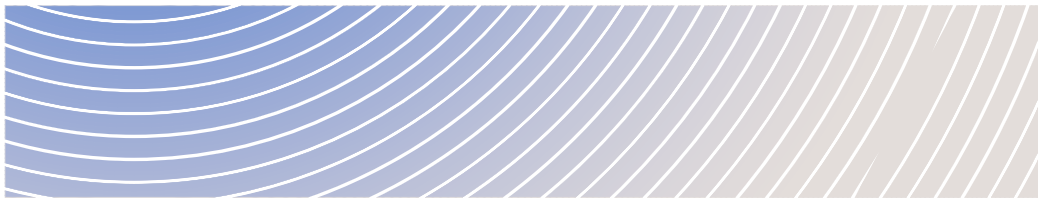
Impact Assessment Agency of Canada



REVISED ENVIRONMENTAL IMPACT STATEMENT GUIDELINES:

MICHEL COAL PROJECT

March 16, 2020

Impact Assessment Agency of Canada | Agence d'évaluation d'impact du Canada

Canada

Contents

DISCLAIMER

This document is not a legal authority, nor does it provide legal advice or direction; it provides information only, and must not be used as a substitute for the Canadian Environmental Assessment Act, 2012 (CEAA 2012) or its regulations. In the event of a discrepancy, CEAA 2012 and its regulations prevail. Portions of CEAA 2012 have been paraphrased in this document, but will not be relied upon for legal purposes.

List of Abbreviations and Acronyms

Abbreviation/Acronym	Definition
CEAA 2012	*Canadian Environmental Assessment Act, 2012*
Agency	Impact Assessment Agency of Canada
EA	environmental assessment
EIS	environmental impact statement
IAA	*Impact Assessment Act*
Project	Michel Coal Project
Proponent	North Coal Limited
VC	valued component
UTM	Universal Transverse Mercator

Part 1 – Key Considerations

1. Introduction

The purpose of this document is to identify for the proponent the minimum information requirements for the preparation of an Environmental Impact Statement (EIS) for a designated project[1] to be assessed pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). On August 28, 2019, *the Impact Assessment Act* (IAA) came into force and CEAA 2012 was repealed. In accordance with the transitional provisions of IAA, the environmental assessment (EA) of this project is continuing under CEAA 2012 as if it had not been repealed.

The Agency originally issued this document in January 2016 based upon the Project Description submitted to the Agency on October 2015. The proponent made changes to the project and submitted a revised Project Description in August 2018, and submitted a letter describing additional project changes in March 2020. The Agency has updated this document in response to these project changes. The revised EIS Guidelines reflect new information requirements about potential effects and comments received from Indigenous communities as a result of the project changes.

This document specifies the nature, scope and extent of the information required. Part 1 of this document defines the scope of the environmental assessment and provides guidance and general instruction that must be taken into account in preparing the EIS. Part 2 outlines the information that must be included in the EIS.

Section 5 of CEAA 2012 describes the environmental effects that must be considered in an EA, including changes to the environment and effects of changes to the environment. The factors that are to be considered in an EA are described under section 19 of CEAA 2012. The Impact Assessment Agency of Canada (the Agency) will use the North Coal Limited's (the proponent) EIS and other information received during the EA process to prepare a report that will inform the issuance of a decision statement by the Minister of Environment and Climate Change. Therefore the EIS must include a full description of the changes the Michel Coal Project (the project) will cause to the environment that may result in adverse effects on areas of federal jurisdiction (i.e. section 5 of CEAA 2012) including changes that are directly linked or necessarily incidental to any federal decisions that would permit the project to be carried out. The EIS must also include a list of the mitigation measures that the proponent proposes to undertake in order to avoid or minimize any adverse environmental effects of the project. It is the responsibility of the proponent

[1] In this document, "project" has the same meaning as "designated project" as defined in CEAA 2012

to provide sufficient data and analysis on potential changes to the environment to ensure a thorough evaluation of the environmental effects of the project by the Agency.

2. Guiding Principles

2.1. Environmental assessment as a planning and decision making tool

EA is a process to predict environmental effects of proposed projects before they are carried out. An EA:

- describes conditions and values in the project area;
- identifies potential adverse environmental effects;
- proposes measures to avoid, minimize or mitigate adverse environmental effects;
- predicts whether there will be significant adverse environmental effects, after mitigation measures are implemented; and
- includes a follow-up and monitoring program to verify the accuracy of the EA, evaluate the actual impacts of the project, and determine the effectiveness of the mitigation measures.

2.2. Public participation

One of the purposes identified in CEAA 2012 is to ensure that opportunities are provided for meaningful public participation during an EA. CEAA 2012 requires that the Agency provide the public with an opportunity to participate in the EA. For EAs led by the Agency the public has an opportunity to comment on the draft EA report. Additional opportunities for participation may also be provided.

Meaningful public participation is best achieved when all parties have a clear understanding of the proposed project as early as possible in the review process. The proponent is required to provide current information about the project to the public and especially to the communities likely to be most affected by the project.

2.3. Engagement with Indigenous[2] groups

[2] For this document, “Indigenous” has the same meaning as “Aboriginal” as per the *Constitution Act, 1982*.

The proponent is expected to engage with potentially affected Indigenous groups starting as early as possible in the project planning process in order to:

- fulfil the statutory obligations of CEAA 2012 to assess environmental effects of the project on Indigenous peoples; and
- assist the Agency in fulfilling the Crown's duty to consult with Indigenous groups with respect to potential impacts on the exercise of asserted or established Aboriginal and Treaty rights.

The proponent is expected to work with potentially affected Indigenous groups to establish an engagement approach. The proponent will make reasonable efforts to integrate Indigenous knowledge into the assessment of environmental effects. For more information on requirements related to the effects assessment, see Part 2, section 7.1.9 and section 7.3.4 of these guidelines. For more information on incorporating Indigenous knowledge, refer to Part 1, section 4.2.2 of these guidelines.

2.4. Application of the precautionary approach

In documenting the analyses included in the EIS, the proponent will demonstrate that all aspects of the project have been examined and planned in a careful and precautionary manner in order to avoid significant adverse environmental effects and, where avoidance is not possible, to minimize and mitigate impacts to the maximum extent practicable.

3. Scope of the Environmental Assessment

3.1. Designated project

On October 1, 2015, North Coal Limited (then CanAus Coal Limited), the proponent of the Michel Coal Project (the project) provided a project description to the Agency. Based on this project description, the Agency has determined that an EA is required under CEAA 2012. In August 2018, the proponent submitted a revised project description that expanded the project from one open pit to three. In November 2019, the proponent submitted a letter advising the Agency of the decision to remove the Tent Mountain pit from the project. The revised Michel Coal Project includes two open pits. The EA will include the construction, operation, decommissioning, and abandonment of the following project components:

- two open pits;
- coal, waste rock, reject material, overburden, and topsoil stockpile areas;
- coal processing facility;

- water management and treatment facilities;
- explosives storage and manufacturing;
- site clearing, earthmoving, leveling, drilling, and blasting activities;
- transportation corridor construction or improvement (road, rail, pipeline);
- transportation through to the existing rail line;
- petroleum products and reagent storage;
- water supply (industrial and drinking);
- power supply;
- borrow areas; and
- administrative, maintenance, storage buildings.

3.2. Factors to be considered

Scoping establishes the parameters of the EA and focuses the assessment on relevant issues and concerns. Part 2 of this document specifies the factors to be considered in the EA, including the factors listed in subsection 19(1) of CEAA 2012:

- environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other physical activities that have been or will be carried out;
- the significance of the effects referred to above;
- comments from the public;
- mitigation measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;
- the requirements of the follow-up program in respect of the project;
- the purpose of the project;
- alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternative means;
- any change to the project that may be caused by the environment; and
- the results of any relevant regional study pursuant to CEAA 2012.

3.2.1. Changes to the environment

Environmental effects occur as interactions between actions (the carrying out of the project or decisions made by the federal government in relation to the project) and receptors in the environment, and subsequently between components of the environment (e.g. change in water quality that may affect fish).

Under CEAA 2012, an examination of environmental effects that result from changes to the environment as a result of the project being carried out or as a result of the federal government exercising any power, duty or function that would allow the project to be carried out must be considered in the EIS.

In scoping the potential changes to the environment that may occur, the proponent should consider any potential changes in the physical environment such as changes to air quality, water quality and quantity, and physical disturbance of land that could reasonably be expected to occur.

3.2.2. Valued components to be examined

Valued components (VCs) refer to environmental, biophysical or human features that may be impacted by a project. The value of a component not only relates to its role in the ecosystem, but also to the value people place on it. For example, it may have been identified as having scientific, ecological, social, cultural, economic, historical, archaeological or aesthetic importance.

The proponent must conduct and focus its analysis on VCs as they relate to section 5 of CEAA 2012, including the ones identified in section 7.3 (Part 2) of these guidelines that may be affected by changes in the environment, as well as species at risk and their critical habitat as per the requirement outlined in section 79 of the *Species at Risk Act*. Section 5 of CEAA 2012 defines environmental effects as:

- a change that may be caused to fish and fish habitat and migratory birds;
- a change that may be caused to the environment on federal lands, in another province or outside Canada;
- with respect to Indigenous peoples, an effect of any change that may be caused to the environment on:
  - health and socio-economic conditions;
  - physical and cultural heritage;
  - the current use of lands and resources for traditional purposes; or
  - any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; and
- for projects requiring a federal authority to exercise a power or perform a duty or function under another Act of Parliament:
- a change, other than the ones mentioned above, that may be caused to the environment and that is directly linked or necessarily incidental to the exercise of the federal power or the performance of a duty or function; and
  - the effect of that change, other than the effects mentioned above, on:
  - health and socio-economic conditions,
  - physical and cultural heritage, or
  - any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

The list of VCs presented in the EIS will be completed according to the evolution and design of the project and reflect the knowledge acquired through public consultation and engagement with Indigenous groups. The EIS will describe what methods were used to predict and assess the adverse environmental effects of the project on these VCs.

The VCs will be described in sufficient detail to allow the reviewer to understand their importance and to assess the potential for environmental effects arising from the project activities. The EIS will provide a rationale for selecting specific VCs and for excluding any VCs or information specified in these guidelines. Challenges may arise regarding particular exclusions, so it is important to document the information and the criteria used to justify the exclusion of a particular VC or piece of information. Justification may be based on, for example, primary data collection, computer modelling, literature references, public participation or engagement with Indigenous groups, or expert input or professional judgement. The EIS will identify those VCs, processes, and interactions that either were identified to be of concern during any workshops or meetings held by the proponent or that the proponent considers likely to be affected by the project. In doing so, the EIS will indicate to whom these concerns are important (e.g. the public or Indigenous groups) and the reasons why, including environmental, cultural, historical, social, economic, recreational, and aesthetic considerations, and traditional (or 'Indigenous') knowledge. If comments are received on a component that has not been included as a VC, these comments will be summarized and the rationale for excluding the component will address the comments.

3.2.3. Spatial and temporal boundaries

The spatial and temporal boundaries used in the EA and in the EIS may vary depending on the VC and will be considered separately for each VC, including for VCs related to the current use of lands and resources for traditional purposes by Indigenous peoples, or other environmental effects referred to under paragraph 5(1)(c) of CEAA 2012. The proponent is encouraged to consult with the Agency, federal and provincial government departments and agencies, local government and Indigenous groups, and take into account public comments when defining the spatial and temporal boundaries used in the EIS.

The EIS will describe the spatial boundaries, including local and regional study areas, of each VC to be used in assessing the potential adverse environmental effects of the project and provide a rationale for each boundary. Spatial boundaries will be defined taking into account the appropriate scale and spatial extent of potential environmental effects, community knowledge and traditional knowledge (or 'Indigenous knowledge'), current or traditional land and resource use by Indigenous peoples, ecological, technical, social and cultural considerations.

The temporal boundaries of the EIS will span all phases of the project determined to be within the scope of this EA as specified under section 3.1 above. If effects are predicted after project decommissioning, this should be taken into consideration in defining boundaries. Community knowledge and Indigenous knowledge should factor into decisions around defining temporal boundaries.

If the temporal boundaries do not span all phases of the project, the EIS will identify the boundaries used and provide a rationale.

4. Preparation and Presentation of the Environmental Impact Statement

4.1. Guidance

The proponent should consult the Agency policy and guidance on topics to be addressed in the EIS, which is available on the Agency's website, and liaise with the Agency during the planning and development of the EIS. The proponent should also consult relevant guidance from other federal departments and ensure that the most up to date version is being used.

The proponent is encouraged to engage with Indigenous groups on the planning and development of relevant sections of the EIS, including effects from changes to the environment on Indigenous peoples, and impacts on the exercise of Aboriginal or Treaty rights.

Submission of regulatory and technical information necessary for federal authorities to make their regulatory decisions during the conduct of the EA is at the discretion of the proponent. Although that information is not necessary for the EA decision, the proponent is encouraged to submit it concurrent with the EIS. While the EIS must outline applicable federal authorizations required for the project to proceed, the proponent must provide information relevant to the regulatory role of the federal government. It should be noted that the issuance of these other applicable federal legislative, regulatory and constitutional requirements are within the purview of the relevant federal authorities, and are subject to separate processes post EA decision.

4.2. Use of information

4.2.1. Government expert advice

Section 20 of CEAA 2012 requires that every federal authority with specialist or expert information or knowledge with respect to a project subject to an EA must make that information or knowledge available to the Agency. The Agency will advise the proponent of the availability of pertinent information or knowledge or expert and specialist knowledge received from other federal authorities or other levels of government so that it can be incorporated into the EIS.

4.2.2. Community knowledge and Indigenous knowledge

Subsection 19(3) of CEAA 2012 states that "the environmental assessment of a designated project may take into account community knowledge and Aboriginal traditional knowledge." For the purposes of these

guidelines, community knowledge and Aboriginal traditional knowledge (or 'Indigenous knowledge') refers to knowledge acquired and accumulated by a local community or an Indigenous group.

The proponent will incorporate into the EIS the community knowledge and Indigenous knowledge to which it has access or that is acquired through public participation and engagement with Indigenous groups, in keeping with appropriate ethical standards and obligations of confidentiality. The proponent will engage in a respectful dialogue with Indigenous groups about the collection and use of Indigenous knowledge and enter into agreements where necessary regarding the use of information during and after the EA. The proponent should collaborate with Indigenous groups to ensure, where possible, that Indigenous knowledge is incorporated into the EIS in a way that is appropriate for the Indigenous group. The proponent will integrate Indigenous knowledge into all aspects of its assessment including both methodology (e.g. establishing spatial and temporal boundaries, defining significance criteria) and analysis (e.g. baseline characterization, effects prediction, development of mitigation measures). Agreement should be obtained from Indigenous groups regarding the use, management and protection of their existing Indigenous knowledge during and after the EA. For more information on how Indigenous knowledge can be obtained and incorporated in the preparation of the EIS, please refer to the Agency's reference guide on the topic. In addition to incorporating Indigenous knowledge the proponent is expected to seek information from all sources[3] to allow for a complete assessment of effects of changes to the environment on Indigenous peoples and the assessment of impacts on the exercise of Aboriginal or Treaty rights to be presented in the EIS. For more information on requirements for the effects assessment, see Part 2, section 7.1.9 and 7.3.4 of these guidelines.

4.2.3. Existing information

In preparing the EIS, the proponent is encouraged to make use of existing information relevant to the project. When relying on existing information to meet requirements of the EIS Guidelines, the proponent will either include the information directly in the EIS or clearly direct the reader to where it may obtain the information through cross-referencing. When relying on existing information, the proponent will also comment on how the data were applied to the project, separate factual lines of evidence from inference, and state any limitations on the inferences or conclusions that can be drawn from the existing information.

4.2.4. Confidential information

In implementing CEAA 2012, the Agency is committed to promoting public participation in the EA of projects and providing access to the information on which EAs are based. All documents prepared or submitted by the proponent or any other stakeholder in relation to the EA are included in the Canadian Impact Assessment Registry and made available to the public on request. For this reason, the EIS will not contain information that:

[3] The proponent should refer to the Agency's guidance documents related to current use of lands and resources for traditional purposes in order to include the appropriate baseline information relevant to current use.

- is sensitive or confidential (e.g. financial, commercial, scientific, technical, personal, cultural or other nature), that is treated consistently as confidential, and the person affected has not consented to the disclosure; or
- may cause substantial harm to a person or specific harm to the environment through its disclosure.

The proponent will consult with the Agency regarding whether specific information requested by these guidelines should be treated as confidential.

4.3. Study strategy and methodology

The proponent is expected to respect the intent of these guidelines and to consider the environmental effects that are likely to arise from the project (including situations not explicitly identified in these guidelines), the technically and economically feasible mitigation measures that will be applied, and the significance of any residual effects. Except where specified by the Agency, the proponent has the discretion to select the most appropriate methods to compile and present data, information and analysis in the EIS as long as they are justifiable and replicable.

It is possible these guidelines may include matters which, in the judgement of the proponent, are not relevant or significant to the project. If such matters are omitted from the EIS, the proponent will clearly indicate it, and provide a justification so the Agency, federal authorities, Indigenous groups, the public and any other interested party have an opportunity to comment on this decision. Where the Agency disagrees with the proponent's decision, it will require the proponent to provide the specified information.

The assessment will include the following general steps:

- describing baseline (pre-development) conditions;
- identifying the activities and components of the project;
- predicting potential changes to the environment;
- predicting and evaluating the likely effects on identified VCs;
- identifying technically and economically feasible mitigation measures for any significant adverse environmental effects;
- determining any residual environmental effects;
- considering cumulative effects of the project in combination with other past, present, or future physical activities; and
- determining the potential significance of any residual environmental effect following the implementation of mitigation measures.

For each VC, the EIS will describe the methodology used to assess pre-project baseline conditions and project-related effects. The EIS could include an analysis of the pathway of the effects of environmental changes on each VC. The EIS will document where and how scientific, engineering, community knowledge and Indigenous knowledge were used to reach conclusions. Assumptions will be clearly identified and justified. Should the VC represent a broader group rather than an individual species (e.g. American Dipper

may represent the guild of riparian bird species), the patterns and trends in effects need to be extrapolated to the broader set of values represented by the VC. All data, models and studies will be documented such that the analyses are transparent and reproducible. All data collection methods will be specified. The uncertainty, reliability, sensitivity and conservativeness of models used to reach conclusions must be indicated.

The EIS will identify all significant gaps in relevant local data, knowledge and understanding related to models, interpretations, and key conclusions, and the steps to be taken by the proponent to address these gaps. Where the conclusions drawn from scientific, engineering and technical knowledge are inconsistent with the conclusions drawn from Indigenous knowledge, the EIS will present each perspective on the issue and a statement of the proponent's conclusions.

The EIS will include a description of the environment (both biophysical and human), including the components of the existing environment and environmental processes, their interrelations as well as the variability in these components, processes and interactions over time scales appropriate to the likely effects of the project. The description will be sufficiently detailed to characterize the environment before any disturbance to the environment due to the project and to identify, assess and determine the significance of the potential adverse environmental effects of the project. These data should include results from studies done prior to any physical disruption of the environment due to initial site clearing activities. The information describing the existing environment may be provided in a stand-alone chapter of the EIS or may be integrated into clearly defined sections within the effects assessment of each VC. This analysis will include environmental conditions resulting from historical and present activities in the local and regional study areas.

If the baseline data have been extrapolated or otherwise manipulated to depict environmental conditions in the study areas, modelling methods and equations will be described and will include calculations of margins of error and other relevant statistical information, such as confidence intervals and possible sources of error. The proponent will provide the references used in creating their approach to baseline data gathering, including identifying where appropriate, the relevant federal or provincial standards. The proponent is encouraged to discuss the timeframe and considerations for its proposed baseline data with the Agency prior to submitting its EIS.

In describing and assessing effects to the physical and biological environment, the proponent will take an ecosystem approach that considers scientific and community knowledge, and Indigenous knowledge and perspectives regarding ecosystem health and integrity. The proponent will consider the resilience of relevant species populations, communities and their habitats. The assessment of environmental effects on Indigenous peoples, pursuant to paragraph 5(1)(c) of CEAA 2012, will undergo the same rigour and type of assessment as any other VC (including setting of spatial and temporal boundaries, identification and analysis of effects, identification of mitigation measures, determination of residual effects, identification and a clear explanation of the methodology used for assessing the significance of residual effects and assessment of cumulative effects).

The proponent will consider the use of both primary and secondary sources of information regarding baseline information, changes to the environment and the corresponding effect on health, socio-

economics, physical and cultural heritage and the current use of lands and resources for traditional purposes. Primary sources of information include traditional land use studies, socio-economic studies, heritage surveys or other relevant studies conducted specifically for the project and its EIS. Often these studies and other types of relevant information are obtained directly from Indigenous groups. Secondary sources of information include previously documented information on the area, not collected specifically for the purposes of the project, or desk-top or literature-based information. The proponent will provide Indigenous groups the opportunity to review and provide comments on the information used for describing and assessing effects on Indigenous peoples (further information on engaging with Indigenous groups is provided in Part 2, section 5 of this document). The proponent will respond to the comments of Indigenous groups prior to submitting the EIS and ensure that the comments are adequately addressed. Where there are discrepancies in the views of the proponent and Indigenous groups on the information to be used in the EIS, the EIS will document these discrepancies and the rationale for the proponent's selection of information.

The assessment of the effects of each of the project components and physical activities, in all phases, will be based on a comparison of the biophysical and human environments between the predicted future conditions with the project and the predicted future conditions without the project. In undertaking the environmental effects assessment, the proponent will use best available information and methods. All conclusions will be substantiated. Predictions will be based on clearly stated assumptions. The proponent will describe how each assumption has been tested. With respect to quantitative models and predictions, the EIS will document the assumptions that underlie the model, the quality of the data and the degree of certainty of the predictions obtained. Where there are discrepancies in the views of the proponent and Indigenous groups with respect to the outcomes of assessment(s), the EIS will document and provide a rationale for these discrepancies.

4.4. Presentation and organization of the environmental impact statement

To facilitate the identification of the documents submitted and their placement in the Canadian Impact Assessment Registry, the title page of the EIS and its related documents will contain the following information:

- project name and location;
- title of the document, including the term "environmental impact statement";
- subtitle of the document;
- name of the proponent; and
- date of submission of the EIS.

The EIS will be written in clear, precise language. A glossary defining technical words, acronyms and abbreviations will be included. The EIS will include charts, diagrams, tables, maps and photographs, where appropriate, to clarify the text. Perspective drawings that clearly convey the various components of the

project will also be provided. Wherever possible, maps will be presented in common scales and datum to allow for comparison and overlay of mapped features.

For purposes of brevity and to avoid repetition, cross-referencing is preferred. The EIS may make reference to the information that has already been presented in other sections of the document, rather than repeating it. Detailed studies (including all relevant and supporting data and methodologies) will be provided in separate appendices and will be referenced by appendix, section and page in the text of the main document. The EIS will explain how information is organized in the document. This will include a table of contents with a list of all tables, figures, and photographs referenced in the text. A complete list of supporting literature and references will also be provided. A table of concordance, which cross references the information presented in the EIS with the information requirements identified in the EIS Guidelines, will be provided. The proponent will provide copies of the EIS and its summary for distribution, including paper and electronic version in an unlocked, searchable PDF format, as directed by the Agency.

4.5. Summary of the environmental impact statement

The proponent will prepare a summary of the EIS in both of Canada's official languages (French and English) to be provided to the Agency at the same time as the EIS that will include the following:

- a concise description of all key components of the project and related activities;
- a summary of the engagement with Indigenous groups, and the participation of the public and government agencies, including a summary of the issues raised and the proponent's responses;
- an overview of expected changes to the environment;
- an overview of the key environmental effects of the project, as described under section 5 of CEAA 2012, and proposed technically and economically feasible mitigation measures;
- an overview of how factors under subsection 19(1) of CEAA 2012 were considered; and
- the proponent's conclusions on the residual environmental effects of the project, and the significance of those effects, after taking into account the mitigation measures.

The summary is to be provided as a separate document and should be structured as follows:

1 Introduction and EA context
2 Project overview
3 Alternative means of carrying out the project
4 Public participation
5 Engagement with Indigenous Groups
6 Summary of environmental effects assessment for each VC, including:
    a. description of the baseline
    b. anticipated changes to the environment
    c. anticipated effects

   d. mitigation measures
   e. significance of residual effects
7. Follow-up and monitoring programs proposed

The summary will have sufficient details for the reader to understand the project, any potential environmental effects, proposed mitigation measures, and the significance of the residual effects. The summary will include key maps illustrating the project location and key project components.

Part 2 – Content of the Environmental Impact Statement

1. Introduction and Overview

1.1. The proponent

In the EIS, the proponent will:

- provide contact information (e.g. name, address, phone, fax, email);
- identify itself and the name of the legal entity(ies) that would develop, manage and operate the project;
- describe corporate and management structures;
- specify the mechanism used to ensure that corporate policies will be implemented and respected for the project; and
- identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS.

1.2. Project overview

The EIS will describe the project, key project components and associated activities, scheduling details, the timing of each phase of the project and other key features. If the project is part of a larger sequence of projects, the EIS will outline the larger context.

The overview is to identify the key components of the project, rather than providing a detailed description, which will follow in section 3 below.

1.3. Project location

The EIS will contain a description of the geographical setting in which the project will take place. This description will focus on those aspects of the project and its settings that are important in order to understand the potential environmental effects of the project. The following information will be included:

- the Universal Transverse Mercator (UTM) projection coordinates of the main project site;
- current and historical land use in the area;
- distance of the project facilities and components to any federal lands;
- the environmental significance and value of the geographical setting in which the project will take place and the surrounding area;
- environmentally sensitive areas, such as national, provincial and regional parks, ecological reserves, wetlands, estuaries, and habitats of federally or provincially listed species at risk and other sensitive areas, wildlife management areas, conservancies, old growth management areas, key connectivity corridors for wildlife;
- description of local communities; and
- traditional territories and/or consultation areas, Treaty lands, Indian Reserve lands and Métis harvesting regions and/or settlements.

1.4. Regulatory framework and the role of government

The EIS will identify:

- any federal power, duty or function that may be exercised that would permit the carrying out (in whole or in part) of the project or associated activities;
- legislation and other regulatory approvals that are applicable to the project at the federal, provincial, regional and municipal levels;
- government policies, resource management plans, planning or study initiatives pertinent to the project and/or EA and their implications;
- any Treaty, self-government or other agreements between federal or provincial governments and Indigenous groups that are pertinent to the project and/or EA;
- any relevant land use plans, land zoning, or community plans, federal or provincial recovery strategies or management plans, and regional or watershed cumulative effects analyses
- information on land lease agreement or land tenure, when applicable; and
- regional, provincial and/or national objectives, standards, guidelines, or policies that have been used by the proponent to assist in the evaluation of any predicted environmental effects.

2. Project Justification and Alternatives Considered

2.1. Purpose of the project

The EIS will describe the purpose of the project by providing the rationale for the project, explaining the background, the problems or opportunities that the project is intended to satisfy and the stated objectives from the perspective of the proponent. If the objectives of the project are related to broader private or public sector policies, plans or programs, this information will also be included.

The EIS will identify strategies for optimizing positive effects of the project and particularly for the communities or values that are most vulnerable to impact.

2.2. Alternative means of carrying out the project

The EIS will identify and consider the environmental effects of alternative means of carrying out the project that are technically and economically feasible. The proponent will complete the assessment of alternative means in accordance with the Agency's Operational Policy Statement on this topic.

In its alternative means analysis, the proponent will address, at a minimum, the following project components:

- transportation of coal (means and routing considered);
- access to the project site;
- location of key project components;
- energy sources to power the project site;
- water supply;
- waste water ;
- water management including the location of the final effluent discharge points; and
- mine waste disposal (methods and sites considered).

The Agency recognizes that projects may be in the early planning stages when the EIS is being prepared. Where the proponent has not made final decisions concerning the placement of project infrastructure, the technologies to be used, or that several options may exist for various project components, the proponent shall conduct an environmental effects analysis at the same level of detail for each of the various options available (alternative means) within the EIS.

3. Project Description

3.1. Project components

The EIS will describe the project, by presenting the project components, associated and ancillary works, and other characteristics that will assist in understanding the environmental effects. This will include:

- maps, at an appropriate scale, of the project location, the project components, boundaries of the proposed site with UTM coordinates, the major existing infrastructure, proponent lands properties or leases lands used for the project, adjacent land uses and any important environmental features;
- coal, waste rock, overburden, topsoil, and tailings storage and stock piles (footprint, locations, volumes, development plans and design criteria);
- open pits (footprint, location, development plans including pit phases);
- crusher, and processing facilities (footprint, technology, location);
- water management facilities proposed to control, collect and discharge surface drainage and groundwater seepage to the receiving environment from all key components of the mine infrastructure (e.g. pit water, mine effluent);
- permanent and temporary linear infrastructures (road, railroad, pipelines, power supply), identifying the route of each of these linear infrastructures, the location and types of structure used for stream crossings;
- storage areas for fuels, explosives and hazardous wastes;
- drinking and industrial water requirements (source, quantity required, need for water treatment);
- energy supply (source, quantity);
- information on the care and control of project components; and
- waste disposal (types of waste, methods of disposal, quantity).

3.2. Project activities

The EIS will include descriptions of the construction, operation, decommissioning and abandonment associated with the proposed project.

This will include descriptions of the activities to be carried out during each phase, the location of each activity, expected outputs and an indication of the activity's magnitude and scale.

Although a complete list of project activities should be provided, the emphasis will be on activities with the greatest potential to have environmental effects. Sufficient information will be included to predict environmental effects and address concerns identified by the public and Indigenous groups. Highlight

activities that involve periods of increased environmental disturbance or the release of materials into the environment.

The EIS will include a summary of the changes that have been made to the project since originally proposed, including the benefits of these changes to the environment, Indigenous groups, and the public.

The EIS will include a schedule including time of year, frequency, and duration for all project activities.

The information will include a description of:

3.2.1. Site preparation and construction

- site clearing and excavation;
- blasting (frequency and methods);
- construction and upgrade of access roads, power lines, rail lines, pipelines, conveyors, and bridges;
- explosives manufacture and storage (location and management);
- borrow materials requirement (source and quantity);
- water management, including water diversions, dewatering or deposition activities required (location, methods, timing);
- equipment requirements (type, quantity);
- administrative buildings, garages, other ancillary facilities;
- construction camp (location, capacity, waste water treatment);
- number of employees and transportation of employees; and
- storage and management of hazardous materials, fuels and residues.

3.2.2. Operation

- mining plan, coal production and stockpiling;
- storage, handling and transport of materials;
- explosives manufacture, storage and use (storage location and management);
- drilling and blasting (frequency and methods);
- water management on the project site including mine water, storm water, process water, wastewater, water recycling and effluent treatment (quantity, treatment requirements, release point(s));
- coal extraction, crushing and treatment;
- storage and handling of reagents, petroleum products, chemical products, hazardous materials and residual materials;

- characterization and management of coal, waste rock, low grade coal, overburden and tailings (storage, handling and transport of the volumes generated, mineralogical characterization, potential for metal leaching and acid rock drainage);
- waste management and recycling (excluding mine waste such as waste rock); and
- characterization and management of workforce, including transportation, work schedules and lodging.

3.2.3. Decommissioning and abandonment

- the preliminary outline of a decommissioning and reclamation plan for any components associated with the project;
- the ownership, transfer and control of the different project components;
- the responsibility for monitoring and maintaining the integrity of the remaining structures; and
- for permanent facilities, a conceptual discussion on how decommissioning and abandonment could occur.

4. Public Participation and Concerns

The EIS will describe the ongoing and proposed public participation activities that the proponent will undertake or that it has already conducted on the project. It will provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process. The EIS will indicate the methods used, where the consultation was held, the persons and organizations consulted, the concerns voiced and the extent to which this information was incorporated in the design of the project as well as in the EIS. The EIS will provide a summary of key issues raised related to the project and its potential effects to the environment as well as describe any outstanding issues and ways to address them.

5. Engagement with Indigenous Groups and Concerns Raised

As noted in Part 1, section 2.3 of these guidelines, the proponent is expected to engage with Indigenous groups that may be affected by the project. For purposes of developing the EIS, the proponent will engage with Indigenous groups that may be affected by the project, to obtain their views on:

- the project;
- effects of changes to the environment on Indigenous peoples (including health and socio-economic conditions; physical and cultural heritage, including any structure, site or thing that is of historical,

archaeological, paleontological or architectural significance; and current use of lands and resources for traditional purposes) pursuant to paragraph 5(1)(c) of CEAA 2012; and

- potential adverse impacts of the project on the exercise of Aboriginal or Treaty rights, and where appropriate, accommodation measures proposed to address these potential impacts.

In order to enable the Indigenous groups to engage and provide views on the above, the proponent will provide the Indigenous groups with the following timely and relevant:

- opportunities to learn about the project including providing information about the proposed project (including but not limited to project design, location, potential effects, mitigation measures and follow-up and monitoring programs); and
- opportunities to provide input on the overall project; effects of changes to the environment on Indigenous peoples pursuant to paragraph 5(1)(c) of CEAA, 2012 and potential adverse impacts of the project on the exercise of Aboriginal or Treaty rights.

The proponent will structure its engagement activities to provide adequate time for groups to review and comment on the relevant information. Engagement activities are to be appropriate to the needs of each Indigenous group, arranged through discussions with the group and in keeping with consultation protocols, where available. The EIS will describe all efforts, successful or not, taken to solicit the information required from groups to support the preparation of the EIS. With respect to engagement activities, the EIS will document for each Indigenous group:

- the engagement activities undertaken prior to the submission of the EIS, including the date and means of engagement (e.g. meeting, mail, telephone, site tour, community open house);
- the main issues and comments raised and the proponent's responses. Effort should be made to group similar issues as per the VCs identified in the EIS;
- future planned engagement activities;
- where and how the perspectives of the group were integrated into and/or contributed to decisions regarding the project design, construction, operation, decommissioning, abandonment, maintenance, follow-up and monitoring and associated potential effects (paragraph 5(1)(c)) and the associated mitigation utilized to manage those effects. The effects and mitigation measures should be clearly linked to VCs in the EIS as well as to specific project components or activities; and
- how engagement activities by the proponent enabled the group to evaluate the project's potential impacts on their communities, activities, and Aboriginal or Treaty rights; and to evaluate and propose ways to avoid, mitigate or otherwise accommodate for those potential impacts.

The information listed above will be disaggregated by Indigenous group. To assist with the provision of records as requested above, the Agency recommends the proponent create a tracking table of key issues raised by each Indigenous group and responses provided by the proponent. Information provided related to potential adverse impacts on the exercise of Aboriginal or Treaty rights will be considered by the Crown in meeting its duty to consult, and consider as appropriate any need to consider accommodation in respect of potential impacts on rights.

For the Indigenous groups expected to be most affected by the project, the proponent is expected to strive towards developing a productive and constructive relationship based on on-going dialogue with the groups in order to support information gathering and the effects assessment. These Indigenous groups include:

- ?akisq'nuk (Columbia Lake Band);
- ?aq'am (?aq'am Band, formerly known as St. Mary's Band);
- yaqan nu?kiy (Lower Kootenay Band); and
- ?akink'um≠asnuq≠i?it (Tobacco Plains Band).

The four Ktunaxa Nations above have indicated that engagement and consultation related to the project should be coordinated through the Ktunaxa Nation Council.

For the above Indigenous groups, the proponent will strive to use primary data sources and hold face-to-face meetings to discuss concerns. The proponent will facilitate these meetings by making key EA summary documents (baseline studies, EIS, key findings, plain language summaries) available in advance of meetings. The proponent will ensure there are sufficient opportunities for individuals and groups to provide oral input in the language of their choice. If possible, the proponent should consider translating information for these groups into the appropriate Indigenous languages in order to facilitate engagement activities during the EA. For any impacts identified during these engagement activities, prior to submitting the EIS to the Agency the proponent will discuss with Indigenous groups approaches to avoid or mitigate those impacts and discuss the seriousness of those impacts after mitigation (residual effects; see Part 2, section 7.1.9 and Part 2, section 7.3.4 of these guidelines). Once the input has been provided, the proponent will summarize the Indigenous groups' views in a plain language document designed for their citizens that addresses key concerns identified by their communities and makes use of their language, where appropriate.

For Indigenous groups that may also be affected by the project, but to a lesser degree, the proponent will, at a minimum, ensure these groups are notified about key steps in the EIS development process and of opportunities to provide comments on key EA documents and/or information to be provided regarding their community. The proponent will ensure these groups are reflected in the baseline information and assessment of potential effects or impacts in the EIS (see Part 2, section 7.1.9 of these guidelines). These Indigenous groups include:

- Shuswap Indian Band;
- Métis Nation British Columbia;
- Bearspaw First Nation;
- Chiniki First Nation;
- Wesley First Nation;
- Tsuut'ina Nation;
- Kainai First Nation (Blood Tribe);
- Siksika Nation;

- Piikani Nation; and
- Métis Nation of Alberta – Region 3.

For the Indigenous groups listed above, if potential effects or impacts are identified, requirements of Part 2, section 6 and section 7.3.4 of these guidelines would apply.

The Indigenous groups referenced above may change as more is understood about the environmental effects of the project and/or if the project or its components change during the EA. The Agency reserves the right to alter the list of Indigenous groups that the proponent will engage as additional information is gathered during the EA.

Upon receipt of knowledge or information of potential effects or adverse impacts on any Indigenous group, even those not listed above, the proponent shall provide that information to the Agency at the earliest opportunity.

With respect to the effects of changes to the environment on Indigenous peoples, the assessment requirements are outlined in Part 2, sections 7.1.9 and 7.3.4 of these guidelines. With respect to the potential adverse impacts of the project on the exercise of Aboriginal or Treaty rights, the assessment requirements are outlined in Part 2, section 6 of these guidelines.

6. Potential Project-Related Impacts on Aboriginal or Treaty Rights

With respect to potential adverse impacts of the project on the exercise of Aboriginal or Treaty rights, the EIS will document for each group identified in Part 2, section 5 of these guidelines (or in subsequent correspondence from the Agency):

- a description of the nature, scope and content of Aboriginal or Treaty rights[4], when this information is directly provided by a group to the proponent, the Agency or is available through public records, including but not limited to:
  - location of the right being practiced or exercised;
  - context in which the right is practiced or exercised (including information about how members of an Indigenous group practice the right (e.g. women, elders, youth), and how the right was practiced historically);
  - how the Indigenous group's cultural traditions, laws and governance systems inform the manner in which they exercise their rights;

[4] Refer to Crown-Indigenous Relations and Northern Affairs Canada or Indigenous Services Canada for more information.

  - the Indigenous group's perspectives on the importance of the land on which the project is located and how it intersects with any land management uses and/or plans they may have;
  - how often the right is practiced or exercised and timing or seasonality of the practice or exercise of the right; and
  - maps and data sets (e.g. fish catch numbers);
- potential adverse impacts of each of the project components and physical activities, in all phases, on the exercise of Aboriginal or Treaty rights, including those raised by Indigenous groups;
- measures identified to avoid, mitigate or otherwise accommodate for potential adverse impacts of the project on the exercise of Aboriginal or Treaty rights. These measures will clearly describe how the proponent intends to implement them, and may go beyond mitigation measures that are developed to address potential adverse environmental effects. Include perspectives and proposals identified by the Indigenous group; including their views on the potential effectiveness of the avoidance, mitigation or other accommodation measures;
- potential adverse impacts on Aboriginal or Treaty rights that have not been fully mitigated or accommodated as part of the EA and associated engagement. Include perspective of the Indigenous groups; and
- potential adverse impacts that may result from the residual and cumulative environmental effects. Include the perspectives of the Indigenous group.

Each of the above sections will include the perspectives of the Indigenous group. This information and assessment will be informed by engagement with Indigenous groups as described in Part 2, section 5 of these guidelines. The information sources, methodology and findings of the assessment of paragraph 5(1)(c) effects under CEAA 2012 may be used to inform the assessment of potential adverse impacts of the project on the exercise of Aboriginal or Treaty rights. However, there may be differences between the adverse impacts on Aboriginal or Treaty rights and paragraph 5(1)(c) effects under CEAA, 2012. The proponent will carefully consider the potential differences between these two aspects and, where there are distinct differences, will include the relevant information in its assessment.

7. Effects Assessment

7.1. Project setting and baseline conditions

Based on the scope of the project described in section 3 (Part 1), the EIS will present baseline information in sufficient detail to enable the identification of how the project could affect the VCs and an analysis of those effects. Should other VCs be identified during the conduct of the EA, the baseline condition for these components will also be described in the EIS. To determine the appropriate spatial boundaries to describe the baseline information, refer to section 3.2.3 (Part 1) of these guidelines. As a minimum, the EIS will include a description of the following environmental components.

7.1.1. Atmospheric environment

- a baseline survey of ambient air quality in the project areas and in the airshed likely to be affected by the project, for the mine site, by identifying and quantifying emission sources for, but not limited to, the following contaminants: total suspended particulates, fine particulates smaller than 2.5 microns (PM2.5), respirable particulates of less than 10 microns (PM10), carbon monoxide (CO), sulphur oxides (SOx), nitrogen oxides (NOx), volatile organic compounds (VOCs), hydrogen sulfide (H_2S) and all other toxic air pollutants (mobile and stationary sources);
- identify and quantify existing greenhouse gas emissions[5] by individual pollutant measured as kilotonnes of CO2 equivalent per year in the project study areas;
- direct and indirect sources of air emissions;
- current provincial/territorial/federal limits for greenhouse gas emission targets;
- current ambient noise levels at key receptor points (e.g. Indigenous groups or communities), including the results of a baseline ambient noise survey. Information on typical sound sources, geographic extent and temporal variations will be included;
- existing ambient night-time light levels at the project site and at any other areas where project activities could have an effect on light levels. The EIS will describe night-time illumination levels during different weather conditions and seasons; and
- historical records of relevant meteorological information (e.g. total precipitation (rain and snow); mean, maximum and minimum temperatures; and typical wind speed and direction).

7.1.2. Geology and geochemistry

- the bedrock and host rock geology of the deposit, including a table of geologic descriptions, geological maps and cross-sections of appropriate scale;
- the geomorphology, topography and geotechnical characteristics of areas proposed for construction of major project components;
- the geochemical characterization of expected mine material such as waste rock, coal, low grade coal, tailings, overburden and potential construction material in order to predict metal leaching and acid rock drainage[6] including oxidation of primary sulphides and secondary soluble sulphate minerals;
- geological hazards that exist in the areas planned for the project facilities and infrastructure, including:
  - history of seismic activity in the area;

[5] Greenhouse gas emissions include: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

[6] The manual produced by the Mine Environment Neutral Drainage (MEND) Program, entitled, MEND Report 1.20.1, “Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials”, Version 0 - December 2009 is a recommended reference for use in acid rock drainage and metal leaching prediction.

  - isostatic rise or subsidence; and
  - landslides, slope erosion and the potential for ground and rock instability, and subsidence during and following project activities.
- baseline concentrations of contaminants of concern[7] within the local, regional and downstream receiving environments; and
- geochemical characterization of leaching potential, including, but not limited to, contaminants of concern from waste rock, pit walls, coal stockpiles, coarse coal rejects and tailings

7.1.3. Topography and soil

- baseline mapping and description of landforms and soils within the local and regional project areas;
- maps depicting soil depth by horizon and soil order within the mine site area to support soil salvage and reclamation efforts, and to outline potential for soil erosion; and
- suitability of topsoil and overburden for use in the rehabilitation of disturbed areas.

7.1.4. Riparian, wetland and terrestrial environments

- characterization of soils in the excavation area, in terrestrial and riparian environments, with a description of their past use;
- topography, drainage, geology and hydrogeology, and the physicochemical characteristics of potential on-land sediment or soil disposal sites;
- characterization of the shoreline, banks, current and future flood risk areas, and wetlands (fens, marshes, peatlands, mudflats and eelgrass beds, etc.), including the location and extent of wetlands that could be affected by project activities according to their size, type (class and form), the description of their ecological function (ecological, hydrological, wildlife, socioeconomic, etc.) and species composition[8];
- identification of ecosystems that are sensitive or vulnerable to acidification resulting from the deposition of atmospheric contaminants;
- identification of ecological communities of cultural significance for Indigenous people; and
- plant and animal species (abundance, distribution and diversity) and their habitats, with a focus on species at risk or with special status that are of social, economic, cultural or scientific significance, as well as invasive alien species.

7.1.5. Groundwater and surface water

[7] Contaminants of concern include, but are not limited to, selenium, sulphate, cadmium, nitrate and calcite.
[8] Refer to the Canadian Wetland Classification System of the National Wetlands Working Group for more information

- hydrogeology, including:
  - hydrogeological context (e.g. hydrostratigraphy with aquifers and aquitards, major faults, etc.), including the delineation of key stratigraphic and hydrogeologic boundaries;
  - physical properties of the hydrogeological units (e.g. hydraulic conductivity, transmissivity, saturated thickness, storativity, porosity, specific yield);
  - groundwater flow patterns and rates;
  - a discussion of the hydrogeologic, hydrologic, geomorphic, climatic and anthropogenic controls on groundwater flow;
  - temporal changes in groundwater flow (e.g. seasonal and long term changes in water levels);
  - a delineation and characterization of groundwater - surface water interactions including temperature and the locations of groundwater discharge to surface water and surface water recharge to groundwater;
  - temperature changes in surface water as a result of groundwater-surface water interactions; and
  - changes to surface water quality, including seasonal changes in runoff entering watercourses;
- hydrogeological maps and cross-sections for the mine area to outline the extent of aquifers and aquitards, including bedrock fracture and fault zones, locations and depths of wells and strainers, groundwater types springs, surface waters, and project facilities. Groundwater levels, potentiometric contours, flow directions, groundwater divides and areas of recharge and discharge should be included;
- all groundwater monitoring wells, including their location, in respect to the project area, including geologic, hydrostratigraphic, piezometric and construction data (e.g. depths of surficial rock and bedrock, bedrock quality, fracture zones, piezometric levels, hydraulic conductivity, diameter and screen depth and intercepted aquifer unit);
- monitoring protocol for collection of existing groundwater and surface water data including frequency of sampling events;
- an appropriate hydrogeologic model for the project area, which discusses the hydrostratigraphy and groundwater flow systems; a sensitivity analysis will be performed to test model sensitivity to climatic variations (e.g. recharge) and hydrogeologic parameters (e.g. hydraulic conductivity);
- groundwater quality, including lab analytical results for metals, major ions and physical parameters, including temperature, with the interpretation of results for any anomalous values and for contaminants of concern;
- graphs or tables indicating the seasonal variations in groundwater levels, flow regime, and quality;
- local and regional potable groundwater supplies, including their current use and potential for future use;
- bedrock fracture sizes and orientations in relation to groundwater flow;
- the delineation of drainage basins, at appropriate scales (water bodies and watercourses), including intermittent streams, flood risk areas and wetlands, boundaries of the watershed and subwatersheds, overlaid by key project components;

- hydrological regimes, including monthly, seasonal and annual water flow (discharge) data;
- for each affected water body, the total surface area, bathymetry, maximum and mean depths, water level fluctuations, type of substrate (sediments);
- seasonal surface water quality, including analytical results (e.g. water temperature, turbidity, pH, dissolved oxygen profiles, total suspended solids, and metals) and interpretation for representative tributaries and water bodies including all sites to receive mine effluents or runoff;
- any local and regional potable surface water resource; and
- sediment quality analysis for key sites likely to receive mine effluents.

7.1.6. Fish and fish habitat

For potentially affected surface waters:

- a characterization of fish populations in the Elk Valley and into Lake Koocanusa on the basis of species and life stage, including information on the surveys carried out and the source of data available (e.g. location of sampling stations, catch methods, date of catches, species, catch-per-unit effort);
- a description of tissue quality for benthic invertebrates and fish
- a description of primary and secondary productivity in affected water bodies with a characterisation of season variability;
- a list of any fish or invertebrate species at risk that are known to be present;
- a description of the habitat by homogeneous section, including the length of the section, width of the channel from the high water mark (bankfull width), water depths, type of substrate (sediments), aquatic and riparian vegetation, and photos;
- a description of natural obstacles (e.g. falls, beaver dams) or existing structures (e.g. water crossings) that hinder the free passage of fish;
- maps, at a suitable scale, indicating the surface area of potential or confirmed fish habitat for spawning, rearing, nursery, feeding, overwintering, migration routes, etc. Where appropriate, this information should be linked to water depths (bathymetry) to identify the extent of a water body's littoral zone; and
- the description and location of suitable habitats for fish species at risk that appear on federal and provincial lists and that are found or are likely to be found in the study area.

Note that certain intermittent streams or wetlands may constitute fish habitat or contribute indirectly to fish habitat. The absence of fish at the time of the survey does not irrefutably indicate an absence of fish habitat.

7.1.7. Migratory birds and their habitat[9]

- birds and their habitats that are found or are likely to be found in the study area. This description may be based on existing sources, but supporting evidence is required to demonstrate that the data used are representative of habitats found in the study area. The existing data must be supplemented by surveys, if required;
- abundance, distribution, and life stages of migratory and non-migratory birds (including waterfowl, raptors, shorebirds, marsh birds and other land birds) likely to be affected in the project area based on existing information, or surveys, as appropriate, to provide current field data;
- characterization of various ecosystems, habitat types, and habitat attributes with the potential to be affected, based on existing information (land cover types, vegetation); and
- year-round migratory bird use of the area (e.g. winter, spring migration, breeding season, fall migration), based on preliminary data from existing sources and surveys to provide current field data if appropriate.

7.1.8. Species at Risk

- a list of all species at risk listed under the *Species at Risk Act* (fauna and flora) that may be affected by the project, using existing data and literature as well as surveys to provide current field data;
- a list of all species assessed by the Committee on the Status of Endangered Wildlife in Canada as extirpated, endangered, threatened and of special concern[10];
- any studies that describe the regional importance, abundance and distribution of species at risk including recovery strategies or plans. The existing data must be supplemented by surveys, as required; and
- information on residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified critical habitat and/or recovery habitat (where applicable) and general life history of species at risk that may occur in the project area, or be affected by the project.

7.1.9. Indigenous Peoples

[9] Surveys should be designed in light of the available references and recommendations in Environment and Climate Change Canada's document entitled "Guidance for the Preparation of an Environmental Impact Statement and Useful References" (2016) (available from the Department of Environment and Climate Change Canada), and in the Canadian Wildlife Service's Technical Report No. 508, A Framework for the Scientific Assessment of Potential Project Impacts on Birds (Hanson et al. 2009). Appendix 3 of the Framework provides examples of project types and recommended techniques for assessing impacts on migratory birds

[10] Proponents are encouraged to consult Committee on the Status of Endangered Wildlife in Canada's latest annual report for a listing of the designated wildlife species posted on their website.

The proponent shall gather and document baseline information in the EIS for each Indigenous group identified in Part 2, section 5 of these guidelines (and any Indigenous groups identified after these guidelines are finalized). The baseline information will:

- describe and characterize the elements in paragraph 5(1)(c) of CEAA 2012 based on the spatial and temporal scope selected for the EA according to the factors outlined in Part 1, section 3.2.3 of this document;
- characterize the regional context of each of the elements of paragraph 5(1)(c) of CEAA 2012 to support the assessment of project related effects, including consideration of the differences of experiences by sub-populations within an Indigenous group, as appropriate (e.g. women, youth, elders, families) and cumulative effects; and
- be sufficient to provide a comprehensive understanding of the current state of each VC related to effects of changes to the environment on Indigenous peoples. Each of the VCs for effects of changes to the environment on Indigenous peoples is interrelated and therefore baseline information will often overlap.

The proponent should engage with Indigenous groups to understand where baseline information and the respective assessment fit appropriately. Note: VCs identified for biophysical assessment (such as fish and fish habitat) may contribute to assessment and conclusion of VCs related to effects of changes to the environment on Indigenous peoples.

7.1.9.1. Health and Socio-Economic Conditions

Baseline information is required for health[11] and socio-economic conditions. For health this includes the state of physical, mental and social well-being. For socio-economic conditions, as well as the economic and social activities of an individual Indigenous group, the baseline will include contextual information regarding their practices. Specific aspects that will be considered include:

- general information about Indigenous populations and sub-populations;
- sites or areas that are used by Indigenous people either for permanent residence or on a seasonal/temporary basis and the number of people that use each site or area identified;
- drinking water sources (permanent, seasonal, periodic, or temporary);
- consumption of country foods (also known as traditional foods) including food that is trapped, fished, hunted, harvested or grown for subsistence or medicinal purposes, outside of the commercial food chain;
- which country foods are consumed by which groups, how frequently, and where these country foods are harvested;
- commercial activities (e.g. fishing, trapping, hunting, forestry, outfitting); and

[11] The proponent should refer to Health Canada's guidance documents in order to include the appropriate baseline information relevant to human health.

- recreational uses.

7.1.9.2. Physical and Cultural Heritage and Structures, Sites or Things of Historical, Archaeological, Paleontological or Architectural Significance to Indigenous Peoples

Baseline information for the tangible and intangible elements of physical and cultural heritage[12] and any site, structure or thing of archaeological, paleontological, historical or architectural significance will consider all elements of cultural and historical importance to Indigenous groups in the area and is not restricted to artifacts considered under provincial heritage legislative requirements. Specific aspects that will be considered include, but are not limited to:

- intangible elements of cultural heritage related to Indigenous language, place names, and transmission of place specific knowledge and histories;
- tangible elements of cultural heritage including sacred, ceremonial or culturally important places, objects or things;
- burial sites;
- cultural landscapes; and
- archaeological potential and/or artefact places.

7.1.9.3. Current Use of Lands and Resources for Traditional Purposes[13]

Baseline information for current use of lands and resources for traditional purposes will focus on the traditional activity (e.g. hunting, fishing, trapping, plant gathering, cultural practices, etc.) and include a characterization of all attributes of the activity that can be affected by environmental change. This includes understanding of the baseline conditions of the quality and quantity of resources (e.g. preferred species and perception of quality, cultural connections to species), access to resources (e.g. physical access, timing, seasonality, distance from community) and overall quality of the experience of the practice (e.g. noise, air quality, visual landscape and presence of others). Specific aspects that will be considered include, but are not limited to:

- location of traditional territory (including maps where available);
- location of reserves and communities;
- traditional uses currently practiced or practiced in living memory, including practices that an Indigenous group wants to engage in in the future, or did recently but cannot presently given the particular context;

[12] Heritage resources to be considered will include but not be limited to physical objects (e.g. middens, culturally-modified trees, historic buildings), sites or places (e.g. burial sites, sacred sites, cultural landscapes) and attributes (e.g. language, beliefs).
[13] The proponent should refer to the Agency's guidance documents related to current use of lands and resources for traditional purposes in order to include the appropriate baseline information relevant to current use.

- location of traditional uses including, hunting, trapping, and fishing camps, cabins and traditional gathering or teaching grounds;
- fish, wildlife, birds, plants or other natural resources and their habitats of importance for traditional use;
- places where fish, wildlife, birds, plants or other natural resources are harvested, including places that are preferred;
- access and travel routes for conducting traditional practices;
- frequency, duration or timing of traditional practices;
- cultural values and importance associated with the area affected by the project and the traditional uses identified; and
- other current uses identified by Indigenous groups.

Any other baseline information that supports the analysis of predicted effects on Indigenous peoples will be included as necessary.

The EIS will also indicate how input from groups, including Indigenous knowledge, was used in establishing the baseline conditions related to health and socio-economics, physical and cultural heritage and current use of lands and resources for traditional purposes. Information collected as part of sections 5 and 6 can be used to inform the baseline information for the elements of 5(1)(c) listed above.

In addition to incorporating Indigenous knowledge, the proponent is expected to seek information from other sources[14] to allow for a complete assessment of effects to be presented in the EIS. For more information on requirements related to the effects assessment, see Part 2, section 7.3.4 of these guidelines.

7.1.10. Other changes to the environment arising as a result of a federal decision or due to changes on federal lands, in another province or outside Canada

Should there be the potential for a change to the environment arising as a result of a federal decision(s), the EIS will include baseline information on the environmental component likely to be affected (if this information is not already covered in other subsections of these guidelines). For example, if an authorization provided under the *Fisheries Act* was to result in the flooding of key wildlife habitat, baseline information should be provided on the wildlife species likely to be affected.

For potential changes to federal lands and transboundary environments the EIS will include:

[14] The proponent should refer to the Agency's guidance documents related to current use of lands and resources for traditional purposes in order to include the appropriate baseline information relevant to current use.

- a description of any federal lands (e.g. Dominion Coal Blocks), environments located outside the province (e.g., Alberta) or Canada (e.g., Lake Koocanusa in the United States) that may be affected by the Project;
- a description of the use of the above described lands and environments that may be affected by the Project; and
- baseline environmental information specific to the above described lands and environments that is required for the assessment of any transboundary environmental effects, such as:
  - surface water quality;
  - air quality;
  - fish and fish habitat; and
  - wildlife and wildlife habitat.

7.1.11. Human environment

- the rural and urban settings likely to be affected by the project;
- any federal lands, lands located outside the province or Canada that may be affected by the project;
- the current use of land in the study area, including a description of hunting, recreational and commercial fishing, trapping, gathering, outdoor recreation, use of seasonal cabins, outfitters;
- current use of all waterways and water bodies that will be directly affected by the project, including recreational uses, where available;
- location of and proximity to the project of any permanent, seasonal or temporary residences or camps;
- health[15] and socio-economic conditions, including the functioning and health of the socioeconomic environment, encompassing a broad range of matters that affect communities in the study area in a way that recognizes interrelationships, system functions and vulnerabilities; and
- physical and cultural heritage, including structures, sites or things of historical, archaeological, paleontological or architectural significance.

7.2. Predicted changes to the physical environment

The EA will include a consideration of the predicted changes to the environment as a result of the project being carried out or as a result of any powers, duties or functions that are to be exercised by the federal government in relation to the project. These predicted changes to the environment are to be considered in relation to each phase of the project (construction, operation, decommissioning, and abandonment) and are to be described in terms of the magnitude, geographic extent, duration and frequency, and whether the

[15] The proponent should refer to Health Canada's guidance documents in order to include the appropriate baseline information relevant to human health.

environmental changes are reversible or irreversible. As changes to various parts of the physical environment, listed below, may be inter-related as part of an ecosystem, the EIS will explain and describe the connections between the changes described.

7.2.1. Changes to the atmospheric environment

- conduct of atmospheric dispersion modelling of the main contaminants in order to estimate the contaminant concentrations present in the entire area that could potentially be affected by atmospheric emissions (section 7.1.1, above) resulting from various project-related activities (sources), including the use of heavy machinery during construction and operations, and road and rail transportation;
- comparison of anticipated air quality concentration against the *Canadian Ambient Air Quality Standards* for fine particulate matter;
- description of all methods and practices (e.g. control equipment, heat or gas recovery systems) that will be implemented to minimize and control atmospheric emissions throughout the project life cycle. If the best available technologies are not included in the project design, the proponent will need to provide a rationale for the technologies selected;
- changes in air quality;
- an estimate of the direct greenhouse gas (GHG) emissions, including coalbed methane release, associated with all phases of the project as well as any mitigation measures proposed to minimize greenhouse gas emissions. This information is to be presented by individual pollutant and should also be summarized in CO2 equivalent per year. The proponent is responsible for the following;
  - provide an estimate of the contribution of the project emissions at the local, provincial and federal scale, and indicate the category into which the project falls in terms of the relative magnitude of its contribution to GHG emissions (project with low, medium or high emission rates);
  - provide a GHG emissions management plan and describe the potential for fugitive emissions;
  - justify all estimates and emission factors used in the analysis;
  - provide the estimation or derivation method, and disclose and describe all assumptions and emission intensity factors used;
  - provide the methods and calculations used for the analysis; and
  - compare and assess the level of estimated emissions of greenhouse gases to the regional, provincial and federal emission targets;
- provide information related to the project's electrical demand and sources of electrical power for facilities and equipment, i.e. the project's main source and any other additional sources (generators, etc.), as appropriate;
- changes in ambient noise levels; and
- changes in night-time light levels.

7.2.2. Changes to groundwater and surface water

- changes to water quality including turbidity, total suspended solids, oxygen level, pH, water temperature, ice regime, nutrients;
  - changes to surface water quality associated with any project effluent releases or surface runoff;
- changes to the hydrological and hydrometric conditions, including instream flows;
- changes to groundwater flow patterns, fluxes, and divides based on the results of groundwater flow modelling;
- changes to the transportation of contaminants of concern in groundwater, including the physical and geochemical processes along the flow path;
- changes to groundwater recharge/discharge areas and any changes to groundwater infiltration areas;
- changes to groundwater quality associated with storage or release of any project effluents or drainage including surface runoff; and
- changes to water quality attributed to acid rock drainage and metal leaching associated with the storage of waste rock, coal, low grade coal, tailings, overburden and potential construction material, including:
  - short term metal leaching properties;
  - longer term rates of acid generation (if any) and metal leaching;
  - estimates of the potential for mined materials (including waste rock, tailings and low grade coal) to be sources of acid rock drainage or metal leaching;
  - estimates of potential time to the onset of acid rock drainage or metal leaching;
  - quantity and quality of leachate from samples of tailings, waste rock, and coal;
  - quantity and quality of effluent to be released from the site into the receiving waters;
  - quality of humidity cell or column test liquid from acid rock testing;
  - sensitivity analysis to assess the effects of imperfect segregation of waste rock;
  - pit water chemistry during operation, decommissioning, and abandonment, as well as pit closure management measures (e.g. flooding). This will include geochemical modelling of pit water quality in the abandonment period;
  - surface and seepage water quality from the waste rock dumps, tailings/waste rock impoundment facility, stockpiles and other infrastructure during operation, decommissioning, and abandonment;
  - concentration of constituents against the water quality targets of the Elk Valley Water Quality Plan and other relevant environmental benchmarks; and
  - changes in water quality due to selenium contamination.

7.2.3. Changes to riparian, wetland and terrestrial environments

- overall description of changes related to landscape disturbance;

- changes to soil quantity and soil quality related to contaminants of concern to biota;
- changes to the habitat of migratory and non-migratory birds, with a distinction made between the two birds category, including losses, structural changes, fragmentation or degradation of riparian, wetland, grassland, brushland, old growth forests, mature forests, or deciduous forest habitats frequented by birds (types of cover, ecological unit of the area in terms of quality, quantity, diversity, distribution and functions);
- changes to critical and valuable habitat for federally listed species at risk; and
- changes to key habitat for species important to current use of lands and resources for traditional purposes or of value to Indigenous peoples.

7.3. Predicted effects on valued components

Based on the predicted changes to the physical environment identified in section 7.2, the proponent is to assess the environmental effects of the project on the following VCs. All interconnections between VCs and between changes to multiple VCs will be described:

7.3.1. Fish and fish habitat

- the identification of any potential adverse effects to fish and fish habitat as defined in subsection 2(1) of the *Fisheries Act*, including the calculations of any potential habitat loss (temporary or permanent) in terms of surface areas (e.g. spawning grounds, fry-rearing areas, feeding), and in relation to watershed availability and significance. The assessment will include a consideration of:
  - the geomorphological changes and their effects on hydrodynamic conditions and fish habitats (e.g. modification of substrates, dynamic imbalance, silting of spawning beds);
  - the modifications of hydrological and hydrometric conditions on fish habitat and on the fish species' life cycle activities (e.g. reproduction, fry-rearing, movements);
  - potential effects on riparian areas that could affect aquatic biological resources and productivity taking into account any anticipated modifications to fish habitat;
  - any potential imbalances in the food web in relation to baseline conditions;
  - effects on the primary and secondary productivity of water bodies and how project-related effects may affect fish food sources; and
  - effects to fish health from increased contaminants of concern including selenium bioaccumulation in the Elk River and associated tributaries;
- the effects of changes to the aquatic environment on fish and their habitat, including:
  - the anticipated changes in the composition and characteristics of the populations of various fish species, including forage fish;

  - any modifications in migration or local movements (upstream and downstream migration, and lateral movements) following the construction and operation of works (physical and hydraulic barriers);
  - any reduction in fish populations as a result of potential overfishing due to increased access to the project area; and
  - any modifications and use of habitats by federally or provincially listed fish species.
- a discussion of how project construction timing correlates to key fisheries windows for freshwater and anadromous species, and any potential effects resulting from overlapping periods; and
- a discussion of how vibration caused by blasting may affect fish behaviour, such as spawning or migrations.

7.3.2. Migratory birds

- direct and indirect adverse effects on migratory birds, including population level effects that could be caused by all project activities, including but not limited to:
  - site preparation; and
  - deposit of harmful substances in waters that are frequented by migratory birds (e.g. tailing impoundment area).
- risk of collision of migratory birds with any project infrastructure and vehicles; and
- indirect effects caused by increased disturbance (e.g. noise, light, presence of workers), relative abundance, movements, and losses or changes in migratory bird habitat, considering the critical breeding and migration periods for the birds.

7.3.3. Species at risk

- the potential adverse effects of the project on species at risk listed under the Species at Risk Act and, where appropriate, its critical habitat; i.e. direct and indirect effects on the survival or recovery of species listed under the Species at Risk Act including effects to reproductive success and impacts on habitat quality and quantity; and
- the potential adverse effects of the project on species listed by the Committee on the Status of Endangered Wildlife in Canada classified as extirpated, endangered, threatened or of special concern (flora and fauna) and their critical habitat.

7.3.4. Effects of changes to the environment on Indigenous Peoples

With respect to Indigenous peoples, provide a description and analysis, for each Indigenous group, of how changes to the environment caused by the project will affect health and socio-economic conditions,

physical and cultural heritage including any structure, site or thing of historical, archaeological or paleontological importance, and current use of lands and resources for traditional purposes.

7.3.4.1. Health and socio-economic conditions

Baseline information gathered as part of the assessment of effects described in paragraph 5(1)(c) of CEAA 2012, as well as general information about Indigenous populations and sub-populations could inform the assessment of effects to health.

- The assessment of impacts on health will be based on effects of changes to the environment on the health of Indigenous peoples, focusing on effects on health outcomes or risks in consideration of, but not limited to, potential changes in air quality, noise exposure and effects of vibration from blasting, current and future availability of country foods, and water quality (drinking, recreational and cultural uses).
- When risks to human health due to changes in one or more of these components are predicted, the proponent is expected to complete a Human Health Risk Assessment examining all exposure pathways for pollutants of concern to adequately characterize potential risks to human health.
- The proponent must provide a justification if it determines that an assessment of the potential for contamination of country foods (or other exposure pathways, such as inhalation) is not required or if some contaminants are excluded from the assessment.
- Consider effects to mental and social well-being of Indigenous peoples. Where adverse health effects are predicted, any incidental effects such as effects on current use of lands and resources for traditional purposes should also be assessed.
- Consider and document how effects of changes to the environment could be different for particular sub-populations within an Indigenous group (for example, women, youth, elders, families).
- This assessment of impacts on human health will assess effects of changes to the environment on Indigenous peoples' socio-economic conditions, including, but not limited to:
    - the use of navigable waters (including any water used for the exercise of Aboriginal or Treaty rights and related interests);
    - forestry and logging operations;
    - commercial fishing, hunting, trapping, and gathering activities;
    - commercial outfitters;
    - recreational use;
    - food security;
    - income inequity;
    - changes at the community level that affect socio-economic conditions for Indigenous peoples due to increased population, economic activity, cost of living, among other factors; and
    - non-commercial / trade economy.

7.3.4.2. Physical and cultural heritage and structures, sites of things of historical, archaeological, paleontological or architectural significance to Indigenous Peoples

- this assessment will assess effects of changes to the environment on the tangible and intangible elements of physical and cultural heritage of Indigenous peoples, and structures, sites or things of historical, archaeological, paleontological or architectural significance to Indigenous peoples, including, but not limited to:
  - changes to tangible forms of cultural heritage such as sacred, ceremonial or culturally important places, objects, or things;
  - changes to intangible forms of cultural heritage related to Indigenous language, place names, and transmission of place specific knowledge and histories;
  - the loss or destruction of physical and cultural heritage;
  - changes to access to physical and cultural heritage;
  - changes to the cultural value or importance associated with physical and cultural heritage; and
  - changes to visual aesthetics over the life of the project.

7.3.4.3. Current use of lands and resources for traditional purposes

- this assessment will assess the effects on the use, practice or activity (e.g. hunting, fishing, trapping, plant gathering, and cultural practices) as a result of the underlying changes to the environment (i.e. how will the activity change if the project proceeds), using the approach described in the Agency's guide entitled Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under CEAA 2012[16]. This assessment will assess effects of changes to the environment caused by the project on the practice of a current use or activity by Indigenous peoples focussing on, but not limited to:
  - resources used, such as changes to the quantity, quality, and availability of resources and habitat, as well as to the sufficiency of resources required to conduct an activity or practice, including perception of effects, avoidance, and consideration of the seasonal round;
  - access to areas and resources without difficulty or additional cost used to conduct an activity or practice, as well as the opening up of areas to non-Indigenous populations for access and use, and consideration of preferred areas, timing of harvest, and options of traveling there in preferred manner; and
  - experience by Indigenous peoples, including changes that affect the spiritual and cultural experiences of the activity or practice, as well as sense of place and wellbeing, and the applicability and transmission of Indigenous knowledge, laws, customs and traditions.

[16] The proponent should refer to the Agency's guidance documents related to current use of lands and resources for traditional purposes.

- using the effects listed in the above list, the proponent should also consider the following in their assessment:
  - the cultural value or importance associated with traditional uses or areas affected by the project (e.g. values or attributes of the area that make it important as a place for inter-generational teaching of language or traditional practices, communal gatherings, integrity of preferred traditional practice areas);
  - how timing of project activities (e.g. construction, blasting, discharges) have the potential to interact with the timing of traditional practices, and any potential effects resulting from overlapping periods;
  - how environmental effects to lands and resources could affect the use and associated activities;
  - consideration of the regional context for traditional use, and the value of the project area in that regional context, including alienation of lands from traditional use; and
  - an assessment of the potential to return affected areas to pre-project conditions to support traditional practices (including the identification of end land use goals); and
  - other effects of changes to the environment on Indigenous peoples should be reflected as necessary

The proponent is expected to provide mitigation measures for effects of changes to the environment on Indigenous peoples pursuant to paragraph 5 (1)(c) of CEAA, 2012 (see Part 2, section 7.4 of these guidelines).

7.3.5. Other valued components that may be affected as a result of a federal decision or due to effects on federal lands, another province or outside Canada

If there is the potential for a change to the environment arising as a result of a federal decision(s), for example an authorization under section 35 of the *Fisheries Act*, the EIS should include a description of the specific project components for which a federal authorization/decision is required, and an assessment of any other VCs (not already covered in other subsections of these guidelines) that may be affected by the changes to the environment caused by these specific project components.

If there is the potential for the project to result in environmental changes on federal lands, another province, or another country, then the effects will include, but are not limited to, a consideration of:

- changes to ambient air quality on federal lands or transboundary environments that may be affected by the Project, including any changes in the concentration of the following contaminants, as relevant: total suspended particulates, fine particulates (PM2.5), particulate matters up to 10 micrometers in size (PM-10), sulfur oxide (SOx), volatile organic compounds (VOCs), and nitrogen oxide (NOx);
- changes to water quality parameters on federal lands and/or in Lake Koocanusa that may be linked to the effects of the Project, including; changes in concentrations of contaminants of concern in surface waters;

- changes in concentrations of contaminants of concern in the aquatic ecosystem on federal lands and/or in Lake Koocanusa; and
- changes to fish and fish habitat that may be linked to a degradation of the water quality for fish and fish habitat on federal lands and/or in Lake Koocanusa.

7.4. Mitigation measures

Every EA conducted under CEAA 2012 will consider measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project. Under CEAA 2012, mitigation measures includes measures to eliminate, reduce or control the adverse environmental effects of a designated project, as well as restitution for damage to the environment through replacement, restoration, compensation or other means. Measures will be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation. Mitigation measures may be considered for inclusion as conditions in the EA decision statement and/or in other compliance and enforcement mechanisms provided by other authorities' permitting or licensing processes.

As a first step, the proponent is encouraged to use an approach based on the avoidance and reduction of the effects at the source. Such an approach may include the modification of the design of the project or relocation of project components.

The EIS will describe the standard mitigation practices, policies and commitments that constitute technically and economically feasible mitigation measures and that will be applied as part of standard practice regardless of location. The EIS will then describe the project's environmental protection plan and its environmental management system, through which the proponent will deliver this plan. The plan will provide an overall perspective on how potentially adverse effects would be minimized and managed over time. The EIS will further discuss the mechanisms the proponent would use to require its contractors and sub-contractors to comply with these commitments and policies and with auditing and enforcement programs.

The EIS will then describe mitigation measures that are specific to each environmental effect identified. Mitigation measures will be written as specific commitments that clearly describe how the proponent intends to implement them and the environmental outcome the mitigation measure is designed to address. The EIS will identify and describe mitigation measures to avoid, or lessen potential adverse effects on species and/or critical habitat listed under the Species at Risk Act. These measures will be consistent with any applicable recovery strategy and action plans. The EIS will also identify and describe mitigation measures to avoid or lessen adverse effects on species listed by the Committee on the Status of Endangered Wildlife in Canada.

The EIS will specify the actions, works, minimal disturbance footprint techniques, best available technology, corrective measures or additions planned during the project's various phases to eliminate or reduce the significance of adverse effects. The EIS will also present an assessment of the effectiveness of

the proposed technically and economically feasible mitigation measures in consideration of the precautionary approach. The reasons for determining if the mitigation measure reduces the significance of an adverse effect will be made explicit. The proponent is also encouraged to identify mitigation measures for effects that are adverse although not significant. The EIS will also consider the effects caused by proposed mitigation measures. The proponent shall demonstrate how they applied the precautionary approach to assumptions regarding the success of mitigation measures.

The EIS will indicate what other technically and economically feasible mitigation measures were considered, and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation measures will be justified. The EIS will identify who is responsible for the implementation of these measures and the system of accountability.

Where mitigation measures are proposed for which there is little experience in the local area or where there is uncertainty as to their effectiveness, the EIS shall describe the effects to the environment if those measures are not effective. Where appropriate, contingency measures shall be described, in addition to the circumstances where the contingency mitigation measures would be implemented. For example, if water treatment is proposed as a potential mitigation measure, the EIS shall describe the technology, location, capacity, and length of time for the mitigation to become effective. In addition, the EIS will identify the extent to which technological innovations will help mitigate environmental effects. Mitigation measures will be discussed with Indigenous groups.

The EIS will document specific suggestions raised by each Indigenous group for avoiding, mitigating or otherwise accommodating for the effects of changes to the environment on Indigenous peoples (paragraph 5(1)(c) of CEAA 2012). For measures intended to address effects of changes to the environment on Indigenous peoples, the proponent must discuss the residual effects with the Indigenous groups identified in Part 2, section 5 of these guidelines prior to submitting the EIS.

Adaptive management is not considered a mitigation measure, but if the follow-up program (refer to section 9 below) indicates that corrective action is required, the proposed approach for managing the action should be identified.

7.5. Significance of residual effects

After having established the technically and economically feasible mitigation measures, the EIS will present any residual environmental effects of the project on the VCs identified in section 7.3 above. For those VCs related to effects of changes to the environment on Indigenous peoples, the proponent must discuss the residual effects with the Indigenous groups identified in Part 2, section 5 of these guidelines prior to submitting the EIS. The residual effects, including those assessed as insignificant or negligible by the proponent, will be described. The EIS will document comments raised by each Indigenous group and the proponent's responses in respect of the significance or not of any identified residual effects.

The EIS will then provide a detailed analysis of the significance of the residual environmental effects that are considered adverse following the implementation of mitigation measures, using the Agency's guidance

on determining whether a project is likely to cause significant adverse environmental effects. The assessment of a residual environmental effect should take into account the predicted effectiveness of proposed mitigation measures and any uncertainties associated with these measures.

The EIS will identify the criteria used to assign significance ratings to any predicted adverse effects. It will contain clear and sufficient information to enable the Agency, technical and regulatory agencies, Indigenous groups, and the public to review the proponent's analysis of the significance of effects. For those predicted adverse effects that relate to effects of the changes to the environment on Indigenous peoples, the proponent will consider the views of the Indigenous groups in the determination of the definitions of the significance criteria. The EIS will document the terms used to describe the level of significance.

The following criteria should be used in determining the significance of residual effects:

- magnitude;
- geographic extent;
- timing;
- duration;
- frequency;
- reversibility;
- ecological and social context[17]; and
- existence of environmental standards, guidelines or objectives for assessing the effect.

In assessing significance against these criteria the proponent will, where possible, use relevant existing regulatory documents, environmental standards, guidelines, objectives, monitoring evidence, or ecological or population thresholds or targets, such as prescribed maximum levels of emissions or discharges of specific hazardous agents into the environment. The EIS will contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each VC.

Where significant adverse effects are identified, the EIS will set out the probability (likelihood) that they will occur, and describe the degree of scientific uncertainty related to the data and methods used within the framework of this environmental analysis.

7.6. Other effects to consider

[17] The ecological and social context within which potential environmental effects may occur should be taken into account when considering the key criteria above in relation to a particular VC, as the context may help better characterize whether adverse effects are significant.

7.6.1. Effects of potential accidents or malfunctions

The failure of certain works caused by human error or exceptional natural events (e.g. flooding, earthquake, forest fire) could cause major effects. The proponent will therefore conduct an analysis of the risks of accidents and malfunctions, determine their effects, and present a preliminary emergency response measures.

Taking into account the lifespan of different project components, the proponent will identify the probability of potential accidents and malfunctions related to the project, including an explanation of how those events were identified, potential consequences (including the environmental effects as defined in section 5 of CEAA 2012), the plausible worst case scenarios and the effects of these scenarios.

This assessment will include an identification of the magnitude of an accident and/or malfunction, including the quantity, mechanism, rate, form and characteristics of the contaminants and other materials likely to be released into the environment during the accident and malfunction events and would potentially result in an adverse environmental effect as defined in section 5 of CEAA 2012.

The EIS will describe the safeguards that have been established to protect against such occurrences and the contingency and emergency response procedures that would be put in place if such events do occur.

7.6.1.1. Accidents or Malfunctions Related to Rail Transportation

The proponent will describe and evaluate the potential effects to the environment caused by accidents and malfunctions resulting from rail transportation associated with the project, including impacts on social, economic or cultural elements of the environment and on people's health in the vicinity of spilled contaminants. The EIS should evaluate these accidents and malfunctions only for the rail components under its care and control.

If serious accidents or malfunctions are likely to occur and if the necessary data are available, the proponent will determine whether it is necessary to carry out an assessment of the probability that such an event will occur and an assessment of its consequences, taking into account the contributing factors such as weather conditions or external events.

The proponent will also assess the potential of minor and major accidental release of fuel, or loss of dangerous goods. If necessary, the proponent will also provide an analysis of the potential environmental effects of these discharges on aquatic and terrestrial environments and on human health in spatial boundaries described in this document.

The proponent will also describe existing emergency preparedness and response systems and existing arrangements with the responsible response organizations in the rail transportation spatial boundaries associated with the project, including exercise and training plans for spill emergency response. The proponent will describe the role it will play in case of spill, collision, or other accidents or malfunctions related to rail transportation associated with the project.

7.6.2. Effects of the environment on the project

The EIS will take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events (e.g. flooding, drought, ice jams, landslides, avalanches, erosion, subsidence, fire, outflow conditions and seismic events), could adversely affect the project and how this in turn could result in effects to the environment (e.g. extreme environmental conditions result in malfunctions and accidental events). These events will be considered in different probability patterns (e.g. 5-year flood vs. 100-year flood) and will also incorporate predicted effects of climate change on the project.

The EIS will provide details of planning, design and construction strategies intended to minimize the potential environmental effects of the environment on the project.

7.6.3. Cumulative effects assessment

The proponent will identify and assess the project's cumulative effects using the approach described in the Agency's guidance documents related to cumulative environmental effects.

Cumulative effects are defined as changes to the environment due to the project combined with the existence of other past, present and reasonably foreseeable physical activities. Cumulative effects may result if:

- the project may cause direct residual adverse effects on the VC, taking into account the application of technically and economically feasible mitigation measures; and
- the same VC may be affected by other past, present and future physical activities[18].

VCs that would not be affected by the project or would be affected positively by the project can, therefore, be omitted from the cumulative effects assessment. A cumulative effect on an environmental component may, however, be important even if the assessment of the project's effects on this component reveals that the effects of the project are minor. The Elk Valley Cumulative Effects Management Framework may be taken into account in the identification of VCs and the carrying out of the cumulative effects assessment.

In its EIS, the proponent will:

- identify and provide a rationale for the VCs that will constitute the focus of the cumulative effects assessment, focussing the cumulative effects assessment on the VCs most likely to be affected by the project and other projects and activities. To this end, the proponent must consider, without limiting itself thereto, the following components likely to be affected by the project:
  - effects on Indigenous peoples;
  - fish and fish habitat in the Elk Valley and into Lake Koocanusa;
  - transboundary environments (including water quality);

[18] Definitions of these terms can be found in the Agency's technical guidance on cumulative environmental effects.

  - migratory birds (including habitat loss, reduced habitat suitability, and direct disturbance impacts);
  - species at risk (including habitat loss, reduced habitat suitability, and direct disturbance impacts); and
  - any VCs associated with subsection 5(2) of CEAA 2012.
- identify and justify the spatial and temporal boundaries for the cumulative effect assessment for each VC selected. The boundaries for the cumulative effects assessments will generally be different for each VC considered. These cumulative effects boundaries will also generally be larger than the boundaries for the corresponding project effects;
- identify the sources of potential cumulative effects. Specify other projects or activities that have been or that are likely to be carried out that could cause effects on each selected VC within the boundaries defined, and whose effects would act in combination with the residual effects of the project. This assessment may consider the results of any relevant study conducted by a committee established under section 73 or 74 of CEAA 2012;
- assess the cumulative effects on each VC selected by comparing the future scenario with the project and without the project. Effects of past activities (activities that have been carried out) will be used to contextualize the current state of the VC.;
- describe the mitigation measures that are technically and economically feasible. The proponent shall assess the effectiveness of the measures applied to mitigate the cumulative effects. In cases where measures exist that are beyond the scope of the proponent's responsibility that could be effectively applied to mitigate these effects, the proponent will identify these effects and the parties that have the authority to act. In such cases, the EIS will summarize the discussions that took place with the other parties in order to implement the necessary measures over the long term;
- determine the significance of the cumulative effects; and
- develop a follow-up program to verify the accuracy of the assessment or to dispel the uncertainty concerning the effectiveness of mitigation measures for certain cumulative effects.

The proponent is encouraged to consult with key stakeholders and Indigenous groups prior to finalizing the choice of VCs and the appropriate boundaries to assess cumulative effects.

8. Summary of Environmental Effects Assessment

The EIS will contain a table summarizing the following key information:

- potential environmental effects on VCs;
- proposed mitigation measures to address the effects identified above; and
- potential residual effects and the significance of the residual environmental effects.

The summary table will be used in the EA Report prepared by the Agency. An example of a format for the key summary table is provided in Appendix 1 of this document.

In a second table, the EIS will summarize all key mitigation measures and commitments made by the proponent which will more specifically mitigate any significant adverse effects of the project on VCs (i.e. those measures that are essential to ensure that the project will not result in significant adverse environmental effects).

9. Follow-Up and Monitoring Programs

A follow-up program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project. Considerations for developing a follow-up program include:

- whether the project will impact environmentally sensitive areas/VCs or protected areas or areas under consideration for protection;
- the nature of concerns raised by Indigenous groups and the public about the project;
- suggestions from Indigenous groups regarding the design of, and their involvement in, follow-up and monitoring programs;
- incorporation of Indigenous knowledge;
- the accuracy of predictions;
- whether there is a question about the effectiveness of mitigation measures or the proponent proposes to use new or unproven techniques and technology;
- the nature of cumulative environmental effects;
- the nature, scale and complexity of the program; and
- whether there was limited scientific knowledge about the effects in the EA.

The goal of a monitoring program is to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of the project, and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety.

9.1. Follow-up program

The duration of the follow-up program shall be as long as required to evaluate the effectiveness of the mitigation measures.

The EIS shall present a preliminary follow-up program and shall include:

- objectives of the follow-up program and the VCs targeted by the program;
- list of elements requiring follow-up;
- number of follow-up studies planned as well as their main characteristics (list of parameters to be measured, planned implementation timetable, etc.);
- intervention mechanism used in the event that an unexpected deterioration of the environment is observed;
- mechanism to disseminate follow-up results among the concerned populations;
- accessibility and sharing of data for the general population;
- opportunity for the proponent to include the participation of Indigenous groups and stakeholders on the affected territory, during the development and implementation of the program; and
- involvement of local and regional organizations in the design, implementation and evaluation of the follow-up results as well as any updates, including a communication mechanism between these organizations and the proponent.

9.2. Monitoring

The proponent will prepare an environmental monitoring program for all phases of the project.

Specifically, the environmental impact statement shall present an outline of the preliminary environmental monitoring program, including the:

- identification of the interventions that pose risks to one or more of the environmental and/or VCs and the measures and means planned to protect the environment;
- identification of regulatory instruments that include a monitoring program requirement for the VCs;
- description of the characteristics of the monitoring program where foreseeable (e.g. location of interventions, planned protocols, list of measured parameters, analytical methods employed, schedule, human and financial resources required);
- description of the proponent's intervention mechanisms in the event of the observation of non-compliance with the legal and environmental requirements or with the obligations imposed on contractors by the environmental provisions of their contracts;
- guidelines for preparing monitoring reports (number, content, frequency, format) that will be sent to the authorities concerned; and
- plans to engage Indigenous groups in monitoring, where appropriate.

Appendix 1

Example – Summary Table of Environmental Assessment

						Key Criteria for Determining Significance[19]							
Valued Component affected	Area of federal jurisdiction[20] (√)	Project Activity	Potential effects	Proposed mitigation	Residual effect	*Magnitude*	*Geographic Extent*	*Timing*	*Duration*	*Frequency*	*Reversibility*	Significance of residual adverse effect	Likelihood of significance of residual adverse effect
Fish and fish habitat													
Migratory birds													
Species at risk													
Effects of changes to the environment on Indigenous Peoples	√ 5(1)(c)(iii)												
Other VCs													

[19] Other key criteria can be used to determine significance, as appropriate. The ecological and social context within which potential environmental effects may occur should be taken into account when considering the key criteria in relation to a particular VC, as the context may help better characterize whether adverse effects are significant.

[20] Indicate by a check mark which valued components can be considered "environmental effects" as defined in section 5 of CEAA 2012, and specify which subsection of section 5 is relevant. For example, for the VC "current use of lands and resources for traditional purposes", the appropriate cell would indicate, section 5(1)(c)(iii) of CEAA 2012.