of the accident or malfunction.

## 10.0 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The Application will include:

- The environmental factors deemed to have possible consequences on the proposed project, including, but not necessarily limited to, consideration of natural hazards such as:
    - Potential impacts of climate change (e.g., temperature rise, and trend of increasing precipitation);
    - Extreme weather and weather-related events (e.g., heavy precipitation, extreme temperatures and high winds);
    - Flood events;
    - Lightning strike;
    - Geo-hazard including slope stability (debris torrents, rock fall and avalanche)
    - Seismic activities/events; and
    - Forest fire.
- A description of any changes or effects on the proposed Project that may be caused by the above-mentioned environmental factors;
- The likelihood and consequence of the changes or effects to relevant VCs and ICs;
- Practical mitigation measures, including design strategies and environmental contingency plans, to avoid or minimize the likelihood and consequence of the effects of the environment on the proposed Project; and
- A conclusion about the potential risk of an effect of the environment on the proposed Project and to relevant VCs and ICs.

# PART C - WET'SUWET'EN RIGHTS AND INTERESTS

## 11.0 WET'SUWET'EN RIGHTS AND INTERESTS ASSESSMENT

### 11.1 Introduction

This section of the Application will:

- Identify and introduce the potentially affected indigenous nation, the Wet'suwet'en and the Wet'suwet'en First Nation, as identified in the section 11 Order.
- Describe the process of developing Part C, and how Wet'suwet'en and the Proponent worked together to establish the approach/methodology.

In April 2017, the Wet'suwet'en and the Proponent signed a Communication and Engagement Agreement as an initial formal step in the relationship.

The Proponent is prepared to work jointly with the Wet'suwet'en to prepare Part C of the Application as it pertains to Wet'suwet'en rights and interests. It is critical that a full and meaningful assessment is conducted for all valued components associated with Wet'suwet'en rights and interests.

### 11.2 Wet'suwet'en Background

This section of the Application will:

- Provide a map that identifies Indian Reserves and Wet'suwet'en communities, and hereditary territory locations and boundaries with respect to the Project location;
- Describe the ecological conditions in Wet'suwet'en territory, based on both science and Wet'suwet'en TEK and understanding, where available;
- Provide background information on Wet'suwet'en, including, but not limited to:
    - ethnography and historic background;
    - language;
    - land use setting and planning, including relevant First Nations policies and applicable stewardship principles;
    - populations;
    - governance (hereditary and band level);
    - sustenance;
    - traditional and preferred future economies; and
    - lands and current reserves.

## 11.3 Wet'suwet'en Understanding of the Project

The Application will:

- Provide a historical context of the area of the Project.
- Describe what types of disturbance the project will entail, based on a Wet'suwet'en understanding of the proposed project.
- Provide a summary of the current understanding of Wet'suwet'en lands and resources, rights and interests related to the Project.

## 11.4 Potential Effects on the Wet'suwet'en Rights and Interests

The Application will identify potential effects from the Project which may include:

- Change in with access preventing Wet'suwet'en use of preferred areas for traditional purposes;
- Change in availability of wildlife and fish resources in preferred locations due to direct mortality (resulting from traffic, contamination, attractants, hunting pressure) and alteration of movement (resulting from sensory disturbance, physical impediments, habitat fragmentation);
- Change in availability of plant resources in preferred locations due to direct removal (resulting from site clearing) and alteration (resulting from edge effects from clearing, roads);
- Change in confidence in the safety of water and country foods, due to (real and perceived) contamination of water, plants, and animals (resulting from dust, chemicals, metals, herbicides, spills, explosives);
- Change in sense of place due to sensory disturbance (resulting from noise, light, visual changes);
- Change in mobility due to removal of trails and waterways (resulting from site clearing, infrastructure), reduced safety on roads (resulting from traffic), removal of campsites (resulting from site clearing, infrastructure); and
- Change in sense of connection with land, spirit, and culture due to removal, alteration, and disturbance of burial sites, cultural heritage sites, spiritual and ceremonial sites, sites connected with important names, legends, and stories, and teaching and learning sites(resulting from site clearing, infrastructure, roads).
- Change in confidence in community well-being as a result of social and economic changes in the territory.

## 11.5 Assessment Methods and Information Sources

This section of the Application will describe the methods for determining effects from the Project on Wet'suwet'en rights and interests.

Existing information, publicly available, or made available by the Wet'suwet'en, will be gathered and reviewed, and may include:

- Historical or ethnographic records/materials;
- Wet'suwet'en knowledge on seasonal use, occupancy or traditional land use;
- Wet'suwet'en Census (most recent available);
- Wet'suwet'en Land Use Plan;
- Wet'suwet'en Lands and Resources Policy Manual: Values and Principles, Policy Statements and Stewardship Standards;
- Other planning or policy related documents;
- GIS-related files showing seasonal use / occupancy, areas of intent, traditional district boundaries;
- Site specific data related to subsistence, habitation, cultural or spiritual, environment or navigation; and
- Other publicly available information.

The significance of residual effects from several other chapters in the Application will be brought forward to this section, including:

## 11.6 Scope of Assessment on Wet'suwet'en Rights and Interests

This section of the Application will include the assessment of the potential Project-related effects on Wet'suwet'en rights and interests. Subject to changes from further consultation, the assessment will focus on the following components and the key potential effect pathways:

- **Resource Harvesting** (hunting, trapping, fishing, gathering) – Project potentially affecting harvesting for sustenance, trade, social, cultural, ceremonial or spiritual purposes through changes to access or ecology.
- **Cultural Heritage** – Project potentially affecting access to lands and water or altering the environment which affects Wet'suwet'en teaching land-based skills and TEK in situ, engaging in rites of passage, social/political events, spiritual practices, and ceremonies.

- **Cultural Well-being** – Through changes in the local and regional communities, demographics and land use, the Project potentially affecting existing and future economic and social well-being of Wet'suwet'en citizens.
- **Wet'suwet'en Health** – from the assessment of changes to human health from alterations in quality of water and foods, and considering potential changes in food security and availability of traditional foods, the potential for the Project to affect the health of Wet'suwet'en individuals and community.

The assessment will provide:

- A description of the baseline situation;
- An assessment of potential adverse effects of the proposed Project on Wet'suwet'en Rights and Interests for each component;
- A description or summary of mitigation measures to avoid or reduce potential adverse effects on First Nations interests consistent with section 3.5 Mitigation Measures of this AIR.
- A characterization of the residual adverse effects on First Nations interests after mitigation using the methodology described in sections 3.6 Characterization of Residual Effects, 3.6.1 Likelihood, and 3.7.1 Confidence and Risk of this AIR and incorporating the findings of the VC chapters in the Application that are relevant to First Nations interests.
- Due to the unique nature of Indigenous rights, the Application will make no determination of the significance of residual adverse effects on Wet'suwet'en interests.

## 11.7 Wet'suwet'en Perspectives on Cumulative Effects

This section will discuss the residual effects of the proposed Project in the context of other industrial and environmental effects based on a Wet'suwet'en perspective. This section will include consideration of existing conditions, the significance of existing effects on Wet'suwet'en rights, the additional effects of the Project in combination with reasonably foreseeable developments (listed in section xx of this AIR), and effects from changes in the environment.

## 11.8 Other Wet'suwet'en Interests

The Application will include:

- A list of other matters of concern raised by the Wet'suwet'en with respect to potential environmental, economic, social, heritage and health effects of the proposed Project, which have not already been assessed;
- A description of how these matters of concern have been addressed from the perspective of the Wet'suwet'en and the Proponent;

- A characterization of the residual adverse effects after mitigation, in a manner consistent with assessment methodology in this AIR; and
- A description of how these matters of concern have been addressed from the perspective of the Wet'suwet'en and the Proponent.

## 11.9 Summary of Potential Project Effects, Mitigation and Conclusions

The Application will include:

- A Summary Table (see example below) that identifies Wet'suwet'en Interests or other matters of concern to Wet'suwet'en that may be impacted by the proposed Project, and how these were addressed including design considerations, mitigations, accommodations, and specific commitments that address the effects identified will be provided in this section.

**Table 5: Summary Table of the Results of Wet'suwet'en Consultation related to Wet'suwet'en Interests/Other Matters of Concern to Wet'suwet'en**

| Group | Consultation Stage / Information Source | Issue – Wet'suwet'en Interest | Issue – Other Matters of Concern | Analysis of Potential Effect | Proposed Measures to Avoid, Mitigate or Otherwise Manage Effects | Status of Issue *(e.g. resolved, ongoing resolution, referred to agency, etc.)* |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

## 11.10 Consultation and Accommodation

The Application will include:

- A summary of past and planned consultation activities;
- If applicable, a summary of proposed changes to the Indigenous Consultation Plan resulting from the Wet'suwet'en feedback, or experience from consultation to date, including any such changes which have been implemented;
- An Appendix, the Indigenous Consultation Report, which contains comments received from Wet'suwet'en regarding this section of the Application;
- A summary of any outstanding Indigenous Interests issues identified by Wet'suwet'en; and
- A summary of publicly available arrangements or agreements reached between the proponent and Wet'suwet'en.

EAO | Environmental Assessment Office

# Application Information Requirements

## *Part D – Public Consultation*

BRITISH COLUMBIA

# PART D – PUBLIC CONSULTATION

## 12.0 PUBLIC CONSULTATION

The Application will include a report on the results of implementation of the approved Public Consultation Plan including:

- Background information:
    - Identification of local governments, residents, property owners, and other rights holders who are potentially impacted by the proposed Project;
    - Maps of local government boundaries, private land, tenures/authorizations, or residences with respect to the proposed Project; and
    - Background information about each potentially affected municipality and/or stakeholder group.
- Public Consultation:
    - A summary of the past and planned consultation activities;
    - A summary of any proposed changes to the approved Public Consultation Plan as a result of feedback from local governments, stakeholders or individuals, or experience from consultation to date; and
    - A description of the key issues raised by the public that are relevant to the EA, the responses to those issues, and the status of their resolution.
- Summary Table:
    - Identification of concerns raised by the public and the measures to avoid, reduce or mitigate those impacts. This information will be provided in the form of a table.

EAO | Environmental Assessment Office

# Application Information Requirements

## *Part E – Management Plans and Management Strategies*

BRITISH COLUMBIA

# PART E - MANAGEMENT PLANS AND MANAGEMENT STRATEGIES

## 13.0 MANAGEMENT PLANS

The Application will include:

- A list of Management Plans for all phases of the proposed Project, including but not limited to:
  - Reclamation and Closure Plan;
  - Occupational Health and Safety Program;
  - Environmental Management System;
  - Surface Erosion Prevention and Sediment Control Plan;
  - Soil Management Plan;
  - Construction Environmental Management Plan;
  - ML/ARD Management Plan;
  - Minesite Water Management Plan;
  - Discharges Management Plans;
  - Vegetation and Invasive Plants Management Plan;
  - Wildlife Management Plan;
  - Archaeological Management and Impact Mitigation Plan;
  - Mine Emergency Response Plan;
  - Minesite Traffic Control Plan;
  - Fuel Management and Spill Control Plan;
  - Combustible Dust Management Plan;
  - Chemicals and Materials, Storage, Transfer, and Handling Plan;
  - Waste (Refuse and Emissions) Management Plan;

- Socio-economic Management Plan;
- Air Quality Management Plan;
- Visual Quality Management Plan;
- Explosives Management Plan;
- Public Access Management Plan; and
- Mine Material Management Plan.

- A comprehensive description of the contents of each Management Plan, including the identification of any mitigation measures described in previous sections that will be included within the plans.

# 14.0 MONITORING & ADAPTIVE MANAGEMENT STRATEGIES

The Application will include:

- A description of the monitoring and follow-up programs the Proponent will implement, including their activities, objectives and reporting; and
- Reporting structure as identified within the environmental management plans, monitoring plans and EA Certificate Conditions.

EAO | Environmental Assessment Office

# Application Information Requirements

## *Part F – Conclusions*

BRITISH COLUMBIA

# PART F - CONCLUSIONS

## 15.0 CONCLUSIONS

The Application will:

- Provide the Proponent's conclusions regarding the potential for significant adverse effects on VCs from the Project;
- Request an EA Certificate for the proposed Project; and
- Acknowledge the need, if applicable, to successfully complete a federal EA and subsequent permitting/authorization processes prior to proceeding with Project construction, operation and decommissioning.

### 15.1 Summary of Residual Effects

The Application will summarize all potential residual effects, including cumulative residual effects, in a table format that depicts the potential effect, project phases, project activity or physical work linked to the effect, proposed mitigation and significance of effect on VCs.

### 15.2 Summary of Mitigation Measures

The Application will include a table that identifies the proposed measures to mitigate potential impacts to VCs as shown in **Table 6**. This information provides the foundation for the development of a Table of Conditions for the proposed Project, which would be appended to an EA Certificate, should one be issued.

**Table 6: Summary of Proposed Mitigation Measures**

| No. | VC and Effect | Proposed Mitigation Measure | Timing | Legal Requirement? | Responsible Agency |
|---|---|---|---|---|---|
| **Environmental** | | | | | |
| 1.1 | | | | | |
| 1.2 | | | | | |
| **Social** | | | | | |
| 2.1 | | | | | |

## 16.0 REFERENCE MATERIAL

The Proponent will provide a list of reference material used in developing the Application.

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# 17.0 APPENDICES

This section will include the appendices referenced in the Application.

Information prepared by professionals and provided under their professional seal will be identified in the Application and the related sealed studies will be included in an Appendix.