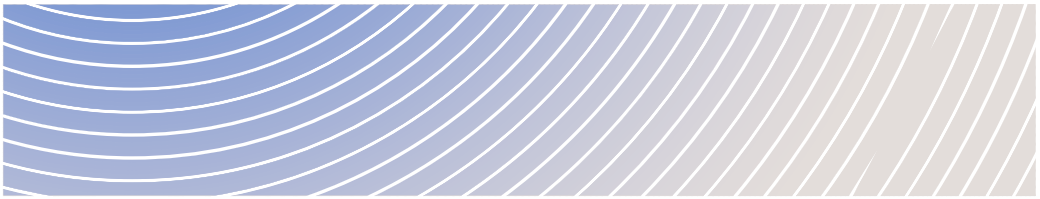
Joint Impact Statement Guidelines



STRANGE LAKE RARE EARTH MINING PROJECT

Draft version

This is a draft document. Contents may change as a result of ongoing engagement and feedback received. Please check back regularly for updates.

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

Newfoundland & Labrador

Canada

Contents

Abbreviations and Short Forms

Term	Definition
AC-CDC	Atlantic Canada Conservation Data Centre
AIS	Aquatic Invasive Species
BAT/BEP	Best Available Technologies / Best Environmental Practices
BCRs	Bird Conservation Regions
CAAQS	Canadian Ambient Air Quality Standards
CCME	Canadian Council of Ministers of the Environment
COPC	Contaminant of Potential Concern
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ECC	Environment and Climate Change (Newfoundland and Labrador)
ECCC	Environment and Climate Change Canada
EEMP	Environmental Effects Monitoring Programs
EPA	*Environmental Protection Act* (Newfoundland and Labrador law)
GBA Plus	Gender Based Analysis Plus
GIS	Geographic Information System
the Guidelines	Joint Impact Statement Guidelines
GHG	Greenhouse Gas
GRCH	George River Caribou Herd
HHRA	Human Health Risk Assessment
HIA	Health Impact Assessment
IAA	*Impact Assessment Act* (federal law)
IAAC	Impact Assessment Agency of Canada
LSA	Local Study Area

Provincial Minister	Newfoundland and Labrabor Minister of Environment and Climate Change
MTISMP	Marine Transportation Impact Study and Management Plan
NL	Government of Newfoundland and Labrador
NLESA	Newfoundland and Labrador *Endangered Species Act*
NOC	National Occupational Classification system
NORM	Naturally Occurring Radioactive Materials
OCAP	Ownership, Control, Access and Possession
PAH	Polycyclic Aromatic Hydrocarbons
Registry	Canadian Impact Assessment Registry
RSA	Regional Study Area
SACC	Strategic Assessment of Climate Change
SAR	Species at Risk
SARA	*Species at Risk Act*
SDOH	Social Determinants of Health
SOCC	Species of Conservation Concern
VC	Valued Component or Valued Environmental Component
VOC	Volatile Organic Compound
WHO	World Health Organization's

Preamble

The Joint Impact Statement Guidelines have been developed to request information required for the assessment process under the federal *Impact Assessment Act* (the IAA) as well as the environmental assessment process under the Newfoundland and Labrador *Environmental Protection Act* (EPA). The Joint Impact Statement Guidelines represents the combination of the Tailored Impact Statement Guidelines usually issued by the Impact Assessment Agency of Canada and the Environmental Impact Statement Guidelines usually issued by the Government of Newfoundland and Labrador. The process under each jurisdiction will focus on the decision-making framework and the factors set out in their respective act and regulations.

1. Introduction

1.1 Joint requirements and information

1.1.1 Purpose of the Impact Statement and Guidelines

The purpose of the environmental impact statement (also referred to as the Impact Statement) is to identify the important beneficial and adverse effects (environmental, health, social and economic) associated with the Project, to identify measures to mitigate adverse effects, to determine the significance of residual effects, and to consult with Indigenous governments and organizations and the public and respond to their concerns.

On December 14, 2023, the provincial Minister of Environment and Climate Change (ECC) (Government of Newfoundland and Labrador), informed Torngat Metals Ltd. (the proponent) that an environmental impact statement is required for the proposed Strange Lake Rare Earth Mining Project (the Project). On June 6, 2024, the Impact Assessment Agency of Canada (IAAC) (Government of Canada) stated its opinion that an impact assessment is warranted for the Strange Lake Rare Earth Mining Project (the Project) proposed by Torngat Metals Ltd.

The purpose of this document is to identify for the proponent the nature, scope and extent of the information and analysis required for preparation and inclusion in the Impact Statement. The proponent shall prepare and submit an Impact Statement that examines the potential effects of the construction, operation and maintenance, decommissioning and rehabilitation[1] of the Project, identifies mitigation measures, and evaluates the significance of residual effects. The Guidelines were tailored based on the nature, complexity,

[1] For the purposes of this document, the project phases “construction, operation and maintenance, decommissioning and rehabilitation” are used to be consistent with the terminology used by the province of Newfoundland and Labrador. These phases correspond to those used by IAAC, which are typically “construction, operation, decommissioning and abandonment”.

and context of the Project, and were informed and guided by consultation and engagement with the proponent, the public, Indigenous groups, jurisdictions, federal authorities and other interested parties.

Moreover, the Government of Canada and the Government of Newfoundland and Labrador have worked collaboratively in order to support the objective of "one project, one assessment". Thus, the Guidelines have also been tailored to identify where the federal and provincial assessment processes have shared information needs, by creating joint requirements. While some of the information requirements may be shared, the impact assessment will respect the jurisdiction of each governing body.

The Guidelines will be finalized following a comment period on this draft version of the Guidelines, which will run from August 15 to September 23, 2024.

1.1.2 Factors to be considered in the Impact Assessment

The Guidelines correspond to factors to be considered in the impact assessment. These factors are listed in subsection 22(1) of the IAA and section 57 of the EPA, and prescribe that the impact assessment of a designated project must take into account:

a) the changes to the environment or to health, social or economic conditions and the positive and negative consequences of these changes that are likely to be caused by the carrying out of the designated project, including:

   i. the effects of malfunctions or accidents that may occur in connection with the designated project;

   ii. any cumulative effects that are likely to result from the designated project in combination with other physical activities that have been or will be carried out; and

   iii. the result of any interaction between those effects;

b) mitigation measures that are technically and economically feasible and that would mitigate any adverse effects of the designated project;

c) the impact that the designated project may have on any Indigenous groups and any adverse impact that the designated project may have on the rights of the Indigenous Peoples[2] of Canada recognized and affirmed by section 35 of the *Constitution Act, 1982*;

d) the purpose of and need for the designated project;

e) alternative means of carrying out the designated project that are technically and economically feasible, including through the use of best available technologies, and the effects of those means;

f) any alternatives to the designated project that are technically and economically feasible and are directly related to the designated project;

g) Indigenous Knowledge provided with respect to the designated project;

h) the extent to which the designated project contributes to sustainability;

i) the extent to which the effects of the designated project hinder or contribute to the Government of

[2] These guidelines use the term "Indigenous Peoples" to represent the "Aboriginal peoples of Canada" which includes Indian, Inuit and Métis peoples as defined in subsection 35(2) of the *Constitution Act, 1982*, and "rights of Indigenous Peoples" is used to reflect the full scope of Aboriginal and Treaty rights recognized and affirmed by section 35 of the *Constitution Act, 1982*.

Canada's ability to meet its environmental obligations and its commitments in respect of climate change [IAA only];

j) any change to the designated project that may be caused by the environment;
k) the requirements of the follow-up program in respect of the designated project;
l) considerations related to Indigenous cultures with respect to the designated project;
m) community knowledge provided with respect to the designated project;
n) comments received from the public;
o) comments from a jurisdiction that are received in the course of consultations conducted under section 21 of the Act [IAA only]*;*
p) any relevant assessment referred to in sections 92, 93 or 95 of the Act [IAA only]*;*
q) any assessment of the effects of the designated project that is conducted by or on behalf of an Indigenous governing body and that is provided with respect to the designated project [IAA only];
r) any study or plan that is conducted or prepared by a jurisdiction—or an Indigenous governing body not referred to in paragraph (f) or (g) of the definition jurisdiction in section 2 of the Act—that is in respect of a region related to the designated project and that has been provided with respect to the Project [IAA only];
s) the intersection of sex and gender with other identity factors;
t) any other matter relevant to the IA that the IAAC or NL requires to be taken into account; and

Moreover, under the EPA, NL considers in its environmental impact assessment process the predicted future condition of the environment that might reasonably be expected to occur within the expected life span of the undertaking, if the undertaking was not approved.

The scope of the factors a) to f), h) to l), s) and t) that are to be taken into account, including the extent of their relevance to the impact assessment, is determined by IAAC and is outlined in the Guidelines.

1.1.3 Gender-based Analysis Plus (GBA Plus)

For consideration of the intersection of sex and gender with other identity factors (paragraph 22(1)(s) of the IAA), the Guidelines will refer to Gender-based Analysis Plus (GBA Plus). GBA Plus is an analytical tool used to identify who is impacted by a project and assess how they may experience impacts differently, in order to develop mitigation measures to address these differential impacts. GBA Plus is an intersectional analysis that goes beyond biological (sex) and socio-cultural (gender) differences to consider other factors, such as age, disability, education, ethnicity, economic status, geography (including rurality), language, race, religion, and sexual orientation. IAAC's Guidance: Gender-Based Analysis Plus in Impact Assessment provides guiding principles and tools to apply GBA Plus in the Impact Statement.

To support GBA Plus, the information provided in the Impact Statement must:

- be sufficiently disaggregated to support the analysis of disproportionate effects as per GBA Plus intersectional approach. As much as possible, the data must be disaggregated by identity factors (e.g., by sex, gender, age, ethnicity, Indigenous identity, ability, and any other community-relevant identify factors) and be considered by looking at the interaction between different elements of identity, as different combinations lead to different lived and living experiences for individuals;

- describe how community and Indigenous Knowledge from affected populations, including community-developed indicators and locally collected data, was used in establishing baseline conditions and informing effects assessments;
- describe how community members differ in access to resources, opportunities and services;
- describe the circumstances in which various population groups could suffer more adverse effects or receive fewer benefits related to the Project than others, and how they may respond differently to potential effects; and
- describe mitigation or enhancement measures to address these differential effects.

Quantitative information, including gender, equality, diversity, and inclusion sensitive data, should be complemented by qualitative insights from studies, engagement, and/ or consultations, and other sources. The description of effects should be based on both data collected and concerns expressed through engaging with the affected Indigenous groups and community members.

1.1.4 Preparation of the Impact Statement

The Impact Statement shall be written in terms understandable to the general public, however, where the complexity of the issues addressed requires the use of technical language, a glossary defining technical words and acronyms shall be included.

In the preparation of the Impact Statement, the proponent must adhere to relevant ethical guidelines and cultural protocols governing research, data collection and confidentiality. This is particularly important in the case of information gathered and studies conducted with various population groups. The proponent must respect the obligation of protecting personal information and adopt the established standards for the management of Indigenous data (e.g., the First Nations principles of Ownership, Control, Access and Possession (OCAP) or standards adopted by an Indigenous group) and disaggregated data from small or unique populations.

The Impact Statement must be based on information that is publicly accessible, within the limitations of confidentiality and ethical constraints, in relation to Indigenous and community knowledge, business confidential information, and intellectual property. Where external sources of information or data are used, they shall be referenced within the body of the Impact Statement and listed as References at the end. Where conclusions that are critical to the assessment of effects are cited from other reports, the Impact Statement shall provide sufficient detail of the original data and analysis to enable a critical review of that material and submit reference material as an appendix to the Impact Statement. All conclusions regarding the receiving environment and predictions of the effects shall be substantiated.

The Impact Statement must address all requirements outlined in the Guidelines. Where the proponent is of the opinion that the information is not required, it should contact the jurisdictions to confirm the rationale for not including it, prior to submitting the Impact Statement. The rationale for not including the information must also be provided in the Impact Statement. The proponent should also notify the jurisdictions of any changes made to the Project as originally proposed in the Detailed Project Description that may result in a different set of effects and may require a reconsideration of information requirements.

The Impact Statement shall reference, rather than repeat, information previously presented in other sections of the document. For clarity and ease of reference, the Impact Statement shall include a Table of Concordance that cross-references the Guidelines so that points raised in the Guidelines are easily located in the Impact Statement. A Table of Contents, providing location of information in the final document by volume (if applicable), section, sub-section and page number, is required. The Impact Statement shall provide a table that lists all commitments made regarding effects mitigation, monitoring and follow-up. Each commitment must be cross-referenced to the section of the Impact Statement where it has been made.

The Impact Statement shall provide charts, diagrams, and maps wherever useful to clarify the text, including a depiction of how the developed Project sites will appear from both an aerial and terrestrial perspective. Where possible, maps shall use common scales to allow for comparison and overlay of mapped features and shall indicate common and accepted local place names. Geographic information shall be provided in standard Geographic Information System (GIS) mapping (digital) format, where feasible. The Impact Statement and all associated reports and studies shall use System International units of measure and terminology.

The Impact Statement shall be a stand-alone document upon which a critical review can be undertaken. The proponent shall explain and justify all methods used in the preparation of the Impact Statement, including the use of scientific, engineering, Indigenous, local, and other knowledge. All hypotheses and assumptions shall be clearly identified and justified. All data collection methods, models, and studies shall be documented so that the analyses are transparent and reproducible. The degree of uncertainty, reliability, and sensitivity of models used to reach conclusions shall be indicated.

The jurisdictions also expect the proponent to demonstrate scientific integrity in the preparation and delivery of the Impact Statement by:

- following existing standards and best practices for the responsible conduct of scientific research;
- declaring and managing any real or perceived conflict of interest for individuals involved in preparing the Impact Statement;
- eliminating, controlling for, or appropriately managing potential biases; and
- characterizing all potential sources of scientific uncertainty, including their magnitude and any differences in the interpretation of scientific results.

The proponent should be prepared to provide:

- all biophysical survey data in a well-documented data file which provides information on the site, site visits and individual observations or measurements (georeferenced where possible);
- individual results of all laboratory analysis, including methods, standards or references followed, detection limits, controls, and quality assurance and control procedures;
- socio-economic data in a well-documented data file;
- input and output data from modelling; and
- documentation and results of analysis that allow for a clear understanding of analytical methods and for replication of results.

The information included in this document is not intended to be exhaustive - additional detail, studies, and/or examination of components may be required. The content of the Impact Statement should be organized following a structure similar to the Guidelines in order to facilitate the review of the Impact Statement and participation in the process.

The jurisdictions are available to support the proponent during the preparation of the Impact Statement and may establish technical advisory groups, consisting of federal and provincial authorities and others, as appropriate. The proponent is encouraged to engage the jurisdictions early in the process to clarify requirements and expectations as presented in the Guidelines. The proponent should also consider submitting documents for review (e.g., proposed study plans, draft sections of the Impact Statement) prior to submitting the formal Impact Statement. Active engagement will support early identification and resolution of issues. The proponent is encouraged to provide the jurisdictions with a work plan for the Impact Statement Phase of the Project.

IAAC and NL will review the submitted Impact Statement, and will engage with federal and provincial authorities, jurisdictions, Indigenous groups, and other participants to identify any deficiencies in the information provided, in comparison to the Guidelines, which the proponent must address.

When IAAC is satisfied that the proponent has provided it with all of the required information or studies, it will post a notice on the Canadian Impact Assessment Registry (the Registry). The proponent must provide IAAC with the information or studies within three years after the day on which a copy of the Notice of Commencement is posted on the Registry. The time limit will include the time required for the review of the Impact Statement and for the proponent to address any deficiencies. On the proponent's request, IAAC may extend the time limit by any period that is necessary for the proponent to provide IAAC with the information or studies. If the proponent does not provide IAAC with the information or studies within the three-year time limit, or within any extension of that time limit, the impact assessment is terminated.

When the provincial Minister is satisfied that the information provided in the Impact Statement complies with the Guidelines and Part X of the EPA, the provincial Minister shall advise the proponent that the Impact Statement is acceptable and shall make a recommendation to the Government of Newfoundland and Labrador as to whether/how the project is to proceed. The proponent must submit an Impact Statement that is found to be acceptable within three years from the date of the provincial Minister's decision to require the Impact Statement. The Government of NL may extend the 3-year period for not more than three periods of one year. If the proponent does not provide the provincial Minister with an acceptable Impact Statement within three years and any additional time provided by extension, the provincial Minister's decision to require an Impact Statement is void and the project must be registered again for environmental assessment.

1.1.5 Coordination of authorizations

The effects and mitigations associated with the Project may be subject to a comprehensive evaluation through the licensing and permitting processes and regulatory oversight of the federal and provincial governments. Authorizations required under other federal or provincial legislation (Newfoundland and Labrador or Quebec) are distinct from the impact assessment process. Information provided in the Impact Statement shall not be considered as redundant, but rather shall be used to inform other regulatory

processes. Although authorities may be prohibited from issuing authorizations during the impact assessment process, the information and consultation requirements for these authorizations may be completed at the same time as the impact assessment. In some cases, the same information may be used to inform both the impact assessment and other authorizations.

While it is not a requirement, a proponent may choose to work concurrently on authorizations during the impact assessment process. Providing the required information during the impact assessment process can expedite regulatory approvals following the impact assessment process. The proponent is encouraged to discuss opportunities for coordination with other authorizations with the jurisdictions early in the process.

1.2 Federal requirements and information

1.2.1 Introduction

The federal impact assessment process is intended to prevent or mitigate significant adverse effects within federal jurisdiction — and significant direct or incidental adverse effects — by anticipating, identifying and assessing the potential effects of designated projects in order to inform decision making. IAAC uses the proponent's impact statement and other information received during the impact assessment process to prepare an impact assessment report.

1.2.2 Format and accessibility

IAAC will make the geospatial data files available to the public under the terms of the Open Government Licence – Canada. Geospatial data files must include metadata that are compliant with the ISO 19115 standard and, at a minimum, include:

- title;
- abstract or summary of what is contained in the data file;
- source of the data;
- date of creation for the data;
- the point of contact and originator; and
- confirmation that there are no restrictions or limitations on sharing the data.

The proponent should review IAAC's Guidance on submitting geospatial data for more information.

2. Proponent Information

2.1 Joint requirements and information

2.1.1 The proponent

This section shall introduce the proponent by providing the following pertinent information:

- corporate body name and contact information (e.g., name, address, phone, email);
- chief executive officer's name and contact information;
- name and contact information for the contact person for the purpose of Impact Statement;
- names and contact information of key personnel, contractors, and/or sub-contractors responsible for preparing the Impact Statement; and
- disclosure of any affiliation or partnership with governmental or non-governmental organizations.

This section shall include a description of the proponent's history of mining and discuss the experiences that have led to the development of this undertaking. Moreover, this section shall specify the mechanism used to ensure that corporate policies will be implemented and respected for the Project.

2.1.2 Qualifications of individuals preparing the Impact Statement

The names and qualifications of key professionals responsible for preparing the Impact Statement and supporting documentation shall be included. A description of the qualifications of scientists conducting surveys and scientific studies associated with the undertaking shall be provided. Where possible, the proponent should use experts who are members of a professional body or recognized association.

3. Project Description

3.1 Joint requirements and information

3.1.1 Project overview

The intent of the project overview is to identify the key project components, rather than to provide a detailed description of the Project. The proponent shall briefly summarize the Project by presenting the major Project components, associated activities, scheduling details, timing of each phase of the Project, the total lifespan of the Project, and other key features. If development of the Project will follow a phased approach, information about the incremental and phased development of the Project, including the timing of each phase of the Project, shall be described. If the proponent is proposing alternative key components of the Project that may be selected by the proponent as the preferred option(s), then the alternative component(s) shall be described.

3.1.2 Project location

The Impact Statement must describe the project location, the geographical setting, and the socio-ecological context in which the Project is to take place. The description should focus on aspects of the Project and its setting that are important in order to understand the potential environmental, health, social and economic effects and impacts of the Project. Aerial images, digital geospatial data, and a precise description of geographic boundaries of all proposed project sites shall be provided, including digital geospatial data. The following information must be included and, where appropriate, located on map(s):

- geographic coordinates (i.e., longitude/latitude using international standard representation in degrees, minutes, seconds) for the centre of the main project site, for the port infrastructures on the Labrador coast, and for the beginning and end points of the access road;
- project footprint, including the extent of the tenure;
- surface areas, location and spacing of project components, including existing infrastructures, developments or debris within the site;
- distance of project components to any federal lands;
- services and infrastructure and current land and aquatic uses in the area, including:
  - roads;
  - municipalities and administrative regions, and provincial boundaries;
  - resource development projects already underway in the study areas (e.g., mines); and
  - local businesses and industries such as fisheries and outfitters, and any other relevant uses;
- primary, secondary and tertiary watersheds affected directly or indirectly;

- all waterbodies and watercourses, including intermittent and ephemeral streams, and groundwater, their directly or indirectly impacted watersheds, the direction of the flow, and their location on a map;
- navigable waterways;
- landcover in the area; including important or critical habitats;
- ecozones, ecoregions, and ecodistricts as per the province's or Canada's Ecological Land Classification[3];
- environmentally sensitive areas, such as national, provincial, regional parks, Indigenous Protected and Conserved Areas, ecological reserves, marine protected areas, protected public water supply areas, marine refuges, ecologically and biologically sensitive or significant areas, wetlands, estuaries, and habitats of federally or provincially listed species at risk and other sensitive areas;
- lands subject to conservation agreements;
- description and locations of all potable drinking water sources;
- description of local communities and Indigenous groups;
- Indigenous traditional territories and/or consultation areas, Treaty and/or Title lands and their geographic extent, land claims, Indian Reserve lands, Indigenous harvesting regions (with permission of Indigenous groups), on which the Project is located or that may be impacted by the Project;
- culturally sensitive areas (as identified by Indigenous groups); and
- culturally important features of the landscape.

3.1.3 Regulatory framework and the role of governments

The Impact Statement shall provide a comprehensive list of permits and regulatory approvals (municipal, regional, Indigenous Government, provincial, and federal) required for the undertaking. The list shall include the following details:

- activity requiring regulatory approval;
- name of permit, license or regulatory approval;
- name of legislation applicable in each case; and
- regulatory agency responsible for each permit, license, and approval.

The Impact Statement shall identify:

- government policies, resource management plans, and planning or study initiatives pertinent to the Project and/or the impact assessment, including relevant regional studies, regional assessments and strategic assessments;
- established and evolving developments in the mining of rare earth elements, production, storage, handling and transportation codes and standards;

[3] Introduction to the Ecological Land Classification (ELC) 2017 and Ecozones Introduction by Canadian Council on Ecological Areas.

- municipal, provincial or Indigenous Government land use plans, land zoning, community plans and regulations;
- regional, provincial, and/or national objectives, standards, codes and/or guidelines that have been used by the proponent to assist in the development of the Impact Statement;
- any governmental or non-governmental working groups or committees that provide guidance to municipal, provincial or Indigenous Government bodies with respect to land use, ecological and recreational stewardship in the project area;
- any financial support that federal authorities are, or may be providing to the Project;
- federal, provincial or Indigenous greenhouse gas (GHG) legislation, policies or regulations that will apply to the Project, and explain their implications in accordance with the Strategic Assessment of Climate Change (SACC) and section 3.5.4 of the associated Draft Technical Guide Related to the Strategic Assessment of Climate Change;
- whether a request has been or will be submitted to Transport Canada's Marine Safety Directorate for implementation of the Navigation Safety Assessment Program review process;
- any treaty, self-government, land claims or other readily available agreements or arrangements between the proponent and the federal or provincial governments and Indigenous groups that are pertinent to the Project and/or the impact assessment, and where applicable, address how they may affect or be affected by the Project;
- legislative or regulatory requirements that are applicable to the Project at the federal, provincial, regional and municipal levels or from any body, including a co-management body, established under a land claim agreement referred to in section 5 of the *Constitution Act, 1982*, or from an Indigenous governing body as defined in the IAA that has powers, duties or functions in relation to the environmental effects of a project; and
- information on land lease agreement or land tenure, when applicable.

3.1.4 Workforce requirements

The Impact Statement shall include a Workforce and Employment Plan for the construction, operation and maintenance, decommissioning and rehabilitation phases of the Project. The plan shall include, but shall not be limited to the following information for each phase of the Project:

- the anticipated labour requirements, employee programs and policies, and workforce development opportunities, including:
  - opportunities for employment outlining the anticipated number of full-time and part-time positions to be created, the timeline for when they will be created, and an indication of how long the position may be needed (duration of position or phases of the Project). Positions shall be presented using the National Occupational Classification system (NOC 2021 or most recent available) at the 5-digit level associated with each position (where possible). This would include the number of positions associated with each NOC code;

  - breakdown of the positions per key project components (i.e., mine, access road, port), and per phase (i.e., construction, operation and maintenance, decommissioning and rehabilitation). Include the NOC code;
  - anticipated workforce region of origin (i.e., local, regional, out-of-province or international employees). Include an indication of which jobs and how many positions are likely to be based in Newfoundland and Labrador and Quebec, respectively. Include an estimate of immigrant employment, and any strategies for recruitment. This should also include clarification on which positions would be direct hires, and which would be from companies contracted to carry out Project work; and
  - the skill and education levels required for the positions;
- anticipated hiring process, policies and programs, per phase. Include a commitment to develop a Gender Equality and Diversity Plan to improve employment and training opportunities for women, Indigenous persons, gender diverse individuals and other underrepresented groups. The Plan's main components should include: a women's employment plan which shall be developed in consultation with NL's Office of Women and Gender Equality, a diversity plan for Indigenous persons and other underrepresented groups, and a business access strategy for these target populations;
- information specific to the individual Indigenous groups involved (to the extent possible and if relevant);
- investment in training opportunities;
- working conditions and anticipated work scheduling for construction and operation (e.g., hours of work, rotational schedules, fly-in/fly-out); and
- the anticipated transportation options for employees to commute to and from the mine site.

3.2 Newfoundland and Labrador requirements and information

3.2.1 Project components and activities

The proponent shall describe the scope of the Project for which the Impact Statement is being conducted including: the construction, operation and maintenance, foreseeable modifications of all Project-related facilities located in the jurisdiction of Newfoundland and Labrador, and the decommissioning and rehabilitation of project facilities and sites. The following project components and activities are to be assessed under the Newfoundland and Labrador environmental assessment process.

3.2.1.1 General layout

The Impact Statement shall provide a written and graphic description, including maps, aerial imagery, drawings, and digital geospatial data, of the following physical features of the undertaking:

- the layout and all proposed infrastructure for the access road, including but not limited to, a description of the following:

- watercourse crossings;
- laydown areas;
- location of potential sources of quarry materials, including any associated access roads and water crossings, for construction, operation and maintenance;
- storage areas for explosives associated with blasting;
- storage areas for hazardous materials and fuel;
- geographic boundaries of the project areas;
- water supply sources and associated infrastructure;
- worker accommodations and temporary buildings; and
- waste management.

- layout of the storage and handling facility at the port, including but not limited to, a description of the following:
  - site preparation, land clearing;
  - structures, and infrastructure for storage, handling and transport of ore;
  - development of drainage systems;
  - office buildings, worker accommodations and associated infrastructure;
  - energy supply;
  - water supply and associated infrastructure;
  - waste management structures, including solid waste and wastewater effluent discharge; and
  - storage facilities and infrastructure for hazardous materials, gas and liquid fuel.

3.2.1.2 Construction

Details of materials, methods, schedule, and locations of all construction activities (including permanent and temporary infrastructure related to physical features) shall be described, including but not limited to, the following:

- construction planning and development schedule;
- site preparation, clearing, blasting, etc., for the installation of:
  - access road (including water crossings);
  - storage and handling area, laydown areas, ancillary buildings, structures and infrastructure;
- sources, predicted decibel levels and duration of noise, including noise during blasting;
- sources of light emissions;
- construction and establishment of Project structures and infrastructures in protected public water supply areas, and wellhead protected areas, if applicable;
- the timing and duration of the construction period for in-water works, including whether installation of infrastructure is required, such as culverts (open or bottom-less culverts) or bridge structures;

- project components for in-water works, such as fording, removal of aquatic and/or stream side vegetation, infilling, dewatering, water use activities, and changes to natural flow regime;
- transport, storage, and use of all hazardous materials, fuels and lubricants required during construction, including a description of best management practices for the storage of waste dangerous goods/hazardous waste;
- marine transportation route for incoming supplies associated with the Project, and outgoing mining products;
- location of existing and proposed primary and alternate quarry sites, including any associated access roads and water crossings, and including boundaries, that are or may be needed to supply materials to the Project;
- the classes (i.e., crushed aggregate, sand, gravel) and quantities of quarry materials that are or may be required for the Project, including for road construction and upgrading, the construction of the port facility, and any other Project uses;
- details of quarry materials exploration or testing activities that may be required to evaluate quarry materials in advance of developing a new quarry site for the Project or in evaluating materials at an existing quarry site;
- all heavy equipment to be used during construction and an estimate of all emissions during construction; and
- waste rock proposed for road construction should be characterized for potential Acid Rock Drainage, Metal Leaching (ARD/ML), as well as, naturally occurring radioactive materials (NORM) risks.

The following plans for the construction of the Project shall be included in the Impact Statement and may be referenced here and included as appendices of the Impact Statement Guidelines:

- Waste Management Plan;
- Hazardous Materials Response and Training Plan;
- Marine Transportation Impact Study and Management Plan;
- Environmental Protection Plan;
- Water Resources Management Plan;
- Indigenous Participation Plan;
- Public Participation Plan; and
- Workforce and Employment Plan.

3.2.1.3 Operation and maintenance

All aspects of the operation and maintenance procedures for the undertaking shall be described in this section of the Impact Statement, including but not limited to the following:

- details of each phase of operations (if the Project will be developed in phases);

- description of any regulatory requirements related to the incremental development of the Project, requiring the proponent to demonstrate that the Project is being conducted in an environmentally acceptable manner;
- routine and responsive maintenance of the access road as it relates to activities such as snow clearing, snow piling, washouts, erosion and surface water management;
- concentrate, processing/treatment chemicals, fuels, and waste materials possibly including hazardous materials that would be transported on the road in Labrador extending from the port facilities to the Strange Lake mine site;
- any proposed water source(s), estimated daily and annual volume of water quantity and water quality requirements, and any treatment needed;
- other water withdrawal requirements and sources during Project operation;
- characterization of wastewater effluent, estimation of annual volume of effluent discharge, description of treatment required for effluent to meet regulatory standards for discharge, and a description of the receiving environment for wastewater discharged;
- procedures for regular source water and wastewater quality and quantity monitoring;
- procedures for regular ambient water quantity and quality monitoring;
- description of method of transportation of personnel and supplies to and from the mine site, the storage and handling location;
- description of best management practices for the storage of waste dangerous goods/hazardous waste;
- storage and transportation of concentrate at the port facility;
- transport, storage, and use of all hazardous materials, fuels and lubricants required during operations and maintenance, including a description of best management practices for the storage of waste dangerous goods/hazardous waste;
- marine transportation route for incoming supplies associated with the Project, and outgoing mining products;
- market intentions for all end products;
- identification of potential sources of quarry materials required for Project operation and maintenance, including any primary and alternate sites, associated access roads and water crossings, for all classes (e.g., crushed aggregate, sand and gravel) required for the Project; and
- site security and management of public access to Project components (access road, storage and handling facility).

The following plans for the operation of the Project, including the construction of the access road, laydown and storage facility at the port, and port development may be referenced here and included as appendices (see section 15 of the Impact Statement Guidelines):

- Waste Management Plan;
- Hazardous Materials Response and Training Plan;
- Marine Transportation Impact Study and Management Plan;

- Environmental Protection Plan;
- Access Road Maintenance Plan;
- Water Resources Management Plan;
- Indigenous Participation Plan;
- Public Participation Plan; and
- Workforce and Employment Plan.

3.2.1.4 Decommissioning and rehabilitation

The Impact Statement shall predict the lifespan of the undertaking and present an approach for decommissioning, which sets out a commitment from the proponent to address:

- expected useful life of major Project infrastructure and life cycle management plans for such infrastructure;
- proposed decommissioning schedule and activities, including dismantling and removal of infrastructure and facilities, including water crossing infrastructure for access roads, and site rehabilitation, including the rehabilitation of quarry sites developed for the Project;

The following plans shall be included in the Impact Statement for the decommissioning of the Project and the rehabilitation of Project sites, and may be referenced here and included as appendices (see section 15 of the Impact Statement Guidelines):

- Waste Management Plan;
- Hazardous Materials Response and Training Plan;
- Marine Transportation Impact Study and Management Plan;
- Environmental Protection Plan;
- Access Road Decommissioning and Rehabilitation Plan;
- Water Resources Management Plan;
- Indigenous Participation Plan;
- Public Participation Plan; and
- Workforce and Employment Plan.

3.3 Federal requirements and information

3.3.1 Project components and activities

The following project components and activities are to be assessed under the federal impact assessment process. The Impact Statement must:

- describe the project components, associated and ancillary works, and other characteristics to assist in understanding the potential environmental, health, social and economic effects, and the potential impacts on Indigenous Peoples, and rights of Indigenous Peoples, including on various population groups;
- describe any project components that will be constructed in, on, under, over, through or across navigable waterways to support the Project, and specify the proposed crossing method;
- describe project activities to be carried out during each project phase, with a focus on activities with the greatest potential to have environmental, health, social and economic effects, or impacts on Indigenous Peoples and their rights;
  - describe the location and impacted area (temporary and permanent), methods used, schedule (including expected start date, time of year, duration and frequency), magnitude, and scale of each project activity, and
  - highlight activities that involve periods of increased disturbance to environmental, health, social and economic conditions or impacts on Indigenous Peoples;
- provide a summary of any change made to the Project as originally proposed in the Detailed Project Description, including the reasons for these changes;
- provide sufficient detail to support analysis regarding the impacts on valued components (VCs) and in the context of potential interaction between VCs;
- detail how input from various population groups was used to identify potential components or activities of concern; and
- include maps of key project components, boundaries of the proposed site with geographic coordinates, major existing infrastructure, proponent lands, and leased properties or lands, adjacent resource lease boundaries, adjacent land uses and any important environmental features. Maps must be produced at a scale that allows both project and environmental components to be seen (e.g., water drainage system and all access roads between mine site components).

It should be noted that the high-purity separation plant in Sept-Îles is not part of the Project evaluated by IAAC, while marine transportation is limited to a restricted area on the Labrador coast.

At a minimum, the Impact Statement must describe the following components and activities:

3.3.1.1 Project components

3.3.1.1.1 Mine site

- open pit mine (footprint, location, development plans including pit phases);
- ore concentration facilities, including physical separation processes (e.g., beneficiation plant) (footprint, process, technology, location);
- storage and stockpiles of waste rock, overburden, topsoil, and low and medium grade ore (footprint, location, volume, development and management plans, and design criteria);

- tailings management facilities (footprint, location, volume, solid and liquid composition, development and management plans, and preliminary design);
- water management infrastructures to divert, control, collect, treat, and discharge surface drainage and groundwater to the receiving environment, including collector ditches, groundwater interception wells, sedimentation ponds, sumps, and pump and pipeline systems;
- watercourse diversions or realignments;
- sources of drinking and industrial/process water, including water used for dust control (include estimate of quantities needed for each water use and project phase);
- treatment facilities for potable water, sewage, wastewater and effluent (including proposed treatment technologies, footprint, location, discharge locations and expected volumes and flows);
- permanent and temporary linear infrastructures (e.g., haul roads, service roads, transmission lines, and pipelines), the route of each of these linear infrastructures, and the location and types of structures used for watercourse and waterbody crossings;
- conceptual design features of all collector and diversion ditches, culverts, bridges, spillways and water storage facilities (including sedimentation ponds and seepage collection ponds);
- borrow pits and aggregate processing/screening (footprint, location, volumes) included in the development and management plan;
- storage and handling facilities for concentrate, chemical and hazardous materials and waste (footprint, location);
- fuel storage and fueling stations for trucks/vehicles/equipment and for energy supply sources (e.g., generators, and alternative energy sources) (footprint, location, volumes);
- explosives manufacturing and storage (method, footprint, location, licensing, management);
- aerodrome and airfield facilities, including the runway and taxiway and all ancillary infrastructures (footprint, location);
- construction workspace and laydown areas (footprint, location);
- temporary or permanent infrastructure areas, including camp, landfill, containers storage and handling, concentrate or finished products storage, packaging and loading, administration buildings, warehouse, garages, maintenance offices and parking areas (footprint, location);
- temporary or permanent energy supply sources (e.g., generators, and alternative energy sources such as renewable energy) (footprint, location);
- fences and barriers (location); and
- any other infrastructure relevant to the mine site (including footprint, location, etc.).

3.3.1.1.2 Access road

- final route and conceptual design of the road corridor, including width of road surface, width of cleared corridor, width of right-of-way, access roads (permanent and temporary);
- watercourse and waterbody crossings, including location and type of structures;

- water management infrastructure to divert, control, collect and discharge surface drainage and groundwater to the receiving environment (including footprint, location, discharge locations and their receiving environment);
- borrow pits (and associated access roads and water crossings) and aggregate processing/screening (footprint, location, volumes);
- temporary or permanent infrastructure areas, including camps, energy supply sources, construction and laydown areas, fuel storage (footprint, location);
- temporary winter road, including footprint, route, construction method, and timing; and
- any other infrastructure relevant to the access road (including footprint, location, etc.).

3.3.1.1.3 Port infrastructures

- any marine infrastructure (such as jetty, platform, dock, wharf, etc.);
- marine and/or port related dredging, if applicable;
- laydown, storage and handling areas for concentrate and supplies (footprint, location);
- container crane and/or any other structure for loading and unloading vessels (boats, barges, ships, etc.);
- ancillary buildings such as camp, office, energy supply sources, water supply sources, fuel storage and fueling station, storage of hazardous materials, and warehouses; and
- any other infrastructure relevant to the port (including temporary works and access roads, footprint, location, etc.).

3.3.1.2 Project activities

3.3.1.2.1 Construction

- construction staging;
- surveying and staking;
- site grubbing, clearing and excavation, including tree and vegetation removal;
- excavation and salvage of substrate and aggregate, such as topsoil, soil, gravel, sand and rock;
- management of excavated materials, method of deposition and storage, including for potentially acid generating and metal (radionuclides) leaching materials;
- transportation and management of substrate and aggregate, if needed (source and quantity);
- blasting (location, frequency, duration, time of year, time of day and methods);
- explosives manufacture, transportation, storage and management (method, quantity, licensing);
- operation of light-duty, heavy-duty and mobile off-road equipment (type, quantity, power source);
- storage, disposal and management of hazardous materials, fuels and waste (indicate types, methods and amounts);
- construction of the beneficiation plant;

- construction of mine waste management infrastructures (e.g., waste rock piles, tailings facilities, ore and overburden stockpiles, etc.);
- construction of winter roads, access roads, haul roads, and any other type of roads;
- construction of the aerodrome and airfield facilities;
- construction of port infrastructures;
- marine and/or port related dredging, including maintenance dredging, if applicable:
  - rationale for the choice of the site and specifying the land area used;
  - the location, depth, surface area, volume and nature of the sediment (physical and chemical characteristics, particle size distribution, sedimentological regime and level of contamination[4]) to be dredged;
  - dredging methods (e.g., equipment used, duration and frequency);
  - management of anticipated dispersion plume of sediment that could be re-suspended during dredging or open-water disposal (if applicable);
  - measures to prevent sediment resuspension;
  - sediment management plans (open-water or terrestrial disposal);
  - sediment transportation modes to the construction or disposal sites, including management of dewatering basins, if necessary;
- construction of site fencing;
- construction of water diversions and realignments, if applicable;
- construction of water management facilities to manage contact water, such as collector ditches, sumps, pump and pipeline systems, groundwater interception wells, sedimentation/collection ponds, and water treatment plant;
- water requirements for project construction, operation and maintenance, decommissioning and rehabilitation (such as process water consumption and other uses such as road watering), including estimates of quantities needed;
- construction of other temporary or permanent infrastructures (e.g., camps, offices, water source and wastewater treatment, and warehouse);
- water management during site preparation and construction, including water diversions, dewatering activities, groundwater seepage management, storm water management, site drainage and runoff management, sediment or erosion control, and discharge to the receiving environment;
- management and treatment of wastewater and discharge points including washing water from concrete mixers or concrete plants, if applicable;
- construction of aquatic habitat offset and compensation features and species at risk compensation features (if applicable);

[4] Contaminated sediment management must comply with the Canadian Sediment Quality Guidelines for the Protection of Aquatic Life: http://ceqg-rcqe.ccme.ca/fr/index.html#void.

- snow management (e.g., plowing, storage, etc.);
- transportation of materials, equipment and employees; and
- other project activities relevant to site preparation and construction.

3.3.1.2.2 Operation and maintenance

- ore extraction, stockpiling, processing and treatment (include pit development phases);
- drilling and blasting (location, frequency, duration, time of year, time of day and methods);
- explosives manufacture, storage and use;
- management strategies of mine wastes, including topsoil, overburden, low and medium grade ore, waste rock and tailings;
- water management, including water diversions, site drainage and runoff management, sediment and erosion control, site dewatering, water use requirements, water recycling and effluent treatment and discharge (volumes, treatment technology and requirements, discharge point(s), and receiving waterbodies), including potable water, storm water, process water, and wastewater;
- storage, handling and transport of ore, concentrate, supply, equipment and materials (by trucks and ships);
- storage and handling of reagents, petroleum products, chemical products, hazardous materials and residual materials;
- management of the aerodrome, airstrip and airfield use;
- maintenance and use of access road, haul roads and watercourse crossings;
- management of port infrastructures, including containers storage areas and handling facilities;
- dredging and maintenance dredging, if applicable;
- snow management;
- measures and strategies for recycling, pollution prevention and waste reduction throughout the Project life cycle, including information on the technologies to be used;
- progressive reclamation of project components and open pit slopes;
- workforce management, including transportation and work schedules; and
- other project activities relevant to operation.

3.3.1.2.3 Decommissioning and rehabilitation

- preliminary outline of a suspension, decommissioning, rehabilitation, reclamation, or abandonment plan for any components associated with the Project that remain in the proponent's control after construction;
- the ownership, transfer and control of the different project components;
- site restoration and reclamation including desired outcomes, approach, and follow-up or adaptive management to achieve outcomes;
- filling the open pit with water and reconnecting pit with natural drainage system, if appropriate;

- removal of surface contamination from facilities and equipment;
- well decommissioning;
- dismantling and removal of equipment and systems;
- demolition or disposition of buildings and ancillary structures;
- long term care, monitoring and maintaining the integrity of the site, including site drainage, water management, effluent management, and any remaining structures (including water crossing infrastructures);
- transfer of fuel and associated wastes to interim and long-term licenced storage facilities;
- suspension, decommissioning, rehabilitation, or abandonment for temporary or permanent facilities, including access road, aerodrome and port infrastructures; and
- other project activities relevant to suspension, decommissioning, rehabilitation, or abandonment.

4. Project Purpose, Need and Alternatives Considered

4.1 Joint requirements and information

The proponent must identify the purpose of and need for the Project. The proponent must also analyze alternatives to the Project and alternative means of carrying it out. The proponent should consult IAAC guidance documents Guidance: "Need for," "Purpose of," "Alternatives to" and "Alternative Means" and Policy Context: "Need for," "Purpose of," "Alternatives" and "Alternative Means".

4.1.1 Purpose of the Project

The Impact Statement must outline what is to be achieved by carrying out the Project. The Impact Statement should broadly classify the Project (e.g., mineral extraction and processing) and indicate the target market (e.g., international, domestic, local), where applicable. The purpose of statement should include any objectives the proponent has in carrying out the Project. The proponent is encouraged to consider the perspectives of participants (i.e., public, Indigenous groups, governments) in establishing objectives that relate to the intended effect of the Project on society.

4.1.2 Need for the Project

The Impact Statement must describe the underlying opportunity or issue that the Project intends to seize or solve and should be described from the perspective of the proponent. In many cases, the need for the Project can be described in terms of the demand for a resource. The information provided should make it possible to reasonably conclude that there is an opportunity or issue that warrants a response and that the Project is an appropriate approach.

The Impact Statement must include:

- supporting information that demonstrates the need for the Project;
- any comments or view of Indigenous Peoples, the public and other participants on the proponent's need statement; and
- description of whether and how the Project would support the objectives of the Canadian Critical Minerals Strategy.

4.1.3 Alternatives to the Project

The Impact Statement must provide a description of the alternatives to the Project that are technically and economically feasible to meet the project need and achieve the project purpose, from the perspective of the proponent. Market and regulatory circumstances that may have influenced the preferred alternative must be

described. The analysis of alternatives to the Project must include explanation for rejecting other alternatives. The process of identifying and considering alternatives to the Project must consider the views, information and knowledge from Indigenous groups potentially impacted by the Project and other participants, as well as existing studies and reports.

The Impact Statement must describe, at a minimum, the following alternatives to the Project:

- the no-action (null) alternative to serve as a benchmark for the assessment and comparison of the Project and any alternatives to the Project. The description should note the baseline conditions of the VCs associated with the Project, as well as changes to these baseline conditions that are likely to occur in the future if the Project is not carried out (e.g., changes as result of other projects already planned for the region, changes to the socioeconomic conditions, future climate change); and
- other sources/deposits of rare earth elements, if applicable.

4.1.4 Alternative means of carrying out the Project

The Impact Statement must identify and consider the potential environmental, health, social and economic effects and the potential impacts on the rights of Indigenous Peoples of alternative means of carrying out the Project that are technically and economically feasible. The Impact Statement shall analyze and compare the alternative means of carrying out the Project in relation to their environmental and social costs and benefits, including those alternatives which cost more to build and/or operate but which cause less harmful environmental effects. The range of alternatives considered for the annual production and scale of the operation shall be discussed, and the chosen alternative justified.

For the selection of the alternative means of carrying out the Project, the Impact Statement must describe:

- the criteria to determine technical and economic feasibility of possible alternative means;
- the best available technologies considered and applied in determining alternative means;
- those alternative means that are technically and economically feasible presented in sufficient and appropriate detail;
- the particularities for each alternative mean and their potential adverse and positive environmental, health, social and economic effects, and their potential impacts on the rights of Indigenous Peoples as identified by Indigenous Peoples; and
- known experience with, and effectiveness and reliability of the equipment, techniques, procedures, and policies, for each alternative mean, particularly under climate conditions in the project vicinity and elsewhere, and their relation to best practice in Canada and in the provinces where the Project is implemented.

The Impact Statement must then describe:

- the methodology and criteria that were used to compare the alternative means, to determine the preferred means of carrying out the Project, and to justify the exclusions of other solutions, based on the trade-offs associated with the preferred and other alternative means;

- environmental criteria should include effects to air quality, water quality and quantity, fish and fish habitat, wildlife and associated habitat (including wetlands), risk from accidents and malfunctions;
- health and social criteria should include health risks and potential or perceived effects on the environment, such as avoidance of country food due to perceived or potential risk of contamination;
- potential effects to species at risk as per *Species at Risk Act* (SARA), including any critical habitat, must be considered in alternative assessment, including a description of how avoidance of effects was considered and how it may be achieved through alternative means of carrying out the Project or alternatives to the Project;
- the preferred means of carrying out the Project and the rationale for the selection based on the consideration of environmental, health, social and economic effects, the impacts on the rights of Indigenous Peoples, technical and economic feasibility, and the use of best available technologies, and consideration of the sustainability principles (described in section 14 - Sustainability);
- application of GBA Plus to the analysis of alternative means of carrying out the Project to inform how effects may vary from one population group to another; and
- how concerns, views and information provided by Indigenous Peoples, the public and other participants were taken into account in establishing criteria and conducting the analysis.

In the alternative means analysis, the proponent must address key project elements, including but not limited to the following, where relevant to the Project:

- project layout and components size and locations;
- schedule and timeline of project phases and project components;
- route or corridor options for the access road between the mine site and the Labrador coast, locations of water crossings and fueling stations if applicable. Alternatives must include all options considered technically and economically feasible in previous iterations of the Project, such as the use of airships;
- port facilities layout and components size and location;
- aerodrome and airfield facilities layout and location;
- energy and power sources (temporary and permanent, stationary and mobile), if applicable;
- water supply sources (potable and industrial, surface water and groundwater);
- aggregate supply sources (e.g., location of dedicated sources);
- locations and methods for building and crossing waterbodies, watercourses, wetlands and other obstacles;
- water diversion routes;
- retaining structures such as dams, dykes, bernes and others;
- mining-related activities:
  - mining operations (open pit, or underground, staging); and
  - processing facilities location and design (comminution, separation, concentration and dewatering);
- mine waste management facilities (tailings, waste rock, overburden, low and medium grade ore):

  - storage, management, and re-use of excavated materials. For instance, segregation of waste rock into different piles based on potential for acid rock drainage and metal(loid) leaching, pit wall management for acid rock drainage and metal(loid) leaching, overburden and soil re-use;
  - location of tailings management facilities in consideration of groundwater flow directions, any local groundwater users, nearby rivers, lakes, and wetlands;
  - tailings storage methods. For instance, conventional slurry, thickened, or filtered tailings, co-disposal versus separation of acid-generating and metal(loid) leaching tailings;
  - management of tailings and waste rock on the surface versus backfilling into the open mine pit during decommissioning; and
  - tailings management techniques to improve carbon sequestration;
- water and wastewater management:
  - location of effluent discharge points (including temporary discharge locations during the construction phase, and ongoing discharge locations during operations, as well as potential locations following decommissioning as needed), taking into account predicted water quantity changes;
  - treatment technologies and techniques to control effluent quality; and
  - water re-use;
- waste management (e.g., landfills, disposal facilities); and
- decommissioning or rehabilitation options.

For mine waste management facilities, an assessment of alternatives must be conducted in such a way that it clearly demonstrates that the chosen location is the most appropriate option for mine waste disposal from environmental, technical, economic, social and health perspectives. The assessment of alternatives shall include the following steps with all supporting documents and/or references (see Guidelines for the assessment of alternatives for mine waste disposal - Canada.ca):

1. Identification of candidate alternatives (including threshold criteria);
2. Pre-screening assessment;
3. Alternatives characterization (including environmental, technical, economical and social considerations);
4. Multiple accounts ledger (including the determination and evaluation of impacts generated by each option);
5. Value-based decision process;
6. Sensitivity analysis.

As relevant, the alternatives to and alternative means assessments should be informed by, but not limited to, the following:

- any study or plan that is conducted or prepared by a jurisdiction—or an Indigenous governing body—in respect to the region related to the Project and that has been provided with respect to the Project;
- any relevant assessment of the effects of the Project that is conducted by or on behalf of an Indigenous governing body and that is provided with respect to the Project;

- Indigenous Knowledge, community knowledge, comments received by the public, comments received from a jurisdiction; and
- other studies or assessments realized by the proponent or other proponents.

4.2 Newfoundland and Labrador requirements and information

As part of the alternative means analysis, the Impact Statement must consider the placement of the “lower-grade stockpile” and “overburden stockpile” at the mine site in Quebec. This would include an assessment of the potential impact of placing the lower-grade stockpile and the overburden stockpile at the locations proposed in Quebec on the viability of potentially mining the Labrador portion of the “Main Zone REE deposit” in the future. This assessment would include proposed mitigation measures if negative impacts are identified, proposed alternate site(s) for placing the respective stockpiles, and considerations for the permanent placement of the lower-grade stockpile should the Quebec-side mining operation cease before the lower-grade stockpile can be processed.

4.3 Federal requirements and information

4.3.1 Alternatives to the Project

The Impact Statement must present a rationale for selecting the Project over other options, which includes how sustainability principles (described in section 14 - Sustainability) were considered. The analysis of alternatives to the Project should serve to validate that the preferred alternative for the Project is a reasonable approach to meeting the need and purpose and is consistent with the aims of the IAA.

5. Description of Public Participation and Views

5.1 Joint requirements and information

The proponent must engage with local communities and stakeholders. Engagement activities should be inclusive and ensure that interested members of the public have an opportunity to share their views. The concerns shared by the public shall be presented and addressed in a separate chapter of the Impact Statement document. It must include analysis and responses to questions, comments and issues raised, including:

- provide a summary of key issues related to the Project, including the potential environmental, health, social and economic effects and potential for disproportionate effects for population groups, that were raised through engagement with the public, or how they were incorporated into the Impact Statement;
- describe any questions and comments raised by the public and how they influenced the design of the Project;
- identify the alternative means, mitigation measures or the monitoring and follow-up programs identified to deal with public uncertainties; and
- identify public concerns that have not been addressed, if any, and provide the reasons why they have not been.

The Impact Statement shall include a Public Participation Plan that describes how the public can meaningfully participate in the planning of all phases of Project (construction, operation and maintenance, decommissioning and rehabilitation) and how they will continue to be consulted throughout the life of the Project, including in the monitoring of environmental effects.

The Public Participation Plan must include:

- a record of engagement undertaken that describes all efforts, both successful and unsuccessful, to seek the views of the public with respect to the Project;
- efforts made to distribute project information and the information and materials that were distributed during the consultation process;
- methods used, where consultations were held, the persons, organizations, and population groups consulted;
- efforts made to involve the public in the development and revision of the proponent's Impact Statement, including collection and incorporation of community knowledge; and
- efforts to engage diverse population groups of the community (including, youth, women, two-spirited people, individuals with disabilities, Elders, gender diverse and other community relevant factors where possible), and incorporate trauma-informed engagement practices, to support the collection of information needed to complete the GBA Plus.

5.2 Newfoundland and Labrador requirements and information

Under section 58 of the *Environmental Protection Act* (EPA), during the preparation of an Impact Statement, the proponent shall provide an opportunity for interested members of the public to meet with the proponent at a place adjacent to or in the geographical area of the undertaking, or as the provincial Minister may determine, in order to provide information concerning the undertaking to the people whose environment may be affected by the undertaking; and record and respond to the concerns of the local community(s) regarding the environmental effects of the undertaking. Under section 10 of the Environmental Assessment Regulations, the proponent shall notify the provincial Minister and the public of a meeting scheduled with the public under section 58 of the EPA not fewer than 7 days before that scheduled meeting.

Protocol for the public meeting shall comply with the legislation and with divisional policy included in section 5.2.1.

5.2.1 Public Participation Plan

5.2.1.1 Requirements for public meetings/information sessions

Purpose: To clarify for proponents and the public, the format, scheduling, number, notification requirements, etc. for public consultations in relation to undertakings required under the *Environmental Protection Act*, SNL 2002 cE-14.2, (Section 58) to prepare an Environmental Impact Statement (Impact Statement).

The proponent is required to conduct public meeting(s) (information sessions) under an Impact Statement process as specified in the legislation. This requirement shall be specified in the project Impact Statement guidelines.

A public meeting shall normally be held in the largest local population centre within the project area. This shall be the minimum requirement. In addition, when demonstrated public interest or concern warrants, additional meetings may be required. This may take the form of additional meetings to be held in major regional or provincial population centres, or possibly additional meetings within the original community. Such requirements are at the discretion of the provincial Minister based on consensus advice from the environmental assessment committee (EAC) chairperson and based upon public interest as evidenced by public submissions received.

The format of the public meeting may be flexible, and the proponent is free to propose a suitable format for approval by the EAC. The format may range from formal public meetings chaired by the proponent or representative with presentations followed by questions and answers, to a less formal open house forum where the public may discuss the proposal with the proponent or representatives. Other formats may be considered by the EAC. The proponent is encouraged to provide opportunities for virtual participation in a public meeting, either during or in addition to, an in-person public meeting. The purpose of the public meeting is to provide information concerning the proposed undertaking to those who may be affected, and 2) to record the concerns of the local community regarding the undertaking. Any format must meet these objectives.

The proponent must ensure that each public meeting is advertised in accordance with the following specified public notification requirements, which shall form part of the project guidelines when appropriate (proponent to substitute appropriate information for italicized items):

PUBLIC NOTICE

Public Information Session on the Proposed

Name of undertaking

Location of undertaking

shall be held at

Date and Time Location

This session shall be conducted by the proponent, proponent name and contact phone number, as part of the environmental assessment for this Project.

The purpose of this session is to describe all aspects of the proposed Project, to describe the activities associated with it, and to provide an opportunity for all interested persons to request information or state their concerns.

ALL ARE WELCOME

Minimum newspaper ad size: 2 columns wide and minimum posted ad size: 10 cm x 12 cm.

Minimum newspaper ad frequency (to be run in newspaper(s) locally distributed within each meeting area or newspaper(s) with the closest local distribution area):

For dailies, the weekend between 2 and 3 weeks prior to each session and the two consecutive days prior to each session, or for weeklies, in each of the two weeks prior to the week in which the session is to be held.

Minimum posted ad coverage: In the local Town or City Hall or office, and the local post office, within the Town or City where the meeting is to be held, to be posted continually for not less than 15 days prior to each session. The proponent is advised to request that the ad and/or notice of the meeting be placed on the community web site, for each community within/adjacent to the project study areas, to be posted continually for not less than 15 days prior to each session.

Any deviation from these requirements for any reason must receive the prior written approval of the provincial Minister. The proponent must provide the chairperson of the EAC with copies of advertisements and public notices.

The proponent is advised to propose other effective means of public notice, including social media announcements, for the provincial Minister’s consideration and approval.

5.3 Federal requirements and information

Particular attention must be paid to the engagement of individuals and communities that have rights and interests in the lands affected by the proposed Project.

The proponent should consult IAAC guidance documents on this topic, particularly: Framework: Public Participation Under the *Impact Assessment Act*, and Guidance: Public Participation under the *Impact Assessment Act*. Additionally, the proponent should also consider public engagement methods and tools outlined in the Public Participation Plan for the Project.

6. Indigenous Engagement

6.1 Joint requirements and information

As part of the impact assessment process, the proponent is required to provide current information about the Project to the Indigenous groups likely to be most affected by the Project as early as possible in the review process. This will ensure Indigenous groups can gain an understanding of the proposed Project and may facilitate their continued involvement in the impact assessment process.

The Impact Statement must describe all concerns raised by Indigenous groups in respect of the Project and, where applicable, how they have been or will be considered and, where appropriate, addressed. This should include a summary of discussions, as well as issues or concerns raised and conveyed to the proponent by Indigenous groups, the Government of Newfoundland and Labrador (NL) or IAAC.

The proponent must ensure that it engages with Indigenous groups who may be adversely impacted by the Project. In preparing the Impact Statement, the proponent must ensure that it provides sufficient, early notification, and timely, updated information to Indigenous groups to ensure they are reasonably informed about the Project, can provide feedback and can validate conclusions and assessment findings related to the potential impacts to Indigenous Peoples and their rights. The proponent shall discuss with Indigenous groups the most practical and appropriate method of engagement. This will require the proponent to provide up-to-date information describing the Project to the relevant Indigenous groups. The proponent shall involve Indigenous groups in determining how best to deliver that information (e.g., the types of information required, formats, and the number of community meetings required). Engagement must also take into account the official language needs and Indigenous language spoken by those involved.

NL and IAAC note that not all Indigenous groups may be willing to collaborate with the proponent, therefore the proponent must demonstrate that they have made best efforts at collaboration and provide NL and IAAC with an explanation regarding circumstances where collaboration was not possible. The proponent should continue sharing information and analyses with the Indigenous groups, to use publicly available sources of information to support the assessment, and to document their efforts in that respect.

The Impact Statement shall include an Indigenous Participation Plan, or record of engagement, that describes a plan to engage Indigenous groups in the project area. The Impact Statement must describe concerns raised by Indigenous Governments or Organizations and where appliable, how they have been or will be considered and where applicable, addressed. This should include a summary of discussions, issues or concerns as conveyed to the proponent by Indigenous Governments or Organizations, the Province of NL or IAAC.. The record of engagement must also describe agreed upon methods of engagement and delivery of information between the proponent and Indigenous groups. It must include a description of the culturally adapted and preferred methods for sharing information (for example, if relevant, the establishment of an indigenous hunter/harvester round table), including alternative solutions implemented for people and locations where technological resources are limited or language barriers exist (i.e., translation of written documents or provision of summaries in Indigenous languages). The Impact Statement should include a

record of all engagement activities, successful and unsuccessful, undertaken prior to, during and planned after the Environmental and Impact Assessments, to seek the views of each potentially affected Indigenous groups with respect to the Project.

The Impact Statement must document any potential adverse impacts on established or asserted Aboriginal and Treaty rights that would be caused by a Project-induced change, as well as any measures taken or recommended that would prevent, mitigate, or otherwise address these effects. IAAC and NL will use this information towards fulfilling its Duty to Consult Indigenous groups about the Project. In addition to proponent-involved Indigenous consultation, IAAC and NL may undertake or require additional engagement activities directly with Indigenous groups.

6.2 Newfoundland and Labrador requirements and information

Indigenous Governments and Organizations will have several opportunities to participate in the environmental assessment (EA) and provide their views on the potential environmental effects of the Project. These are outlined in Table 1.

Table 1: Indigenous Participation Opportunities

Opportunity
Comment on Draft IS Guidelines
Comment on proponent's IS or Plain Language Summary
Comment on any additional IS requirements, i.e., Addendum (if required by the provincial Minister)

Electronic and hard copy versions of documents will be provided to ECC and these will be made available for Indigenous Consultation and public review. Key documents will be available on the ECC Environmental Assessment webpage for this EA: https://www.gov.nl.ca/ecc/projects/project-2272/.

Public comment periods will be announced in the EA Bulletin and posted on the NL Government News Release webpage (https://www.gov.nl.ca/releases/) and on the ECC Environmental Assessment webpage mentioned above. Interested parties may contact the EA Committee Chair identified in section 2.1 for further information regarding comment periods.

The EA Division will commence Indigenous Consultation periods by sharing the pertinent document(s) with Indigenous Governments or Organizations and inviting comments within a prescribed timeframe. All comments received will be accorded full and fair consideration.

During the preparation of the Impact Statement, the proponent must hold public information sessions to provide information concerning the Project to the people whose environment may be affected by the undertaking. The proponent must record and respond to the concerns of the local communities regarding the potential environmental effects of the Project.

NL is committed to consulting Indigenous Governments and Organizations when NL contemplates making land and resource development decisions that have the potential to adversely impact settled or asserted Aboriginal rights.

NL strives for a practical consultation process that helps to ensure that land and resource development decisions minimize or, where reasonably practicable, eliminate potentially adverse impacts on settled or asserted Aboriginal rights.

NL also aims to maintain, foster and improve effective working relationships among Indigenous Governments and Organizations, the proponent and NL.

In particular, NL's consultation process is intended to produce better communication, stronger relationships and easier resolution of issues among Indigenous Governments and Organizations, the proponent and NL.

Consultation should be conducted with the objective of helping ensure that land and resource development decisions minimize or, where reasonably practicable, avoid or eliminate adverse impacts on asserted rights.

For clarity, the province will consult only those Indigenous Governments and Organizations whose members have settled or asserted or proven Aboriginal rights in the project area.

6.3 Federal requirements and information

The Indigenous Engagement and Partnership Plan identifies Indigenous groups that may be potentially impacted by the Project. The federal impact assessment process will be conducted in a manner consistent with the Indigenous Engagement and Partnership Plan. Engagement with Indigenous groups is required to inform the impact assessment and identify measures to avoid or minimize potential impacts on Indigenous Peoples and their rights from the Project. This engagement may also identify potential positive outcomes, including measures that could improve the underlying baseline conditions that support the exercise of rights. Ideally, the Project will be designed not only in such a way as to minimize its negative effects, but also to maximize its positive impact on the quality of life of Indigenous Peoples.

The proponent's engagement efforts should be consistent with the Government of Canada's commitment to implement the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP or the Declaration) as a comprehensive international human rights instrument and Canada's roadmap for reconciliation. The Declaration emphasizes the importance of recognizing and upholding the rights of Indigenous Peoples and ensuring that there is effective and meaningful participation of Indigenous Peoples in decisions that affect them, their communities and territories. The Declaration also emphasizes the need to work together in partnership and respect, as articulated through the principle of free, prior and informed consent. This principle reflects working together in good faith on decisions that impact Indigenous Peoples, with the intention to

achieve consensus. The proponent's engagement should also be consistent with jurisprudence and best practices in respect of implementing the common law duty to consult. The proponent's engagement with Inuit should be consistent with the Inuit Nunangat Policy, including the use of Inuktut.

Engagement is also conducted to learn about and further explore Indigenous interests in a project, or to understand other potential project impacts not directly related to the exercise of Aboriginal or Treaty rights.

The proponent is required to work with each Indigenous group identified in section 3[5] of the Indigenous Engagement and Partnership Plan to establish a mutually agreed approach to their participation, should they wish to participate. Section 3.1 of the Indigenous Engagement and Partnership Plan identifies the Indigenous groups with whom the proponent must engage to understand the concerns and potential impacts of the Project on their exercise of potential or established Aboriginal and/or Treaty rights and, where appropriate, identify mitigation measures and/or make accommodations. The degree of engagement with each Indigenous group will vary and in general, will be proportionate to the information provided by Indigenous groups, regarding potential pathways of impact from the Project on Aboriginal and/or Treaty rights.

If the proponent becomes aware of potential adverse impacts on the exercise of potential or established Aboriginal or Treaty rights of an Indigenous group that is not listed in section 3 of the Indigenous Engagement and Partnership Plan, that group must also be engaged, as outlined above, and the proponent is required to notify IAAC as soon as it has the opportunity to do so.

For the purposes of the Impact Statement the proponent must:

- in accordance with existing community protocols and/or guidance provided by IAAC, seek available Indigenous Knowledge and, as directed by the Indigenous groups, include it into its Impact Statement, just as it includes scientific knowledge;
- share project information frequently and transparently with Indigenous Peoples;
- support the participation of Indigenous groups in the completion of the Impact Statement, which could include funding studies conducted by potentially affected Indigenous groups who will have demonstrated interest in this regard (e.g., baseline studies, Indigenous Knowledge and Land Use studies, Indigenous-led evaluation of effects on health, socio-economic conditions, Indigenous Knowledge and land uses, cultural and physical heritage, as well as Aboriginal and/or Treaty rights);
- cooperate with Indigenous groups to identify preferred mitigation measures to avoid, minimize, offset or otherwise accommodate for potential adverse impacts on Indigenous Peoples or their rights, as well as to optimize the project's benefits for their communities; and
- cooperate with Indigenous groups to define the VCs and the indicators to be preferred in the Impact Statement.

[5] The list of Indigenous Peoples, groups, or communities identified during the Planning Phase may change as knowledge of the effects and potential impacts of the Project is gained, or if the Project or its components are modified during the impact assessment. IAAC reserves the right to modify the list in the Indigenous Engagement and Partnership Plan based on additional information gathered during the impact assessment and will notify the proponent of any modifications.

The record of engagement should demonstrate that the proponent sought to build consensus and obtained the agreement from Indigenous groups regarding information specifically pertaining to those Indigenous groups, including Indigenous Knowledge, that is presented in the Impact Statement.

6.3.1 Indigenous Knowledge Considerations

Indigenous Knowledge[6] is holistic and when integrated in impact assessment, it informs the assessment on areas including the biophysical environment, as well as social, cultural, economic and health aspects, Indigenous governance, resource use, and mitigation. Indigenous Knowledge should be brought together on equitable footing with scientific or technical aspects to inform the impact assessment including the environmental, health, social, economic and rights assessments and best practices and mitigation. It is important that Indigenous Knowledge, where available to the proponent, be included for all of these aspects in the impact assessment, not only to look at potential impacts of the Project on Indigenous Peoples and their exercise of rights. It is also important to capture the context in which Indigenous groups provide their Indigenous Knowledge and to convey it in a culturally appropriate manner.

Community-specific engagement protocols and procedures around Indigenous Knowledge in assessment processes should be understood, respected and implemented.

The Impact Statement must indicate where Indigenous Knowledge that was provided was not included in the assessment and provide a rationale. Where findings differ between Indigenous Knowledge and other scientific or technical studies, the proponent should clearly present how both were considered in the Impact Statement.

Indigenous Knowledge, whether publicly available or directly shared with the proponent, should not be included without written consent and validation from the Indigenous group, regardless of the source of the Indigenous Knowledge. Appropriate, culturally based Indigenous methodology for integrating Indigenous Knowledge and community input into the impact assessment is necessary to appropriately and ethically assess potential effects and significance of those effects from an Indigenous perspective.

6.3.2 Record of Engagement

The record of engagement in the Impact Statement must include:

- the proponent's Indigenous engagement policy, as well as established policies, local protocols, information sharing agreements, and stated principles related to the collection of Indigenous Knowledge and traditional land use information;
- the list of Indigenous groups engaged by the proponent, including those that the proponent was unsuccessful in engaging;

[6] The Government of Canada recognizes that Indigenous Peoples refer to their knowledge in different ways, characteristic of their unique languages. Within the context of these Guidelines, the term Indigenous Knowledge is used to refer to all Indigenous ways of knowing. The proponent is encouraged to respect the terminology preferences of the Indigenous groups involved in the assessment.

- the list of Indigenous groups wishing to be engaged but omitted by the proponent from engagement and the reasons for their omission;
- where applicable, a copy of each community-specific engagement plan developed collaboratively by the Indigenous group and the proponent for the Project. If only one engagement plan was developed for engagement with all Indigenous groups, provide a rationale for this approach;
- the engagement activities undertaken with each Indigenous group, including the date, means and results of engagement;
- a description of the outcomes of conversations with each Indigenous group about how they wish to be engaged by the proponent;
- the results of any engagement and the perspectives of the Indigenous Peoples involved;
- the list of the consultation or engagement protocols adopted by each Indigenous group, if applicable. A copy of the protocols must be included, when available, in writing;
- an explanation for cases where engagement efforts have proven unsuccessful;
- a description of how project information is frequently and transparently shared with Indigenous Peoples, including information about the timing of relevant studies to collect baseline information;
- a description of how Indigenous groups were provided with an appropriate opportunity, given each community-specific context, to review draft sections of the Impact Statement prior to them being filed, where disagreements occurred, and how disagreements were considered;
- a description of how Indigenous expertise will be sought to assist with the carrying out of the Project, should it be approved;
- a description of efforts to engage diverse segments of each Indigenous group in culturally appropriate ways, including groups identified by gender, age or other community-relevant factors (e.g., hunters, trappers, other harvesters, and Elders) to support the collection of information needed to complete the GBA Plus.
- a description of how engagement activities by the proponent were intended to ensure Indigenous groups were provided an opportunity to evaluate the project's potential positive and negative effects and impacts on their members, communities, activities and rights, as identified by the Indigenous group (s);
- a description of the proponent's progress in seeking free, prior and informed consent from Indigenous groups, as identified by the Indigenous groups themselves, where Indigenous groups have agreed to include this information in the Impact Statement; and
- any agreements pertaining to engagement that are finalized or in progress, with anticipated timelines to complete.

The record of engagement must demonstrate that the capacity needs of Indigenous groups were taken into account, and that timelines were adequately communicated and flexible enough to ensure Indigenous groups had the ability to review and gain understanding of information in the Impact Statement, including, where applicable, specific procedures for contributing information for sections of the Impact Statement. The proponent should share engagement records with Indigenous groups on a routine basis prior to submitting the Impact Statement to IAAC.

It is expected that the engagement activities for the preparation of the Impact Statement will be carried out with integrity and transparency, without conflicts of interest, in good faith, and conducted in a manner that is attentive to the concerns of Indigenous groups and committed to producing mutually beneficial outcomes.

6.3.3 Analysis and response to questions, comments and issues raised

This analysis is to include all input received by Indigenous groups, including Indigenous Knowledge, prior to, and since commencing, the impact assessment process. It is recommended that the proponent organize and analyze information relevant to Indigenous groups in separate sections based on the preference expressed by those people.

The Impact Statement must:

- indicate where input from Indigenous groups, including Indigenous Knowledge, has been incorporated and how it was considered. Information should be specific to the individual Indigenous group(s) involved in the assessment and describe contextual information about the members within an Indigenous community (e.g., 2SLGBTQI + people, women, men, Elders and youth, with the possible intersection of gender and age). This include, but is not limited, to the following:
  - the construction, operation and maintenance, decommissioning and rehabilitation plans, including final land use plans for the site (e.g., decommissioning of water management infrastructure on site);
  - the evaluation of alternatives to the Project, and alternative means of carrying out the Project (e.g., selection of the effluent discharge location);
  - developing the assessment, including setting spatial and temporal boundaries, identifying and selecting VCs and sensitive receptor locations, and collecting of baseline information (e.g., timing, methodology and conduct of fish studies, caribou studies and other species of interest, and of health, socio-economic studies);
  - the validation of model assumptions (e.g., the rate of country food consumption);
  - characterization of potential environmental, health, social and economic effects of the Project for each Indigenous group,
  - the cumulative effects assessment;
  - measures to mitigate effects or to enhance or optimize potential project benefits, including compensation and offset plans (as listed in Appendix 1 – Additional Guidance).
  - the determination of the extent of significance of effects; and
  - follow-up and monitoring activities and adaptative management strategies, should the Project be approved.
- consider and incorporate spiritual practices, cultural beliefs, laws and norms in the assessment, including whether the Project would be inconsistent with Indigenous laws and norms;
- describe the type of information received from Indigenous groups (e.g., observations, questions, issues, knowledge, expertise or other);

- describe the potential effects and impacts to environmental, health, social, cultural and economic conditions of each Indigenous community, informed by the Indigenous group(s) involved in the assessment and must include both adverse and positive effects.
- describe the rights or interests of each Indigenous group, which the groups themselves have identified and consented to including in the Impact Statement, and which may be impacted by the Project;
- describe the potential effects and impacts to lands in a reserve within the meaning of subsection 2(1) of the *Indian Act*. Federal lands include "reserves, surrendered lands and any other lands that are set apart for the use and benefit of a band and that are subject to the *Indian Act*, and all waters on and airspace above those reserves or lands";
- provide an analysis of the extent of the potential effects on each Indigenous group, and the views of Indigenous groups regarding the extent of impact on the exercise of rights as well as how these effects or impacts may be avoided, managed, mitigated or accommodated;
- detail the main issues, questions and comments raised by each Indigenous group during engagement activities and the proponent's responses, including how matters have been addressed in the Impact Statement or will be addressed in the future;
- append any specific studies or assessments provided by Indigenous groups, if permission has been obtained from the Indigenous group concerned to publish them;
- identify the sources of information used in the analyses of potential impacts to rights, as well as assumptions and methodologies used for the analyses;
- integrate the perspectives of various population groups, such as youth, women, Elders, gender diverse, two-spirited people, individuals with disabilities, and other community-relevant factors where provided;
- set out any proponent commitments for engaging affected Indigenous groups, where appropriate throughout the lifecycle of the Project;
- describe how Indigenous Peoples will be involved in decision-making processes related to the Project throughout its lifecycle;
- describe how Indigenous expertise and Knowledge would be considered in carrying out the Project; and
- describe how the information gathered during the Planning phase of the impact assessment of the Project was included, including the documents submitted to the Registry by Indigenous groups during that phase of the impact assessment.

Where applicable, the information and analysis must also be sufficiently disaggregated to support the GBA Plus analysis of disproportionate effects. In all cases, ethical guidelines and culturally appropriate protocols governing research, data collection and confidentiality must be followed (e.g., the Nunatsiavut Government Research Advisory Committee instructions and process, the report from Keepers of the Circle & AnânauKatiget Tumingit Regional Inuit Women's Association of Canada Shared Responsibilities: An Indigenous-lens GBA Plus Framework report).

The proponent must consult IAAC's guidance documents on Indigenous participation and engagement throughout the Impact Statement and the guidance Protecting Confidential Indigenous Knowledge under the

Impact Assessment Act, which are available on IAAC's website and are listed in Appendix 2 – Resources and Guidance.

7. Assessment Methodology

7.1 Baseline methodology

7.1.1 Joint requirements and information

The Impact Statement must provide a description of the baseline for the environmental, health, social and economic conditions related to the Project. This should include the existing environmental, health, social and economic conditions, interrelations and interactions among them, and the variability in these conditions over time scales and spatial boundaries appropriate to the Project. Meaningful, two-way dialogue with communities and Indigenous groups can provide input to describe how environmental, health, social and economic conditions are interrelated.

Baseline data must be collected in a manner to allow for reliable analysis, extrapolation and predictions. The proponent will be responsible for collecting the data, establishing appropriate data governance, and performing reliable analysis, extrapolation, and predictions. Source of baseline data can include secondary-information source such as baseline and follow-up studies conducted for other projects in the region and surveys and data from public authorities (e.g., Public Health Agency of Canada, Statistics Canada, Indigenous Services Canada, Indigenous health authorities, provincial health authorities, municipalities). The baseline data should be suitable to estimate pre-project baseline conditions, to predict and assess effects from the Project (adverse and positive effects), and to assess effects within and across the project area, local study area (LSA) or regional study area (RSA). Moreover, the baseline description and data must be sufficient to enable effective follow-up.

If the information available from government or other agencies is insufficient or no longer representative of current conditions, the Impact Statement shall complete the baseline description by conducting original surveys and research according to generally accepted practices and local knowledge. The Impact Statement must justify how the studies are representative of current conditions. If field studies are considered unnecessary to improve and demonstrate confidence in the prediction of residual effects and the appropriate selection of mitigations, justification must be provided (statistical analyses, simulations, organized reasoning). The Impact Statement shall provide the information required to understand or interpret collected data (methods, survey dates and times, weather conditions, location of sampling stations, etc.).

Further data requirements are included in the specific baseline conditions sections for biophysical environment (section 8), for the socio-economic and health condition (section 9), and for Indigenous Peoples physical and cultural heritage, current use and rights (section 10) in the Guidelines.

7.1.2 Newfoundland and Labrador requirements and information

Baseline Studies shall be prepared for at least the following components:

- atmospheric environment – air quality, noise, vibration and light (including GHG emissions);
- existing environments (landforms, soils, snow permafrost and ice);
- water resources including wetlands;
- avifauna including migratory birds and their habitat;
- fish and fish habitat (including species at risk, non-SAR and species of conservation concern, aquatic species including marine mammals, freshwater and marine environment);
- species at risk, species of conservation concern and their habitat requirements;
- special/important places or areas of conservation concern;
- the cultural, recreational and commercial importance of the waters of the marine shipping port;
- terrestrial environment; and
- land and resource use.

Each baseline study shall be a stand-alone document which may be appended to the Impact Statement upon submission. The results of each baseline study shall be included and referenced in the Impact Statement. Where new information becomes available, additional baseline studies may be required. Baseline surveys should be conducted in accordance with guidance provided by the jurisdictional authority(ies).

Study Outputs:

- all maps are to be presented using GIS and associated shapefiles are to be provided in digital format;
- raw data shall be included in the appendices in electronic tabular form and as digital geospatial data for GIS; and
- identification of all information sources.

7.1.3 Federal requirements and information

Ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to. This is particularly important in the case of information gathered and studies conducted with vulnerable population groups (e.g., analysis of gender-based violence). The proponent must protect personal information and adopt the established standards for the management of Indigenous data (e.g., OCAP or standards adopted by an Indigenous group).

For all baseline conditions, the Impact Statement must:

- describe potential changes in the baseline conditions that are likely to occur in the future, if the Project was not carried out, including changes due to future climate change;
- include baseline data collected, and clearly demonstrate that these have been collected in a way that makes analyses, extrapolations and reliable predictions possible;
- provide detailed descriptions of data sources and data collection methods, including sampling, survey and research protocols, modelling methods, sources of uncertainty, analytical detection limits, error estimates and any assumptions or biases to corroborate the validity and accuracy of the reference information collected;

- describe modelling methods and software used (including program and version), and include assumptions, calculations of margins of error, and other relevant statistical information. Models should be validated using field data from the appropriate LSA and RSA;
- show that the data sources are relevant to and representative of conditions within the established spatial and temporal boundaries and account for natural variability, especially if surrogate data from representative sites are used rather than specific measurements at the project site;
- indicate if baseline data gaps exist and additional steps taken to address gaps in information;
- describe where and how community knowledge as well as Indigenous Knowledge, input and studies were collected and considered in determining baseline conditions;
- describe how GBA Plus was applied to examine differences in baseline conditions among diverse population groups and provide disaggregated data where necessary;
- describe how any ongoing or completed regional assessment in the project area or any relevant strategic assessments were considered in determining baseline conditions; and
- include a bibliography of all consulted documentation and information sources.

Proponents are encouraged to consult with IAAC during the development and planning of baseline studies. Relevant sources of baseline information are listed in Appendix 1 – Additional Guidance.

7.2 Selection of valued components

7.2.1 Joint requirements and information

The Impact Statement must identify VCs that will serve as the focal points for the impact assessment. VCs consists of components that are of particular concern or value to participants and that may be affected by the Project. The value of a component not only relates to its role, but also to the value people place on it.

The Guidelines provide information requirements organized in categories that may be considered as VCs, or may be considered as intermediate components to inform the assessment of VCs. The VCs will help to organize the description of the effects of the Project required by the Guidelines.

7.2.2 Newfoundland and Labrador requirements and information

A description of the existing environment that occurs within the Province of Newfoundland and Labrador shall be developed for the Project and each alternative, drawing specific reference to the VCs. Detailed descriptions shall be developed for the following:

- atmospheric environment;
- aquatic environment;
- terrestrial environment;

- land and resource use;
- heritage and cultural resources;
- communities; and
- economy, employment and business

VCs for each environmental component shall be described.

7.2.3 Federal requirements and information

The VCs included in the Impact Statement must include, at minimum:

Valued Component	Rationale for inclusion
Valued Components for the assessment of adverse effects within federal jurisdiction, as defined under section 2 of the IAA	
Fish and fish habitat	Project components and activities, such as stream crossings, effluent discharge, water use and management, and tailings management could cause changes to water quantity and quality that could adversely affect fish and fish habitat. Project components and activities could also cause changes to air quality which could affect fish and fish habitat, such as dust deposition on waterbodies or watercourses. Moreover, project components and activities could lead to the death of fish and/or harmful alteration, disruption or destruction of fish habitat.
Migratory birds	Project components and activities such as vegetation clearing, noise and light sources, and the release of harmful substances into waters frequented by migratory birds could adversely affect migratory birds and their habitat. Effects could include disturbance and displacement, and habitat loss.
Indigenous physical and cultural heritage, and structures, sites or things of significance	Project components and activities could adversely affect, amongst other things, the George River (a site of historical significance) and the Eastern Migratory Caribou, George River population (a species of cultural and heritage significance). Historical or archaeological remains may be uncovered by project components and activities.
Current use of lands and resources for traditional purposes by Indigenous Peoples	Project components and activities could adversely affect the experience of traditional activities such as hunting, fishing, gathering, trapping and the use of traditional lands. The Project

	could affect resources valued by the Indigenous Peoples such as the Eastern Migratory Caribou and the Arctic Char.
Health, social and economic conditions of Indigenous Peoples	Project components and activities, as well as concerns regarding potential radioactivity is likely to adversely affect the health and social conditions of Indigenous Peoples by causing potential changes to air and surface water quality and avoidance of country food.

The proponent may also identify additional VCs beyond those included in the Guidelines in consultation with Indigenous groups and other participants. Indigenous groups may identify holistic VCs that encompass multiple environmental, health, social, or economic VCs. Where identified, the proponent should structure the analysis and presentation of individual VCs into an assessment of the holistic Indigenous VCs. The proponent is encouraged to work with Indigenous groups to identify holistic VCs, which may increase the efficiency of the assessment and clarity of presentation.

The Impact Statement must:

- describe the VCs and provide a rationale for the selection of VCs in sufficient detail to allow IAAC to understand their relevance to the assessment;
- indicate the source and reasons of the concerns or interests considered in the selection of VCs, including from the public, provincial or federal authorities, Indigenous groups, and other participants;
- in the event that a VC is suggested by an Indigenous group but is excluded from the Impact Statement, the proponent must provide a justification for its exclusion; and
- describe how community knowledge, Indigenous Knowledge and public and Indigenous perspectives were considered in selecting VCs.

Concerns and interests raised by participants during the Planning phase have been considered in the Guidelines and are reflected in the information requirements. The proponent is expected to finalize the selection of VCs in consultation with Indigenous groups and other participants. The proponent should refer to comments received in relation to the Project on the Registry for additional information to support the selection of VCs.

7.3 Spatial and temporal boundaries

7.3.1 Joint requirements and information

The Impact Statement must establish appropriate spatial and temporal boundaries to describe the baseline conditions for, and to guide the assessment of, each VC. The spatial and temporal boundaries will vary depending on the VC and must be considered separately for each VC.

The Impact Statement must describe the spatial and temporal boundaries for each VC and provide a rationale for each boundary. Spatial boundaries must be shown on maps.

7.3.2 Newfoundland and Labrador requirements and information

7.3.2.1 Spatial boundaries

A precise description of the geographic boundaries of the Project shall be presented in relation to the study areas for each VC. The boundary description shall be accompanied by recent maps/aerial imagery of appropriate scale (e.g., 1:30,000, 1:20,000, or other) showing the entire project study areas, as well as illustrating the boundary of each study area with principle structures and ancillary works. Digital geospatial data of the project study areas and all component parts shall be submitted in the Impact Statement. The delineation of the study areas is crucial to scope the extent of the environmental assessment. This description shall focus on those aspects of the Project and its settings that are important in order to understand the potential environmental effects of the Project, and shall provide the following information:

- geospatial data and proximity of project components to existing environmental features, including but not limited to:
  - nearest temporary and permanent residential dwellings and commercial and industrial sites;
  - municipal or Inuit Community boundaries, planning areas and infrastructure;
  - communities and jurisdictions without municipal plans and development regulations;
  - traditional, cultural and recreational sites, recognized mineral occurrences and other areas that have been the focus of past mineral exploration efforts;
  - industrial, private and public water supplies;
  - waterbodies and watercourses; and
  - commercial fishing areas and navigation routes;
- identification of any project location overlap with existing land users, areas corresponding to mineral licences, mining leases, or exempt mineral lands under the *Mineral Act*, recognized mineral occurrences and other areas that have been the focus of past mineral exploration efforts, freshwater and marine users, and municipal and Inuit Community boundaries and planning areas, Labrador Inuit Lands, and Labrador Inuit Settlement Areas; and
- description of the environmental significance and value of the geographical setting in which the Project is proposed to take place, and the surrounding area, including but not limited to:
  - environmentally sensitive areas, such as national, provincial, and regional parks and reserves;
  - ecologically and biologically significant areas and protected areas including proposed protected areas;
  - wetlands, estuaries, lakes and rivers; and
  - habitats of federally or provincially-listed species at risk, or species recommended for legal listing by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or the NL Species

Status Advisory Committee, including critical habitat for the designated species and other sensitive areas.

An overview map(s)/ image(s) shall be provided, noting the proximity of the study areas to the above features.

7.3.2.2 Temporal boundaries

Where appropriate and possible to do so, the Impact Statement shall present a time series of data and sufficient information to establish the averages, trends, and extremes of the data that are necessary for the evaluation of potential environmental effects. For key environmental and social components, the proponent should consider how far back in time and how far into the future the study should be conducted. Rationale for the temporal boundaries chosen should be provided.

7.3.3 Federal requirements and information

The proponent must engage with Indigenous groups when defining spatial and temporal boundaries for VCs that are identified by, or related directly to, Indigenous Peoples. The Impact Statement must explain how the proponent considered the information received from Indigenous groups and relevant municipalities in its definition of spatial and temporal boundaries, particularly for VCs related to effects to Indigenous Peoples.

7.3.3.1 Spatial boundaries

Generally, it is recommended that the proponent establish three spatial boundaries of study areas[7] to assess the impacts on each VC:

- Project Area: defined as the project footprint including all temporary and permanent areas associated with the Project, and alternatives considered;
- Local Study Area (LSA): defined as the area beyond the project footprint where project effects may extend; and
- Regional Study Area (RSA): defined as the larger area around the LSA (delineated by ecological, social, economic or other appropriate boundaries), including the region where cumulative effects may extend.

The Impact Statement must define spatial boundaries by taking into account:

- scale and spatial extent of potential effects and impacts of the Project;
- the physical location of potential receptors, including, where applicable, the movement patterns of potential receptors;
- relationships between VCs (e.g., interaction between wildlife and vegetation);
- community knowledge and Indigenous Knowledge;
- current use of land and resources for traditional purposes by Indigenous groups;

[7] The concepts of “Project area”, “Local Study Area (LSA)” and “Regional Study Area” (RSA) apply to all project components: mine site, access road, port infrastructures and marine transport.

- rights of Indigenous Peoples, including treaty lands, traditional territories and areas or sites used for cultural and spiritual practices;
- physical, technical, ecological, social, health, economic and cultural considerations;
- size, nature, location and known effects of past, present and foreseeable projects and activities, particularly for the RSAs; and
- any ongoing or completed regional assessment in the project area or any relevant strategic assessments.

The Impact Statement must identify where spatial boundaries may extend to areas that are (i) on federal lands, (ii) in a province other than the one where the Project is being carried out, or (iii) outside Canada where effects are expected.

7.3.3.2 Temporal boundaries

The Impact Statement must define temporal boundaries by taking into account:

- schedule of phases of the Project;
- past conditions and historical context;
- community knowledge and Indigenous Knowledge;
- current or traditional land and resource use by Indigenous groups;
- rights of Indigenous Peoples, including treaty lands, traditional territories and areas or sites used for cultural and spiritual practices and inter-generational knowledge transfer;
- relevant physical, technical, ecological, social, health, economic and cultural considerations;
- the foreseeable period over which temporary impacts are expected (e.g., groundwater changes following decommissioning);
- timing of past, present and foreseeable projects and activities, including any foreseeable expansion and delay of decommissioning; and
- any ongoing or completed regional assessment in the project area or any relevant strategic assessments.

7.4 Effects assessment methodology

7.4.1 Newfoundland and Labrador requirements and information

The Impact Statement shall contain a comprehensive analysis of the predicted environmental effects of each project alternative for the VCs. If the effects are attributable to a particular phase of the Project (construction, operation and maintenance, decommissioning and rehabilitation), or to a particular component, or to accidents or malfunctions, then they should be designated as such. Predicted effects (positive and negative,

direct and indirect, and short and long-term) shall be defined quantitatively and qualitatively (where applicable) for each project alternative and for each VC. Effects predictions shall be explicitly stated and the theory or rationale upon which they are based shall be presented in terms of the following parameters:

- nature;
- magnitude (qualitative and quantitative);
- geographic (spatial) extent;
- timing, duration and frequency;
- degree to which effects are reversible or can be mitigated;
- ecological context;
- uncertainty;
- the capacity of renewable resources that are likely to be significantly affected by the Project, to meet the needs of present and future generations;
- the extent to which biological diversity is affected by the Project; and
- the extent of application of the precautionary principle to Project mitigation measures.

7.4.2 Federal requirements and information

The Impact Statement must describe the changes to the environment or to the health, social or economic conditions and the positive and negative consequences of these changes (the effects) that are likely to be caused by the carrying out of the Project, and the results of interactions among the effects. This includes the effects to Indigenous Peoples' physical and cultural heritage, current use of lands and resources for traditional purposes, any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and any change occurring in Canada to the health, social or economic conditions of the Indigenous Peoples of Canada.

The overall effects assessment methodology must also consider the Project's potential interference with the exercise of rights of the Indigenous Peoples of Canada as further detailed in sections 9 and 10. The description must include the information requirements detailed in specific effects sections in the Guidelines.

The assessment of effects must be based on a comparison of baseline conditions and the predicted future conditions with the Project (without mitigation measures). In some cases, it may be appropriate to determine future conditions both with, and without, the Project, in order to account for potential changes in baseline conditions (e.g., due to climate change or to anticipated changes in socioeconomic conditions). The assessment of effects should also provide the probability or likelihood of that effect occurring, and the degree of confidence in the analysis. The assessment of effects must use methods that are statistically and scientifically defensible, must describe the degree of uncertainty related to the data and methods used and must reflect community knowledge and Indigenous Knowledge if it is available.

After considering the technically and economically feasible mitigation measures (see Section 7.5 Mitigation and enhancement measures), the Impact Statement must describe any residual environmental, health, social or economic effects of the Project. The assessment of residual effects must also take into account

interactions between the Project and past, existing and reasonably foreseeable projects or physical activities to be carried out, as described in section 7.6 Cumulative effects assessment.

Depending on the VC, the description of the effects can be either a qualitative or quantitative, taking into account any important contextual factors, as appropriate. The Impact Statement may describe the effects in terms of magnitude, geographic extent, timing, duration and frequency, and whether effects are reversible or irreversible. For some effects, it may be more appropriate to use other criteria, such as the nature of the effects, their direction, causation and probability. The ecological and socioeconomic context should also be provided. The perception of the same effect may vary among different individuals, groups and communities. Consequently, the effect assessment should take into account views and concerns expressed through engagement with Indigenous Peoples and community members.

The Impact Statement must:

- describe in detail the Project's potential direct and indirect, adverse and positive effects for each phase of the Project;
- identify and describe measures that are technically and economically feasible and that would mitigate the project's adverse effects or enhancements to increase positive effects (see Section 7.5 Mitigation and enhancement measures for more details);
- describe any residual effects of the Project;
- identify the adverse effects within federal jurisdiction and the direct or incidental adverse effects, as defined in section 2 of the IAA;
- describe how baseline data were used to inform this analysis;
- describe the analytical methods selected to assess effects, including clearly stated assumptions for all predictions and how each assumption has been tested, and provide clear definitions of any criteria or descriptors used;
- describe the degree of uncertainty related to the data and methods;
- for quantitative predictions based on models, detail model assumptions, parameters, the quality of the data and the degree of certainty of the predictions obtained, including an explanation of model calibration, validation, and model performance metrics used;
- discuss the degree of confidence in the predictions and conclusions of the effect assessment;
- if a detailed description of effects cannot be provided, provide a rationale for the absence of details and a general description of the potential effects and related project activities (e.g., activities and effects related to decommissioning and rehabilitation). The proponent should confirm the rationale with IAAC before submitting the Impact Statement;
- for predictions that may be affected by climate change, discuss how the range of potential climates informed the assessment, including projected changes in climate extremes;
- consider and describe the interactions among the environmental, health, social and economic effects and impacts on Indigenous Peoples and their rights;
- consider and describe the perspectives, concerns and tolerance levels of Indigenous groups and other participants;

- describe where and how Indigenous Knowledge, community knowledge as well as input from Indigenous groups and the public were considered and incorporated into effects assessment;
- describe how GBA Plus was applied to examine differences in effects among diverse population groups and provide disaggregated data where necessary; and
- describe how any ongoing or completed regional assessment in the project area or any relevant strategic assessments were considered in the effects assessment.

7.5 Mitigation and enhancement measures

7.5.1 Joint requirements and information

The Impact Statement must identify measures that are technically and economically feasible and that would mitigate the Project's adverse environmental, health, social and economic effects for each phase of the Project. The proponent may also identify enhancement measures to increase positive effects, such as local and regional training efforts, investment in infrastructure and services, and projects to rehabilitate degraded environments. The rationale for and effectiveness of the proposed mitigation and enhancement measures should be discussed and evaluated. The Impact Statement, where possible, should provide relevant information to demonstrate anticipated mitigation effectiveness, including technical information from analogous projects and projects in the region, peer-reviewed studies, and local Indigenous Knowledge and community knowledge. Where relevant, the proponent should provide relevant information to demonstrate the efficiency of the combination of selected mitigation measures. Mitigation failure should be discussed with respect to risk and severity of consequence.

The Impact Statement shall identify who is responsible for implementing the mitigation measures and the system of accountability, including the obligations of contractors and subcontractors.

Other mitigation measures that were considered may be identified, and the rationale for rejecting these measures explained. The implementation of best available technology and best management practices shall be described. Avoidance of environmental effects through implementation of scheduling and siting constraints and pollution prevention opportunities shall be considered. Trade-offs between costs and predicted effectiveness of the mitigation measures shall be justified.

For more guidance on developing mitigation measures see Appendix 1 – Additional Guidance.

The Impact Statement must:

- describe mitigation measures that are specific to each environmental, health, social or economic effect identified in the effects assessment including:
  - mitigation practices, policies and commitments that are part of the project design and that are required to achieve the predicted residual effects (e.g., project design elements that were accounted for in the effects assessment);

  - standard mitigation practices, policies and commitments that constitute proven technically and economically feasible mitigation measures and that are to be applied as part of standard practice;
  - any new or innovative mitigation measures being proposed;
- identify and justify the use of pre-established environmental threshold levels at which additional mitigation measures must be applied if exceedances occur;
- propose differentiated mitigation measures, if applicable, so that adverse effects do not fall disproportionately on diverse population groups, or so they are not disadvantaged in sharing any development benefits and opportunities resulting from the Project. These mitigation measures should be developed in collaboration with various population groups affected by the negative impacts, as well as people in positions within these groups, to maximize diversity and depth of perspective and understanding;
- write mitigation measures as specific commitments that clearly describe how the proponent intends to implement them and the desired outcomes. Measures are to be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation;
- identify and describe the use, application and effectiveness of best available technology and best environmental practice in identifying, assessing and implementing mitigation measures;
- describe any environmental protection plan(s) for the Project and, if applicable, the environmental management system through which the proponent will deliver this plan. The plan(s) must provide an overall perspective on how potentially adverse effects would be minimized and managed over time;
- describe the approach that would be taken if a mitigation measure is no longer feasible while the Project is carried out;
- describe how, throughout the project duration, the lessons learned through follow-up programs will be used to continually improve mitigation measures;
- where appropriate, describe any adaptive management plans that will be implemented to address uncertainties associated with the effectiveness of mitigation measures included in a follow-up program (see section 15.3 Adaptive Management Plans), including:
  - identifying the expected outcomes and targets that the Adaptive Management Plan will address;
  - describing the uncertainties that the Adaptive Management Plan will address;
  - developing hypotheses aimed at reducing the uncertainties described above;
  - describing the relevant baseline(s) for the Adaptive Management Plan; and
  - describing mitigation measures to be employed and alternatives;
- where components are to be decommissioned and rehabilitated or abandoned, include planned activities to do so. Project components that may be abandoned and decommissioned during the construction or operation phases may include access roads, temporary laydown areas, aggregate extraction sites and other temporary sites;
- where appropriate, provide details regarding financial liability and compensation in place as required by regulation or company commitment in relation to decommissioning or rehabilitation;

- document specific suggestions raised by Indigenous groups for avoiding, mitigating or otherwise accommodating the Project's environmental, health, social and economic effects, including potential effects and impacts on Indigenous Peoples and their rights and interests and describe whether and how these measures will be incorporated in the project design; and
- identify opportunities for enhancing positive effects, such as creation of local employment and infrastructure improvements.

For each mitigation measure identified, the Impact Statement must:

- describe all relevant uncertainties and assess how they could affect predicted residual effects;
- for those mitigation measures intended to address effects to the environmental, health, social and economic conditions of Indigenous Peoples or impacts on rights of Indigenous Peoples, provide a description of the consultation with Indigenous groups regarding the residual effects;
- assess any potentially adverse environmental effects associated with the mitigation method itself; and
- describe how disproportionate effects that were identified in the GBA Plus results were used to inform mitigation and enhancement measures.

Residual effects may have to be offset by the implementation of compensatory measures. Where compensatory measures are proposed as mitigation for residual effects on species at risk and their critical habitat, fish and fish habitat or wetland functions, the impact assessment must provide compensation plans for review during the impact assessment process.

In addition to the general requirements above, additional requirements and recommended mitigation measures are shown in the specific mitigation subsections that follow. The proponent may propose measures that differ from the specific requirements and recommendations. In which case, the proponent must provide a rationale. For example, the proponent could propose measures viewed as better suited to the anticipated effects than those listed in the Guidelines

7.6 Cumulative effects assessment

7.6.1 Joint requirements and information

The proponent must assess the Project's cumulative effects using the approach described in IAAC's guidance document Policy Framework for Assessing Cumulative Effects under the *Impact Assessment Act*.

The Impact Statement shall identify and assess the Project's cumulative environmental effects. Cumulative effects are defined as changes to the environment, health, social, cultural and economic conditions, as a result of the Project's residual effects combined with the effects of other past, existing and reasonably foreseeable projects and activities, and in consideration of climate change. Cumulative effects may result if:

- the implementation of the Project may cause residual adverse effects to the VC; and
- the same VC has been or can be affected by other past, existing or future projects or activities.

A cumulative effect on an environmental, health, social or economic component or an Indigenous group or the rights of Indigenous Peoples may be important even if the Project's incremental effects to these components by themselves are minor. Activities from the Project itself that generate multiple emissions and discharges (e.g., simultaneous operations) may also need to be considered in the cumulative effects analysis to understand synergistic, compensatory, masking or additive effects.

The Impact Statement must:

- identify the VCs that will be subject to the cumulative effects assessment, including:
  - VCs for which the proponent anticipates residual effects from the Project (must be considered in the cumulative effects assessment);
  - VCs identified as being of particular concern in the context of cumulative effects by the public and by Indigenous groups;
  - VCs where the predicted residual effects might not indicate the need for a cumulative effects assessment, but rely heavily on uncertain mitigation measures;
  - VCs for which cumulative effects were identified as a concern during the Planning phase, such as:
    - air quality;
    - surface water quality;
    - wildlife and vegetation, especially the George River Caribou herd;
    - the health and well-being of Indigenous Peoples;
    - current use of lands and resources for traditional purposes by Indigenous Peoples, including on the local harvest of species of importance such as arctic char; and
    - the rights of Indigenous Peoples.
- include a rationale if VCs are excluded from the cumulative effects assessment;
- identify and justify the spatial and temporal boundaries for the cumulative effect assessment for each VC selected, taking into account:
  - boundaries may differ for each VC and should not be constrained by jurisdictional boundaries;
  - spatial and temporal boundaries will generally be larger than the boundaries for the project effects alone, and may extend beyond Canada's jurisdiction;
  - temporal boundaries should account for potential effects throughout the lifecycle of the project, including decommissioning and rehabilitation;
  - spatial and temporal boundaries for VCs related to effects and impacts on Indigenous Peoples defined in collaboration with the Indigenous groups concerned;
- identify the sources of potential cumulative effects. Specify which other projects or activities that have been or will be carried out that could have resulted or could result in effects on the selected VCs within the defined boundaries and whether those effects could interact with the residual effects of the Project. Clearly explain and justify the rationale for selecting other past, existing or future projects or activities to include in the cumulative effects assessment. At a minimum, the cumulative effects assessment must consider:

  - the “A Zone” of the Strange Lake Alkaline Complex;
  - Crater Lake Scandium Deposit;
  - Ashram Rare Earth Element and Fluorspar Deposit;
  - Voisey’s Bay Mine;
  - past, existing, or future mining activities or projects;
  - mineral exploration activities near the Project; and
  - any prior or continuing developments or undertaking carried, including exploration activities carried out at the site in relation to the Project;
- describe how the selection of boundaries and other past, existing or future projects or activities for cumulative effects assessment were informed by consultations with the public, Indigenous Peoples, lifecycle regulators, jurisdictions, federal authorities and other participants;
- assess the cumulative effects for each selected VC:
  - the analysis must include the effects of past, existing and future projects and physical activities in combination with the residual effects of the Project, taking into account how the effects may interact (additive, synergistic, compensatory, and masking effects);
  - the analysis of the effects of future projects and physical activities must include a comparison of possible future scenarios with and without the Project, but must reflect the full range of cumulative effects and not just the project’s contribution;
  - the effects of past and existing projects and physical activities can be used to put the current state of the VC into context, but must be included in the cumulative effects analysis;
  - cumulative effects for the same VC may need to be assessed using a hierarchy (e.g., effects on local populations of certain species and on the larger populations);
  - in cases where measures to mitigate these effects are beyond the control of the proponent, identify any parties that have the authority to act on these measures. In such cases, the Impact Statement must summarize any commitments by the other parties regarding implementation of the necessary measures and any associated communication plans;
- describe technically and economically feasible mitigation measures proposed for cumulative environmental, health, social and economic effects, as well as potential impacts on the rights of Indigenous Peoples, including an assessment of the effectiveness of the measures applied to mitigate the cumulative effects.
- assess the regional implications of applying project-specific mitigation and enhancement measures, taking into account any reasonably foreseeable development in the area; and
- develop a follow-up program to verify the accuracy of the assessment and the effectiveness of mitigation measures for cumulative effects (see section 15 Follow-up Programs and Plans).

The cumulative effects assessment must include consideration of cumulative effects in relation to the ability of Indigenous Peoples to exercise their rights and culture. Both the content and means of presenting this information is to be developed in consultation with each potentially impacted Indigenous group. Proponents must collaborate with Indigenous groups in assessing the cumulative impacts of the Project on the rights and

interests of Indigenous Peoples. If Indigenous groups do not wish to participate in the cumulative effects assessment, the proponent should continue sharing information and analyses with the Indigenous groups, to use publicly available sources of information to support the assessment, and to document their efforts in that respect.

The Government of Canada has developed the Open Science and Data Platform as a means to access science, data, publications and information about development activities to better understand cumulative effects. Proponents are encouraged to make use of this resource in their cumulative effects analysis.

7.7 Extent to which effects are significant

7.7.1 Joint requirements and information

Residual effects are those adverse effects which cannot be avoided or mitigated through, or that remain after, the application of environmental control technologies and best management practices. The Impact Statement shall list and contain a detailed discussion and evaluation of residual effects, and must consider the following criteria, as appropriate:

- magnitude;
- geographic extent;
- timing, duration and frequency;
- reversibility;
- uncertainty; and
- the environmental, health, social and economic context within which potential effects may occur.

The Impact Statement shall contain a concise statement and rationale for the overall conclusion relating to the significance of the residual adverse effects. The Impact Statement shall, for ease of review, include a matrix of the effects, proposed mitigations, and residual adverse effects.

7.7.2 Newfoundland and Labrador requirements and information

The discussion and evaluation of residual effects shall also be defined in terms of the following criteria:

- nature;
- the capacity of renewable resources that are likely to be significantly affected by the Project, to meet the needs of present and future generations;
- the extent to which biological diversity is affected by the Project; and
- the extent of application of the precautionary principle to Project mitigation measures.

7.7.3 Federal requirements and information

For adverse effects within federal jurisdiction and direct or incidental adverse effects, the Impact Statement must:

- describe the environment, health, social and economic context within which likely effects may occur, for example:
  - the sensitivity and importance of affected aquatic and terrestrial species, including species at risk and species of importance for Indigenous Peoples;
  - the sensitivity and importance of affected habitats and their functions for wildlife;
  - the existence of standards, guidelines, tolerance levels and other sources of information to assess effects; and
  - the potential for disproportionate residual effects for population groups as per GBA Plus;
- characterize the extent to which the residual adverse effects within federal jurisdiction and the residual direct or incidental adverse effects are significant;
- characterize the extent to which the cumulative adverse effects within federal jurisdiction, and cumulative direct or incidental adverse effects, are significant;
- describe how the probability or likelihood of that effect occurring, and the degree of scientific uncertainty related to the data and methods used in the effect assessment were considered in characterizing the extent of significance;
- indicate, among the residual and cumulative adverse effects within federal jurisdiction and direct or incidental adverse effects, those that are likely to be, to some extent, significant;
- justify the methodology and choice of quantitative or qualitative criteria used to determine the extent to which the residual and cumulative effects are significant; and
- identify and explain relevant sources of information that were used to characterize the extent to which residual and cumulative effects are significant, including how the perspectives, concerns and tolerance levels of Indigenous groups and other participants were considered.

The information provided must be clear and sufficient to enable IAAC, Indigenous groups, and participants to evaluate the proponent's characterization of the extent of significance of adverse residual effects within federal jurisdiction and of direct and incidental adverse effects.

The best practices described in IAAC's technical guidance document for Describing effects and characterizing extent of significance may be considered for the characterization of residual effects in the context of the IAA, as applicable.

8. Biophysical Environment

In describing effects to the biophysical environment, the Impact Statement must take an ecosystem approach that considers how the Project may affect the structure and functioning of biotic and abiotic components within the ecosystem using scientific and community knowledge, and Indigenous Knowledge. The Impact Statement must describe the existing environment and biological diversity and consider the resilience of relevant species populations, communities, and associated habitats to the effects of the Project. The Impact Statement must identify the metrics and biotic and abiotic indicators used to characterize the biophysical baseline conditions (e.g., population size, recruitment rates), and discuss the rationale for their selection.

The presence of rare or unique ecosystems and/or significant habitat (e.g., federal, provincial, or Indigenous protected areas, aquatic and wildlife sensitivity maps, Ramsar sites, identified or proposed critical habitat in recovery strategies or action plans) potentially affected by the Project should be included in the description of the biophysical baseline conditions.

8.1 Meteorological environment

8.1.1 Joint requirements and information

The Impact Statement must:

- describe the local and regional climate, in sufficient detail to highlight weather variations and characteristics of the regions affected by project activities and components, including historical records of relevant meteorological information;
- provide summary data and the reference to underlying data source, including unique weather stations identifiers for climate information, including but not limited to:
  - monthly and annual mean, maximum and minimum temperatures;
  - monthly and annual mean, maximum and minimum precipitation;
  - typical wind speed and direction;
  - storm events; and
  - standard meteorological measurement to provide estimates of evaporation (e.g., using the Penman, Morton or Meyer Methods) or estimates of monthly (or daily) evapotranspiration. The use of the pan evaporation measurements is not recommended;
- provide reference to sources (and unique weather station identifiers) for hourly meteorological data (wind speed and direction, air temperature, dew point temperature or humidity, air pressure and precipitation data) from a minimum of one year to support dispersion modelling that captures the normal variability of meteorological conditions;
- identify the impact of permafrost melting or loss and sea ice loss; and

- describe the influence of climate change on the local and regional climate and on the risks of extreme weather events.

8.2 Geology and geological hazards

8.2.1 Baseline conditions

8.2.1.1 Joint requirements and information

The Impact Statement must:

- describe the geology and geotechnical characteristics of areas proposed for construction of major project components;
- describe the geology of the rare earth elements deposit, including the types of rocks and minerals forming ore and waste;
- describe the geology of the bedrock and unconsolidated sediments at an appropriate scale for the Project, including a table of geological descriptions, geological maps, geophysical information, satellite imagery, and cross-sections;
- identify on geological maps the location of areas of bedrock outcrops, highlighting locations that will require blasting;
- identify the geological zones likely to contain asbestos (chrysotile and amphibole), specifically, characterize the arfvedsonite (sodium amphibole) content of the various rock types;
- identify any geological hazards that exist in the areas planned for the project facilities and infrastructure, including:
  - history of seismic activity in the area, including induced earthquakes, and secondary effects such as the risk of seismic generated tsunamis, landslides and liquefaction;
  - evidence of active faults;
  - isostatic rise or subsidence; and
  - history of landslides and slope erosion.

8.2.2 Effects to geology and geological hazards

8.2.2.1 Joint requirements and information

The Impact Statement must describe the effects of all phases of the Project on geology and geological hazards, including potential for increased landslides, slope erosion and potential for ground and rock instability/landslides, and subsidence.

The Impact Statement must also describe the effects of the Project on geology and geological hazards, including:

- potential risk for induced earthquakes at the mine site and the potential for the public to experience shaking; and
- provide a description and location of any erosion-sensitive soils and areas of ground instability.

8.3 Geochemistry of mined or excavated materials

8.3.1 Baseline conditions

8.3.1.1 Joint requirements and information

The Impact Statement must:

- provide a geochemical and mineralogical characterization and testing program of expected mined or excavated materials, and processed products, such as waste rock, ore, low and medium grade ore, pit wall materials, tailings, concentrates, overburden and potential construction material (i.e., mine rock, borrow pits, quarries, or other unconsolidated material), whether sourced on-site or transported to the site from external sources;
- provide a characterization of rock/aggregate and other materials used for construction purposes, including risk of Acid Rock Drainage and Metal Leaching (ARD/ML), as well as presence of NORM; and
- identify which minerals will report to the concentrate and which will end up in the tailings and identify the various mineral hosts of uranium and thorium and assess their stability.

In particular:

- provide a detailed summary and justification of sample digestion and analytical methods used to evaluate mineralogy, acid rock drainage, and metal(loid) leaching (including radionuclides). The Mine Environment Neutral Drainage report 1.20.1 and the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs' 2020 Guide de caractérisation des résidus miniers et du minerai are recommended as guidance to support study design;
- describe the representativeness of samples collected for acid rock drainage, metal(loid) leaching assessment, and radionuclide testing. Present cross-sections or block model images at an appropriate scale that include mine rock samples, geology, mineralized zones, the approximate location of the open pit development, borehole traces and identification numbers, a scale and legend;
- describe the representativeness of tailings solids and process water. Provide a schematic process flow chart including the location that each tested sample represents if various processing streams are tested;
- describe the approach and methods for the prediction of acid rock drainage, metal(loid) leaching, and radionuclide testing, including identification of potential parameters of concern. Provide initial leaching potential results based on short term leach tests and an analysis of the representativeness and detailed composition of laboratory and field kinetic tests based on static test results;
- describe the quality assurance/quality control procedures. Provide laboratory certificates of analysis that include information related to analytical methodology and quality assurance/quality control;

- provide estimates of the potential for all materials (i.e., waste rock, ore, low and medium grade ore, pit wall materials, tailings, overburden, and potential construction material) to be sources of acid drainage, neutral mine drainage, metal(loid) leaching (including radionuclides), and/or radioactivity, timing to its onset, and short- and long-term loading rates calculated from kinetic testing for both neutral and acidic conditions (if potentially acid-generating material is identified in static testing), with consideration for the use of a proxy (i.e., historical mine waste, analytical tests replicating acidic conditions) if kinetic tests have not produced acidic leachate, if applicable. Perform leach testing on cemented thickened tailings (as proposed for disposal); and
- quantify the abundance of asbestos, distinguishing the chrysotile and amphibole types, including arfvedsonite (sodium amphibole), of expected mined or excavated materials and geological waste products using an appropriate mineralogical technique.

8.3.2 Effects to chemical release rates

8.3.2.1 Joint requirements and information

The Impact Statement must describe the effects of the Project on the rate at which chemicals may be released from mined or excavated materials, and materials transported onto the site (e.g., aggregate for mine or road construction), to inform assessment of effects on groundwater and surface water quality (section 8.6.2 Effects to groundwater and surface water), which are then used to inform on necessary mitigation measures, including:

- present chemical release rates from all major sources of mine or excavated materials and mine wastes, to be used as source terms in an integrated chemical mass balance model described in section 8.6.2 Effects to groundwater and surface water, for all phases of mine life considering:
  - the results of the geochemical characterization study that evaluated the potential for acid rock drainage, neutral mine drainage, metal(loid) leaching (including radionuclides), and/or radioactivity, for all materials described in section 8.3.1 Baseline conditions;
  - exposure of potentially acid generating, metal(loid) leaching (including radionuclides), and/or radioactive rock in pit walls;
  - baseline groundwater and surface water quality as described in section 8.6.1 Baseline conditions;
  - volumes and tonnages of material with the potential for acid-rock drainage, metal(loid) leaching (including radionuclides) and/or radioactive rock for the lifecycle of the Project; and
  - mine waste disposal, management, and mitigation methods and how these mitigation methods will affect acid rock drainage, metal(loid) leaching (including radionuclides), and/or radioactivity potential;
- provide a clear description and rationale for all input parameters and assumptions;
- provide base case (i.e., most likely, mean, median) and worst case (e.g., 75th to 90th percentile) scenarios, plus applicable sensitivity scenarios; and
- describe potential effects to groundwater and surface water and sediment quality from acid rock drainage, neutral mine drainage, metal(loid) leaching (including radionuclides), and/or radioactivity, as described in section 8.6.2 Effects to groundwater and surface water.

8.3.3 Mitigation and enhancement measures

8.3.3.1 Joint requirements and information

The Impact Statement must:

- describe the conceptual approach to operational testing to identify and manage potentially acid generating, metal(loid) leaching (including radionuclides), and/or radioactive mine waste during mine construction and operations, if applicable;
- describe methods for the prevention, monitoring, management and control of acid rock drainage, neutral mine drainage, metal(loid) leaching (including radionuclides), and/or radioactivity during all project phases and for all material with the potential for acid-rock drainage, metal(loid) leaching (including radionuclides) and/or radioactive rock;
- describe methods for the prevention, monitoring, management, and control of asbestos in airborne dust, including arfvedsonite (sodium amphibole), if needed; and
- describe tailings management strategies including:
  - characterization of tailings to be backfilled and tailings to be stored on surface;
  - the solid and liquid composition and volume of specific waste streams (including mineralogy and total organic carbon content for solid streams), and dissolved inorganic carbon, organic carbon, isotopic composition of water, and potential tracers of groundwater contamination for liquid streams;
  - feasibility and effectiveness of different reclamation strategies, such as the use of covers and consideration of their long-term performance, including after decommissioning;
  - identify the limits of proposed tailings treatment technologies at decommissioning; and
  - a plain language summary of options for, and approach adopted for tailings management.

8.4 Topography, soil and sediment

8.4.1 Baseline conditions

8.4.1.1 Joint requirements and information

The Impact Statement must:

- describe and map geomorphology (landforms) and identify landforms associated with important wildlife habitat features (such as elevated landforms, eskers, ridges, cliffs, rock outcrops, exposed bedrock, talus and other karst topography caves);
- describe the terrain, topography, soils and sediments within the study areas, including sediment stratigraphy. Provide surficial geology maps and cross-sections of appropriate scale;

- describe permafrost conditions including distribution of frozen and unfrozen ground, thermal conditions (ground temperatures), ground ice, thaw sensitivity and active layer thickness; and
- provide high resolution mapping of permafrost in the project area, including hazard/high-risk mapping.

8.4.1.2 Federal requirements and information

The Impact Statement must:

- provide maps depicting soil depth by horizon and soil order within the project area to support soil salvage and reclamation efforts, and to outline potential for soil erosion;
- describe the suitability of topsoil and overburden for use in the reclamation of disturbed areas, including an assessment of the acid generating potential of overburden to be used;
- describe the historical land use and the potential for contamination of soils and sediments;
- describe the interactions between permafrost, surface water and groundwater, and topography, as well as rock fractures and talik zones between different surface-groundwaters; and
- describe the potential for thaw settlement and terrain instability associated with ground thawing in permafrost areas.

8.4.2 Effects to topography, soil and sediment

8.4.2.1 Joint requirements and information

The Impact Statement must describe all effects of the Project on topography, soil and sediment including:

- potential effects to landforms, permafrost sites and ice, as well as potential for occurrence of avalanches along the access road;
- potential effects on soil quality and on groundwater, as well as appropriate mitigation measures to alleviate these potential effects;
- changes to general topography and the viewscape from locations of interest;
- potential and likelihood of problematic erosion from movement or redistribution of soil and overburden, vegetation clearing and watercourse diversions; and
- potential and likelihood of changes to soil quality and fertility, loss, and compaction.

8.5 Atmospheric, acoustic and visual environment

8.5.1 Baseline conditions

8.5.1.1 Joint requirements and information

The Impact Statement must:

- characterize the ambient air quality in the study areas and identify existing emissions and contaminant sources. Include a description of the impact of forest fires, if applicable, by referring to the Portrait statistique des feux de forêt published by the Ministère des Ressources naturelles et des Forêts du Québec and the Canadian National Fire Database;
- identify the characteristics of the atmospheric zone in which the Project is located, in particular the threshold values of the management levels according to the Air Quality Management System;
- identify and locate sensitive receptors on maps (e.g., communities, users of traditional territories, fauna and flora), the project footprint, as well as the main existing emission sources;
- provide baseline ambient air concentrations for contaminants in the study areas, in particular near key receptors (e.g., communities, traditional land users, wildlife) for the following:
  - total particulate matter (TPM);
  - particulate matter less than 2.5 microns ($PM_{2.5}$);
  - particulate matter less than 10 microns (PM_{10});
  - carbon monoxide (CO);
  - sulphur dioxide (SO_2);
  - nitrogen dioxide (NO_2) and nitrogen oxides (NOx);
  - ozone (O_3);
  - hydrogen sulphide (H_2S) and other reduced sulphur compounds;
  - volatile organic compounds (VOCs)[8], individual or an appropriate subset;
  - polycyclic aromatic compounds, including polycyclic aromatic hydrocarbons (PAHs), alkylated PAHs, PAH transformation products, including nitro and oxy-PAHs, and dibenzothiophenes;
  - metals (including rare earth elements and radioactive elements, such as thorium, uranium and their descendants);
  - crystalline sillica;
  - asbestos (chrysotile and amphibole);
  - any other relevant air pollutants from mobile, stationary or fugitive sources, including contaminants produced by the combustion of diesel fuel (e.g., acetaldehydes, formaldehydes, 1,3-butadiene, acrolein, benzene, diesel particulate matter (DPM));
- compare ambient air quality results with applicable regional, provincial and federal criteria and standards. For air pollutants with standards, the comparison must use the same averaging period and the statistical format associated with each numerical value;
  - standards include Canadian Ambient Air Quality Standards (CAAQS), National Ambient Air Quality Objectives, or relevant provincial criteria and standards. The proponent must refer to the CAAQS

[8] In addition to relevant VOCs, it is recommended to assess specific aldehydes that are associated with diesel exhaust, such as acetaldehyde formaldehyde, 1,3-butadiene, and acrolein, as well as benzene, for the evaluation of VOCs.

established by the Canadian Council of Ministers of the Environment (CCME) for $PM_{2.5}$, O_3, SO_2 and NO_2 for 2020 and 2025;

- describe deposition through either existing long term, or new monitoring data for a duration of a minimum of one year, including dust and acid deposition;
- describe the data collection methods and data source(s), including data validation and quality control methods;
- identify and address issues related to the quality of the monitoring data and seasonal variability in the baseline survey and determine ambient contaminant concentrations using complete, exhaustive and representative monitoring data, collected over an appropriate duration and geographic scope;
- if modelling is undertaken to understand baseline ambient air quality, then describe all relevant sources of baseline air emissions, including mobile, stationary and fugitive, and provide an inventory of all equipment sources of baseline air emissions. Describe the approach adopted;
- provide current ambient noise levels (and vibration levels, if applicable) at key receptor points, for all project components and activities (e.g., communities, traditional land users, sensitive human receptors, and wildlife), including the results of a baseline ambient noise survey and permissible noise levels for each receptor. The information on usual noise sources (natural or anthropogenic), their geographic extent, and temporal variations must be included. At the time of collecting baseline data for the study on ambient noise where there are human receptors, it is recommended that the following aspects be considered:
  - natural sounds;
  - soundscapes (see ISO 12913-1:2014. Acoustics — Soundscape — Part 1: Definition and conceptual framework);
  - expectations regarding quiet conditions in specific places or at specific times;
  - usual sleeping hours (the default assumption is 10 p.m. to 7 a.m.);
  - degree of baseline annoyance attributable to existing noise sources (e.g., vehicle traffic, aircraft, other industrial noise);
- justify the selection of and provide information on all noise sensitive receptors in the study areas, including any foreseeable potential receptor and the distance between the receptors and the Project;
- describe 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;
- describe night-time illumination levels during different weather conditions and seasons; and
- describe landscapes of interest, visual screens, and other components of the visual environment, and locate them on maps.

The proponent should consult the additional guidance for atmospheric environment provided in Appendix 1 - Additional Guidance.

8.5.2 Effects to the atmospheric, acoustic, and visual environment

8.5.2.1 Joint requirements and information

The Impact Statement must:

- provide a detailed description, including quantification, of emission sources of air pollutants listed under section 8.5.1. Baseline conditions, for all phases of the Project;
- provide detailed methodology and assumptions used to estimate emissions of air pollutants released:
  - all relevant emission factors should be provided and referenced;
  - for all applicable emission sources, include the assumed tier of emission standard for each emission factor applied;
  - provide details of the achievement of emission standards for all mobile and stationary engines used in the Project;
- use atmospheric dispersion modelling to predict the fate of air pollutants resulting from project-related emission sources, with a big enough domain to identify air quality impacts on all sensitive receptors, and provide appropriately scaled contour map(s)[9] plotting the predicted pollutant levels for all phases of the Project (see Appendix 1 - Additional Guidance)
  - determine whether the formation of secondary pollutants (pollutants which are not directly emitted but form when other primary pollutants react in the atmosphere) resulting from the Project under assessment has the potential to raise concentrations above baseline levels – if so, identify and characterize these pollutants;
- provide the rationale for the choice of the air quality atmospheric dispersion model, including the chosen model options, the type and magnitude of emissions, the characteristics of the sources, the terrain and the meteorology, or for why modelling is not being used to predict fate of air emissions;
- provide justification for all control efficiencies used to reduce emission rates of sources within the model, including details of all assumptions associated with the related mitigation measures, and their achievability;
- assess the uncertainty in the modelled air pollutant concentrations using relevant range of model inputs. All sources of uncertainty should be taken into account, including:
  - model uncertainty, including a consideration for how uncertainty in modeled predictions may vary spatially and temporally;
  - uncertainty in baseline concentration estimates, in the estimates of meteorological inputs, and in estimates of source emissions (from sources attributable to the Project, as well as sources not attributable to the Project);

[9] Extend contour maps within property boundary in areas where traditional land uses will be allowed to continue, if any.

- conduct a source contribution analysis to assess the relative contributions of project and non-project emission sources on pollutant concentrations at sensitive receptors. The source contribution analysis should be conducted for all pollutants that exceed 10% of the relevant guidance or standard value. Emission sources should be grouped into appropriate categories;
- assess effects to receiving environment through:
  - comparison of predicted air pollutant levels to the most stringent applicable federal or provincial air quality criteria and standards, including the CAAQS. Include the frequency of exceedances over the modelled periods. The assessment against CAAQS should be based on the principles of "keeping clean areas clean" and continuous improvement, and in the context of air sheds and air zones with the Air Quality Management System;
  - comparison with critical thresholds (consider current, historical loadings, buffering capacity, including Acid Deposition Critical Loads), and compare dust deposition with ambient deposition. However, it should be noted that there are no longer thresholds for dust fallout in Quebec. It is possible to use the thresholds of the old Quebec regulation;
  - comparison to other appropriate existing guidelines, objectives, or standards, where relevant. This includes regional and community-based air quality guidelines;
- model particulate matter emissions from unpaved road dust both with and without implementation of mitigation measures during the construction and operation phases. Mitigation measures with varying control efficiency scenarios should be modeled such as 50% and 70% control efficiency;
- describe additional analyses that were undertaken, if any, to predict the likelihood and quantity of asbestos (chrysotile and amphibole) contamination in dust;
- analyze and describe changes in air quality and noise levels at a scale and resolution that allow the results to be applied to the assessment of interdependent VCs, particularly for human health;
- describe changes in ambient vibration and sound levels resulting from the Project at potential receptor locations and how they might impact the perception of nonanthropogenic sounds. Describe the anticipated frequency and timing of changes in ambient vibration and other sound levels;
- for project activities that result or may result in an increase in sound emissions during any phase of the Project:
  - quantify sound levels at appropriate distances from any project components and/or activities and describe, for each contributing source, the timing (e.g., hours of night-time activities), number and duration of noise events, and their sound characteristics, including frequency spectrum;
  - provide the baseline hourly distribution of individual noise events at night compared to that of predicted individual noise events at night, at each receptor location;
  - describe the locations and characteristics of sensitive receptors, including species at risk;
  - compare the predicted increased noise level to acceptable standards;
  - describe consultation with regulators, stakeholders, community groups, landowners, and Indigenous groups about potential effects to the acoustic environment;
  - identify and justify the approach to determine the extent to which sound effects resulting from the Project are adverse;

- provide a description of any changes in nighttime light levels resulting from the Project:
  - quantify light levels at appropriate distances from any project facilities, including the timing (e.g., night hours), frequency, duration, distribution, and character of light emissions;
  - describe the locations and characteristics of the most sensitive receptors, including species at risk and areas favoured by Indigenous Peoples for the practice of traditional activities; and
  - describe engagement activities and, where appropriate, provide a record of engagement with regulators, stakeholders, community groups, landowners and Indigenous Peoples regarding potential effects on the visual environment.
- where there is public or Indigenous group concern associated with an increase in sound levels during construction and operation, provide a vibration and sound impact assessment, including an overview of the concerns; and
- describe any positive changes.

The proponent should refer to Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise and Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air Quality to ensure that it provides the information and analysis considered necessary to assess the Project's impacts on human health in relation to changes to the sound environment and air quality. It is requested that the proponent complete the checklists provided in these guides (Appendix B in the noise guide and Appendix A in the air quality guide) to assist participants in verifying that the main elements of a noise or air quality impact assessment have been completed and in identifying the location of this information in the Impact Statement. These checklists will facilitate the review of the Impact Statement and will be particularly useful if analyses on these aspects are found in several sections of the Impact Statement.

8.5.3 Mitigation and enhancement measures

8.5.3.1 Joint requirements and information

The Impact Statement must:

- describe all methods and practices to be deployed to reduce and control air contaminants emissions. If the best available technologies are not included in the project design, the proponent should provide a rationale for the technologies selected;
- provide a description of existing and planned measures to reduce odours and dust, including a description of improvements to existing infrastructure, as applicable;
- document and justify how the contaminant emission reduction efficiencies were applied in the calculation of emission rates, including details of all assumptions associated with these mitigation measures and their feasibility;
- provide a description of additional measures to be implemented specifically to manage asbestos in airborne dust, if necessary;
- provide a description of participation in national or regional air emission tracking and reporting programs (e.g., National Pollutant Release Inventory) or provide rationale why participation is not required;

- provide an air quality management plan (i.e., sources of air pollution, current air contaminant mitigation measures, performance effectiveness of air contaminant control devices);
  - the air quality management plan must take into account the principles of continuous improvement, good practice and the protection of unpolluted areas in the context of airsheds and air zones;
  - the air quality management plan must include a dust management plan describing air pollution sources, standard mitigation measures for air contaminants (including a detailed complaint resolution process), the efficacy of air contaminants control measures, best practices and continuous improvement programs. The dust management plan must outline the need for monitoring, either for model validation purposes or due to concerns raised by participants, and describe the opportunities for Indigenous Knowledge holders to participate in the development of the plan;
- provide a description of any ambient air quality monitoring to be implemented to verify predictions from modeling results and to confirm the effectiveness of mitigation measures;
- develop strategies compliant with regional and national commitments, such as the CCME's commitment regarding pollution prevention;
- provide a noise management plan, including identification of the noise sources, common noise mitigation measures, the performance efficiency of the noise control devices, the best practices programs, and the continuous improvement programs, and establish the need for follow-up monitoring for the purposes of validation of the model or due to any concern raised by participants including a complaint resolution process as appropriate; and
- provide a lighting management plan, including the planning and management of lighting and of the ambient light for every activity site and the consideration of measures for the reduction of excessive light during construction and operation. Consider the following options of measures for lighting management:
  - avoid or minimize the use of artificial light;
  - select low-intensity lighting;
  - use lighting fixtures that limit or concentrate the lighting to targeted areas and avoid light spilling out of the spaces to be illuminated;
  - limit the projection of light toward the sky by using fixtures that produce dark, uniform lighting that meets actual lighting needs;
  - avoid the emission of light at more than 90 degrees; and
  - avoid lights that emit blue/green/white/UV wavelengths.

8.6 Groundwater and surface water

8.6.1 Baseline conditions

8.6.1.1 Newfoundland and Labrador requirements and information

The Impact Statement shall describe the relevant components of the aquatic environment within the study areas, including, but not limited to, the following:

- protected public water supply areas, protected wellhead areas, unprotected public drinking water source areas;
- surface water flow and groundwater movement, delineation of drainage basins including wetlands and sources of those resources proposed to supply Project construction activities, operations and the storage and handling facility;
- biological diversity, composition, abundance, distribution, population dynamics, and habitat utilization of fish, and invertebrates; and
- marine navigation (e.g., commercial and recreational boat traffic) and identification of the marine transportation route for incoming supplies associated with the Project, and outgoing mining products;

Water resources and use in the project area is part of the fish and fish habitat baseline study. This baseline study must describe the water resources and wetlands that may be affected by the Project and that are within the jurisdiction of Newfoundland and Labrador, including the following:

- hydrological features such as watershed areas and the location of rivers and river inputs;
- surface and ground water resources;
- water quality;
- surface water flow, groundwater movement, base flow and aquifer recharge zones;
- hydrologic/hydrogeologic assessment of the water supply, including all testing results for quantity and quality, including metals;
- groundwater and surface water monitoring plan to ensure the long-term security of the water resources. Hydrogeological assessment and groundwater monitoring program will require the drilling of appropriate number of monitoring and production wells; and
- survey of existing public drinking water source areas that may be affected, including watershed or recharge areas and characteristics, land cover assessment, and a water quality assessment.

The information required above as part of the fish and fish habitat baseline study is needed to inform modeling to determine whether the planned water withdrawal from the industrial water supply can sustain the project requirements for its projected lifetime, and the effects of the water withdrawal on water quality, water quantity and other users of the supply.

The fish and fish habitat baseline study shall characterize the wastewater and estimate the annual volume of effluent discharge, describe the capacity of the receiving environment describe the receiving environment

for wastewater discharged during the mine's operation. The baseline study shall enumerate stream discharge measurements and water quality parameters upstream and downstream of affected waterbodies.

8.6.1.2 Federal requirements and information

Requirements for the characterization of baseline groundwater and surface water conditions in an Impact Statement will vary depending on the type of project. They will be commensurate in emphasis and detail with potential effects on groundwater and on surface water. Requirements listed here are in a sequence corresponding to the steps of a coupled, groundwater–surface water characterization study.

The Impact Statement must:

- provide complete hydrometeorological information (temperature, precipitation, evapotranspiration), based on data from nearby weather stations or from a weather station on site;
- describe and illustrate on one or more topographic maps, at appropriate scales, the drainage basins in relation to key project components. On the map(s), identify all waterbodies and watercourses, including intermittent streams, flood risk areas, wetlands, watershed and sub-watershed boundaries, and direction of flow;
  - if applicable, indicate the intended locations of water crossings and watercourse diversions;
- provide a list of all waterbodies and watercourses (permanent, intermittent and ephemeral) that may be directly or indirectly affected by the Project. Provide a table that groups waterbodies and watercourses by sub-watershed and provides the following information about each:
  - type of watercourse impacted (e.g., lotic or lentic system, lake, river, pond, temporary or permanent stream);
  - size of the waterbodies and watercourses, as applicable (e.g., width at the ordinary high water mark, length or area); and
  - navigability of waterbodies and watercourses impacted;
- provide flow hydrographs and corresponding water levels for nearby streams and rivers including any site-specific rating curves (and manually collected flow/level data), if available, showing the full range of seasonal and inter-annual variations; as well as seasonal low-flow for baseflow quantification;
  - hydrographs may be based on data from nearby gauging stations or from gauging stations on site if appropriate rationale is provided to explain its applicability; and
  - approach used should take into account the need to provide information for use in fish habitat characterization and effects assessment as guided by the Canadian Science Advisory Secretariat's Framework for Assessing the Ecological Flow Requirements to Support Fisheries in Canada;
- provide stage hydrographs for lakes expected to be affected by the Project showing the full range of seasonal and inter-annual water level variations;
- for each waterbody and watercourse potentially affected by the Project, provide a description of ice cover, thickness and conditions and the timing of freeze-thaw cycles;

- provide for each waterbody potentially affected by the Project, bathymetry, maximum and mean depths, vertical profile information, information on stratification and turnover, and sediment composition (e.g., particle size analysis and sediment quality);
- provide the design flood at each water crossing;
- provide details on the hydraulic design of the water crossings;
- using traditional field and mapping techniques, provide a delineation and characterization of groundwater–surface water interactions, including an identification of groundwater-dependent ecosystems, wetlands, discharge, and recharge areas that are potentially affected by the Project;
    - the chosen field and mapping techniques should take into account the potential effect that changes to groundwater-surface water interactions have on fish and fish habitat;
- describe permafrost conditions and taliks and their influence on groundwater–surface water interactions with consideration to potential for effects on surface water quality;
- develop a quantitative surface water balance for watersheds potentially affected by the Project, detailing water intake and outflow to the environment;
- describe the surface water, groundwater and sediment quality baseline characterization program, including sampling site selection and locations (upstream, within the zone of influence of the Project, and downstream), monitoring duration and frequency, sampling methodology, and analytical protocol, including quality assurance and quality control measures;
    - describe the incorporation of any applicable historical data or existing information;
    - describe existing data sources and data collection methods, and provide a rationale for why the chosen data, methods, and analyses were deemed appropriate for the Project; and
    - characterization program should include sampling locations within the project area, LSA, and RSA, and should include reference locations that are unlikely to be impacted by the Project;
- provide baseline data for relevant physicochemical parameters and chemical constituents for surface water, groundwater, and sediment quality;
    - physicochemical parameters may include temperature, pH, electrical conductivity, dissolved oxygen, turbidity, total suspended solids, total hardness, total dissolved solids;
    - relevant chemical constituents may include the mineralization of rare earth elements (including yttrium), major and minor ions, total and dissolved trace metals (including arsenic), radionuclides (including thorium, uranium, and their descendants), zirconium, beryllium, niobium, total mercury, methylmercury, polycyclic aromatic compounds, nutrients, organic and inorganic compounds, or other compounds of potential concern; and
    - water sample collection and analysis should use appropriately sensitive detection limits and the data should illustrate the seasonal and inter-annual variability in baseline surface water quality with sufficient years of baseline data to fully characterize natural variability, including possible variabilities due to groundwater–surface water interactions;

- describe baseline concentrations for relevant physicochemical parameters and chemical constituents in relation to applicable water quality and sediment guidelines[10];
- identify groundwater-producing strata (coarse-grained sediments and permeable bedrock) that may be affected by the Project. Where current domestic, communal, or municipal water wells access these strata, their distance from the Project must also be marked and added to the map;
- provide a summary of key groundwater monitoring wells within the RSA used to inform the conceptual model, and identify their location, groundwater quality information and monitoring frequency. Provide representative hydrographs showing the range of seasonal and inter-annual water level variations and indicate any spatial variation in the RSA;
- describe the hydrostratigraphic units (aquifers, aquitards, aquicludes) of the hydrogeological environment in both bedrock and overburden and provide a piezometric map showing heads groundwater elevations and the direction of groundwater flow for the various hydrostratigraphic units;
- describe the structural geology of the hydrogeological environment, including major faults, fracture density and orientation with respect to groundwater flow directions, and magnitudes;
- describe the groundwater flow boundaries of the hydrogeological environment, including groundwater divides and boundaries with surface water;
- provide the hydraulic properties of the hydrostratigraphic units, including data on hydraulic conductivity, specific storage, transmissivity, storativity, saturated thickness, porosity, and specific yield, as applicable;
- provide hydrogeological maps and cross-sections of the study areas showing hydrostratigraphic units, water table elevations, potentiometric contours, interpreted groundwater flow directions, groundwater divides and areas of recharge and discharge;
- present a conceptual model of the hydrogeological environment, including a discussion of geomorphic, hydrostratigraphic, hydrologic, climatic, and anthropogenic controls on groundwater flow;
- present a 3-dimensional numerical groundwater flow model developed for the project area based on the conceptual model of the hydrogeological environment;
    - state limitations, and assumptions in the modelling approach, including calibration methods, model validation and accuracy;
    - calibrate the numerical model to baseline hydrogeological conditions using groundwater level and stream flow monitoring data, along with the delineation and characterization of groundwater-surface water interactions from the field investigation, and provide metrics and graphs describing the quality of the calibration that was achieved and discuss how spatial variability is considered in model calibration;
    - analyze the sensitivity of key model outputs to hydraulic properties and climatic parameters such as recharge, and describe uncertainty within the model as it relates to model assumptions; and

[10] Because many contaminants of potential concern (COPCs), such as fluoride, are more readily mobilized in mine wastes than in their in-situ state, it is recommended to consider lowering the reported detection limit (RDL) below the Canadian Water quality Guideline value for the protection of aquatic life.

- using the calibrated numerical model, provide a baseline groundwater budget including groundwater discharge to / recharge from waterbodies and watercourses, particularly those identified in the delineation of groundwater-surface water interactions, and any anthropogenic withdrawals;

- present a conceptual model for the hydrological environment, as appropriate to describe baseline conditions for surface waters. The model should be developed to support the assessment of potential changes to water and sediment quantity and quality in watercourses, waterbodies, and wetlands, with input from regulators and Indigenous groups; and
- explain how baseline data were gathered, and modelling developed, at a scale and resolution that allows for the application of results about groundwater and surface water to the assessment of interrelated VCs, notably for fish, birds and other wildlife, their habitat and their health, as well as human health, and the current use of lands and resources for traditional purposes.

8.6.2 Effects to groundwater and surface water

8.6.2.1 Newfoundland and Labrador requirements and information

The Impact Statement must include a comprehensive analysis of the effects of the Project on surface waterbodies, wetlands and groundwater aquifers, permafrost, including but not limited to the following:

- changes in nearby surface and groundwater quality and quantity resulting from water withdrawals from the Project, including potential effects on industrial and other users of nearby surface water and groundwater aquifers;
- effects of water withdrawal for construction and operations on surface water flow, groundwater movement and aquifer recharge zones;
- effects of project infrastructure on water quality in protected public water supply areas, protected wellhead areas, unprotected public drinking water source areas, and private water sources;
- effects of wastewater discharge from any treatment needed to produce required water quality on receiving environment; and
- capacity of the receiving environment to manage wastewater discharge from the facility.

8.6.2.2 Federal requirements and information

The Impact Statement must:

- describe the effects of the Project on surface and groundwater, for each phase of the Project, including effects related to:
  - project use of surface water or groundwater resources;
  - changes to water flow or watercourse diversions; and
  - discharge of water, effluent, wastewaters (including wash water), or other substances to the environment;

- discuss physical changes to watersheds, including alignment and condition of waterbodies and watercourses (permanent, intermittent and ephemeral), including those created, removed or altered by the Project;
- describe the effects on the navigability of waterbodies and watercourses, including navigation safety, from project components (e.g., water crossing structures) and from physical and hydrological changes to surface water;
  - describe consultation with regulators, waterway users, and Indigenous groups regarding navigability of waterways, issues raised and how they were addressed;
- quantify the extent of hydrological changes resulting from disturbances to groundwater and surface water features for each phase of the Project, taking into account climate change (see also sections 8.12 Climate change and 12 Effects of the Environment on the Project). This includes changes to the quantity or timing of surface flow, water levels, ice thickness or extent, sediment input, and channel regime in watercourses, and water levels in affected waterbodies;
- present an integrated site water balance model incorporating surface and groundwater fluxes to or from all major project components, for all project phases. Include estimates of surface water runoff rates for major project components;
- indicate the groundwater and surface water withdrawal requirements during all phases and specify:
  - the timing, quantity, location(s), and quality of water withdrawn from the environment (flow rates and annual volumes);
  - any treatment carried out on these waters (e.g., addition of a tracer); and
  - the conditions under which this water is released into the receiving environment;
- present key flow rates for all project components and water management structures, including inflow, outflow or surface runoff from storage piles, dredge materials, contaminated material storage, and tailings management facilities;
- present a comprehensive site water management plan for the Project's life cycle, including for;
  - water inflows and outflows from project site;
  - water diversion;
  - process water management;
  - stormwater management, including flow direction;
  - water management for all project components (such as collection ponds, runoff and contact water ditches, pit dewatering, road dust control);
  - mine flooding strategies, if applicable, including identification of the watercourse where pit water will flow; and
  - any input or loss of water on site (evaporation and precipitation, including snow accumulation);
- present a 3-dimensional numerical groundwater flow model of the hydrogeological system that incorporates all major project components such as the open pit, waste rock piles, tailings management facilities, dewatering wells, and water diversion ditches:
  - the model should be based on the calibrated model used to describe baseline conditions; and

- the use of telescopically refined groundwater flow models is recommended in the vicinity of open pits and tailings management facilities;

- using the 3-dimensional numerical groundwater flow model:
  - estimate key project fluxes, including open pit or mine inflow rates, pit or mine dewatering rates, pit or mine-flooding rates, and tailings and waste storage (including in-pit storage) seepage rates during operations and maintenance, and decommissioning and rehabilitation phases;
  - estimate seasonal changes to surface water and groundwater regimes during operations and maintenance, and decommissioning and rehabilitation phases, including effects of groundwater depressurization and dewatering of water bearing units, effects on groundwater-surface water interactions, effects on wetlands, effects on potable supplies, and effects on natural flow divides;
  - describe the direction, quantity, timing, and receptors for any groundwater seepage associated with project facilities during the operations and maintenance, and decommissioning and rehabilitation phases including the waste rock stockpiles, the low grade ore stockpiles, the tailings management facility, and the flooded/backfilled open pit, using particle tracking, piezometric contours, and water balance quantification;
    - describe if and when the flooded pit will decant to Lac Brisson during the post-closure period;
    - describe the fate of seepage from various stockpiles and cemented tailings during the post-closure period;
  - quantify any changes in groundwater discharge to surface water, or surface water recharge to groundwater, relative to the calibrated baseline conditions for the operation and maintenance, and decommissioning and rehabilitation phases;
- clearly indicate and describe any output from the groundwater flow model used within the integrated site wide water balance and/or water quality model, or in the assessment of other VCs;
- describe the contaminants associated with the Project, and their spatial and temporal locations. Characterize how they could affect surface and groundwater quality, including information on the source(s) of any contaminants (including rare earth elements, other metals, fluoride, sulfate and high total dissolved solids), and their transport and fate in the hydraulic environment;
- describe the downgradient flow of groundwater affected by the Project, with the use of figures showing piezometric contours, drawdown contours, and particle tracking results;
- describe the contaminant attenuation capacity within the hydrogeological units in the project area. With this input, assess the potential for off-site groundwater and surface water contamination. Alternatively, the proponent may conservatively assume no attenuation capacity, but must still describe, in detail, potential degradation products (i.e., daughter products) that may result from attenuation and other processes during groundwater flow;
- describe the potential changes to surface water, groundwater or sediment quality related to the Project including:
  - potential changes to surface water quality due to surface erosion and sedimentation, from the removal of vegetation and changes to riparian, wetland, and terrestrial environments;

- potential changes to surface water quality due to the generation and deposition of dust and particulate matter and any contaminants they contain (such as metals, radionuclides, mercury, methylmercury), resulting from relevant project components and activities;
- changes to surface water and groundwater and sediment quality due to all discharges and effluents from the Project, including changes to physicochemical parameters (temperature, pH, salinity, dissolved oxygen), and relevant chemical constituents (including rare earth elements, zirconium, beryllium, niobium, and yttrium, major and minor ions, trace metals (including arsenic), radionuclides (including thorium, uranium, and their descendants), nutrients, organic compounds), and taking into account predicted changes to water quantity;
- potential changes to surface water, groundwater, and sediment quality resulting from acid rock drainage, metal(loid) leaching (including radionuclides) from mined or excavated material (including from quarries and borrow pits) tailings, stockpiles, and pit walls; and
- potential changes to surface water as a result of acidifying emissions from the Project and acid deposition, using the information provided to meet the requirements under section 8.5 Effects to Atmospheric, Acoustic and Visual environment;

- compare any changes to surface or groundwater quality to applicable guidelines, objectives or standards;
- provide the establishment of discharge concentration targets and an evaluation of the environmental risks of rare earth elements, niobium, and yttrium to water quality, sediments, groundwater, aquatic species, fish, and fish habitat during all phases of the Project. This should include the establishment of baseline concentrations in the environment, the development of source terms for all mine and processing waste streams, toxicity testing to support environmental guideline derivation, assessment of mine water treatment technology, and appropriate management of any mine or processing waste as needed to mitigate negative impacts to the environment. Health risks should also be considered when setting discharge concentration targets (e.g., to protect a drinking/recreational water source or to prevent contamination of organisms potentially consumed);
- describe the quantity and quality of all effluent streams released from the site to the receiving environment, for all phases of the Project, including effluent from treatment facilities, dewatering activities, seepage, surface runoff from project components and site, and from the flooded pit after decommissioning and abandonment;
  - compare the quality of all effluent streams to applicable guidelines, objectives or standards to better identify possible adverse effects on the receiving environment;
  - provide information regarding the effluent release limits which will be implemented to regulate the discharge of rare earth elements, radionuclides, and other metallic substances, for which there are no regulatory effluent limits or environmental guidelines established;
- using an integrated chemical mass balance model, and taking into account predicted changes to water quantity, describe predicted worst, base and sensitivity case changes caused by project activities to surface water, groundwater and sediment quality in the receiving environment, including but not limited to:

  - chemical loadings associated with acid rock drainage, neutral mine drainage, and/or metal(loid) leaching (including radionuclides) described in section 8.3.2. Effects to chemical release rates;
  - seepage from piles of material (including excavated materials from borrow pits and quarries) and tailings; and
  - watercourse and waterbody crossings, blasting, diversions, dewatering, water withdrawal, wastewater return, overflows from excavation, and surface runoff volumes and quality;
- compare the predicted worst, base and sensitivity case scenario changes to groundwater, surface, and sediment quality to baseline and applicable guidelines, objectives or standards;
- provide an assessment for off-site migration pathways for impacted groundwater, and an analysis of contaminant attenuation capacities within the hydrogeological units of the project area, including an assessment of the potential for the flooded pit to decant to Lac Brisson;
- describe locations at which potential changes to water or sediment quality will be assessed and how Indigenous input was considered, including:
  - all point and diffuse sources of discharges, including flooded pit discharge during and after decommissioning and abandonment;
  - immediate receiving environment for any point source or diffuse sources of discharges from the Project;
  - at outer boundary of mixing zone, defined as where the concentration of the parameters of concern reach applicable criteria within the receiver(s);
  - where the water quality from the immediate receiving environment begins to meet Water Quality Guidelines, or background levels for that contaminant;
  - at project area boundary;
  - at LSA boundary;
  - at RSA boundary; and
  - at locations that will enable an assessment and report of predicted residual water quality changes;
- analyze and describe changes to surface and groundwater at a scale and resolution that allows for the application of results to the assessment of interrelated VCs, notably for fish and fish habitat and human health. Carry forward the assessment of potential changes in water quality, as required in the following sections of the Guidelines; and
- provide a description of the specific effect of the northern climate on the efficiency of dedicated wastewater treatments, for both industrial and domestic wastewater from the mine site, the mobility of contaminants (metals, radionuclides, etc.) in groundwater, effects of effluent discharge under ice in Lac Brisson, and the design of water management infrastructures, as well as their monitoring and maintenance programs.

The proponent should refer to Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment: Drinking and Recreational Water Quality to ensure that it provides the information and analysis considered necessary to assess the Project's effects on human health in relation to changes to water quality. It is requested that the proponent complete the checklist provided in this guide

(Appendix A) to assist participants in verifying that the main elements of a water quality impact assessment have been completed and in identifying the location of this information in the Impact Statement. This checklist will facilitate the review of the Impact Statement and will be particularly useful if analyses on this aspect are found in several sections of the Impact Statement.

8.6.3 Mitigation and enhancement measures

8.6.3.1 Newfoundland and Labrador requirements and information

The Impact Statement shall describe measures that will be undertaken to mitigate the effects of project operations on water quantity and quality of surface waterbodies, groundwater aquifers and wetlands in and adjacent to the project area, including but not limited to the following:

- changes in nearby surface and groundwater quality and quantity resulting from water withdrawals from the Project, including potential effects on industrial and other users of nearby surface water and groundwater aquifers;
- effects of water withdrawal for construction and operations of the access road and the storage and handling facility and project operations, on surface water flow, sea water, groundwater movement and aquifers;
- effects of project construction and operations on water quality in protected public water supply areas, protected wellhead areas, unprotected public drinking water source areas, and private water sources;
- effects of wastewater discharge from any treatment needed to produce required water quality for any desired use, on receiving environment; and
- capacity of receiving environment to manage wastewater discharge.

Groundwater and Surface Water Monitoring Program:

- A groundwater and surface water monitoring plan must be described that ensures the long-term security of the groundwater resources and must include a groundwater monitoring program that will require the drilling of an appropriate number of monitoring and production wells.

8.6.3.2 Federal requirements and information

The Impact Statement must:

- for all phases of the Project, describe the mitigation measures for the possible effects on the quantity and quality of surface water, groundwater, and sediment, including water supply wells, and provide a rationale with quantitative and qualitative evidence that explains the effectiveness of proposed measures;
- describe any applicable water quality treatment measures and provide evidence supporting the effectiveness of these measures (refer to Mine Environment Neutral Drainage report 3.50.1), including predicted inflow and outflow concentrations for relevant water quality parameters;
- provide the details of mitigation measures comprised in water management plans proposed for waterbodies and watercourses likely to be affected during all phases of the Project, including measures

applicable to water use minimization, and measures applicable to passive seepage after decommissioning and abandonment (after the removal of the water treatment plant);

- describe and justify water use for the Project and the measures that will be taken to eliminate or reduce the adverse effects, including the supply and discharge of water, and potential exchanges between watersheds;
- if the final details of the hydrostatic tests have not been confirmed yet, the proponent nonetheless must specify the expected requirements, the options available and the criteria it intends to apply to assure protection of water resources;
- describe groundwater and surface water monitoring programs during, as applicable, the construction, operation and maintenance, decommissioning, and the rehabilitation phases, including:
  - the proposed monitoring points to assess changes to surface water quality, which should include monitoring at all point and diffuse sources of discharge and in the immediate receiving environment, and at the boundaries for the outer mixing zone, the project area, LSA and RSA;
  - the proposed monitoring points to assess changes to surface water quantity, which should include watercourses and waterbodies with the potential for flow reductions;
  - the proposed monitoring points to assess changes to groundwater quality and quantity, which should include well locations and depths;
  - the parameters that will be measured, the duration and frequency of monitoring and reporting, the sampling protocol and analysis protocol, and the quality assurance and quality control measures; and
  - the proposed plans and measures that will be implemented if the criteria are exceeded, including after the water treatment plant is no longer in operation;
- describe any specific monitoring program planned during construction, including assessment of effects before and after construction activities in order to optimize or adapt mitigation measures at the time of their application; and
- describe methods for managing the seepage and runoff from project components (road, port, and mine infrastructures) and indicate how it will be collected, managed, and monitored, during all phases, including overflow from the flooded pit. In the event of uncertainty with predictions or effectiveness of measures proposed, detail an adaptive management plan to meet requirements under section 15 Adaptive management.

8.7 Vegetation, riparian and wetland environments

8.7.1 Baseline conditions

8.7.1.1 Joint requirements and information

The Impact Statement must:

- describe vegetation biodiversity and map the distribution of vegetation species and/or plant communities within the study areas, including, but not limited to:
  - rare vegetation species and/or plant communities or of limited distribution;
  - vegetation species and/or plant communities of importance to Indigenous Peoples; and
- map, describe, and quantify (including the relative abundance) riparian areas and wetlands (e.g., shallow open water, swamps, fens, marshes, bogs) within the study areas.

8.7.1.2 Newfoundland and Labrador requirements and information

Wetlands are defined as the wetlands within the vicinity of the Project or that could be affected by the Project. They have been included as a VC because of their importance to project planning and potential to be affected by project activities.

Wetlands within the project areas shall be classified according to the Canadian Wetland Classification System (National Wetlands Working Group 1997). Efforts should focus on collection of data for wetlands with the greatest potential to be affected (i.e., within the project footprint), while collecting data at the appropriate scale for regional comparisons. An overview of the key plant communities and animals that rely on wetlands shall be presented.

8.7.1.3 Federal requirements and information

Note that requirements for vegetation, riparian and wetland environment apply to species at risk (such as plants and amphibians). Additional requirements specific to species at risk are included in section 8.11, Species at Risk, and must be taken into account in the Impact Statement. The proponent should also consult the additional guidance for requirements pertaining to species at risk provided in Appendix 1 – Additional Guidance.

The Impact Statement must:

- determine whether the riparian areas and wetlands identified within the study areas are habitats for fish, migratory birds, species at risk, or species of importance to Indigenous Peoples;
- identify riparian areas and wetlands of importance to Indigenous Peoples;
- describe the current level of both anthropogenic and natural disturbance associated with vegetation, riparian areas and wetlands, including a description of:
  - level of habitat fragmentation and loss; and

- historical and current disturbances such as fire, flooding, insect infestations, etc.

8.7.2 Effects to vegetation, riparian and wetland environments

8.7.2.1 Newfoundland and Labrador requirements and information

The Impact Statement must include a comprehensive analysis of the effects of all phases of the Project on flora associated with, but not limited to, emissions, discharges and releases of substances;

The Wetlands Baseline Study shall describe the potential effects to any waterbodies within the project footprint and discuss, at a minimum, the following:

- the adverse environmental effects of the Project on wetlands shall be assessed for all phases of the Project, as well as accidental events. Wetland alteration is defined as changes to the wetland class or form, or changes to the performance of wetland functions resulting from disturbance to vegetation, soils, or hydrology. Wetland loss is defined as conversion of wetland to non-wetland (e.g., upland, lake, pond or watercourse) due to infilling, excavation or alteration to the hydrology. Wetland loss and wetland alteration shall be assessed within the context of wetland supply and wetland function.
- in conducting the analysis, the Impact Statement should consider relevant federal, provincial, municipal and local acts, policies, guidelines and directives relating to wetlands.
- further guidance related to the assessment of effects to wetlands can be found in the Environment Canada publication Wetland Ecological Functions Assessment: An Overview of Approaches (Hanson et al., 2008) and in Wetland Mitigation in Canada: A Framework for Application (Cox and Grose, 2000).

8.7.2.2 Federal requirements and information

The Impact Statement must describe the effects of the Project on vegetation and the riparian and wetland environments that are habitats (potential or confirmed) for fish, migratory birds, species at risk, or species of importance to Indigenous Peoples. In particular, the proponent is expected to:

- describe all potential effects, for all phases of the Project, to vegetation and to the riparian and wetland environments used as habitats by fish, migratory birds, species at risk, and species of importance to Indigenous Peoples. For instance, the Impact Statement should include potential effects caused by:
  - introduction of invasive species;
  - hydrological changes, either permanent or temporary, that could alter the habitat function; and
  - contaminations from project emissions in atmospheric environment and surface waters;
- quantify and map the area of vegetation communities, riparian, wetland environments used as habitats by fish, migratory birds, species at risk, and species of importance to Indigenous Peoples, that may be cleared or otherwise disturbed within the study areas during all phases of the Project, including a description of the disturbance and changes.

8.7.3 Mitigation and enhancement measures

8.7.3.1 Newfoundland and Labrador requirements and information

The Impact Statement shall describe measures that will be undertaken to mitigate the effects of all phases of the Project on flora, associated with, but not limited to, emissions, discharges and releases of substances.

The study shall describe the measures that will be applied to mitigate effects on wetlands and predict residual adverse effects. Proposed mitigation should be consistent with the provincial policy directive, Policy for Development in Wetlands (www.gov.nl.ca/ecc/waterres/regulations/policies/wetlands/). The Impact Statement should provide justification for situations where avoidance of wetlands is not possible.

8.7.3.2 Federal requirements and information

The Impact Statement must describe the mitigation measures for the potential effects on vegetation and on riparian and wetland environments that are habitats (potential or confirmed) for fish, migratory birds, species at risk, or species of importance to Indigenous Peoples. In particular, the Impact Statement must:

- describe and justify the construction methods used to cross riparian and wetland habitats, and the criteria for determination of techniques proposed for each crossing, including the locations where trenchless crossing methods will be employed; and
- describe and justify the ways of avoiding or reducing the temporary or permanent adverse effects on wetlands and riparian habitats.

8.8 Fish and fish habitat

8.8.1 Baseline conditions

8.8.1.1 Joint requirements and information

The Impact Statement must:

- prepare a list of all waterbodies and watercourses (permanent and intermittent) that may be directly or indirectly affected by the Project and assess the potential of fish habitat and the potential presence of fish;

For the access road between the Labrador coast and the airport intersection at the mine site:

- using aerial and satellite imagery, publicly available information, watercourse connectivity, existing literature and professional knowledge, identify potential waterbodies and watercourse crossings that may be directly or indirectly affected by the access road;
- conduct a desktop analysis of digital satellite imagery to characterize fish habitat at the proposed crossing locations or potentially affected waterbodies;

- using aerial and satellite imagery, characterize fish habitat at all watercourse crossing locations, including:
  - channel status (visible or not visible);
  - habitat type;
  - estimated width;
  - riparian vegetation;
  - dominant substrate, slope; and
  - adjacent relevant features;
- classify, based on stream order, all watercourse sizes as small, medium, or large;
  - use existing available literature to characterize fish communities by species and life stage; and
  - identify critical and sensitive habitats for spawning, nursery, rearing, feeding and migration;
- using aerial and satellite imagery, assign a dominant substrate type at all watercourse crossing locations based on substrates visible from satellite imagery (e.g., boulders or bedrock). Where substrates are not visible, assign substrate based on the type of riparian vegetation present at the crossing. Assignments should be based on professional experience from numerous field surveys, where substrate type was found to be generally related to the type of riparian vegetation present or channel slope. The following assumptions of substrate type can be applied when characterizing fish habitat from satellite imagery where substrates were not readily visible, unless professional judgment indicated otherwise:
  - fine substrates are typically associated with wetland riparian vegetation;
  - mixed substrates (i.e., fine and coarse) are associated with shrub riparian vegetation; and
  - coarse substrates are associated with treed riparian vegetation ponds;
- identify all waterbodies and watercourse crossings along the access road that have been selected to be further characterized through field surveys and provide rationale for selection. Include maps;
- for all waterbodies or watercourse crossings that have evidence of fish presence and/or sensitive fish areas, including potential or confirmed habitat function, and have the potential to be directly or indirectly affected by the access road, conduct baseline characterization, description of effects and mitigation measures for a representative subset of fish bearing crossings as per the guidelines outlined below for all other project components; and
- engage with Fisheries and Oceans Canada regarding ongoing and additional data collection along the access road to support requirements under the *Fisheries Act*.

For the remaining project components and activities (i.e., at the mine site, port, and marine transport) and for crossings along the access road identified as having potential for fish habitat and that have been selected for further characterization, provide the following information. The requirements apply to all fish and fish habitat (freshwater and marine), unless otherwise indicated:

- type of waterbody or watercourse;
- size and depths of the waterbody or watercourse (for freshwater include permanent and intermittent);

- for each potentially affected waterbody or watercourse that has the potential to be frequented by fish, provide the location, distribution, condition and surface area of potential and confirmed fish habitat and a detailed assessment of physical and biological habitat characteristics. Present information as maps using satellite imagery overlaid with relevant information and text description, with associated summary tables. Relevant physical and biological habitat characteristics for fish habitat include:
  - for freshwater fish only: surface water and groundwater characteristics requested in Section 8.6.1 Baseline conditions;
  - for marine fish only: marine water, sediment, and coastal geomorphology characteristics, as requested in Section 8.13.1 Baseline conditions;
  - for freshwater fish only: for watercourses: streamflow types and characteristics, Strahler stream order, and presence of natural barriers (e.g., significant vertical drop, impassable waterfalls or sections of smooth sloped bedrock extending over significant distance) or existing anthropogenic barriers preventing or limiting free passage of fish. Barriers must be documented (size, state, photos) and their crossing must be evaluated;
  - for freshwater fish only: for waterbodies: bathymetry, maximum and average depths, seasonal water levels variation and water quality characteristics (e.g., temperature and oxygen depth profiles, turbidity, pH);
  - substrate type and characteristics (including sediment quality, material size and total organic compounds composition), freshwater and marine vegetation, bank stability, shoreline, future flood risk areas, light penetration, presence of woody debris, presence of beaver dams, stream segment type (riffle, run, pool), and Strahler stream order, natural or anthropogenic barriers to fish, and geomorphological features and processes;
  - for freshwater fish only: biological productivity estimates, including benthic invertebrates and planktonic communities, in addition to associated temporal and spatial variations;
  - habitat use or suitability for fish present, including potential or confirmed habitat function (e.g., spawning, nursery, growth, prey, invertebrate population, food availability, foraging, movement and migration, cover habitat, thermal and overwintering habitat), habitat quality and sensitive times for these activities, and seasonal variability in habitat use; and
  - extent of existing habitat disturbance (e.g., fragmentation);
- for each potentially affected waterbody or watercourse, provide a detailed description of potentially affected fish species and populations (freshwater and marine fish, including any diadromous or migratory species);
  - for freshwater fish only: provide baseline measurements of contaminants in fish;
  - for freshwater fish only: describe the associated life stages based on recent field inventories, standardized experimental fisheries or available data (e.g., public databases, fisheries data, Indigenous Knowledge resulting from consultation and mobilization activities with communities impacted by the Project); and
  - for freshwater fish only: where data is used to generate biodiversity metrics (e.g., abundance, richness, diversity, density), provide rationale on the choice of metrics based on their applicability for use in the effects assessment and associated follow-up, if applicable;

- for freshwater fish only: describe parameters and ecological processes relevant to predicted effects on fish present. Relevant parameters and ecological processes may include: migratory patterns, food webs and trophic levels, structural and functional linkages (e.g., predator-prey interactions), life history and population dynamics, sensitive habitats and periods, behaviour or other relevant ecological processes that fish depend on to carry out their life history;
  - use either a qualitative or a quantitative approach to characterize ecological processes, as appropriate, and include a rationale to support the selected approach;
- identify and describe the data sources used, including information on data collection and project specific baseline surveys (e.g., gear and catch methods, location of sampling stations, date of catches, date of surveys, species surveyed, size and lifecycle stage, catch per unit effort) and how the results helped to characterize baseline conditions. It is recommended that the information be presented in the form of maps and tables;
- describe the historical occurrence, distribution and conservation status of fish;
- provide a summary of existing studies and research on potential effects of noise and vibrations on freshwater and marine fish, including behavioural impacts, for each phase of the Project, including from blasting (above ground and underground) and seismic activity;
- identify and describe sensitive fish and fish habitat areas (e.g., Atlantic salmon, ecologically and biologically sensitive marine areas) within the LSA and RSA, including along the shipping route, and include maps that demonstrate proximity of these areas; and
- identify, describe and locate on a map invasive aquatic species (fauna and flora).

For marine mammals only (while all the requirements above also apply to marine mammals, these below are specific to marine mammals only):

- provide a list of known marine mammal species that may be present in the defined assessment areas. Describe their abundance, distribution, times of year they are present, the ranges of the species, their habitat and their migration patterns;
- describe habitat use and suitability for marine mammals present, including habitat function (e.g., calving, growth, food availability, foraging, migration habitat, etc.) and sensitive times/seasonal variation in these activities;
- describe and provide any project-specific baseline surveys completed, including the methods used and how the results helped to characterize existing conditions;
- describe presence of important prey species and their abundance;
- describe and provide maps of any existing, designated or proposed special marine areas such as: marine refuges, marine conservation areas, ecological reserves and marine protected areas, within or in proximity to the project location, including the marine shipping areas that could be affected by routine project operations; and
- provide a summary of existing studies and research on the potential effects of underwater noise and vibration on marine mammals, as requested in Section 8.5.

8.8.1.2 Newfoundland and Labrador requirements and information

The Fish and Fish Habitat Baseline Study shall:

- classify and quantify fish habitat, as per the Standards Methods Guide for Freshwater Fish and Fish Habitat Surveys in Newfoundland and Labrador: Rivers & Streams;
- list any rare fish species and fish species at risk that are known to be present (as per the Species at Risk Act (SARA), NL Endangered Species Act, Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and Atlantic Canada Conservation Data Centre (ACCDC); and
- include Areas of Conservation Concern.

The proposed routes intersect numerous watersheds and small unnamed watersheds. This baseline study should include these watersheds. Watersheds that extend to tundra areas, although rich in fish diversity but low in productivity contain very sensitive refugia habitat, particularly for cold-water fish species. Atlantic salmon and Arctic char are reported to spawn in Ikadlivik and Reid brook and in the main stem up to Trout Pond. While there is limited information for Toma Brook, the Labrador Inuit Association has reported that Arctic char migrate up to the first lake on the system and this would also contribute to the char fishery in Voisey Bay. A thorough sampling program must be conducted for Trout Pond, regardless of the route taken since this is the major lake of production for the Ikadlivik system and all routes will intersect its tributaries. Sampling methodology should be consistent with previous Government of Newfoundland and Labrador sampling programs in the region to ensure that data are comparable. Full-scale habitat assessments documenting locations of spawning areas, nursery streams, and holding, resting and migration areas for both Atlantic salmon and Arctic char must be conducted prior to any project construction.

8.8.1.3 Federal requirements and information

Note that requirements for fish and fish habitat (baseline, effects, and mitigations requirements) apply to fish species at risk. Additional requirements specific to species at risk are included in section 8.11 Species at Risk, and must be taken into account in the Impact Statement. The proponent should also consult the additional guidance for requirements pertaining to fish and species at risk provided in Appendix 1 – Additional Guidance.

8.8.2 Effects to fish and fish habitat

8.8.2.1 Joint requirements and information

The Impact Statement must describe the potential effects of the Project on fish and fish habitat, as defined in subsection 2(1) of the *Fisheries Act,* and on marine plants, as defined in section 47 of the *Fisheries Act*. Consider any effects whether they are adverse or positive, direct or indirect, and temporary or permanent, for all phases of the Project, including from the release of effluent or the deposit of a deleterious substance to water frequented by fish, for all developmental stages of fish, and other aquatic species. Refer to Section 8.6 Groundwater and surface water for related water quality requirements to inform the assessment.

For each waterbody and watercourse, as well as the marine environment, potentially directly or indirectly affected by the Project that has the potential to be frequented by fish, the following must be documented and considered in the determination of effects:

- potential effects to fish and fish habitat, identify interactions between the Project and these effects, and outline indicators that will be used to measure these effects;
- geomorphological changes and their effects on hydrodynamic conditions and aquatic habitats (e.g., modification of substrates and vegetation, dynamic imbalance, long-term bank instability, silting of spawning grounds), including direct and indirect effects from habitat fragmentation;
- changes in groundwater and surface water conditions (including diversions, drainage, flow reductions, effluents and site water management) and their cumulative effects on fish habitat delineated by the Normal High-Water Mark (NHWM), fish communities and lifecycle activities (e.g., reproduction rearing, feeding, movements, migrations, winter refuge) and any changes to aquatic invertebrate communities;
- changes in waterbodies or watercourses potentially affecting the free passage of fish (upstream and downstream);
- changes in hydrological, hydrometric and oceanographic conditions and their effects on aquatic habitat and lifecycle activities (e.g., reproduction, rearing, feeding, movements, migrations, winter refuge) and any changes to aquatic invertebrate communities;
- changes to fish composition and population characteristics, including molluscs and crustaceans;
- changes to fish behaviour including movement/migration (upstream and downstream) and spawning, distribution, abundance, species health, reproduction and migration patterns;
- changes to riparian areas, littoral zone, or areas at higher elevation (e.g., the removal of vegetation causing higher flows of sediments), that could affect fish and fish habitat, and productivity;
- any alteration to accessibility or use of habitat, including residence and critical habitat;
- changes in primary and secondary productivity of waterbodies and how effects generated by the Project could affect fish food sources;
- risk of fish mortality, including that associated with:
  - noise and vibrations caused by blasting (above ground and underground) and other seismic activities in or near the aquatic environment; and
  - entrapment, impingement, crushing, burial or entrainment;
- potential introduction of aquatic invasive species, including pathogens, through project work, undertaking and activities, including relocation of species, including discussion of the frequency of those activities;
- any proposed fish relocation activities and the timing and methodology that will be used to undertake each fish relocation;
- changes to fish and fish habitat as a result of water quality changes described in section 8.6:
  - potential discharges to the aquatic environment; and

- effluent at the discharge point and in the receiving environment, and seepage and runoff from the mine not discharged through a discharge point (referencing the assessment of water quality in section 8.6 Groundwater and surface water);

- changes in potential contaminant levels in harvested species and their prey, with a focus on country foods harvested by Indigenous Peoples;
- changes in access to the area and increased access to fishing;
- for linear projects, describe and justify watercourse crossing techniques to be used and the criteria for determining the techniques proposed for each watercourse crossing; and
- any other changes resulting from the Project that may affect fish and fish habitat and marine plants.

The Impact Statement must:

- use a Pathways of Effects approach to determine potential effects to fish and fish habitat and marine plants;
- delineate anticipated habitat alteration, disruption or destruction (temporary or permanent) in terms of area, habitat type, sensitivity of habitat and impact, including for marine mammals. Habitat losses must be clearly located, described, delimited, and presented on a map at appropriate scales and in a table with area of loss represented. Delimitation must be assessed based on habitat characteristics (area, habitat type, habitat sensitivity and importance) and work, undertaking or activity characteristics;
  - in particular, consider the areas of natural habitat directly affected by dredging, blasting, digging or infilling work within the aquatic environment, if applicable;
- describe potential effects to fish and fish habitat, marine mammals, and marine plants, based on specific life history processes, population status, resilience in the face of change, dependence on specific habitat features, or limiting ecological processes or variables;
  - include an examination of the correlation between construction periods and sensitive periods for fish (e.g., reproduction), key fisheries windows for freshwater and anadromous/catadromous species, and any potential effects due to overlapping periods;
- describe potential effects to fish and marine plants from contaminants, including from bioaccumulation downstream of the Project. Include a comparison of predicted water quality for all project phases at all key locations in the receiving environment to applicable water quality guidelines, site-specific objectives or benchmarks, and relevant toxicity test results (either site-specific or published), or other applicable methods. Describe potential effects from contamination on fish and other aquatic species' behaviour, distribution, abundance, and migration patterns;
  - effects should be predicted or modelled using baseline measurements of contaminants in the complete food web (including water, invertebrates and prey fish), and by carbon and nitrogen stable isotope measurements in fish and the complete fish food web;
- describe how the effects on aquatic biodiversity may contribute to changes in regional biodiversity and effects on local and regional ecosystems including effects from changing water levels on the riparian zone;
- describe potential effects of marine traffic, vibrations and sound on marine species or populations (e.g., marine mammals, marine fish), including, but not limited to:

- risk of collision with vessels (ship strike and laceration);
- disruption of activities such as resting, feeding, calving, movement, migration;
- alteration or avoidance of habitat;
- fish and marine mammal behaviour, including injury and the physiological effects of underwater sound on individuals (e.g., underwater noise on acoustic masking of echolocation or communication calls);
- potential effects from contaminants in vessels discharge (e.g., ballast water, grey water, bilge water and scrubber effluent);
- increased turbidity; and
- ballast discharge and potential for introduction of invasive species;

- describe potential effects on marine animals (e.g., marine mammals, marine fish) behaviour, distribution, abundance, migration patterns, species health and reproduction from project activity, like marine shipping, ice-breaking activities, increase in noise and destruction of habitat;
- describe tolerance thresholds for potential adverse effects that the Indigenous Peoples have identified for species of cultural significance, and how they were considered in the assessment;
- describe any need for a *Fisheries Act* authorization and describe any consideration of Fisheries and Oceans Canada guidance documents; and
- describe any positive changes, such as habitat creation and, where applicable, provide information on re-stocking (including the number of fish) or creation of new habitat (including the new area created) and provide maps for proposed locations.

In addition to pertinent above requirements, for marine mammals, specifically:

- assess potential effects on marine mammals from contaminants, including by comparing predicted water quality and sediment quality for all project phases and at all key locations in the receiving environment to applicable water quality and sediment quality guidelines, objectives or standards.

8.8.2.2 Newfoundland and Labrador requirements and information

Predicted environmental effects of the Project shall include, but not be limited to a comprehensive analysis of the following:

- the construction and operation of project facilities and infrastructure including, but not limited to: primary and ancillary buildings and structures associated with the storage and handling facility; site preparation, blasting, access roads; surface and groundwater management activities; water use / water withdrawal during operations; and turbidity, siltation and other contamination from surface runoff and slope movement;
- in-water works during construction such as: fording; removal of aquatic and/or stream side vegetation; installation of culvert, bridges and water crossings; infilling; dewatering; and changes to natural flow regime;
-

- consideration of the effects of the Project on Fish and Fish Habitat due to increased access to fishing areas that were otherwise undisturbed and the potential prosecution of fish through increased fishing activity during the construction of the access road.

8.8.2.3 Federal requirements and information

Additional guidance that should be referenced to support the effects assessment and associated follow up include:

- A framework for assessing fisheries productivity for the Fisheries Protection Program.
- A Science-Based Framework for Assessing the Response of Fisheries Productivity to State of Species or Habitats.

For projects requiring the use of natural waterbodies frequented by fish for the disposal of mine waste[11] and/or for the management of process water, an amendment to the *Metal and Diamond Mining Effluent Regulations* will be required. This regulatory process will not be initiated until the proponent has undertaken a detailed assessment of alternatives for mine waste disposal. By fulfilling the requirements of the regulatory authorization during the impact assessment, authorizations may be granted in an accelerated manner. For further guidance, the proponent should consult Environment and Climate Change Canada's Guidelines for the Assessment of Alternatives for Mine Waste Disposal.

8.8.3 Mitigation and enhancement measures

8.8.3.1 Joint requirements and information

The Impact Statement must describe the mitigation measures for the potential effects on fish and fish habitat, including:

- all standard and project-specific measures, code of practice, policies and commitments regarding mitigation that constitute technical and economically feasible proven mitigation measures and that will be applied in common practice, regardless of the location, as well as any new or innovative mitigation measure proposed;
- measures to prevent or mitigate the risk of harmful alteration, disruption or destruction of fish, fish habitat, marine plants or death of fish caused by any project activity, including during the sensitive periods and in the sensitive locations (e.g., spawning and migration) for fish and other aquatic species;
- measures applicable to all water crossings, intakes, and outflows including how they would be maintained following construction of the Project;
- measures and conditions applicable as per federal and provincial guidelines to all water crossings, intakes, and outflows including how they would be restored and maintained following construction of the Project;

[11] For the purposes of this document, mine waste refers to waste rock and effluent as set out in section 5(1) of the *Metal and Diamond Mining Effluent Regulations*.

- measures to mitigate sensory disturbance and functional habitat loss that it may cause, including in relation to marine shipping;
- measures recommended to avoid fish mortality, for example, from dredging, blasting, placement of fill and pile driving in the aquatic environment or nearby, during fish relocation activities, or by fish impingement and entrainment during pumping and water withdrawal operations (e.g., during the construction of temporary structures and of hydrostatic tests) or transfer between water segments;
- measures to prevent the deposit of substances harmful to fish and fish habitat in the freshwater and marine environments and their restoration;
- measures for bank and shoreline erosion, including measures to reduce the potential for erosion impacted riparian or aquatic environments and their restoration;
- describe the criteria for assessment of the successful restoration of fish-bearing watercourses, as well as the mode and timing and the conditions of documentation of this assessment;
- mitigation measures to be applied during hydrostatic tests, including for water withdrawal and discharge activities;
- the necessity of temporary construction sites, and the considerations taken for minimizing the adverse effects, namely the location choice and management measures;
- measures to prevent the introduction, movement and intrusion of invasive aquatic species during work in or near freshwater and marine environments;
- measures and plans to offset any death of fish and harmful alteration, disruption or destruction of fish habitat as a result of the Project (see Appendix 1 - Additional Guidance);
- describe how environmental protection plans will address any applicable federal and provincial policies with respect to marine mammals, fish and fish habitat; and
- describe how the mitigation measures are consistent with any applicable recovery strategy, action plan or management plan.

The proponent must refer to Fisheries and Oceans Canada guidance and explain how it was applied to the assessment, including the references provided in Appendix 1 - Additional Guidance.

In addition to pertinent above requirements, for marine mammals, specifically:

- describe the proposed measures to mitigate temporary or permanent changes to marine mammal habitat, or injury or death caused by any project activity, including during the sensitive periods and in sensitive locations (e.g., feeding, migration);
- consider how timing windows can be used to avoid effects of project construction on fish (freshwater and marine) and marine mammals during periods of high habitat use, and indicate if and how project activities will adhere to timing windows;
- discuss sound dampening technologies that could be used and provide a description of their potential effectiveness, and state whether technologies will be used; and
- consider the use of stop work orders, exclusion zones, or detection methods to avoid effects on marine mammals during construction, and if and how these types of measures will be implemented.

8.9 Birds and birds habitat

8.9.1 Baseline conditions

8.9.1.1 Joint requirements and information

The Impact Statement must:

- describe and map the general biodiversity[12] of bird species and their habitat that are found or are likely to be found in the LSA and RSA, based on available information from a desktop analysis, supplemented by field data as necessary to build confidence in the assumptions. This applies to birds not covered under the MBCA or SARA, and thus applies to all avifauna including raptors, owls, corvids, and upland game birds. In particular, the analysis should be based on representative studies of habitats and current conditions. The representativeness of the studies should be explained and justified;
- provide an estimate of year-round bird use of the study areas (e.g., winter, spring migration, breeding season, fall migration), based on data from existing sources and/or surveys, if required. Information should be obtained from all relevant government agencies, (Federal, Provincial, Nunatsiavut and other Indigenous Peoples), the Atlantic Canada Conservation Data Centre (ACCDC), and naturalists and supplemented with data collection where information is not conclusive. It may be necessary to undertake surveys to get the current data needed for reliable estimates; and
- describe the source of the data, data collection methods, and provide a rationale for any modelling approaches chosen. The baseline data must be sufficient to account for natural population variability (generally at least two years of field data) and have been collected through well-designed studies (see Appendix 1 – Additional Guidance for further guidance on baseline data collection).

8.9.1.2 Federal requirements and information

Birds covered by the federal requirements (under baseline, effects, and mitigations) are either migratory birds as defined under the *Migratory Birds Convention Act, 1994*, or birds of importance to Indigenous Peoples.

Note that requirements for birds and their habitat apply to bird species at risk. Additional requirements specific to species at risk are included in Section 8.11, Species at Risk, and must be taken into account in the Impact Statement. The proponent should also consult the additional guidance for requirements pertaining to birds and species at risk provided in Appendix 1 – Additional Guidance.

The Impact Statement must:

[12] A description of biodiversity can include the species or communities found, abundance, density, species richness and evenness, species distribution within the study areas; their ecological role or position in food webs, their ecological or population health (e.g., breeding status, population trends, movement, habitat availability or connectivity, reproductive status or health, food availability or limitations).

- consider the following groupings as unique VCs with rationale provided where groups are not included as unique VCs:
  - waterfowl;
  - waterbirds and seabirds (other than waterfowl);
  - forest birds and songbirds;
  - marshbirds;
  - shorebirds;
  - any bird species of importance to Indigenous Peoples (e.g., ptarmigan, Canada geese, etc.);
- identify any applicable Bird Conservation Regions (BCRs) and BCR strategies;
- identify bird species, communities or groups that use the study areas at any time of the year that are likely to be directly or indirectly affected and describe their:
  - distribution;
  - lifecycle;
  - seasonal ranges, migration (e.g., Canada Geese), movements;
  - frequency and timing of occurrence;
  - seasonal and annual variation in abundance, distribution and habitat use;
  - habitat association(s) and requirements for all relevant lifecycle stages; and
  - abundance (including relative abundance in each habitat type), population status, density, distribution, and patterns of occurrence and abundance trends in time;
  - sensitive periods (e.g., seasonal, time of day);
- identify and map areas of concentration of migratory birds, including sites used for breeding, feeding, wintering, resting, staging and migrating;
- describe and map the habitat and habitat features found in the project area, LSA and RSA, that are associated with the presence of those bird species that are likely to be affected, based on the best available existing information (e.g., land cover types, vegetation, marine elements) supplemented by field data as necessary to enable demonstration of sufficient data for baseline characterization;
- quantify and provide the relative abundance of migratory bird habitat in the project area, LSA and RSA; and
- where predictive modelling is used to portray baseline conditions and estimates of project effects, provide the explanatory data (e.g., covariables such as associated land cover). Explanatory data should be shown to be sufficient for representing the following sources of variation where applicable: spatial variation in land cover composition, soil type, geomorphology, hydrological processes, and inter-annual and intra-annual climate variability.

8.9.2 Effects to birds and their habitat

8.9.2.1 Joint requirements and information

The Impact Statement must:

- describe the interaction between the Project and birds and their habitat, for all phases of the Project, including, but not limited to, from:
  - site preparation, vegetation removal, stockpiling, particularly of habitats important for nesting, foraging, staging, overwintering or that act as movement corridors;
  - construction and operation of structures;
  - construction and operation of tailings facilities, wastewater ponds or other ponds containing process liquids or substances harmful to birds;
  - decommissioning and rehabilitation activities;
  - deposit of harmful substances in waters that are frequented by birds and changes to water quality;
  - changes to the aquatic flow regime and sediment load;
  - changes to the atmospheric, acoustic and visual environment (e.g., noise, vibration, lighting, air emissions and dust); and
  - any project activities that may occur during critical periods and/or restricted activity periods for birds;
- describe the potential effects of the Project on birds, their nest and eggs, including, but not limited to, from:
  - short and long-term changes to habitats important for nesting, foraging, staging, overwintering, rearing and moulting and to movement corridors between habitat, and from habitat loss, fragmentation and structural change. Consider changes in terms of habitat type, quality, availability, distribution, and function;
  - changes to bird-habitat relationships; the change in biodiversity, abundance, and density of the avian community that utilise the various habitat types or ecosystems;
  - changes to mortality risk, including as a result of collision of birds with project infrastructure, buildings, overhead lines, aircrafts, vessels and vehicles, as a result of light attraction and from indirect effects, such as increased movement of predators or access to hunting; and
  - increased disturbance (e.g., sound, artificial light, presence of workers) considering the critical periods for the birds, including breeding, migration and overwintering;
  - describe the activities most likely to result in disturbance, injury or take of birds, their nests and eggs, such as vegetation clearing, increased noise from industrial machinery, and indicate the timing window for these activities, the amount, duration, frequency, and timing of disturbances, and whether or not those activities would be permanent or non-permanent in the environment; and
  - contaminants and bioaccumulation of contaminants, including those that may be consumed by Indigenous Peoples.

8.9.2.2 Federal requirements and information

The Impact Statement must:

- describe the key indicators used to assess project effects and the sensitivity of bird species to disturbance. Provide a rationale for their selection, including a clear connection to the indicators used to characterize baseline conditions;
- identify species or groups that may be affected differently by the Project, and where possible, avoid collapsing data into diversity metrics or narrowing to an indicator species; and
- analyze the predicted effects for (1) migratory birds, (2) birds of importance to Indigenous Peoples, (3) each VC (4) priority BCR species. Include separate analyses for each activity, component and project phase.

In the event of bird displacement, assumptions regarding temporary or permanent relocation of displaced birds during the construction or operational phases of the Project should be supported with scientific evidence that there is available habitat within the LSA or RSA to allow relocation, and should be supported by monitoring within the applicable Project and study areas as the Project proceeds. For example, it must be clear that a population will not be limited by habitat loss (direct or indirect due to sensory disturbance or other potential effects) in the study areas.

The proponent should refer to the Government of Canada's guidance on this topic, including:

- Avoiding harm to migratory birds;
- A framework for the scientific assessment of potential project impacts on bird; and
- Migratory birds environmental assessment guideline.

8.9.3 Mitigations and enhancement measures

8.9.3.1 Joint requirements and information

The Impact Statement must:

- describe the measures to mitigate adverse effects to birds and their habitat, including their eggs and nests;
- describe the measures to prevent and mitigate the risk of harmful, destructive or disruptive activities during sensitive periods (e.g., breeding season, migration and nesting) for birds, their nests and their eggs, or areas frequented by birds, or at sites used for a particular part of their life cycle (e.g., migration or nesting) or significant aggregation areas frequented by birds, such as avoiding lights at night during key migration peaks, avoiding excessive loud noises, vibration or blasting during breeding season;
- demonstrate how the timing of activities most likely to disturb birds and nest, such as vegetation removal, is considered, to avoid the main nesting season;
- describe measures to mitigate sensory disturbance and the functional habitat loss it may cause;

- describe measures for preventing the deposit or spill of substances harmful to birds in areas frequented by birds; and
- describe technologies and approaches to minimize the impacts of tailing ponds on birds that maybe come into contact with process affected waters.

8.9.3.2 Newfoundland and Labrador requirements and information

Avifauna Management Plan

An Avifauna Management Plan (including Migratory Birds and non-migratory birds such as raptors and upland game birds) should be developed in consultation with Department of Fisheries, Forestry and Agriculture and Environment and Climate Change Canada's Canadian Wildlife Service and included in the Impact Statement. The plan should include preventative and mitigation measures, monitoring, and adaptive management frameworks for minimizing impacts of the Project on Avifauna, including the avoidance of incidental takes of birds, nests and eggs.

8.9.3.3 Federal requirements and information

The Impact Statement must:

- describe any feasible options for compensation or offsetting if habitat will be lost and is a limiting feature for the species in the RSA, and propose whether and how any habitat losses will be offset (prior to submitting the Impact Statement); and
- for species for which the Project could create new potential habitats, identify the measures that could be implemented to prevent the establishment of these species during the Project.

The proponent should refer to the Guidelines to reduce risk to migratory birds and to the General nesting periods for migratory birds, which provide estimates of the major nesting periods for migratory birds and provides advice for reducing the risk of destroying nests or eggs. This recommendation does not authorize the disruption, destruction or taking of a migratory bird, its nest or its eggs outside these periods.

8.10 Terrestrial wildlife and wildlife habitat

8.10.1 Baseline conditions

8.10.1.1 Joint requirements and information

The Impact Statement must describe and map the general and regional biodiversity[13] of terrestrial wildlife species (amphibians, reptiles, mammals) and wildlife habitats that are found or are likely to be found in the study areas.

8.10.1.2 Federal requirements and information

Note that requirements for wildlife and wildlife habitat apply to wildlife species at risk. Additional requirements specific to species at risk are included in section 8.11 Species at Risk, and must be taken into account in the Impact Statement. The proponent should also consult the additional guidance for requirements pertaining to species at risk provided in Appendix 1 – Additional Guidance.

The Impact Statement must:

- identify terrestrial wildlife species of importance to Indigenous Peoples (based on consultation with Indigenous groups) within the study areas, that are likely to be directly or indirectly affected, and describe, in general, each species or group. Most importantly, the Eastern Migratory Caribou must be considered as a VC, separately;
- describe habitat requirements for species of importance to Indigenous Peoples, including but not limited to sensitive areas and critical or sensitive periods;
- describe the levels of natural and human-induced disturbance (e.g., fire, floods, droughts, diseases, presence of prey, insects, industrial developments or other human activity) currently affecting terrestrial wildlife species of importance to Indigenous Peoples and their habitat, such as habitat fragmentation and the extent of human access and use; and
- if available, include data based on Indigenous and community knowledge, studies and input and consider accepting submissions of wildlife sightings (photographs with date, time, and location).

Specifically for Eastern Migratory Caribou, provide the following:

- historic variation in abundance, distribution, habitat use, and habitat connectivity (provide maps);
- denning, rutting, calving, breeding, wintering periods, setback distances, or other restrictions related to the Eastern Migratory Caribou; and

[13] A description of biodiversity can include the species or communities found, abundance, density, species richness and evenness, species distribution within the study areas; their ecological role or position in food webs, their ecological or population health (e.g., breeding status, population trends, movement, habitat availability or connectivity, reproductive status or health, food availability or limitations).

- when possible, use already available telemetric data to monitor Eastern Migratory Caribou. Provide details and justifications on the data used and their relevance.

8.10.2 Effects to terrestrial wildlife and their habitat

8.10.2.1 Newfoundland and Labrador requirements and information

The Impact Statement must describe the effects of the Project on fauna (including bats and caribou) and their habitats (including critical, sensitive and rare habitat), associated with, but not limited to, the following:

- direct and indirect effects of project activities during the construction, operation and maintenance, decommissioning and rehabilitation phases;
- emissions, discharges and releases of substances;
- fragmentation of wildlife population home ranges;
- noise, vibrations and light, and in particular effects on feeding, breeding, movement and migratory patterns; and
- an evaluation of anticipated adverse effects on caribou and caribou habitat.

8.10.2.2 Federal requirements and information

The Impact Statement must:

- describe the potential effects from all phases of the Project on terrestrial wildlife species of importance to Indigenous Peoples and on their habitat, including effects from, but not limited to:
  - noise, light and sensory disturbances;
  - water and air emissions or dust;
  - increase in the spread and prevalence of diseases and other health effects, including acute or chronic health effects due to changes to air and water quality (e.g., bioaccumulation in wildlife);
  - altered predator-prey relations, such as increased wildlife predation;
  - increased vehicle traffic, and other mortality risk;
  - site preparation, vegetation removal, particularly of habitats important for breeding, overwintering or that act as movement corridors;
  - habitat loss and fragmentation; and
  - disturbance, especially to movement patterns, and displacement;
- describe and assess the resilience and recovery capabilities of wildlife populations and habitats (species of importance to Indigenous Peoples) to disturbance, including the anticipated potential for the project area to be returned to its existing state with respect to wildlife populations and their habitat following operations;
- describe and take into account the tolerance thresholds for potential adverse effects that Indigenous groups have identified;

- describe, using evidence, the available habitat, if any, in the LSA and RSA for the relocation of displaced species; and
- describe how Indigenous groups were consulted to share Indigenous Knowledge regarding terrestrial wildlife species of importance to Indigenous Peoples. Include how concerns were addressed including studies needed to assess potential impacts and develop mitigation strategies as needed.

Specifically for Eastern Migratory Caribou:

- use population-level modelling to assess the effects of the Project on caribou at the project, local and regional scale; and
- describe the potential effects of the Project on the population at its current collapsed state, as well as how the Project could affect a larger population if it recovers.

8.10.3 Mitigation and enhancement measures

8.10.3.1 Newfoundland and Labrador requirements and information

The Impact Statement shall describe measures that will be undertaken to mitigate the effects of all phases of the Project on fauna (including bats and caribou) and their habitats (including critical, sensitive and rare habitat).

8.10.3.2 Federal requirements and information

The Impact Statement must describe the measures for mitigating potential effects on terrestrial wildlife and their habitat (only for species of importance to Indigenous Peoples), including:

- describe the proposed mitigation measures for potential adverse effects to wildlife and their habitat, including residences and critical habitat. Include a description of the effectiveness of each measure, based on scientific data and studies;
- provide the best technically and economically feasible approaches for mitigating effects on habitat, aligned with the hierarchy of mitigation measures, and justify moving from one mitigation option to another;
- describe and explain the condition in which the temporary construction areas and right-of-way will be restored or maintained following construction, and explain the mitigation measures considered including possible revegetation, obstruction of the sightline, restoration of wildlife corridors and habitat connectivity, reduction of fragmentation and reduction of long-term cumulative effects;
- describe and explain the measures to control the use of the right-of-way and new access roads to access areas that were previously difficult to reach, including by wildlife predators as well as by hunters, off-roading recreationalists, and other users;
- describe the proposed measures to prevent the release of harmful substances into waters or areas frequented or occupied by wildlife;

- describe technologies and approaches that will be implemented to minimize the effects of tailings storage facilities and ponds on wildlife that may come into contact with water in the tailings ponds or seepage and run-off collection ditches;
- describe the proposed measures to address sensory disturbance and the resulting functional loss of wildlife habitat;
- describe wildlife friendly road-design and features that will be implemented, taking into account sensitive periods;
- consider the implementation of a logbook for reporting accidents and malfunctions, including the reporting of wildlife mortality. This log may inform monitoring approaches and could be shared with Indigenous partner groups;
- provide details on compensation or offsetting plans proposed, if any, following guidance in Appendix 1 – Compensation and offset plans and available guidance documents, if effects cannot otherwise be avoided or mitigated; and
- describe mitigation measures applicable to wildlife habitat that will be implemented through reclamation, including timelines and targets that will be used to assess effectiveness.

Specifically for Eastern Migratory Caribou:

- develop management plans, including contingency measures that will be implemented if Eastern Migratory Caribou are observed near the Project;
- describe, quantify and show on maps the habitat types planned in the reclaimed landscape and how much of it will be suitable habitat for caribou;
- demonstrate consideration as to how the effects of the Project on the Eastern Migratory Caribou may interfere with the efforts and measures that have been put in place by Indigenous Peoples to allow for the recovery of the herd (e.g., hunting ban); and

8.11 Species at risk and their habitat

8.11.1 Newfoundland and Labrador requirements and information

When describing the baseline conditions, effects, and mitigation measures related to the biophysical environment, the proponent must include species at risk and their habitat. In other words, the requirements from section 8.7 Vegetation, riparian and wetland environments, to section 8.10 Terrestrial wildlife and their habitat, apply to:

- species that are listed under the federal *Species at Risk Act* (SARA) and relevant provincial legislation such as the NL *Endangered Species Act* (NLESA), and
- species recommended for legal listing by COSEWIC, the NL Species Status Advisory Committee (SSAC), and ranked by the Atlantic Canada Conservation Data Centre (AC-CDC) as S1, S2, or S3 or

general status (Department of Fisheries, Forestry and Agriculture – Wildlife Division General Status of Wildlife Ranks) as maybe at risk or undetermined.

The following information sources on species at risk and species of conservation concern should be consulted:

- *Species at Risk Act* (SARA (www.sararegistry.gc.ca));
- Newfoundland and Labrador *Endangered Species Act* (NLESA);
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Species Status Advisory Committee;
- Department of Fisheries, Forestry and Agriculture – Wildlife Division General Status of Wildlife Ranks
- Québec *Loi sur les espèces menacées ou vulnérables*;
- Indigenous Governments and Organizations;
- Atlantic Canada Conservation Data Centre (ACCDC);
- Wildlife Ranks;
- Other relevant government agencies; and
- Local naturalist and interest groups.

8.11.2 Federal requirements and information

The proponent should consult the additional guidance for requirements pertaining to species at risk provided in Appendix 1 - Guidance for biophysical components.

The Impact Statement must address the requirements for each species at risk listed on Schedule 1 of the federal *Species at Risk Act* (SARA), or species recommended by COSEWIC for inclusion to Schedule 1, if the species or its habitat are likely to be in the project area or study areas. Each species at risk must be considered as a valued component.

Specifically, the Impact Statement must include, but not limited to, each of the following species:

Birds

- Bank Swallow (*Riparia riparia*) (threatened);
- Barrow's Goldeneye (*Bucephala islandica*), Eastern Population (special concern);
- Common Nighthawk (*Chordeiles minor)* (special concern);
- Harlequin Duck (*Histrionicus histrionicus*), Eastern population (special concern);
- Leach's Storm-Petrel (*Oceanodroma leucorhoa*), Atlantic Population (COSEWIC recommended status: endangered)
- Olive-sided Flycatcher (*Contopus cooperi*) (special concern);
- Rusty Blackbird (*Euphagus carolinus)* (special concern); and
- Short-Eared Owl (*Asio flammeus*) (special concern).

Marine mammals

- Blue Whale (*Balaenoptera musculus*), Atlantic Population (endangered); and

- Fin Whale (*Balaenoptera physalus*), Atlantic Population (special concern).

Fishes

- American Eel (*Anguilla rostrata*) (COSEWIC recommended status: special concern),
- Atlantic Wolffish (*Anarhichas lupus*) (special concern)*;*
- Northern Wolffish (*Anarhichas denticulatus*) (threatened); and
- Spotted Wolffish (*Anarhichas minor*) (threatened).

Mammals

- Eastern Migratory Caribou (*Rangifer tarandus*) (COSEWIC recommended status: endangered);
- Little Brown Bat (*Myotis lucifugus*) (endangered);
- Northern Myotis (*Myotis septentrionalis*) (endangered); and
- Polar Bear (*Ursus maritimus*) (special concern).

The Impact Statement must also address any species at risk that are added to Schedule 1, recommended by COSEWIC to be added, after these guidelines are published, if the species or their habitat are likely to be in the project area or study areas. It is recommended to refer to the most recent COSEWIC annual report for the list of assessed wildlife species posted on its website.

8.11.3 Baseline conditions

8.11.3.1 Federal requirements and information

For each species identified in the list above, the Impact Statement must:

- assess their potential presence in the study areas. This analysis must consider the potential habitats and ecological requirements of species whose distribution overlaps the study areas;
- describe the location, condition, abundance (including relative abundance in each habitat type), occurrence, population status, and distribution;
- describe seasonal and annual variation in abundance, distribution, and habitat use, if applicable;
- provide information and mapping at an appropriate scale for potential habitats, survey sites, species sightings records, the areas of highest concentration or areas of use, residences, habitat requirements, key habitat areas, identified or proposed critical habitats and/or recovery habitat (where applicable and unless such information is considered sensitive), seasonal movements, and movement corridors;
- describe the general life history (e.g., breeding, foraging) that may occur in the study areas, or be affected by the Project;
- identify critical periods (e.g., denning, rutting, spawning, calving, breeding, roosting), setback distances, or other restrictions related to these species;
- describe the source of the species at risk data, including survey design, sampling protocols and data handling;
    - when using recognized standards, provide details of any modifications to the recommended methods and rationale for these modifications;

- indicate who was consulted in the development of the baseline surveys (e.g., federal/provincial wildlife experts, specialists and local Indigenous groups); and
- describe how community and Indigenous Knowledge was incorporated.

8.11.4 Effects to species at risk and their habitat

8.11.4.1 Newfoundland and Labrador requirements and information

The effects of the Project on species at risk , as listed under SARA and NLESA, recommended by COSEWIC and SSAC for legal listing, ranked by the AC-CDC as S1 S2, or S3, and noted as may be at risk by provincial General Status rankings are to be assessed within the Project study areas, where they could reasonably be affected by the project activities. NLESA requires proponents to identify any adverse effects on a listed species or its critical habitat be identified and that measures be taken to mitigate and monitor those effects.

Project activities that will result in clearing of, or disturbance to, natural vegetation, or ground disturbance (e.g., grubbing, grading, and excavation) may affect ground nesting raptors such as Short-eared owls, roost sites of bat colonies, and rare plant species by:

- altering or destroying existing nest and roost sites;
- altering or destroying individual rare plants, or habitat capable of supporting rare plant species;
- altering preferred habitat due to changes in surface water hydrology;
- reducing health conditions of individuals and /or their habitat due to soil erosion, structural soil changes, or soil contamination; or
- displacing rare plants due to non-native and invasive species introduction.

An assessment of work windows and sensitive times, which are critical for wildlife populations (e.g., migration, spawning/ birthing and raising young, and feeding areas) must be identified in relation to the study areas.

As background for the analysis of the Project's effects on identified species at risk, the Impact Statement must:

- identify all species at risk that may be affected by the Project, using existing data and literature, as well as surveys to provide current field data, as appropriate;
- provide assessments of regional importance, abundance and distribution that optimize the ability to detect all species at risk and sufficient survey effort to obtain comprehensive coverage; and
- identify 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.

The Impact Statement must also specifically provide:

- information related to targeted surveys within the regional/local study area for species including but not limited to Common Nighthawk, Peregrine Falcon, Short-Eared Owl, Harlequin Duck and Bank Swallow;

- information related to plant surveys within the regional/local study areas using targeted sites based on the Ecological Land Classification;
- an assessment and description of historical and recent caribou distribution and habitat use at various temporal and spatial scales using recent data available from both Newfoundland & Labrador, and Quebec (upon finalization of a data sharing agreement between the Proponent and the Province). This assessment shall include:
  - appropriate analyses and interpretation of data to ensure a fulsome understanding of the George River Caribou Herd range use throughout the various biological seasons and population cycles and to ensure compatible analysis across Quebec and NL datasets; and
  - Indigenous Knowledge on Eastern Migratory Caribou into the baseline information.

The Impact Statement must present an evaluation of mitigation measures to ensure viability of George River Caribou Herd (GRCH) population during all phases of the Project including but not limited to:

- a literature review of the effects of linear features on caribou populations and the potential direct and indirect effects on the GRCH, including but not limited to effects of habitat fragmentation, increased predator efficiency, increased ease of human access to caribou groups, and cumulative effects;
- a literature review of potential implications of all aspects of this project (in Quebec and Labrador) on the atmospheric deposition of contaminants on caribou forage, including impacts to contaminant and heavy metal loads within caribou meat and organs;
- a spatiotemporal analysis of caribou movement identifying migration corridors and interactions with the proposed road location and other relevant project features; and
- an analysis to discuss/determine whether potential effects of the proposed undertaking on the GRCH can be mitigated to the extent that the Project will not hinder the population's recovery from its current 1% of previous maximum population size.

8.11.4.2 Federal requirements and information

For each species at risk identified in the preamble of the section, the Impact Statement must:

- describe the potential effects of the Project on these species at risk, their habitat or potential habitats and, where applicable, their critical habitat (including extent, availability and presence of biophysical attributes). The analysis of potential effects should be provided separately for each species at risk, including separate analyses for each activity, component and phase of the Project;
- identify provincial, territorial or federal permits or authorizations that may be required in relation to the species at risk, and describe discussions with the appropriate authority regarding permits or authorizations;
- describe and quantify the area, biophysical attributes and location of relevant habitat types for species at risk that may be affected (e.g., destroyed, permanently altered, disrupted), including direct and indirect effects due to vibration, noise and artificial light in the study areas on usage patterns and migratory behaviour of species at risk;
- describe and quantify potential effects, with respect to objectives in management plans, recovery strategies and action plans;

- describe areas created by the Project, including road surfaces and margins, pits, overburden stockpiles, etc., that may create new habitat types thereby attracting species at risk which were not present before. Describe how new habitat types may impact species at risk in the study areas; and
- describe and take into account the tolerance thresholds for potential adverse effects that Indigenous groups have identified.

8.11.5 Mitigation and enhancement measures

8.11.5.1 Joint requirements and information

The Impact Statement must demonstrate the use of mitigation hierarchy to select appropriate mitigation measures and describe the measures for mitigating potential effects on species at risk and their habitat, including:

- describe the proposed mitigation measures for potential adverse effects on species at risk, their habitat, potential habitat and critical habitat, include the justification, based on scientific data, for the proposed measures;
- provide an account of how the Project and mitigation measures are consistent with local, regional and national recovery strategies, action plans, or management plans for the species. Mitigation measures must be compatible with any applicable recovery strategy and action or management plan and be described in terms of the effectiveness of each measure in avoiding negative effects;
- describe mitigation measures to reduce the risk of harmful, destructive or disruptive activities in sensitive times and places of importance to species at risk;
- describe measures to prevent the release of harmful substances into waters or areas frequented or occupied by species at risk; and
- provide mitigation measures for effects on habitat, aligned with the hierarchy of mitigation measures and justify moving from one mitigation option to another.

8.11.5.2 Newfoundland and Labrador requirements and information

NLESA requires proponents to identify any adverse effects on a listed species or its critical habitat be identified and that measures be taken to mitigate and monitor those effects. Any measures undertaken to mitigate and monitor effects must be consistent with applicable federal recovery strategies, federal action plans, or provincial recovery plans.

Species at Risk Impacts Mitigation and Monitoring Plan

A species at risk impacts mitigation and monitoring plan may be required if the baseline study shows that a species at risk or its residence will be affected. This plan would be developed in consultation with the Department of Fisheries, Forestry and Agriculture for all potentially impacted species listed under the provincial *Endangered Species Act* or the federal Species at Risk Act. It would include mitigation, monitoring, and adaptive management frameworks for all possible impacts to these listed species.

8.12 Climate change

8.12.1 Federal requirements and information

The proponent must follow the directions and guidance contained in the Strategic Assessment of Climate Change (SACC) and the technical guides related to the SACC, developed by ECCC including the Guidance on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment (Technical Guide)[14]. The requirements are summarized below, and IAAC expects the proponent to keep apprised of updates to the SACC and related technical guides published by ECCC.

The Impact Statement must:

- assess the project's GHG emissions as described in section 5 of the SACC and section 2.1 of the Technical Guide;
- provide a quantitative and qualitative description of the project's positive or negative effects on carbon sinks as described in section 5.1.2 of the SACC and section 4 of the Technical Guide;
- an explanation of how the Project may impact Canada's effort to reduce GHG emissions in Canada and globally as described in section 5.1.3 of the SACC and in the Technical Guide; and
- a description of the impact of increased forest fires that may result from the Project on climate change.

8.12.1.1 Mitigation for climate change and greenhouse gas emissions

In terms of mitigation measures, the Impact Statement must include a determination of Best Available Technologies and Best Environmental Practices (BAT/BEP) as described in Section 3.2 of the technical guidance. This BAT/BEP determination process will evaluate potential mitigation measures throughout all phases of the Project with an emphasis on reducing net GHG emissions as early as possible in the life of the Project, as described in Section 5.1.4 of the SACC. Additional guidance is provided in Sections 3.4.1 and 3.4.2 of the Technical Guide.

If the proponent determines that there will be activities beyond 2050, the proponent must also provide a credible plan to achieve net-zero emissions that would be used for and form the basis of the BAT/BEP determination process, describing the mitigation measures that will be taken to minimize GHG emissions during all project phases and achieve net-zero emissions by 2050, as described in section 5.3 of the SACC. The plan to achieve net-zero emissions must follow the principles and include the required information that is described in sections 3.5.1 and 3.5.2 respectively of the Draft Technical Guide, or any final version of the Technical Guide that becomes available prior to submission of the Impact Statement.

[14] In accordance with the relevant version of the Strategic Assessment of Climate Change (SACC) and the draft Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment at the time the Impact Statement is submitted to IAAC.

8.13 Marine environment and marine geohazards

8.13.1 Baseline conditions

8.13.1.1 Federal requirements and information

Note that specific requirements for marine species at risk are included in section 8.11, Species at Risk, and must be taken into account in the Impact Statement. The proponent should also consult the additional guidance for requirements provided in Appendix 1 – Additional Guidance.

The Impact Statement must:

- describe seasonal marine water quality (e.g., water temperature, turbidity, hydrocarbons, total suspended solids, salinity and pH);
- provide a description of marine geology, geomorphology and geohazards including:
  - sediment stratigraphy, bottom sediment type, competence, thickness, grain size; and
  - ice scours, gas-charged sediments, gas hydrates, sediment diapirs, fluid escape features, in northern areas the presence of subsea permafrost, permafrost and melting hazards, sediment mobility, sediment overpressures and loading, faults and their movement, erosion past and present and its potential as a hazard, and geo-biological hazards like bioherms;
- describe marine physical process;
- describe the historical marine and near shore use and the potential for contamination of waters and sediments;
- describe existing and proposed shipping routes within the local and regional areas;
- describe the physical, chemical and potential toxicological nature of any known or suspected sediment or soil contamination, including the results of baseline surveys, within the study areas that could be re-suspended, released or otherwise disturbed as a result of the Project;
- provide a description of the physical oceanography within the study areas including surface and subsurface current patterns, current velocities, waves, storm surges, longshore drift processes, tidal patterns, and tide levels for the site, in proximity to the site, and along the marine shipping routes with consideration of predicted climate change effects;
- describe coastal processes, including zones of erosion and deposition;
- provide bathymetric information for the study areas and along marine shipping routes, if applicable;
- describe sea ice climate in the regional and local study area, including ice formation and thickness, ridging, breakup and movement for the shipping season;
- describe sea ice and iceberg conditions along the marine shipping routes with consideration of predicted climate change and its possible effect on the timing and frequency of iceberg and/or ice island encounters or timing of sea ice formation in the future;

- provide a description of fast-ice characteristics, including its surface area and seasonal stability at the site of any designated project and/or port and along marine shipping routes during the shipping season; and
- provide current underwater soundscape and vibration sources, including those offshore in the study areas, based on acoustic measurements. Provide information on vibration and sound sources, geographic extent and spatial and temporal variations within the water column and at the seafloor.

8.13.2 Effects to the marine environment

8.13.2.1 Newfoundland and Labrador requirements and information

Predicted environmental effects of the Project shall include, but not be limited to a comprehensive analysis of effects on the marine environment, in the vicinity of the laydown facility and shipping port, and the effects on marine navigation (e.g., commercial and recreational boat traffic) and biosecurity. The Impact Statement must include potential effects from noise and vibrations in particular regarding marine vessel traffic.

8.13.2.2 Federal requirements and information

The Impact Statement must describe all the interactions between the Project and the marine environment, including:

- describe the physical effects to the estuarine and marine environment, including changes to:
  - water and sediment quality and characteristics (temperature, chemical composition, nutrients, turbidity);
  - changes to oceanographic conditions;
  - changes to bathymetry;
  - changes to the marine ecosystem, including effects to biodiversity;
  - changes to the marine resources and habitat;
  - changes caused by ship traffic;
- describe the sources, quantities and frequency of project related emissions and discharges to the marine environment from vessels, including drill ships, drilling and production platforms or any other type of vessels or seafloor infrastructure. This should include, but not be limited to, discharges of ballast water, grey water, sewage, food waste, deck wash, muds and drill cuttings resulting from all phases of the Project or any accidental spills of any kind;
- for marine projects that require pile driving, dredging or disposal at sea, or any other work or activity below the High Water Mark, provide a description of:
  - the location of the activity (including a bathymetric chart of the area);
  - local conditions, including seasonal flow currents and tide cycles that inform sediment transport;
  - the sediments to be disturbed, dredged, managed or disposed (e.g., quantities, particle size) based on a sampling program representative of site conditions;

- chemical characterization of sediment quality where there is a risk of contamination or sediment resuspension and resettlement;
- the proposed location of disposal activity, if any, (including a bathymetric chart of area) and supporting rationale for a preferred disposal site along with alternatives considered;
- how disposal is to be conducted, if any, along with alternatives considered;
- predicted dispersion and deposition of sediments over time for piling activity, pile infrastructure placement, dredging and disposal using scientifically acceptable techniques, including dispersion modelling where appropriate. Such predictions would include attention to suspended solids in the water column or turbidity, and to short and long-term accumulation of material on the seafloor along with contaminant concentrations;
- route, duration and number of trips between dredging site and disposal site(s) along with equipment employed; and
- the proponent should contact ECCC and Fisheries and Oceans Canada for further guidance with respect to the information required to support a permit application and/or *Fisheries Act* review;

- describe the changes to the underwater soundscape and vibrations caused by project activities, in particular noise pollution related to marine shipping;
- describe the effects to the use of the marine environment, including estuarine, salt marsh and marine habitats; and
- describe how floating docks, foreshore disturbances, navigation channels, and sediment disturbances by installation and presence of pile infrastructure affect longshore currents or littoral drift that move sediment downdrift along the beach and contribute to shoreline retreat, deposition updrift and erosion downdrift.

8.13.3 Mitigation and enhancement measures

8.13.3.1 Newfoundland and Labrador requirements and information

The Impact Statement shall describe measures that will be undertaken to mitigate the effects of project operations on marine navigation (e.g., commercial and recreational boat traffic) and marine invasive species. The Impact Statement shall describe measures to manage marine vessels associated with the Project to prevent the introduction and transfer of pathogens or aquatic invasive species (AIS) to the surrounding aquatic environment. Best management practices should include, but are not limited to:

- AIS awareness in the waters frequented;
- taking precautions with respect to vessel traffic and movement of gear in areas affected and unaffected by AIS to prevent introductions and spread;
- cleaning, drying and handling of gear and ropes to avoid transport of water from one location to another;
- prevention of biofouling with routine vessel maintenance; and
- procedures for reporting AIS to the Department of Fisheries and Oceans Canada.

The Impact Statement must describe measures to manage marine vessel traffic and reduce vessel speeds to mitigate for increased marine vessel traffic and increased noise and vibrations in the Project area and marine environment.

8.13.3.1.1 Marine Transportation Impact Study and Management Plan

The Impact Statement shall include a Marine Transportation Impact Study and Management Plan (MTISMP) that shall assess and report on the potential effects of transporting materials and equipment over the access road and through the marine environment of the shipping port during construction, operation and maintenance, and decommissioning and rehabilitation phases of the Project, that includes but is not limited to the following information:

- acknowledgement that measures that will be implemented to mitigate any deficiencies in the roads, bridges or infrastructure, including providing alternative access, acknowledging that any engineering design or investigation costs will be at the proponent's expense;
- identification of provincial access and right of way permit requirements as expected over the life of the Project;
- the MTISMP must include a noise and vibration monitoring plan to monitor potential long term effects due to increased vessel traffic and noise. The Plan should recognize that anthropogenic noise and vibration can cause auditory masking, leading to changes in individual and social behavior of marine species, hinder population recruitment and ultimately impact the health of marine ecosystems; and
- the MTISMP must include plans to consult local fish harvesters specifically in NAFO Division 2H to mitigate for any potential negative effects on the marine environment and local fisheries, the Plan should demonstrate a commitment to engage with fish harvesters throughout the life of the Project.

8.13.3.2 Federal requirements and information

The Impact Statement must describe the mitigation measures for the potential effects on the marine environment, including measures to mitigate effects on marine water quality, sediment and geomorphology.

8.14 Ambient radioactivity

8.14.1 Federal requirements and information

8.14.1.1 Baseline conditions

For projects or project-related physical activities that potentially could change the radiological conditions within the study areas, the Impact Statement must:

- describe the ambient radiological conditions at the project site and within the local and regional study areas. The Impact Statement must provide information on existing conditions including an inventory of sources, activity levels, using measured values for external dose rate, and origin for all environmental

components including air, soil, food, water, aquatic sediments, plant and animal tissue. The identity of the radionuclides and their activity/concentrations should be specified;

- describe human and non-human biota exposed to ambient radioactivity, including information on radiation levels to which workers and members of Indigenous groups are exposed;
- describe country food exposure pathways, taking into account cultural norms and traditional activities of Indigenous Peoples;
- describe current radiological monitoring, management programs and any special studies, including detailed results from these programs; and
- describe the permits, licences, registrations, and/or any other type of authorization required for the transportation of the ore concentrate, tailings, and waste rock.

8.14.1.2 Changes to radiological conditions

For all phases of the Project, and where appropriate and integrated into other appropriate sections within the Impact Statement, the Impact Statement must:

- describe changes to radioactivity and radionuclide concentrations present in the terrestrial and aquatic environment, and the atmosphere. As per above, identify the pathway and radionuclides that could lead to an incremental dose to members of Indigenous groups and workers based on the specific local conditions of the mines and processes of the ore;
- document plans and strategies for assessing the effects of the Project related to the release of radionuclides to the environment, including sampling media and/or indicator species, measured parameters, sampling methodologies, locations and frequencies. Consult CSA N288.6-22 for guidance and methodology; and
- refer to Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment: Radiological Impact to ensure that the information and analysis considered necessary to assess the project's effects on human health in relation to changes to radiological impact are provided. Complete the checklist provided in this guide (Appendix A) to assist participants in verifying that the main elements of a radiological impact assessment have been completed and in identifying the location of this information in the Impact Statement. This checklist will facilitate the review of the Impact Statement and will be particularly useful if analyses on this aspect are found in several sections of the Impact Statement.

8.14.1.3 Mitigation and enhancement measures

The Impact Statement must:

- describe plans for dose mitigation strategies for Indigenous groups and workers, including a review and implementation of a NORM program, and describe estimated activities for NORM management in relation to derived release limits in the Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials.

9. Socio-Economic and Health Conditions

9.1 Newfoundland and Labrador requirements and information

9.1.1 Baseline conditions

The Impact Statement shall describe relevant community elements, in jurisdictions with and without municipal plans and development regulations, including municipalities, Inuit Communities, Labrador Inuit Lands, Labrador Inuit Settlement Areas, and unincorporated communities in the study areas of the Project, including the following:

- population demographics and health status, including physical, mental, and social well-being;
- family life, recreation, and culture;
- education and training facilities and programs;
- housing, accommodations, and property values;
- fire and emergency services;
- health care services including mental health and addiction services, social programs, and other community services;
- active municipal, governmental or non-governmental working groups or committees; and
- municipal infrastructure or services to be used by the Project and the capacity of the infrastructure and services to support the Project, including human resources, equipment and training.

In addition, the Impact Statement shall describe relevant economy, employment and business elements in the study areas of the Project, including the following:

- economy of the regions in the project area;
- value of existing industries including cultural and recreational; mining, mineral and quarrying; commercial, recreational, and Indigenous fisheries industrial operations and other major employers.
- employment in the region;
- availability of skilled and unskilled labour in the region and in the province;
- business capacity relative to goods and services; and
- employment equity and diversity including under-represented groups.

The baseline study shall describe overlap of the study areas with areas covered by mineral licences, areas of current or recent mineral exploration activity, areas that have been the focus of past mineral exploration efforts, recognized mineral occurrences of potential economic significance, areas of past, present or planned

future mining, infrastructure associated with a mining operation, areas of past or present quarrying, and areas underlain by deposits of high-quality sand and gravel. This information shall be used to assess the effects of the Project on current and potential future mining, mineral exploration and quarrying, and measures to mitigate the effects.

The Impact Statement shall describe the cultural, recreational and commercial importance of the waters of the marine shipping port including the value of existing industries, including cultural and recreational, commercial, recreational, and Indigenous fisheries, industrial operations, and other major employers.

The baseline study of land and resource use shall focus on, at a minimum, the following components:

- current and historic land use for mining, mineral exploration, and quarrying activities, including the presence of known mineral occurrences of potential economic significance;
- land tenure, including but not limited the following: Crown lands; private land ownership, land tenure under the *Mineral Act* and *Quarry Materials Act*, and Municipalities and Inuit Community Governments with municipal plan and development regulations, Labrador Inuit Lands, and the Labrador Inuit Settlement Area;
- heritage and Cultural Resources, including archaeological and paleological resources, and burial, cultural, spiritual and heritage sites;
- recreational fishery; and
- commercial, recreational, and Indigenous and non-Indigenous hunting/harvesting practices.

Land use may be positively or negatively affected by changes to the physical and socioeconomic environment. The Traditional, Cultural and Recreational Land Use component of this baseline study shall assess traditional, cultural and recreation land use in the project area. Consultation, including surveys and interviews, with the public, municipalities, Inuit Community Governments, communities and community groups and organizations and known user groups will inform the baseline study of existing traditional, cultural and recreational land use. Specific land use activities, the frequency of those activities, and geographic areas of use shall be documented in the baseline study and overlaps with the study areas of the project area shall be mapped or otherwise illustrated. This information is needed to understand the importance of traditional, cultural and recreational land use to local residents and other users, and for the development of measures to mitigate the effects of the Project on those affected.

9.1.2 Effects to health and socio-economic conditions

Predicted effects of all phases of the Project shall include, but not be limited to a comprehensive analysis of the following:

- human health and quality of life, including but not limited to:
  - dust and air emissions;
  - traditional, cultural and recreational activities; and
  - developed areas;
- community health and services, including but not limited to the following factors:

- food security;
- employment and employment equity and diversity including under-represented groups;
- business capacity relative to goods and services;
- housing, accommodations and property values;
- health care and community services, including mental health and addiction services and social programs;
- fire and emergency services;
- education and training services and facilities; and
- municipal infrastructure or services to be used by the Project and the capacity of the infrastructure and services to support the Project;

- land use and tenure, including but not limited to:
  - mining, mineral exploration, and quarrying activities, and land accessibility for future mining, mineral exploration, and quarrying activities, including the accessibility of land for future exploration;
  - existing land tenure under the *Mineral Act*, and *Quarry Materials Act*, including restrictions for Project development associated with existing land tenure;
  - effects of potential options for location of the low-grade stockpile and overburden stockpile and the interaction of those sites with the current disposition of mineral rights and exploration efforts;
  - potential effects of the proposed mining operations in the project area, on water resources, terrestrial environment, fauna and avifauna and other VCs adjacent to the project mine site and within the Province of Newfoundland and Labrador, existing land tenure, including Crown land tenure and private land ownership and restrictions for Project development associated with existing land tenure, land use zoning if applicable, permitted/discretionary use in designated zones, and permissibility of Project features that overlap municipal zones;

The Impact Statement shall describe and summarize the economic and social benefits of the Project to the Province of Newfoundland and Labrador given that the proposed mine site would be located in the Province of Quebec.

9.1.3 Mitigation and enhancement measures

The Impact Statement shall describe mitigation measures that will be implemented to mitigate potential effects:

- on human health and quality of life, including but not limited to the following:
  - vibrations;
  - noise emissions and noise levels;
  - dust and air emissions;
  - traditional, cultural and recreational activities including existing and potential commercial, recreational and Indigenous fisheries and wildlife harvesting practices;

- on community health and quality of life and services, including but not limited to the following:
  - food security;
  - employment and employment equity and diversity including under-represented groups;
  - business capacity relative to goods and services;
  - housing, accommodations and property values;
  - health care and community services, including mental health and addiction services and social programs;
  - fire and emergency services;
  - education and training services and facilities; and
  - municipal and or community infrastructure and/or services to be used by the Project and the capacity of the infrastructure and services to support the Project;
- on land and resource use and tenure conflicts, including but not limited to:
  - mining, mineral exploration, and quarrying activities, and land accessibility for future mining, mineral exploration, and quarrying activities
  - existing land tenure under the *Mineral Act*, and *Quarry Materials Act*, including restrictions for Project development associated with existing land tenure;
  - potential effects of existing mining operations on the Project, specifically but not limited to, the effects of blasting from mining operations;
  - existing land tenure, including Crown land tenure and private land ownership and restrictions for Project development associated with existing land tenure;
  - land use zoning if applicable, permitted/discretionary use in designated zones, and permissibility of Project features that overlap municipal zones; and
  - existing and potential commercial, recreational, and Indigenous fisheries.

9.2 Federal requirements and information

For each section, the proponent must describe how Indigenous governance regimes, Indigenous law and Indigenous Knowledge were taken into account and used in establishing the baseline conditions.

9.2.1 Economic conditions

9.2.1.1 Baseline conditions

Baseline conditions must be described using disaggregated data for diverse population groups (e.g., Indigenous Peoples, women, youth, Elders, etc.) and their different access to resources, opportunities and services within the community to support GBA Plus.

The Impact Statement must provide:

- an overview of the main economic activities in the study areas, including information on the economically active members of the local, regional and Indigenous population;
- existing employment rates, including principal employment and economic well-being in the study areas and impacted communities;
- an overview of the workforce, including:
  - the availability of skilled and unskilled workers, including a qualitative summary of the conditions that influence workforce availability over the proposed project timeline,
  - existing working conditions,
  - wages and average salary range in mining and other industries,
  - full-time and part-time employment and training; and
  - gender gaps such as for skilled trades and in wages and qualifications;
- a description of any use of lands and waterbodies for economic activities in the study areas including commercial fishing, ecotourism and outfitters.

With respect to the economic conditions of Indigenous Peoples, the Impact Statement must describe:

- any relevant treaty provisions pertaining to economic activities for Indigenous Peoples;
- Indigenous or federal economic development plans for the study areas;
- an overview of the Indigenous businesses that may provide supplies and services required for the Project, including the affiliation of those businesses, if applicable, to Indigenous groups identified in the Indigenous Engagement and Partnership Plan;
- an overview of employment in other projects of similar size in the regional area, including current Indigenous participation rates; and
- existing barriers to employment and/or participation in the labour market for Indigenous Peoples and communities.

9.2.1.2 Effects to economic conditions

The Impact Statement must describe potential positive and adverse effects to Indigenous Peoples and to the local, regional and provincial economies. The assessment of these effects to Indigenous Peoples must describe and take into account interactions with the effects on physical and cultural heritage, on structures, sites or things of significance, and on the current use of lands and resources for traditional purposes. The assessment of economic effects should also take into consideration the temporal scale for construction, operation and maintenance, decommissioning and rehabilitation and the potential for boom-and-bust cycles associated with the Project. The proponent should refer to IAAC guidance on Analyzing Health, Social and Economic Effects under the *Impact Assessment Act*.

9.2.1.2.1 Employment

The Impact Statement must:

- describe the potential changes in employment including:
  - an estimate of the direct, indirect and induced employment created at each phase of the Project, and during each calendar year over the lifespan of the Project (including also an estimate of the full-time equivalent employment and part-time employment created at each phase of the Project, and during each calendar year over the lifespan of the Project);
  - an estimate of direct, indirect or induced income or wages and benefits, including a comparison for each phase of the Project and to the industry average, and regional and provincial average;
  - a description of the types of employment created at each phase of the Project, including skill and education requirements for the types of employment; and
  - an estimate of the ability of the local and regional labour market (including Indigenous participants in the labour market) to meet demand. To the extent possible, indicate the hiring targets and number of jobs potentially created for each Indigenous groups identified in the Indigenous and Engagement Partnership Plan;

With respect to the economic conditions of Indigenous Peoples, the Impact Statement must:

- describe the potential for labour shortages in specific sectors within the Indigenous groups affected by the Project, taking into account the different phases of the Project and other potential projects in the region; and
- describe the potential effects on employment, including for the diverse population groups within Indigenous groups for each phase of the Project.

9.2.1.2.2 Business environment and local economy

The Impact Statement must:

- set out the investment in the Project for each phase and the total investment, including detailed forecast of capital and operating costs;
- describe economic benefits to the economy as a whole, including;

  - information on revenues from tax levies, royalties, changes to Gross Domestic Product, development of new technologies or intellectual property, etc.;
  - an estimate and description of direct, indirect and induced economic effects of the Project in the short and long terms;
- provide information on the economic viability of the Project, to support the net benefits assessment, including cash-flow modelling results for the Project with a focus on net-present value, internal rate of return, and break-even commodity prices for the Project;
- describe the methodologies and assumptions used to estimate the economic benefits of the Project including:
  - forecasts of relevant commodity prices used, where these were acquired and, if available, how they were forecasted;
  - sources and methodologies used for developing multipliers and estimates and, where a generic multiplier may not accurately reflect the specific situation of the Project, provide evidence of specific economic activity that will result from the Project going ahead;
  - relevant sources of uncertainty in the estimate;
  - sensitivity analysis pertaining to key aspects of the Project, including how changes in global competitiveness of the Project, commodity prices, capital and operating costs or other relevant sources of uncertainty may affect the estimated economic benefits. Present best-case and worst-case scenarios to provide a realistic description of long-term economic effects of the Project; and
  - describe environmental, social, and governance risks to project economics, including the cost of capital; and
- describe changes to economic conditions for people or businesses that use lands and waterbodies for economic activities in the study areas.

With respect to the economic conditions of Indigenous Peoples, the Impact Statement must:

- describe any revenue/economic benefit agreements under consideration or concluded with Indigenous groups (details not necessary);
- provide an estimate of the anticipated levels of local and regional economic participation in the Project for Indigenous groups, in comparison to the total project requirements (e.g., total dollar value of contracts);
- describe situations when the Project may directly or indirectly create economic hardships or the displacement of Indigenous businesses;
- estimate the potential effects of the Project on the traditional economy, including the potential loss of related jobs; and
- describe the potential effects of changes to economic conditions in affected Indigenous groups related to traditional use of lands and resources (refer to sections 7.6 Cumulative effects assessment, and 10.1.2 Current use of lands and resources for traditional purposes).

The economic effects assessment should apply the GBA Plus methodology to describe the circumstances under which various population groups may experience more adverse effects or receive fewer benefits from

the Project. The economic information provided will be made publicly available and should not contain confidential business information.

9.2.1.3 Mitigation and enhancement measures

The Impact Statement must describe the mitigation and enhancement measures that will be implemented for all potential effects on economic conditions, including:

- With respect to the economic conditions of Indigenous Peoples, identify and describe opportunities for enhancing positive effects, including:
  - education, training and hiring practices that encourage employment and retention;
  - describe any actions that will be taken to increase the employment of diverse population groups that may face barriers to employment in the Project, including training opportunities and programs, measures to be put in place to accommodate the use of indigenous language in the workplace, and measures to address gender-based violence and discrimination;
  - actions to provide flexibility in work schedules to enable the continued participation of Indigenous employees in traditional and cultural activities;
  - a summary of commitments made with respect to employment, training and trade, including any economic benefit plans or specific cooperation agreements with Indigenous groups and diverse population groups;
  - training, education, and scholarship programs that the proponent plans to support in order to improve employment opportunities, including participation in and contribution to local training networks. Specify the types of employment targeted by these programs, as well as the targeted clientele, such as local residents, Indigenous Peoples, and various relevant population groups;
  - all cultural awareness training plans for non-Indigenous employees to promote a safe work environment that fosters the well-being of Indigenous employees and respectful working relationship with Indigenous contractors;
  - describe plans, programs and policies to encourage contracting and procurement opportunities for Indigenous Peoples and Indigenous-owned companies;
  - describe supplier network development initiatives, including the identification of potential Indigenous suppliers, and plans to provide them with information on technical, commercial and other requirements, and to debrief unsuccessful bidders;
  - describe technology transfer and research and development programs that will facilitate the use of indigenous suppliers of goods and services and Indigenous employees;
- where appropriate, provide details regarding financial liability and compensation in place as required by regulation and the proponent's commitments in relation to decommissioning or rehabilitation including compensation for lay-offs; and
- describe and justify the need for compensation plans to mitigate potential economic effects.

The consideration of mitigation and enhancement measures should elaborate on the potential of the Project to benefit community members in relevant population groups, including Indigenous Peoples. Indicate if mitigation and enhancement measures will rely on any federal or provincial level social programs.

9.2.2 Indigenous social conditions

9.2.2.1 Baseline conditions

The Impact Statement must describe the existing social conditions of Indigenous Peoples, including:

- identify the social area of influence of the Project (i.e., the populations that may be positively or negatively affected by the Project); provide community-specific baseline conditions on a disaggregated basis (without identifying individuals) for diverse population groups (e.g., women, youth, and Elders); and
- provide a comparison of data at the provincial, regional or national level, if possible, to better interpret baseline conditions.

9.2.2.1.1 Community profile

To understand the community context, the Impact Statement must prepare community profile(s) for each Indigenous group and describe:

- demographic characteristics and major socio-cultural values and concerns of the Indigenous Peoples;
- influences on community well-being (e.g., disposable income, cost of living, language, and gender-based violence), including indicators proposed by Indigenous groups;
- community cohesion, including level of support and engagement in community, social networks and social activities;
- the psychosocial environment and its influence on community well-being;
- access, ownership and use of resources (e.g., land tenure, minerals, food, water, social infrastructure); and
- relevant historical community background, including applicable history with previous proponents.

9.2.2.1.2 Services and infrastructure

The Impact Statement must describe the existing local and regional infrastructure in the study areas as they relate to the social conditions of Indigenous Peoples, including:

- road infrastructure and traffic safety;
- marine terminals;
- airports; and
- any other potentially affected infrastructure and transportation routes.

The Impact Statement must describe the existing local and regional services in the study areas as they relate to the social conditions of Indigenous Peoples, including:

- waste disposal;
- existing health services and programs, including health providers capacity, and addiction and mental health-related services;
- social services including women's shelters; and
- all other potentially affected services.

9.2.2.2 Effects to Indigenous social conditions

The Impact Statement must assess the adverse and positive effects of the Project on social conditions of Indigenous Peoples. Interconnections between social VCs and other VCs and interactions between effects must be described. The assessment of these effects to Indigenous Peoples must also describe and take into account interactions with the effects on physical and cultural heritage, on structures, sites or things of significance, and on the current use of lands and resources for traditional purposes.

As applicable to the assessment, the analysis should describe the goals of local or regional land use plans or local or regional development plans and the extent to which the Project is aligned with such plans to avoid adverse social effects or enhance positive ones. The effects assessment should explore and discuss opportunities by which benefits to local communities can be enhanced.

The proponent should refer to IAAC guidance on Analyzing Health, Social and Economic Effects under the *Impact Assessment Act*.

9.2.2.2.1 Community well-being

The Impact Statement must describe effects to community well-being for Indigenous Peoples, including:

- assess potential adverse and positive effects, at the Indigenous community level, of changes to social conditions including, but not limited to:
  - income inequity;
  - changes that result from increased cost of living;
  - non-commercial/trade economy;
  - other effects highlighted by Indigenous Peoples, if applicable; and
  - those conditions considered for analysis of determinants of health in this section;
- describe, at the community level, the expected interactions between the Project's construction, operation and maintenance, decommissioning and rehabilitation workforce and local communities, businesses and residents;
- identify whether social divisions might be intensified as a result of a Project;
- evaluate effects on access, ownership and use of resources (e.g., land tenure, minerals, food, water, social infrastructure);

- consider the potential for stresses on community, family and household cohesion, reliance on women's shelters, substance use, or illegal or other potentially disruptive activities;
- describe potential effects from an influx of non-resident workers in terms of increased risk of propagation of sexually transmitted infections as a proxy indicator of a potential increase in sexual exploitation or sexual assaults and in terms of gender-based violence (e.g., harassment or human trafficking);
- document and take into account tolerance thresholds for potential adverse effects identified by Indigenous Peoples;
- describe how Indigenous Knowledge was used in assessing community well-being;
- describe any positive effects on well-being (e.g., resulting from improved economic opportunities, increased access to services); and
- apply GBA Plus within the information related to community well-being and document how potential effects of changes to community well-being could be different for diverse population groups, including Indigenous Peoples or other relevant population groups (e.g., women, youth, Elders).

9.2.2.2.2 Services and infrastructure

The Impact Statement must:

- describe the predicted adverse and positive effects to the local and regional services and infrastructure, as they relate to the social conditions of Indigenous Peoples, anticipating and considering increased demand on these services, including to:
  - ambulance and health care services;
  - mental health and addiction-related services, and social services including women's shelters;
  - road infrastructure and traffic safety;
  - transportation infrastructure (marine terminals, airports);
  - waste disposal; and
  - other utilities highlighted by Indigenous groups, if applicable.
- take into account potential effects arising from a higher risk of accidents for each phase of the Project, (e.g., a higher risk of impact on the road system and emergency services during the construction phase due to an increased use of roads); and
- describe any need for government and/or proponent expenditures for new or expanded services, facilities or infrastructure, arising out of project-related effects.

9.2.2.3 Mitigation and enhancement measures

The Impact Statement must describe the mitigation and enhancement measures that will be implemented for all potential effects on social VCs in relation to Indigenous Peoples, including:

- describe mitigation for changes to, health services, emergency services, and addiction and mental health-related services:

- identify opportunities to enhance positive impacts, such as improving infrastructure;
- take into account local and regional land use plans, development plans, and community safety and wellness plans; and
- indicate if mitigation and enhancement measures will rely on any federal or provincial level social programs;

- describe how GBA Plus findings on disproportionate impact have been used to inform mitigation and improvement measures, including measures to prevent sexual harassment and gender-based violence in the workplace; and
- describe and justify the need for compensation plans to mitigate potential social effects.

9.2.3 Indigenous health conditions

9.2.3.1 Baseline conditions

The Impact Statement must describe the current state of physical, mental and social well-being and incorporate a determinants of health approach to move beyond biophysical health considerations. In line with the World Health Organization's (WHO) expanded definition of health, a determinants of health approach recognizes that health is more than the absence of disease but rather a state of physical, mental, and social well-being.

The Impact Statement must:

- identify the social area of influence of the Project (i.e., the diverse population groups who may be positively or negatively affected by the Project);
- provide information that is sufficiently detailed to describe the interconnections by which the Project's influence on the determinants of health may affect health risks for potentially affected Indigenous Peoples;
- provide a comparison of data at the provincial, regional or national level, if possible, to better interpret baseline conditions for the health of potentially affected Indigenous Peoples;
- describe how Indigenous governance regimes, Indigenous law and Indigenous Knowledge were taken into account and used in establishing baseline conditions, including input from diverse population groups; and
- describe baseline conditions using disaggregated data for diverse population groups and their different access to resources, opportunities and services within the community to support GBA Plus.

To understand the context and develop the baseline health profile of potentially affected Indigenous Peoples the Impact Statement must:

- develop community health profiles that reflect the overall health of each potentially affected Indigenous group, where information is available, and that include:

  - health outcomes of interest (i.e., current health status), such as chronic diseases (e.g., diabetes, heart disease, cancer), mental health conditions, suicide rate, and other health information relevant to the community;
  - health factors of interest, such as biological risk factors (e.g., overweight/obesity, hypertension), health-related behaviours (e.g., dietary intake/food consumption, physical activity, substance use), and mental well-being;
  - vulnerabilities and resiliencies from a social determinants of health perspective;
  - any context-specific definitions of health and well-being, including from the perspective of the relevant Indigenous groups;
- describe relevant Indigenous history or context, including historical impacts on health;
- describe all determinants of health, including social determinants of health (SDOH[15]) that may be relevant to the Project. The baseline information must:
  - describe the SDOH for diverse population groups within each Indigenous group;
  - include SDOH of interests for Indigenous groups;
- specify the health factors involved in the effect pathways (e.g., food consumption, alcohol and drug use, mental well-being, health inequalities);
- illustrate the overarching links between the identified populations, the SDOH, and health factors;
- provide the approximate location on a map and distance of likely human receptors, including foreseeable future receptors, which could be affected by changes in air, water, country food quality, and noise and light levels. Include the gathering, hunting, trapping and fishing areas used by Indigenous Peoples, residences and seasonal camps identified in collaboration with Indigenous Peoples and any sensitive receptors near the Project;
- describe drinking and recreational water sources, both surface and/or groundwater (permanent, seasonal, periodic or temporary), and the distance from Project activities;
- describe the access to, and the consumption of, country foods (traditional foods)[16] as a health-related behaviour, including what species are used, quantities, frequency, harvesting locations and how the data were collected (e.g., site-specific consumption surveys, First Nations Food, Nutrition and Environment Study);
- provide baseline contaminant concentrations in ambient air, drinking water and tissues of country foods consumed by Indigenous Peoples. The proponent should work with local Indigenous groups to identify the species for which tissue samples must be collected, where appropriate ;
- describe the level of food security and food sovereignty within Indigenous groups. Refer to the Public Health Agency of Canada's website on food security and to the First Nations Food, Nutrition & Environment Study for more information; and

[15] The social determinants of health encompass economic, social, cultural, and psychosocial factors—the latter three types of factors may be categorized under social conditions]
[16] Country foods refer to all foods that do not come from commercial systems. It includes all food that is trapped, fished, hunted, harvested or grown for subsistence or medicinal purposes or has Indigenous cultural value.

- provide a summary of identified data and explain the selection of methods for statistical analysis of available data, including identifying uncertainties and limitations of proposed methods and available data. If surrogate data from reference sites are used rather than Project site-specific measurements, demonstrate how the data are representative of site conditions.

Guidance for developing the appropriate baseline information relevant to human health is identified in Appendix 2 – Human health. The proponent should refer to the Health Canada guides to ensure that best practices are followed in collecting baseline information for assessment of the Project's impacts on human health caused by changes in air quality, noise levels, the quality of drinking water and water used for recreational purposes, country foods and the multiple contaminant exposure routes. The proponent must justify any omission or deviation from the recommended baseline characterization approaches and methods, including the Health Canada guidelines.

9.2.3.2 Effects to Indigenous health conditions

The proponent must assess the potential effects of the Project on the health of Indigenous Peoples. The assessment of these effects to Indigenous Peoples must describe and take into account interactions with the effects on physical and cultural heritage, on structures, sites or things of significance, and on the current use of lands and resources for traditional purposes. A determinants of health approach accounts for interactions among environmental, social, economic, and health VCs, and is best applied by using the health impact assessment method. This method of assessing health effects will also support the analysis of disproportionate effects across population groups. Interactions between the Project and the determinants of health (as value components) must be described.

A dedicated Health Impact Assessment (HIA), accompanied by a Human Health Risk Assessment (HHRA[17]), should show an understanding of the interconnections between the project's environmental, social, economic impacts on Indigenous Peoples and will play a role in understanding the project's impacts on rights and culture. The proponent should refer to IAAC guidance on Analyzing Health, Social and Economic Effects under the *Impact Assessment Act* and to Guidance from Health Canada regarding Human Health Impacts and the best practices for the conduct of Health Impact Assessment in Appendix 2 – Human health.

The Impact Statement must:

- apply a determinants of health approach, which may be supported by HIA and HHRA methodologies that consider a broad range of relevant determinants of health
- describe any potential health effects of the Project resulting from changes in the biophysical determinants, and SDOH;
- consider and describe how Indigenous Knowledge was used in assessing human health effects; and
- apply GBA Plus across all health effects and document how potential effects or changes to human health conditions could be different for diverse population groups.

[17] HHRA: assessment of the effects on the health of persons exposed to biophysical stressors, particularly increased concentrations of chemical substances present in the environment and linked to various phases of a Project (construction, operation and maintenance, decommissioning and rehabilitation, as the case may be).

9.2.3.2.1 Biophysical determinants of health

The Impact Statement must:

- provide an assessment of the potential effects on the health of Indigenous Peoples in consideration of, but not limited to, potential changes in:
  - air quality, as recommended in Health Canada's guidance document, Guidance for Evaluating Human Health Impacts in Environmental Assessment: Air quality. Air quality criteria and guidelines must not be considered thresholds below which health effects do not occur, particularly for non-threshold substances;
  - noise exposure and effects of vibration. For noise it is recommended to use criteria based on human health. For more details, refer to Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise;
  - current and future accessibility, availability and quality of country foods (traditional foods);
  - current and future accessibility, availability and quality of water for drinking, recreational and cultural uses. For water used for domestic purposes, the strictest guideline values should be used: Guidelines for Canadian Drinking Water Quality, or any relevant provincial water quality standards or guidelines;
  - radiation levels in country food and water; and
  - other effects highlighted by Indigenous Peoples, as applicable;
- describe how Project-related contaminants (e.g., arsenic, cadmium, lead, mercury), that can potentially end up in the water, air or soil, can be absorbed in country foods (i.e., foods that are trapped, fished, hunted, harvested or grown for subsistence, cultural or medicinal purposes);
- provide the rationale if a determination is made that an assessment of the potential for contamination of country foods (traditional foods or other exposure pathways, such as inhalation) is not required or if some contaminants are excluded from the assessment;
- identify other potential routes of exposure to contaminants;
- provide a detailed justification for every contaminant of potential concern (COPC[18]) or exposure route that would be excluded and/or eliminated from the assessment of the human health risks;
- conduct a problem formulation exercise and/or preliminary conceptual model predictions to determine whether a more detailed HHRA is required. The proponent must provide a rationale if the problem formulation and/or preliminary conceptual model predictions indicate that a HHRA is not warranted;
  - problem formulation consists of identifying the main factors to consider. It briefly addresses the following factors:

[18] COPC: Any chemical substance for which the concentration in an environmental medium is likely to be high due to the project's activities may first be considered as a COPC. However, if it is established that the sum of the modeled concentrations and the background concentrations is below the guidelines, standards or criteria - based on health protection - for the affected area, the statement of the problem stage of the risk assessment may conclude that it is unnecessary to treat this chemical substance as a COPC in a quantitative risk assessment.

        - identification of the boundaries of the study;
        - identification of the current and future COPCs;
        - identification of current and future human receptors;
        - identification of current and future exposure pathways; and
        - development of the conceptual site model illustrating the connections existing between the COPC, the receptors and the exposure routes;
- if a HHRA is conducted, the assessment must examine all exposure pathways for contaminants of potential concern to adequately characterize potential biophysical risks to human health. A multimedia HHRA may need to be considered and conducted for any contaminant of potential concern with an identified risk and multiple pathways. Use best practices in health risk assessment methods (see Health Canada, 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Human Health Risk Assessment, 2023);
- provide an assessment of the carcinogenicity of diesel exhaust gases when diesel engines are a source of air pollutant emissions for the Project. In characterizing the carcinogenic risk of Project related diesel exhaust gases, the proponent has two options:
    - carry out a quantitative risk assessment based on the information in Health Canada's (2022) report, which provides a quantitative assessment of the relationship between ambient PM2.5 exposure and lung cancer risk. A sample calculation is available upon request to: ia-ei@hc-sc.gc.ca; or
    - provide a qualitative risk assessment of the carcinogenic risk of diesel exhaust gases related to the Project, which includes three different elements to ensure transparency:
        - identification of the main sources of diesel emissions for the Project and acknowledgement of the relative importance of diesel emissions as a source of air pollution for the Project;
        - acknowledgement that diesel emissions have been labelled a human carcinogen by international authorities such as Health Canada, WHO's International Agency for Research on Cancer, the U.S. Environmental Protection Agency and the California Environmental Protection Agency; and
        - why a quantitative assessment of the carcinogenic risk of diesel emissions for the Project is not being done;
- assess non-cancer risks of short-term and chronic exposure to diesel exhaust using the guidance values presented in the Human Health Risk Assessment for Diesel Exhaust;
- assess the cancer risks of human exposure to all potentially carcinogenic PAHs in the diesel mixture rather than to a single surrogate substance (refer to Health Canada's Guidance for Evaluating Human Health Effects in Impact Assessment : Human Health Risk Assessment, 2023);
- describe and quantify specific thresholds used for HHRA and document if different thresholds were considered for vulnerable populations, including by sex and age. Provide a justification if any applicable threshold was not used;

- document and take into account tolerance thresholds for potential adverse effects on health identified by Indigenous Peoples;
- in situations where Project related air, water or noise emissions meet local, provincial, territorial or federal guidelines, and yet public concerns were raised regarding human health effects, provide a description of the public concerns and how they were or are to be addressed; and
- describe any Project-related changes that could result in a positive health effect (e.g., remediation Projects).

9.2.3.2.2 Social determinants of health

With respect to the social determinants of health of Indigenous Peoples, the Impact Statement must:

- describe the potential health effects arising from the project-related interactions among relevant social, cultural, psychosocial and economic factors, and identify any key interconnecting factors along effect pathways
- use secondary information and community input to describe potential project-related changes , including:
  - psychosocial factors affecting the mental well-being of Indigenous Peoples living in communities, including but not limited to:
    - Indigenous group resilience (relationship to the natural environment, concern for future generations);
    - concerns regarding public safety, particularly the risk of traffic-related injuries during the construction phase and the risk of accidents or malfunctions related to project operations as well as disturbance of normal daily activities;
    - concerns regarding perceived risks of environmental contamination;
    - community cohesion;
  - socio-economic factors as a result of an influx of money and/or in-migrant, where applicable, affecting the overall well-being of Indigenous Peoples, including but not limited to:
    - increased cost of living;
    - average income and wage inequality;
    - local drug and sex trades;
    - access, availability and quality of health, social services and emergency services including the increased use of these services in relevant communities;
    - education level, employment, and training, including youth drop-out rate;

    - the availability, accessibility, utilization (quality and use) and stability pillars of food security, including country food considerations within the broader perspective of Indigenous distinct food systems;[19]
- identify potential avoidance of land, country food sources or drinking or recreational water sources near Project components by Indigenous Peoples due to perceived changes in environmental quality and tranquillity and describe how it was considered in assessing potential effects on the diet and health of Indigenous Peoples;
- describe and quantify potential effects to mental and social well-being (e.g., stress, depression, anxiety, sense of safety, addiction, substance abuse, suicide rate);
- document and take into account tolerance thresholds for potential adverse effects identified by Indigenous Peoples; and
- describe any positive health effects (e.g., resulting from improved economic opportunities, increased access to services).

The proponent should refer to the following guidance:

- Analyzing Health, Social and Economic Effects under the *Impact Assessment Act*;
- Indigenous Mental Wellness and Major Project Development: Guidance for Impact Assessment Professionals and Indigenous Communities; and
- More-than-mental health: Indigenous identity, culture, community, and relationship with land are integral to Indigenous wellbeing (training manual).
- Final report on Missing and Murdered Indigenous Women and Girls, in particular the Calls to Justice for Extractive and Development Industries (calls 13.1 to 13.5).

9.2.3.3 Mitigation and enhancement measures

The Impact Statement must describe the proposed mitigation and enhancement measures for any potential effects on the health of Indigenous Peoples and for each Indigenous group.

In particular, the Impact Statement must:

- if the level of emissions from the Project or effluent discharge is below or at the applicable regulatory limits, identify if additional mitigation measures will still be considered. However, if the change may be substantial compared to baseline conditions (even within established regulatory limits) as a result of local or regional circumstances or the extent of the change, the proponent must provide additional mitigation measures to minimize pollution and risks to human health;
- when potential effects on human health exist due to exposure to a non-threshold contaminant (e.g., certain air pollutants such as fine particulate matter and nitrogen dioxide, as well as arsenic and lead in drinking water), describe mitigation measures aimed at reducing residual effects to as low a level as reasonably possible;

[19] Refer to: University of Ottawa, Université de Montréal, Assembly of First Nations, First Nations Food, Nutrition & Environment Study

- identify any measures that would reduce negative effects or enhance positive effects on the state of mental health (e.g., life skills training such as financial management and coping strategies; and resources available in work camps for recreational activities outside working hours to further support healthy coping):
  - mitigation measures to help stabilize the effects of boom-and-bust cycles so as to improve community adaptation after the Project is completed; and
  - mitigation measures to support the health, safety and security of individuals, including permanent measures to prevent gender-based violence;

The proponent is encouraged to refer to the National Collaborating Centre for Healthy Public Policy's publication entitled Tools and approaches for assessing and supporting public health action on the social determinants of health and health equity.

10. Indigenous Peoples Physical and Cultural Heritage, Current Use and Rights

10.1 Joint requirements and information

The Impact Statement must provide information on how the Project may affect Indigenous Peoples, as informed by the Indigenous groups involved in the assessment. The proponent should apply IAAC NL guidances on engaging with Indigenous groups and appropriate methodologies for assessing potential effects and impacts on Indigenous Peoples and their rights.

The assessment of potential effects must include both adverse and positive effects to the current use of lands and resources for traditional purposes, to physical and cultural heritage, to structures, sites or things of historical, archaeological, paleontological or architectural significance, and to environmental, health, social, cultural and economic conditions of Indigenous Peoples affected by the Project.

Indigenous VCs may be holistic in nature and may encompass the effects on a number of individual environmental, health, social or economic value components, as well as impacts to the exercise of Aboriginal or Treaty rights. Where holistic VCs are identified, the proponent must combine the analysis of individual VCs into an assessment of the holistic VCs identified by Indigenous groups.

The proponent must provide an opportunity for Indigenous group to review the information prior to submission of the Impact Statement. If the information is about an Indigenous group, they must be afforded the opportunity to comment on the information in the Impact Statement and their comments should be included. In cases where a specific study addressing elements relevant to the impact assessment of the Project has been prepared by an Indigenous group, the proponent must incorporate it into the Impact Statement and explain how it was taken into account.

The proponent is also encouraged to work with Indigenous groups who demonstrate an interest in drafting sections of the Impact Statement that concern them, including sections describing Indigenous Knowledge, on the subject of current use of lands and resources for traditional purposes, on potential impacts to the rights of Indigenous Peoples, and for the identification of mitigation or enhancement measures. Where applicable, sections of the Impact Statement prepared by Indigenous groups must be clearly identified. All perspectives and the rationale for different conclusions should be documented in the assessment report.

Where Indigenous groups do not wish to participate, the proponent should continue sharing information and analysis with the Indigenous groups of the potential effects of the Project, to document its efforts in that respect, and to use available public sources of information to support the assessment.

10.1.1 Indigenous physical and cultural heritage, and structures, sites or things of significance

10.1.1.1 Baseline conditions

The Impact Statement must include a description of the baseline conditions associated with physical and cultural heritage and structure, site or thing of significance for Indigenous Peoples. This description should allow for an understanding of the historical baseline conditions associated with ability to transmit knowledge and culture as defined through the engagement process.

Information on heritage and structures, sites and things of significance for Indigenous Peoples can include:

- burial sites;
- spiritual sites, including rivers and watercourses;
- cultural landscapes;
- oral histories;
- teaching areas used to transfer knowledge between generations;
- cultural values and experiences on the land;
- Indigenous governance systems and Indigenous laws tied to the landscape;
- toponymy, language and other components that make up a culture;
- sacred, ceremonial or culturally important places, such as the George River, the waters of the marine shipping port, Lake Mistinibi, plants, animals, objects, beings or things;
- places with archaeological potential or artefacts, including in the George River, Lake Mistinibi and Lake Brisson area, and along the road connecting the mine site to the Labrador coast; and
- site occupied historically.

The Impact Statement must:

- describe the interconnections and impact pathways between heritage and cultural structures, sites, places, and things of significance and the current use of lands, health, social, and economic components, and Indigenous rights for each potentially impacted Indigenous group, including intergenerational impacts over the lifetime of the Project;
- describe how cumulative effects to environmental and socio-cultural conditions, including changes to those conditions, have already impacted physical and cultural heritage;
- provide the location of physical and cultural heritage features on maps, if it has been shared by Indigenous Peoples with the proponent and if the proponent has obtained permission from the Indigenous groups, for the information to be shared publicly;
- include components of the environment identified by Indigenous groups as having heritage value, to reflect that natural and cultural heritage is a multidimensional concept which is not limited to particular sites or objects; and

- describe how input from potentially impacted Indigenous groups was sought and considered in the identification of these locations and features, including opportunities provided to participate in or lead historic resources studies and archaeological studies (including field studies).

The proponent should consult the Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing on IAAC's Website.

10.1.1.2 Effects to physical and cultural heritage

The Impact Statement must:

- assess potential effects to physical and cultural heritage, and structures, sites or things of historical, archaeological, paleontological or architectural significance to indigenous Peoples, including, but not limited to:
  - loss or destruction of physical and cultural heritage;
  - changes to access to and/or experience with physical and cultural heritage;
  - changes to the cultural value, spirituality, or importance associated with physical and cultural heritage, including any changes resulting from changes to the access and current use of land and resources for traditional purposes;
  - changes to sacred, ceremonial or culturally important sites, including sites along the George River and its shores, Lake Mistinibi, Lake Brisson and along the road connecting the mine site to the Labrador coast, objects or things, including languages, stories and traditions;
  - changes to cultural security and the ability to maintain and transmit knowledge, language, and culture to future generations; and
  - changes to visual aesthetics and landscape over the life of the Project and post-project decommissioning and rehabilitation;
- for all project activities that disturb the soil, on the surface or underground, conduct an archaeological potential study in consideration of provincial legislation and in consultation with Indigenous groups, as appropriate;
- provide copies of correspondence with provincial, territorial or Indigenous authorities responsible for heritage resources with comments on any physical and cultural heritage resource assessment and proposed mitigation measures;
- describe contingency plans and field interventions that will be applied should heritage resources be discovered during construction and operation, or cultural heritage training programs for workers;
- describe the outcomes of engagement and consultation activities with Indigenous groups with concerns about heritage resources in the project area and indicate the participation of the members of these groups in the related studies (e.g., archaeological studies), if applicable;
- describe how Indigenous Knowledge informed studies, including the identification of the sites to assess and include studies conducted by Indigenous Peoples, if any; and
- list any other effects highlighted by Indigenous groups or other participants, if applicable.

The proponent should consult IAAC's Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under CEAA, 2012.

10.1.2 Current use of lands and resources for traditional purposes

10.1.2.1 Baseline conditions

The Impact Statement must include information on the current use of lands and resources for traditional purposes. The proponent should refer to the Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under CEAA, 2012, on IAAC's website.

Where information is publicly available or is provided by Indigenous groups, the Impact Statement must identify and describe:

- Indigenous governance systems and Indigenous laws associated with the current use of lands and resources for traditional purposes;
- relevant local or regional land use or resource development plans;
- resources important for traditional and cultural purposes, including the following[20]:
  - plants, lichens, moss, fish (including char (including arctic char), lake Trout, brook trout, whitefish, pike, salmon (including ouananiche), cod, long nose sucker, scallop, whelk, herring, and smelt), mammals (including the George River Caribou herd, moose, fox, weasel, wolf, lynx, hare, black bear, beaver, porcupine, and seals), birds (including ptarmigan, goose) and other natural resources including fish and plants used for medicinal purposes;
  - wild and country food consumed by Indigenous groups;
  - waterways, waterbodies, springs, wetlands, and shallow groundwater used as drinking water sources and aesthetic properties (taste, colour, clarity, temperature, odour) of those waters;
  - other resources identified by Indigenous groups;
- access to resources (e.g., physical access to harvest-specific species, culturally important harvesting locations, timing, frequency, seasonality, distance from community);
- the traditional and cultural significance of identified resources;
- the quality and quantity of resources (e.g., preferred species and perception of quality);
- the types of traditional practices (present, historic, or reasonably foreseeable), including for:
  - hunting, fishing, trapping, or harvesting practices;

[20] For a complete list of resources identified to date as important for traditional and cultural purposes please refer to the original comment submissions shared by Indigenous groups available on the Project's Canadian Impact Assessment Registry website. The proponent should continue to integrate any additional Indigenous Knowledge that is shared by Indigenous groups throughout the development of the Impact Statement.

  - seasonal practices and how they vary in time, such as berry and tea harvesting, bait harvesting and fishing, game hunting and trapping of fur-bearing animals;
  - all historic, current, and potential future uses of riverbanks, shorelines, waterways, and waterbodies navigable by Indigenous Peoples, such as for travel and recreation (e.g., canoe route and portage trails), including entry and exit/landing sites for watercraft;
  - social and ceremonial purposes as well as, gathering and teaching grounds;
  - traditional economic purposes;
  - other current uses identified by Indigenous groups;
- context for traditional practices, including:
  - access and travel routes for conducting traditional practices (e.g., historical and current travel routes and land use trail);
  - important features for the experience of the practice (e.g., connection to the landscape without artificial noise and sensory disturbances, air quality, visual landscape, perceived or real contamination, etc.);
  - efforts by Indigenous groups to restore traditional practices;
- location of resources and traditional practices (include a map, if possible):
  - places where each resource important for traditional and cultural purposes are located;
  - places where each traditional practice is undertaken including culturally important locations;
  - cabins, camp sites, Aullâsimavet, and staging areas, including those used for hunting, trapping and fishing;
  - gathering and teaching grounds for social, educational, economic, or ceremonial purposes;
  - for locations identified for traditional purposes, identify whether it is used as a permanent residence or as a seasonal/temporary location, and the number of people using each identified site or area;
- location of any Indigenous-led research or monitoring activities; and
- other current uses identified by Indigenous groups.

The information should be provided in sufficient detail to allow analysis of the effects to Indigenous Peoples that result from changes to the environment and on health, social and economic conditions.

The Impact Statement must also outline methods used to collect information on traditional use of lands and resources by Indigenous groups.

10.1.2.2 Effects to current use of lands and resources for traditional purposes

The Impact Statement must:

- assess the potential effects on current use of lands and resources for traditional purposes, within the context of cumulative effects, including to:
  - current and future availability and quality of country foods (traditional foods);

- quality, quantity and distribution of resources available for harvesting (e.g., species of cultural importance, traditional and medicinal plants);
- access to culturally important harvesting areas or resources, access to traditional territory and to/from the community and reserves;
- the use of historical and current travel ways, navigable waterways and waterbodies;
- experiences of being on the land, including sensorial changes (e.g., air quality, noise, vibration, light, visual aesthetics) and any corollary wellness impacts as a result of changes in the sensory experience of being on the land;
- sites of interest to communities including historical and current camp sites and sites for commercial and non-commercial fishing, hunting, trapping and gathering and cultural or ceremonial activities and practices including Lake Brisson, Lake Mistinibi, and the George River and its shoreline;
- economic burdens of, and increased time for, travelling further to hunting, fishing, trapping and gathering opportunities;

- describe how information about effects to land and resource use is integrated into this section, including:
  - changes to traditional use of cultural landscapes including important travelways, waterways and harvesting areas associated with sacred, ceremonial or culturally important places, objects or things, use of placenames, languages, stories and traditions;
  - changes to visual, auditory or olfactory aesthetics over the life of the Project, including after rehabilitation is completed;
  - impacts to harvesting and traditional use changes affecting teaching and knowledge transfer between generations;
- describe how traditional land and resource use informed the biophysical assessment and impact the assessment relating to the significance of the residual effects;
- describe how the results of the biophysical assessment were integrated in the traditional land and resource use assessment and considered in the assessment relating to the significance of the residual effects;
- describe how the comments, traditions, perspectives, values and knowledge of Indigenous groups informed the assessment of potential effects and have been considered in determining the severity impacts for current use of land and resources for traditional purposes;
- describe and assess the interconnections and impact pathways between the current use of lands, resources and health, social, and economic components, and Indigenous rights for each Indigenous group, including potential intergenerational impacts over the lifetime of the Project;
- describe how Indigenous Peoples who participated in the gathering of traditional use information took part in the impact assessment, including undertaking their own assessment of effects;
- include all Indigenous comments on potential effect to current use of lands and resources for traditional purposes; and
- list other effects on the current use of lands and resources for traditional purposes highlighted by Indigenous groups or other participants, if applicable.

10.1.3 Rights to Indigenous Peoples

10.1.3.1 Baseline conditions

The Impact Statement must:

- identify and describe the Aboriginal and Treaty rights of Indigenous Peoples potentially affected by the Project, including historic, regional and community context, the geographic extent of traditional territory, the purpose and importance of the rights to the rights-bearing communities (e.g., the practices, customs, beliefs, worldviews and livelihoods), and information on how rights have already been affected. The description should include maps, when available and permitted by the respective Indigenous groups, to illustrate the location of treaties, land claims and traditional territories;
- document the nature and extent of the exercise of rights of Indigenous Peoples, potentially impacted by the Project, as identified by the Indigenous group(s);
- consider how the information requirements related to physical and cultural heritage, current use, Indigenous health, social and economic conditions are applicable to the nature and extent of the exercise of rights; and
- consider how the information requirements related to cumulative effects are applicable to the baseline conditions supporting the exercise of rights.

Indigenous groups may also provide their perspective through consultations with IAAC, NL or, if applicable, directly to a Review Panel. Indigenous groups must be involved in the baseline characterization of conditions supporting the exercise of rights, as well as the scoping and assessment of the nature and extent of the exercise of rights of Indigenous Peoples.

The information related to the rights of Indigenous Peoples may include, but is not limited to:

- the quality and quantity of resources required to support the exercise of the rights (e.g., preferred species);
- access to the resources required to exercise rights (e.g., physical access to culturally important places, timing, seasonality, distance from community);
- the experience associated with the exercise of rights (e.g., noise and sensory disturbances, air quality, visual landscape);
- specific areas of cultural importance where rights are exercised;
- landscape, social and cultural conditions that support the Indigenous group's exercise of rights (e.g., large, intact and diverse landscapes, connection to landscape, sense of place; language; Indigenous Knowledge; clean water, biodiversity, abundance, distribution and quality of wildlife and vegetation);
- where possible, information about members within an Indigenous group, and their role in the exercise of rights (e.g., women, men, Elders, youth, people with disabilities);
- how the Indigenous group's cultural traditions, laws and governance systems, social values, access and patterns of occupation and preferences inform the manner in which they exercise the rights (the who, what, when, how, where and why);

- where they exist, identification of thresholds identified by the community that, if exceeded, may impair the ability to meaningfully exercise rights*;* and
- maps and data sets (e.g., overlaying the project footprint, places of cultural and spiritual significance, traditional territories, fish catch numbers).

The proponent should consult IAAC guidance on engaging Indigenous groups, and the Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples.

10.1.3.2 Impacts on the Rights of Indigenous Peoples

The Impact Statement must describe the level of engagement with each Indigenous group regarding potential impacts of the Project on the exercise of rights. The proponent can use Indigenous-led assessment of impacts on rights and include them directly in the Impact Statement.

It is preferable that Indigenous groups have all the information about the Project and its potential effects on hand to be able to assess the potential impacts of the Project on their rights. The proponent is therefore encouraged to share studies with Indigenous groups prior to assessing the impact of the Project on their rights. The proponent must document the approach taken to support Indigenous groups in identifying the potential impacts of the Project on their rights, including the hypotheses put forward on the potential effects. Each Indigenous group must have the opportunity to review assessment of impacts on their rights. Indigenous groups should also be provided the opportunity to approve use of their Indigenous Knowledge, prior to submission of the Impact Statement to IAAC and NL.

The proponent must justify the approach taken to assessing impacts on rights in cases where an Indigenous group has not provided its views on these impacts to the proponent, or where both parties agree that it is better to provide this information directly to IAAC and/or NL. Proponent should discuss with Indigenous groups how best to reflect their views regarding the assessment of impacts on rights in the Impact Statement.

The proponent must work together with Indigenous groups to find mutually agreeable solutions to concerns raised about impacts on the exercise of their rights.

The Impact Statement must:

- document the Project's potential impacts on the exercise or practice of the rights of Indigenous Peoples or the rights arising from treaties in the project area, as expressed by potentially impacted Indigenous Peoples;
- describe the impact on the rights of Indigenous Peoples, taking into account the concept of the link between resources, access and experience;
- document the views of potentially affected Indigenous Peoples regarding the severity of impact that the Project could have on their rights and interests; and
- describe how the assessment the project's effects were integrated in the assessment of impacts on the exercise of rights of Indigenous Peoples and considered in the determining residual effects and the severity of impacts.

The proponent should consult the following IAAC guidance on this topic: the Policy Context: Assessment of Potential Impacts on the Rights of Indigenous Peoples and the Guidance on Assessing Potential Impacts on the Rights of Indigenous Peoples.

The proponent, in collaboration with Indigenous groups, should consider the following factors, as relevant:

- how, given historic context of Indigenous groups, the Project may contribute cumulatively to any existing impacts on the exercise of rights, as identified by the Indigenous group(s). The Impact Statement must examine the interconnections between cumulative impacts on Indigenous rights with other cumulative impacts in the region, such as over-harvesting and climate change;
- the impacts of the Project on the quality and quantity of resources available for the exercise of rights;
- how the Project affects the ability to travel freely in the territory;
- the impacts of the Project on the access to areas important to the exercise of rights;
- the impacts of the Project on the experience associated with the exercise of rights, including the ability of Indigenous groups to exercise their rights in a peaceful manner (e.g., without changes in connection to land, well-being, knowledge of the landscape, air quality, noise exposure, effects of vibrations, fragmentation, visual aesthetics, safety);
- the effects of the Project on Indigenous traditions, laws and governance;
- how the Project will affect the planning, management or stewardship of traditional lands and resources by Indigenous Peoples, such as the ownership of the road (including after mine decommissioning and rehabilitation);
- the manner in which the Project and its impacts weaken or strengthen the authority of Indigenous Peoples on their territory;
- how the Project will affect the ability of Indigenous Peoples to derive future economic benefits from the land or water or to maintain an ongoing relationship with the land or water;
- the way that the Project is aligned with the values, political direction and/or objectives of Indigenous Peoples' actions to mitigate or to adapt to a changing climate;
- how the Project affects all other components of significance identified by Indigenous groups; and
- the severity of the impacts on the exercise of rights, as identified by the Indigenous groups.

10.1.4 Mitigation and enhancement measures

The Impact Statement must:

- describe the proposed mitigation and enhancement measures for all potential effects to Indigenous Peoples, including potential effects to the current use of lands and resources for traditional purposes, potential effects to cultural and physical heritage, and potential impacts on the rights of Indigenous Peoples:
  - be clear about which specific measures are design to manage each specific pathways of effect;
  - identify if these are measures for which the proponent or other parties would be responsible;

  - elaborate on how these measures may vary for each Indigenous group or Peoples;
  - describe if and how these measures will be integrated into the project design, if applicable;
  - elaborate on how input from Indigenous groups, including Indigenous Knowledge, informed these mitigation and enhancement measures and describe the collaboration to identify preferred measures;
  - include perspectives of the potentially impacted Indigenous groups on the effectiveness of mitigation measures; and
  - describe how the proponent has addressed the suggestions and recommendations of the potentially impacted Indigenous groups;
- demonstrate how the timing of Indigenous activities on the land was considered when establishing the schedule for Project activities;
- provide any intervention and communication plans, as applicable, pertaining to heritage resources and structures, sites, and things of cultural, historical, archaeological, paleontological, or architectural significance, if there is a possibility of discovery during construction or exploitation activities. This plan must include, at a minimum, the person to be contacted, intervention measures and the conditions that would lead to a shutdown and resumption of work;
- provide copies of correspondence from provincial or territorial heritage resource authorities containing their comments on the heritage resource assessment and proposed mitigation measures;
- propose differentiated mitigation measures, if applicable, so that adverse effects do not fall disproportionately on Indigenous groups and vulnerable population groups, and they are not disadvantaged in sharing any positive effect resulting from the Project. These mitigation measures should be developed in collaboration with the potentially affected communities and population groups;
- describe how the GBA Plus results on disproportionate effects have been used to inform mitigation and enhancement measures;
- describe the measures that would return the site to a state that is safe and productive for traditional use activities, such as hunting, fishing, and gathering of traditional medicines or foods during the decommissioning and rehabilitation phases; and
- provide available evidence of the effectiveness for all mitigation measures related to potential effects to Indigenous groups. This assessment of mitigation measure must be based on science and/or Indigenous Knowledge. An Indigenous group's own knowledge should be prioritized, when applicable, in relation to mitigation measures regarding impacts on their rights and interests. Where no evidence exists, describe plans to monitor the effectiveness of mitigation measures. The proponent is encouraged to share results with Indigenous groups and to monitor the effectiveness of mitigation measures in cooperation with Indigenous groups.

Where no mitigation measures are proposed or mitigation is not possible, the Impact Statement must describe the potential adverse impacts on the rights of Indigenous Peoples, as identified by the Indigenous group(s).

11. Effects of Potential Accidents and Malfunctions

11.1 Joints requirements and information

The Impact Statement will identify and describe the potential accidents and malfunctions related to the failure of certain works caused by technological malfunctions, human error or exceptional natural events and that may result in major effects. The Impact Statement must describe and explain how those events were identified, potential consequences (including the potential effects), the worst case scenarios as well as emergency scenarios that can reasonably be expected to occur, and the effects of these scenarios. If certain events are expected to occur (e.g., minor spills, road accidents), they should also be included as expected effects in the previous sections.

Potential accidents and malfunctions may include, but not be limited to the following occurrences:

- accidental spills and/or releases of gasoline and associated products, used oil and glycol, chemicals, pesticides, Waste Dangerous Goods, Hazardous Waste, or any potentially hazardous substance on land or in air or water;
- fire and explosions;
- traffic accidents;
- failure of industrial water supply; and
- wildlife emergencies/incidents (e.g., bird mortality events of 10 or more birds in a single event, or an individual species at risk during a single event).

The Impact Statement shall explain the potential quantity, mechanism, rate, form, and characteristics of the materials likely to be released into the environment during the malfunction and accident events. The Impact Statement shall assess the likelihood of occurrence and consequence severity of the accidents and malfunctions.

11.1.1 Risk assessment

The Impact Statement must:

- identify hazards for each project phase and component that could lead to events of accidents and malfunctions related to the Project and provide an explanation of how these events were identified (e.g., information sources, recognized risk assessment methodology, professional expertise, similar project, participants' input);
    - take into account the lifespan and design of different project components (e.g., access road, tailings management facilities, airstrip, etc.), complicating factors such as weather or external events, and the potential for vandalism or sabotage;

- conduct an analysis of the risk of each hazard and adverse event (including likelihood and consequences) and describe the potential consequences (including the environmental, health, social and economic effects and effects to Indigenous Peoples);
- describe the plausible worst-case scenarios and the more-likely but lower-consequence alternative scenarios, including;
  - the magnitude, duration and extent of effects;
  - the quantity, mechanism, rate, form and characteristic of contaminants, GHG emissions and other materials released into the environment;
  - influence of local and regional terrain, topography and weather conditions (e.g., difficult access for interventions);
  - modelling for any contaminants spilled or released directly or indirectly into water or air, taking into account, where possible, various meteorological conditions;
  - potential environmental, health, social and economic effects, including effects to Indigenous Peoples. With respect to human health specifically, consideration should be given to potential pathways of effects associated with surface water, air, country foods, and other relevant media, including short-term and long-term risks to human health;
  - relative locations of sensitive receptors (e.g., humans, fish and/or wildlife and their habitat, waterways, wetlands, private drinking water wells);
  - timing related to sensitive receptors (e.g., migration and nesting periods of migratory birds, spawning periods for fish, hunting season, tourist season), and
  - critical infrastructure, such as local drinking water treatment plants or facilities that can treat water sources affected by the Project, as well as the ability and capacity of the drinking water treatment plants or facilities to treat water sources affected by accidental releases from the Project during all project phases;
- identify and justify the spatial and temporal boundaries for the effect assessment associated with accidents and malfunctions. The spatial boundaries identified for effects from potential accidents and malfunctions will generally be larger than the boundaries for the project effects alone, and may extend beyond Canada's jurisdiction. For example, for potential accidents and malfunctions related to marine shipping, the effects assessment should go beyond the Voisey's Bay;
- provide environmental sensitivity mapping that identifies site-specific conditions and sensitive receptors adjacent to project activities, including the marine environment, shores, streams and wetlands frequented by fish and / or migratory birds, and likely routes to them. Shoreline classification surveys and mapping must be conducted along major waterways where large spills are possible. The characterization criteria established by ECCC contained in the Field Guide for Intervention in the Event of an Oil Spill on Maritime Shores constitutes a useful guide in this regard; and
- provide a characterization and mapping of sensitive shorelines in all areas that may be at risk of shoreline oiling resulting from a potential accident or malfunction. ECCC's established characterization criteria contained with A Field Guide to Oil Spill Response on Marine Shorelines is a useful guide.

11.1.2 Mitigation measures

The Impact Statement must:

- describe the mitigation measures and safeguards that would be in place to avoid, prevent, or reduce the likelihood and consequences of accidents and malfunctions, including project design choices and operational considerations, including engineering, safety and risk reduction standards, criteria and approaches to be used (e.g., spacing, fire protection, prevention plan for leaks of toxic chemicals, active fire suppression and explosion/overpressure minimization);
- describe the mitigation measures on spill response and container recovery planning and provisions. These measures should reflect existing regulations and marine emergency response procedures, overseen and administered by federal and international authorities;
- describe the mitigation measures that would be in place to avoid and prevent accidents and malfunctions related to transportation and storage of dangerous goods (e.g., rare earth ore concentrate);
- describe the proposed security measures to reduce the potential for vandalism or other malicious acts that could lead to accidents or malfunctions;
- describe the mitigation measures for the potential adverse environmental, health, social and economic effects, including effects to Indigenous Peoples, in the event of an accident or malfunction, such as emergency response and repair procedures that would be put in place;
- describe monitoring, evaluation, adaptative management and recovery measures that would be implemented to identify, proactively avoid and manage effects to the environment and health, social and environmental conditions, including impacts to Indigenous Peoples rights and interests, from accidents and malfunctions, including those to remediate affected lands and waters;
- provide details of financial liability and compensation measures in place pursuant to regulations or the proponent's commitment in case of potential accidents or malfunctions associated with the Project;
- describe mutual aid arrangements in the event that the incident exceeds proponent resources and how to access these resources; and
- describe the expected effectiveness of the mitigation measures, safeguards and response measures and systems.

11.1.3 Emergency management

The Impact Statement shall include an Emergency Response/Contingency Plan that describes procedures, equipment and responsibilities that are in place to ensure an efficient and effective response. The plan shall establish an emergency communication strategy with those potentially affected and must describe the capacity of the proponent/nearby communities to respond to each type of accident, malfunction or emergency, including the availability of required response equipment and training. The plan must include at a minimum the following:

- accidental spills and/or releases of gasoline and associated products, chemicals, pesticides, oily waste, or any potentially hazardous substance on land or in air or water;
- fire (including wildfires) and explosion;
- motor vehicle accidents and marine vessel collisions involving other vessels, marine mammals, ice or navigational hazards;
- environmental emergencies, flooding or other natural disasters;
- occupational hazards and human injuries;
- failure of industrial water supply; and
- wildlife emergencies/incidents.

The Emergency Response/Contingency Plan must:

- identify emergency planning and emergency response zones;
- present preliminary emergency measures to respond to such events, including identifying associated response systems and capabilities;
- take into account evacuation areas in the planning of emergency measures as well as the particularities linked to these areas (e.g., number of residents varying with the seasons, possible high number of individuals unfamiliar with the region, limited communication means in remote areas and with temporary residents);
- describe existing emergency preparedness and response systems and existing arrangements and/or coordination with the responsible response organizations in the spatial boundaries associated with the Project;
- describe how the proponent will integrate its response operations into an incident management system (for example, the Response Command System, Incident Command System) when deploying a significant incident response effort;
- describe the role of the proponent or external parties in the case of spill, collision, grounding or other accidents or malfunctions associated with the Project;
- describe emergency response training, training periodicity and exercise programs, including a description of the participation and training agreements with surrounding communities, including Indigenous groups, that could be impacted by accidents or malfunctions;
- document spill response strategies for each type of spill scenario (including tailings dam breaches, spills from accidents on the road, at the airfield, at fueling stations, and at the port infrastructures, spills from wastewater tanks or reservoirs, failure of the water treatment system, spills in water, snow, and soil, etc.), including strategic locations of spill response equipment relative to likely accident and malfunction sites and/or likely pathways to sensitive environmental receptors;
- describe emergency communication and public notification plans, community awareness plans and public reporting, including plans for translation in French, English or Indigenous languages, as appropriate;

- describe emergency communication plans that would provide emergency instructions to surrounding communities, including Indigenous groups, and how these will be informed by the public and Indigenous groups. The proponent should consider including:
  - immediate urgent actions, such as notifying the public of security and safety concerns, instructions for on-site shelter or shelter-in-place, procedures and evacuation routes; and
  - longer-term actions, such as a general website and telephone helplines, updates on the status of incidents, injured animal reports, etc.;
- describe liaison and continuous education plans linked to emergency preparedness for surrounding communities that may be affected by the consequences of a significant incident, including for Indigenous groups;
- explain how the proponent has made and will continue to make an outreach effort to ensure public and Indigenous groups' understanding the risks associated with this type of project (e.g., providing non-technical information, providing information in French, English, Indigenous or other languages if requested; and
- describe any waste management plan as it pertains to waste generated during an emergency response.

12. Effects of the Environment on the Project

12.1 Joint requirements and information

The Impact Statement must consider and describe how changing environmental conditions and environmental hazards may affect the Project, and how this in turn could result in effects to the environment, health, social and economic conditions. Examples of changes to environmental conditions and environmental hazards include wind, severe weather events, floods, ocean currents, waves, storm surges, ice, etc. These changes and events are to be considered in different probability patterns (e.g., 5-year flood versus 100-year flood) taking into account how these could change under a range of potential future climate scenarios. Examples of future climate change scenarios include sea level rise, increased severity and frequency of storms and floods, changes to precipitation quantity and recharge rates, etc. The focus should be on credible events that have a reasonable probability of occurrence and for which the resulting environmental effects could be major without careful management.

The Impact Statement must:

- describe how environmental conditions, including natural hazards such as severe and/or extreme weather conditions and external events, could adversely affect the Project and how this in turn could result in effects to the environment, health, social and economic conditions;
- provide details of planning, design and construction strategies intended to minimize the potential adverse effects of the environment on the Project;
- describe mitigation measures that can be implemented in anticipation or in preparation for effects of the environment on the Project;
- describe possible mitigation measures to address adverse environmental, health, social and economic effects resulting from effects of the environment on the Project;
- describe measures to enhance positive environmental, health, social and economic effects resulting from effects of the environment on the Project;
- describe the Project's climate resilience, how the impacts of climate change have been integrated into the project design and planning throughout the life of the Project, and the climate data, projections and related information used to assess risks over the life of the Project. Additional guidance related to conducting climate change resilience assessment is included in the Strategic Assessment of Climate Change and the Draft technical guide related to the Strategic Assessment of Climate Change: Assessing climate change resilience;
- identify the project's sensitivities and vulnerabilities to climate change (both in mean conditions and extremes such as short-duration heavy precipitation events);
- describe all known and relevant trends in meteorological events, weather patterns or physical changes in the environment that are expected to result from climate change, and incorporate this information

into a risk assessment as contributing or complicating factors for accidents and malfunctions (e.g., increased risk of forest fires, permafrost thaw affecting stability of water management infrastructure). Provide mitigation measures (both passive and active) that the proponent is prepared to take to minimize the frequency, severity and consequences of these potential effects;

- identify any areas of potential wind or water erosion; and
- assess the potential effects of seismic events on facilities (including mining induced earthquakes) and specify the soil movement parameters that will be used with the probability of occurrence (e.g., 2% in 50 years) and the standards, best practice codes and guides that are or will be used in the seismic effects analysis for relevant buildings and structures (e.g., pit walls, tailings/residue and explosive storage facilities) (e.g., National Building Code of Canada 2015, CAN/CSA-Z662 standard).

12.2 Newfoundland and Labrador requirements and information

Provincial climate change projections for Nain and extreme precipitation event projections for Labrador should be considered in the planning for this Project.

13. Canada's Ability to Meet its Environmental Obligations

13.1 Federal requirements and information

The Government of Canada recognizes that Impact Statement contributes to Canada's understanding and ability to meet, first, its environmental obligations, and second, its commitments in respect of climate change.

The Impact Statement should describe the likely effects of the Project in the context of environmental obligations, with a focus on Government of Canada obligations and commitments.

Federal environmental obligations relevant to this Project include:

- the Convention on Biological Diversity, including Canada's supporting national framework (e.g., the Canadian Biodiversity Strategy, Canada's Biodiversity Outcomes Framework and the current biodiversity goals and objectives in Canada), and legislation that supports the implementation of Canada's biodiversity commitments, including SARA and the *Canada Wildlife Act* (1985), as well as supporting policies and guidance documents;
- recovery strategies and actions plans developed under SARA for all species at risk potentially affected by the Project; and
- the Convention for the Protection of Migratory Birds in the United States and Canada, as implemented in part under the *Migratory Birds Convention Act* (1994) and supporting guidance documents on conservation objectives and strategies to Bird Conservation Regions.

The Impact Statement must:

- describe the extent to which the likely effects of the Project could hinder or contribute to Canada's ability to meet its environmental obligations, including:
  - the proponent's plans and commitments to ensure that positive contributions are respected; and
  - any mitigation or follow-up program related to those likely effects of the Project.

With respect to climate change commitments, section 8.12 Climate change of these Guidelines outline the information required as part of the Impact Statement. IAAC, with the support of federal authorities, will provide a supplementary analysis on the project's GHG emissions in the context of Canada's emissions targets and forecasts (see section 6 of the SACC). Although it is not required, the proponent may provide its views in the Impact Statement on the extent to which the likely effects of the Project would hinder or contribute to the Government of Canada's ability to meet its commitments in respect of climate change in order to inform the impact assessment.

The proponent should refer to IAAC's guidance documents on this topic, including the document Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the *Impact Assessment Act*.

14. Sustainability

14.1 Federal requirements and information

Sustainability is the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations. Sustainability is a lens to be applied throughout the impact assessment. Information and data requirements to inform the sustainability analysis should be considered from the outset of the impact assessment.

The Impact Statement must:

- provide an analysis of the extent to which the Project's likely effects contribute to sustainability. The analysis should be qualitative but may draw on quantitative data to provide context, and should follow the methodology and sustainability principles outlined in the Guidance: Considering the Extent to which a Project's Likely Effects Contribute to Sustainability:
  - consider the interconnectedness and interdependence of human-ecological systems;
  - consider the well-being of present and future generations;
  - consider positive effects and reduce adverse effects of the Project; and
  - apply the precautionary principle and consider uncertainty and risk of irreversible harm;
- describe engagement with potentially affected Indigenous groups and outline measures and commitments that contribute to the sustainability of Indigenous livelihood, traditional use, culture and well-being:
  - include any description of sustainability as defined by Indigenous groups;
- describe the project-specific context, including key issues of importance to Indigenous groups and the public that will inform the sustainability assessment;
- describe how the sustainability principles were considered in:
  - the assessment of the likely effects of the Project, including setting spatial and temporal boundaries, and identifying mitigation and enhancements, and
  - the planning and design of the Project and the selection of the preferred alternative means and alternatives to the Project;
- describe and document uncertainties and assumptions underpinning the analysis;
- describe how the precautionary principle was applied in cases where there may be risk of irreversible harm; and
- indicate how monitoring, management and reporting systems consider the sustainability principles and attempt to ensure continuous progress towards sustainability.

15. Follow-up Programs and Plans

15.1 Joint requirements and information

Follow-up program in this section also applies to the Newfoundland and Labrador's Environmental Effects Monitoring Programs (EEMPs). The Impact Statement shall describe the environmental and socio-economic follow-up programs to be incorporated into construction, operation and maintenance, decommissioning and rehabilitation activities should the Project proceed. The follow-up programs shall be developed in consultation with government agencies and other stakeholders.

The purpose of the follow-up programs is to verify the accuracy of the predictions made in the assessment of the effects as well as the effectiveness of the mitigation measures. The duration of the follow-up and monitoring shall be as long as is needed to evaluate the effectiveness of the mitigation measures. If the follow-up program indicates that mitigation measures are not working effectively, additional measures may be required and implemented. If, through a follow-up program, it is identified that the predictions of the impact assessment were not accurate, corrective action or additional measures may be required to be put in place by the proponent. The proposed approach for follow up shall be described and shall include:

- the objectives or expected outcomes of the follow up programs and how they will be achieved. These objectives may be qualitative or quantitative but must be measurable to support the determination of whether the mitigation measures are effective;
- a schedule for collection of the data required to meet these objectives;
- the sampling design, methodology, selection of the subjects and indicators to be monitored, (e.g., climate, water quality, water quantity) and their selection criteria;
- the frequency, duration and geographic extent of monitoring, and justification for the extent;
- reporting and response mechanisms, including criteria for initiating a response and procedures;
- the approaches and methods for monitoring the cumulative effects of the Project with existing and future developments in the project area;
- procedures to assess the effectiveness of follow-up programs, mitigation measures and recovery programs for areas disturbed by the Project;
- a communications plan to describe the results of follow up to interested parties;
- consideration of accessibility and sharing of data for the general population; and
- how the proponent will involve Indigenous groups in the follow-up program design and implementation.

The proponent is required to develop a follow-up program in consultation with relevant authorities and Indigenous groups and to submit to IAAC and NL the results of monitoring efforts. Monitoring is a key component of follow-up programs and can identify the potential for environmental, health, social or economic degradation during all phases of the Project. Monitoring can also assist in developing clearly defined action plans and emergency response procedures to account for environmental, health, social and economic protection.

Proponents will be expected to provide information on the extent to which they are achieving their expected outcomes in their annual follow-up program reports.

Follow-up programs are an opportunity to continue engaging with impacted Indigenous groups. If undertaken collaboratively, they can support solution-oriented approaches to managing adaptively through the early identification of issues in follow-up programs and appropriate solutions incorporating Indigenous Knowledge.

In developing the follow-up program framework for environmental, health, social or economic VCs as applicable, the Proponent should take into account the considerations outlined in IAAC guidance on Follow-up Programs under the *Canadian Environmental Assessment Act* (guidance to be updated). The proponent must identify the VCs that warrant a follow-up program and provide a rationale for their inclusion.

15.1.1 Follow-up program monitoring

As part of the proposed follow-up programs, the Impact Statement must present a preliminary monitoring program, which must include:

- identification of regulatory instruments that include a monitoring requirement for the VCs;
- an explanation of how any differences in predicted effects versus actual measured effects will be attributed to either uncertainty related to predictions or to effectiveness of the mitigation measures;
- identification of monitoring activities that could have adverse effects on VCs, and the mitigation measures proposed for these effects;
- guidelines for preparing monitoring reports (number, content, frequency, format, duration, geographic extent) that will be sent to the authorities involved; and
- plans, including funding options, to involve Indigenous groups and local communities in monitoring and follow-up programs, where appropriate.

15.1.2 Compliance monitoring

Proponents are responsible for verifying whether the required mitigation measures were implemented. The Impact Statement must present a framework by which it will undertake compliance monitoring for follow-up programs. This should include, but not be limited to:

- identification of those positions accountable and responsible for monitoring and ensuring compliance;
- 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 provisions of their contracts; and
- quality assurance and quality control measures to be applied to monitoring programs.

15.1.3 Adaptative management plans

Proponents should consider adaptive management as a means to address high uncertainties associated with the effectiveness of mitigation measures or predicted effects and to help ensure expected outcomes are

achieved. Adaptive Management Plans establish a systematic process following six iterative steps: assess, design, implement, monitor, evaluate, and adjust. An Adaptive Management Plan may be warranted in addition to a follow-up program if it meets each of the following criteria:

1. There is high uncertainty around the effectiveness of mitigation measures or predicted effects;
2. There is a need for, or benefit to reducing uncertainties through an Adaptive Management Plan;
3. Adaptive management is technically feasible.

Adaptive management does not eliminate the need to provide sufficient information on the baseline conditions or effects attributed to the designated project. Nor does it eliminate the need to characterize effects and identify appropriate mitigation measures to eliminate, reduce or control those effects.

15.2 Newfoundland and Labrador requirements and information

The Impact Statement shall prepare and submit the Environmental Effects Monitoring Programs (EEMPs) subsequent to the completion of the Impact Statement, but before the initiation of the Project's construction.

Moreover, the Impact Statement shall include plans, that describe procedures, equipment and responsibilities that are in place to ensure an efficient and effective response to aspects of the Project that could adversely affect the receiving environment, including but not limited to the following plans:

- Environmental Protection Plan:
  - The proponent shall prepare an environmental protection plan for each construction site for approval by the provincial Minister of Environment and Climate Change before starting construction. The environmental protection plan shall be a stand-alone document that assigns responsibility to the site foreperson, the proponent's occupational health and safety staff, the proponent's environmental staff and any government environmental surveillance staff. It shall address construction, operation and maintenance activities throughout the lifetime of the Project. A proposed table of contents and an annotated outline is to be presented in the Impact Statement, which shall address the major construction, operational and maintenance activities, permit requirements, mitigation measures and contingency planning as follows:
    - proponent's environmental policies and provincial and federal environmental legislation and policies;
    - environmental compliance monitoring;
    - environmental protection measures;
    - mitigation measures;
    - permit application and approval planning;
    - contingency planning for accidental and unplanned events;
    - statutory requirements; and

        - revision procedures and contact lists.
- Waste Management Plan:
    - A waste management plan shall describe all liquid and solid waste expected to be generated during construction, operation and maintenance, decommissioning and rehabilitation for all components of the Project, and methods to reduce, reuse, recycle, recover, and/ or manage residual wastes through disposal.
- Hazardous Materials Response and Training Plan:
    - A hazardous materials response and training plan that describes how fire fighters and first responders in local areas and along transportation routes will be trained to the appropriate National Fire Protection Association Codes and Standards (e.g., NFPA 1072 Hazardous Materials Technician) and any other related codes necessary to execute a Hazardous Materials Response. Vehicles and hazardous materials equipment needed to execute an effective Hazardous Materials Response shall be identified in the plan. In accordance with the requirements of the *Fire Protection Services Act***,** training shall meet the approval of the Fire Commissioner. Review by the Fire Services Division of curriculum being offered and developed would be applicable.

Other plans are required throughout the Joint Guidelines document, including:

- Emergency Response and Contingency Plan,
- Marine Transportation Impact Study and Management Plan,
- Indigenous Participation Plan,
- Water Resources Management Plan,
- Public Participation Plan,
- Workforce and Employment Plan, and
- Avifauna Management Plan

16. Assessment Summary

16.1 Joint requirements and information

The proponent must prepare a stand-alone plain language summary of the Impact Statement in both of Canada's official languages (French and English) with a glossary of terms. The summary must contain sufficient details for the reader to identify the proponent and to understand the Project and its alternatives, potential environmental, health, social and economic effects, and potential adverse impacts on Indigenous rights and interests. It should also provide sufficient details to understand proposed mitigation measures, and residual and cumulative effects associated with the Project (in consideration of other existing and reasonably expected future projects in the vicinity of the project site). Finally, the summary must also include all studies and plans required by the Impact Statement guidelines and a summary of the fundamental conclusions of the Impact Statement.

The Assessment Summary provides an opportunity for the proponent to demonstrate how issues raised, notably by Indigenous Peoples and the public, were addressed. The Assessment Summary should be presented by VC, which allows the proponent to demonstrate the completeness of the assessment and provide the results of the analysis. The summary must include key maps or figures illustrating the Project location and key project components and may summarize information through a series of table.

The Assessment Summary must summarize the Impact Statement, including:

- potential environmental effects, and changes to health, social and economic conditions, and the potential impacts on Indigenous rights and interests;
- mitigation, enhancement measures, monitoring and follow-up in relation to potential effects and impacts;
- residual effects of the Project;
- cumulative effects and proposed mitigation measures to address them;
- any other commitments made by the proponent or recommendations made by the proponent to other parties; and
- the table of concordance may be included in the executive summary.

16.2 Newfoundland and Labrador requirements and information

The Assessment Summary must include the extent to which the adverse effects are significant based on the characterization of residual and of cumulative effects. In addition, the summary must contain sufficient details for the reader to understand the extent to which the effects that are likely to be caused by the carrying out of

the Project contribute to sustainability and to the Government of Newfoundland and Labrador's ability to meet its environmental objectives, and to understand the follow-up programs.

16.3 Federal requirements and information

The Assessment Summary must also include the extent to which the adverse effects within federal jurisdiction and the adverse direct or incidental effects are significant based on the characterization of residual and of cumulative effects.

In addition, the summary must contain sufficient details for the reader to understand the extent to which the effects that are likely to be caused by the carrying out of the Project contribute to sustainability and to the Government of Canada's ability to meet its environmental obligations, and to understand the follow-up programs.

Appendix 1 – Additional Guidance

This appendix contains guidance on how to address the requirements outlined in the main body of the Guidelines. Guidance has been placed in appendix for ease of reading. The proponent is expected to demonstrate how relevant guidance or technical recommendations were used. Alternatively, a rationale must be provided as to why it is not applicable, feasible, or why different approaches were found more adequate.

Sources of baseline information

Information sources and data collection methods used for describing the baseline environmental, health, social and economic setting may consist of the following:

- Government of Canada's Open Science and Data Platform. This online, public platform provides access to government sources of science, data, publications and information about development activities across the country that are relevant to understanding cumulative effects. The platform can help identify relevant data and scientific articles in one online location, and be a source of open data available for download;
- field studies, including site-specific survey methods;
- database searches, including federal, provincial, territorial, municipal and local data banks, including for example:
  - Atlantic Canada Conservation Data Centre;
  - Centre de données sur le patrimoine naturel du Québec;
  - eBird Canada;
  - Breeding Bird Survey;
  - Christmas bird count https://netapp.audubon.org/CBCObservation/Historical/ResultsByCount.aspx;
  - Birds Canada's Canadian Migration Monitoring Network;
  - Nature Counts;
  - iNaturalist;
  - Neighbourhood Bat Watch;
  - Bird Conservation Regions and strategies;
  - Wildtrax (https://wildtrax.ca/);
  - Quebec Breeding Bird Atlas;
  - Birds Canada - Nesting Calendar Query Tool;
  - Suivi des espèces en péril - QuébecOiseaux;

  - Chauve-souris aux abris.
- land cover data, such as forest cover maps, or remote sensing data for important habitats features and important characteristics;
- research programs of regional industry, resource or species-specific committees;
- protected areas, watershed or coastal management plans;
- natural resource management plans;
- species recovery and restoration plans;
- species at risk Public Registry for information on federally listed species at risk and available recovery documents.
- species at risk in Quebec for information on the provincial list of species at risk and available recovery documents.
- carte des occurrences d'espèces en situation précaire, an interactive map identifying occurrences of species at risk in Quebec.
- Newfoundland and Labrador Species at Risk resources for information on the provincial list of species at risk and available recovery documents.
- field measurements to gather data on ambient or background levels for air, water, soil and sediment quality, light levels or acoustic environment (soundscape);
- published literature;
- environmental assessment documentation, including monitoring reports, from prior projects in the area and similar projects outside the area;
- regional studies or assessments, project assessments and strategic assessments;
- navigation studies;
- renewable harvest data;
- Indigenous Knowledge, including oral histories;
- expert, community, public and Indigenous engagement and consultation activities, including workshops, meetings, open houses, surveys;
- qualitative information gathered from interviews, focus groups or observation;
- census data;
- human health impact assessments or risk assessments;
- information available from Canadian Institute for Health Information under Community and Health System Characteristics;
- community and regional economic profiles; and
- statistical surveys, as applicable.

The proponent should consult with federal, provincial or local government authorities to determine whether additional data sources and survey methods may be appropriate.

Establishing spatial and temporal boundaries

The following guidance is supplement to the requirements in section 7.3 Spatial and temporal boundaries.

The study area boundaries must encompass the spatial boundaries of the Project, including any associated project components or activities, and the anticipated boundaries of the project effects. The proponent should consider the following areas in assigning appropriate spatial boundaries:

- areas potentially impacted by changes to water quality and quantity or changes in flow in the watershed and hydrologically connected waters;
- areas potentially impacted by airborne emissions or odours;
- air zone(s) and airsheds under the Air Quality Management System;
- local major emission sources;
- areas of importance to people, including recreational areas;
- International and provincial or territorial borders which require transboundary assessment;
- modelling domain size based on isopleths resulting from the project-only case that represents 10% of the appropriate jurisdictional ambient air quality criteria (within the limits of validity of the model);
- areas within the range of vision, light and sound;
- the locations and characteristics of the most sensitive receptors or areas;
- species habitat areas, usage timing and migratory patterns;
- emergency planning and emergency response zones;
- the geographic extent of local and regional services;
- any affected communities;
- all potentially affected Indigenous Peoples;
- areas of known Indigenous land,[21] cultural, spiritual and resource use; and
- existing affected infrastructure.

For biophysical VC, spatial boundaries should be defined using an ecosystem-centered approach. See document Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012 (2014) for more information on establishing spatial boundaries.

For habitat-related VCs potentially affected by the Project, a land cover analysis, including freshwater and marine environments, should be conducted to determine appropriate ecological boundaries and buffer distances around the project area. The spatial extent of habitat and habitat functions should influence the determination of an appropriate LSA and RSA. Spatial boundaries of the RSA should be changed if one or more land cover types are concentrated in a sub-area and are uncommon in other parts of the region.

[21] Indigenous lands may encompass reserve lands, traditional territories and/or treaty lands.

Where a VC is a species, the LSA should correspond to the project area plus a buffer defined in consideration of direct and indirect project effects to species including habitat effects, changes to connectivity, alteration of predator/prey dynamics, mortality, sensory disturbance and pollution. Use simulation modelling to help define buffers that address the species or species group being assessed. The proponent should contact federal, provincial and/or local government authorities to verify appropriate boundaries for wildlife species.

Spatial boundaries should consider the location of sensitive receptors, which may include:

- vulnerable individuals or population groups, (e.g., individuals with compromised health, children, pregnant women, seniors);
- residences, health and social services institutions (e.g., hospitals, long-term care facilities, seniors' residences);
- educational institutions (e.g., schools, daycare centres, early childhood centres);
- tourism establishments (e.g., tourism information offices, museums, ski areas, summer camps, outdoor recreation areas, camp sites);
- recreational areas (e.g., recreational land, urban parks, parks and conservation areas);
- areas for the exercise of the rights of Indigenous Peoples; and
- sensitive wildlife species or habitats (e.g., soil types or areas with historical loading or poor buffering, important areas of wildlife use, harvesting activities).

The temporal boundaries of the impact assessment should span all phases of the project. If potential effects are predicted after project decommissioning or abandonment, this should be taken into consideration in defining specific boundaries. Define temporal boundaries in a manner that enables detection of all species that use the project area, LSA, and RSA throughout the year and from one year to another, and to estimate their temporal pattern of use (e.g., breeding, migrants stopping on northward and/or southward migration). Temporal boundaries spanning more than one year will enable accounting for variation due to irregular events (e.g., masting events, storms on migration, late snowfalls).

Developing mitigation measures and enhancements

Mitigation measures are technically and economically feasible measures to eliminate, reduce, control or offset the adverse effects of a designated project, and include restitution for any damage caused by those effects through replacement, restoration or compensation. The "hierarchy of mitigation measures" presents three options for types of mitigation measures, in descending order of preference:

- eliminate: refers to the elimination of effects, such as by changing the location or design of the Project. It can also be referred to as "avoidance" of effects.
- reduce and control: aims to reduce effects to the extent possible, for example, by modifying the most adversely impactful project activities or components or by taking measures specific to the potential effects. There may still be residual effects where measures are not sufficient to eliminate the effects, or where their absolute effectiveness is uncertain. Effects may also be "minimized" when it is not possible to "avoid" them.

- offset: aimed at offsetting residual effects following consideration of elimination and reduction measures, through measures referred to as “compensation” or “restitution.” For example, where an effect on fish habitat persists, it may be possible to offset through the creation of new habitat (replacement) or to propose measures to restore degraded habitat conditions. These include measures referred to as replacement, restoration, or (financial) compensation. These measures must respect the guiding principles of the Policy for applying measures to offset adverse effects on fish and fish habitat under the Fisheries Act.

As a first step, the proponent should use an approach based on the avoidance and reduction of the adverse effects at the source, namely consider modifying the design or changing the location of certain project components.

Enhancement measures for positive effects are not necessarily required to mitigate negative effects but are measures that may be developed to make use of opportunities presented by the project to contribute to, for example, local and regional training efforts, investment in infrastructure and services, projects to rehabilitate degraded environments. Measures are to be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation, and implementation.

The proponent is encouraged to work with the community to align project goals with an aim to enhance positive project effects. Such an approach may include the modification of the design of the project or relocation of project components.

Compensation and offset plans

Where compensatory measures are proposed to offset residual adverse effects that cannot be avoided or mitigated, the Impact Statement must include the compensation or offset plans for consideration during the impact assessment process.

In general, these plans should address the following elements, or refer to locations in the Impact Statement where this information is presented:

- describe the baseline conditions of the fish and fish habitat, species at risk, critical habitat potentially impacted by the Project;
- explain and justify the hierarchy of mitigation measures considered;
- identify and describe residual effects that are the subject of the compensatory measures;
- determine and justify the required offsetting plan, including how any policies or guidance provided by federal and provincial authorities and Indigenous Peoples have been considered;
- where feasible, identify the location and timing of implementation of compensation projects;
- identify and describe the success criteria;
- identify and describe in detail nonhabitat related compensation measures (e.g., predator control);
- describe how the proposed measures align with published provincial and federal recovery management or action plans and strategies for species at risk, or for fish and fish habitat;

- describe how the proposed measures align with published provincial and federal recovery management or action plans and strategies for wetlands;
- identify, if possible, the parties responsible for implementation of the compensatory measures, including monitoring and review;
- identify indicator species for setting compensation objectives. The choice of indicator species should be based on baseline data. Species at risk should not be used as indicator species, since compensation efforts must be specifically directed to these species;
- describe the habitat functions gained at the compensation site(s);
- provide evidence that habitat functions can be replaced by the proposed offset activities;
- describe the selection process for proposed compensation sites and associated baseline conditions;
- provide a description of the monitoring schedule and activities to be completed to verify the success of compensation activities; and
- if offsets are required to address residual effects, refer to the Operational Framework for Use of Conservation Allowances.

The proponent must explain how Indigenous Peoples were involved in the development of the compensation plans. The proponent must demonstrate how the information received from Indigenous Peoples has been taken into account, including the choice of compensation ratios, if applicable. The proponent must also elaborate on how Indigenous Peoples will be involved in the implementation of the compensation measures and the evaluation of the success of these measures.

For compensation plans targeting non-aquatic species at risk, the proponent can refer to Template 2 in the *Species at Risk Act* Permitting Policy.

Each compensation plan to offset residual adverse effects on fish and fish habitat must be developed in accordance with the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the *Fisheries Act* and must include. For fish and fish habitat, each offsetting plans should include:

- an exact location for the proposed measures of the Project (e.g., latitude and longitude, lot number, municipality, regional municipality county) and property rights;
- baseline information including a description of the environment (e.g., biological, hydrological, physical, chemical), an estimation of the quality of the environment in question, and a description of the issue to address. Ideally, the description of the environment should be accompanied by georeferenced and dated photographs;
- a description of the proposed measures (e.g., nature, extent, method, timetable);
- the fish species affected by the proposed measures, including the resulting fish habitat functions (feeding, reproduction, rearing, shelter, growth, migration);
- an assessment of the benefits to fish and fish habitat resulting from the offsetting measures in terms of the significance, magnitude, and adequacy of the gains to be achieved with respect to the current situation; and

- a follow-up program to measure the success of offsetting objectives, including the details of its implementation. Offsetting objectives as well as the methods and criteria used to evaluate success (e.g., parameters, frequency, duration) must be clearly identified and described. Deliverables must be identified (e.g., baseline information, follow-up protocol, plans and specifications, work report, follow-up report), along with contingency measures in case success criteria are not met. The offsetting objectives and the timelines of the follow-up program (including deliverables) should be compiled in one or more tables.

Offsetting plans and monitoring programs for fish and fish habitat should be developed using standard Fisheries and Oceans Canada (DFO) guidance:

- A review of functional monitoring methods to assess mitigation, restoration, and offsetting activities in Canada;
- Assessing the Effectiveness of Habitat Offset Activities in Canada: Monitoring Design and Metrics;
- Equivalency metrics for the determination of offset requirements for the Fisheries Protection Program; and
- Policy for applying measures to offset adverse effects on fish and fish habitat under the Fisheries Act.

Guidance for biophysical components

Atmospheric, acoustic and visual environment

The following guidance should be consulted in conjunction with section 8.5. Atmospheric, acoustic and visual environment:

- project sources of air pollutant emissions should include the following types of sources:
  - point sources: including but not limited to power generation equipment (i.e., gensets), turbines, compressor engines, incinerators, exhaust vents and stacks from processing facilities, ventilation vents, boilers and other heating equipment, flares, docked marine vessels, idling train engines and other transport vehicles, fugitive emissions from storage tanks and leaks for gas pipes and other equipment. This should also include start-up and shut-down emissions, as appropriate,
  - area sources: including drilling and blasting activities, material handling and transport, wind erosion of material piles, fugitive emissions from exposed mine faces, fugitive emissions from process areas and tailings management areas,
  - mobile / road sources: including tailpipe emissions and fugitive dust emissions. Fugitive dust emission factors and assumed mitigation (control efficiency) should be described and should be justifiable based on what is practicable. Tailpipe emission factors should be estimated using established methods. Include all off-road and on-road fleet vehicles used in the project, and
  - emissions from project-related vessels and their tugs in transport along the marine shipping area;

- baseline data should be taken from existing or new long-term monitoring with representative monitoring data, collected over an appropriate duration (multi-year) and geographic scope;
- if a long-term monitoring data are not available, then other techniques may be acceptable on a case-by-case basis – with a rationale – including:
  - limited or short-term monitoring,
  - data from a surrogate site that has similar meteorological and air quality to represent the site in question,
  - results of existing large-scale modelling, and
  - dispersion modelling to indicate spatial distribution of contaminants;
- for requirements pertaining to the use of atmospheric dispersion modelling, the proponent should:
  - assess four scenarios in the air quality assessment, namely: i) baseline conditions; ii) project only (with and without mitigation); iii) baseline conditions plus project; and iv) cumulative effects or future development, if applicable;
  - perform dispersion modeling for all relevant temporal scenarios, including construction and operation scenarios. Modeling for the construction stage must represent conditions that will maximize impacts on atmospheric quality. For the operation stage, it is also important to choose a year in which the consequences on air quality are at their maximum;
  - carry out modeling of fugitive emissions with and without mitigation measures to assess the impact of these measures on air quality and the deposition of particulate matter on sensitive receptors. In particular, modeling of particulate matter emissions from unpaved roads should be carried out with and without mitigation measures. Various mitigation control effectiveness scenarios should be modeled, for example with control efficiencies of 0% (no mitigation measures or worst case scenario), 50% and 70%;
  - carry out the modeling over an appropriate period to take into account the variability of weather and reference conditions. Use the most recent weather and emissions data available;

To do this:

  - perform modelling over an appropriate time period to account for variability in weather and baseline conditions. Use the most recent meteorological and emissions data;
  - use appropriate domain boundaries and identify transboundary considerations. At a minimum, the modelling domain should enclose concentrations that are 10% of relevant air quality criteria, and
  - use an air quality model that is appropriate for the complexity of the terrain, sources and meteorology.

The proponent should engage with experts at ECCC to inform the choice of program to conduct regional air quality modelling of acidifying deposition rates.

Fish and fish habitat

The following guidance should be consulted in conjunction with section 8.8 Fish and fish habitat, as relevant to the establishment of baseline conditions

- for watercourses, it is recommended that the description be provided on the basis of homogenous section. Parameters to be measured include, and not limited to: length of the section, wetted width at the ordinary high water mark, depth, streamflow types and characteristics (depth, velocity, turbidity, peak and low flows), substrate type (shoreline and bottom), aquatic (e.g., grass flat) and riparian vegetation, natural (e.g., significant vertical drop, waterfalls, subsurface flow over large distances), and anthropogenic barriers (e.g., stream crossing structures) that impede or obstruct free passage of fish. The obstacles must be documented (e.g., size, condition) and the ability of fish to pass must be assessed;
- Ordinary High Water Mark is the usual or average level to which a body of water rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing waters (e.g., rivers, streams) this refers to the “active channel/bank-full level” which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments it refers to those parts of the water-body bed and banks that are frequently flooded by water so as to leave a mark on the land and where the natural vegetation changes from predominately aquatic vegetation to terrestrial vegetation (excepting water tolerant species). For reservoirs this refers to normal high operating levels (i.e., full supply level);
- for waterbodies, the parameters to be measured include, but are not limited to, size, bathymetry, littoral, sublittoral, bathyal, epipelagic, mesopelagic, bathypelagic zones, maximum and average depths, seasonal water level fluctuations, substrate type (sediment), aquatic (submerged, floating and emergent) and riparian vegetation, and water quality (temperature and dissolved oxygen profile, turbidity, transparency, pH, salinity); and
- baseline measurements of contaminants should be provided for the complete fish food web (including water, invertebrates, prey fish), and include carbon and nitrogen stable isotope measurements in fish and the complete fish food web. These measurements should then be used to inform the assessment of effects from contaminants, including bioaccumulation of contaminants, in fish downstream of the Project.

For potentially affected fish, the proponent should:

- first, use existing information (e.g., the Fish and Wildlife Internet Mapping Tool, accessible regional reports, primary literature, fisheries management objectives, information from consultation and engagement activities, traditional knowledge of Indigenous Peoples affected by the Project). Existing information should be supplemented using field data collection as necessary to support the assessment, and as relevant to validate predictions and mitigation success in the future; and
- perform field data collection programs, as relevant to the establishment of baseline conditions in Section 8.8, in a representative number of locations (including reference locations where applicable), using sampling methods appropriate to the aquatic system, and should be performed in multiple seasons.

With respect to the assessment of effects on fish and fish habitat, the proponent should:

- present potential habitat alteration, disruption and destruction on maps at appropriate scales, as well as in the form of tables;

- include changes to surface water conditions resulting from changes to groundwater quantity and discharge location. The Framework for Assessing Ecological Flow Requirements to Support Fisheries in Canada should be used to guide this aspect of the effects assessment;
- refer to standard metrics for changes in habitat quality and quantity to choose an analysis that is appropriate to the type and scale of effects (see A framework for assessing fisheries productivity for the Fisheries Protection Program). For example, broader, ecosystem-wide effects may require a modelling approach. It is recommended that the information be collected in the form of a map at appropriate scales, as well as in the form of a table; and
- consider that the effects of chronic and acute disturbances to fish populations are often dependent on the state of the fish population. If the fish population is already quite depleted, the effect of an acute disturbance may have a disproportionate effect on the population.

Birds and their habitat

The following guidance should be consulted in conjunction with section 8.9 Birds and their habitat:

- data collection should come from surveys that are designed to meet the defined outcomes and goals for the Impact Statement. Designed data collection (as opposed to haphazard, opportunity or convenience based sampling) ensures that goals are met, and the potential for biases in the data collected are minimized. Avian surveys should be designed based on a thorough review of the available scientific literature pertinent to the specific region, bird groups, and anticipated effects;
- in order to establish adequate baseline conditions for birds, the proponent should take into account the following technical recommendations:
  - collect data to account for natural variability among years, within and among seasons, and within the 24-hour daily cycle;
  - collect data in a manner to allow for reliable extrapolations in space (i.e., at a minimum in the project area, local and regional study areas) and in time (i.e., over the years);
  - design surveys so that they represent the spatial and temporal targets of modelling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of the effectiveness of mitigation measures. Survey designs should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project area, LSA, RSA), any departures from predictions, and the effectiveness of mitigation measures. Justify the selection of modelling techniques based on current and recent scientific literature;
  - survey protocol planning should include modelling and simulations to estimate sampling requirements and analysis to evaluate resulting survey options. It is recommended to collect field data over at least two years. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. Two years of sampling is suggested as a minimum to achieve that goal. As the number of sampling years increases so does the understanding of natural variability; use spatially balanced and randomly chosen sampling sites, preferably using stratified random sampling that covers all habitat types. When major habitat edges are identified, sampling

should be designed such that it is possible to sufficiently describe the importance not only of the types of habitat, but also of the edges between the types of habitat;

- have sufficient sampling effort and sampling locations to reflect variability among habitat type in the project area, LSA, and RSA, with more intensive sampling effort:
  - in the project area;
  - in areas or habitats more likely to be affected by the Project; and
  - for rare species that may be harder to detect;
- take into account detection errors and provide unbiased estimates of abundance and distributions using, as appropriate, simulation modelling in study design; and
- provide estimates of confidence or error for all estimates of abundance and distribution. Estimates should be defined (e.g., mean across years, mean across sites, modeled prediction) and, if appropriate, confidence or other intervals should be defined (e.g., 95% confidence intervals, credible intervals);

- describe the protocols used to conduct surveys using point counts, Autonomous Recording Units, and aerial survey methods and provide rationale for why the selected protocols are best suited for the Project;
- where predictive modelling is required, provide the explanatory data (e.g., covariables such as associated land cover) required to predict effects on bird groupings (e.g., changes in abundance, distribution or other relevant effects) collected in such as way as to represent the following sources of variation where applicable: spatial variation in land cover composition, soil type, geomorphology, hydrological processes, and inter-annual and intra-annual climate variability;
- when selecting metrics to characterize avifauna biodiversity, it is recommended that:
  - biodiversity metrics should include the following: distribution in space, frequency of occurrence, occurrence and abundance trends in time, abundance and density, as well as the types of associated habitats and the strength of the associations; and
  - species communities should not be grouped together by diversity indicator and should not be limited to the indicator species. The identification of species, distribution, abundance and, when possible, estimates of species' breeding status should be the main quantification objectives;
- when identifying areas of concentration of migratory birds, the following must be considered:
  - migratory bird concentrations can vary within a year and between years. It is therefore important to survey across the project area, LSA, and RSA both temporally and spatially, and
  - migratory bird counts are dependent on length of stay as well as total number of birds using a site. Attempt to estimate abundances across a migratory period should incorporate an estimate of inter and intra-annual trends and estimates of lengths of stay. Irruptive species may act in ways similar to migrants in terms of abundance. They may be absent from an area until conditions change (such as a mast-seeding event), during which time the habitat becomes vital to these species;
- baseline description of bird habitats should include, at a minimum, characterization of biophysical conditions with regard to ecoregion and Bird Conservation Region (BCR), taking into account the specific conditions found near the borders of these regions;

  - habitat surveys need to be detailed enough within the LSA and RSA to provide context for local and regional habitat availability and quality;
  - peatlands and wetlands including fens and bogs are ecologically important elements of the landscape. River riparian corridors with adjacent mixed forest are another relatively uncommon feature that should be clearly identified;
- the analysis of predicted effects on birds should:
  - include separate analyses for each activity, component and project phase;
  - distinguish between birds listed under the *Migratory Birds Convention Act, 1994* and birds that are not listed under the Migratory Birds Convention Act;
  - consider sources of error for all analyses to ensure that the final effects predictions indicate the best estimate of precision;
  - explore, wherever possible, non-linear, indirect and synergistic responses to the Project; and
  - produce defendable forecasts of effects on bird species or groupings, and of the effectiveness of mitigation measures.

The proponent should consult:

- Framework for the Scientific Assessment of Potential Project Impacts on Birds for examples of project types and potential techniques for assessing effects on migratory birds;
- Government of Canada's guidance on the website Avoiding harm to migratory birds to characterize effects on birds in terms of amount, duration, frequency, and timing of disturbances; and
- Guidelines to reduce risk to migratory birds and ECCC's website on General nesting periods for migratory birds to inform the development and application of mitigation measures
  - note that although the nesting period dates on ECCC's website cover the main nesting periods of migratory birds, in order to reduce the risk of taking nests or eggs, it does not authorize the disruption, destruction or taking of a migratory bird, its nest or its eggs outside these periods.

The description of bird species and their habitat in the study area may be based on existing sources, but supporting evidence is required that demonstrates that the data used are representative of the avifauna and habitats in the study area. Existing data must be supplemented by surveys, if required to produce a representative sample of the avifauna and habitats of the study area.

The proponent should:

- submit complete data sets, including GIS files from all inventory sites. These must be in the form of complete, quality-assured relational databases, with precise information on georeferenced sites, precise information on observations or visits and with observations and measurements in non-summary form; and
- provide documentation and digital files for all analysis results that allow methods to be clearly understood and results to be reproduced (raw scripts or workflows are preferred over descriptive documentation).

Wildlife and species at risk

The following guidance should be consulted in conjunction with section 8.10. Terrestrial wildlife and wildlife habitat and for section 8.11 Species at Risk and their habitat.

In those situations where field surveys are necessary to be confident in a conclusion (e.g., to increase certainty that mitigation is not needed, or to improve specificity in the documentation of biodiversity loss), in order to establish adequate baseline conditions for wildlife, take into account the following technical recommendations:

- data collection should come from surveys that are designed to meet the defined outcomes and goals for the Impact Statement. Designed data collection (as opposed to haphazard, opportunity or convenience based sampling) ensures that goals are met, assumptions for analysis and statistical modelling are met, and the potential for biases in the data collected are minimized. Wildlife surveys should be designed based on a thorough review of the available scientific literature pertinent to the specific region, wildlife, and anticipated effects;
- it is recommended to collect field data over at least two years. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. As the number of sampling years increases so does the understanding of natural variability. Repeated sampling of locations or spatial overlap of sampling between years is required to separate spatial variability from temporal variability;
- if recent existing data is available for the study area, it can be used to complement the data collected in the field. If data from prior surveys is used to replace further sampling (e.g., only one year of sampling is planned to be conducted), a demonstration must be presented that these data and survey designs meet the requirements outlined below;
- survey protocol planning should include development of statistical models, use of simulations to estimate sampling requirements and analyses to evaluate resulting survey options. It is recommended to:
  - collect data to represent sources of temporal variation between years, during and between seasons (e.g., spring migration, breeding, fall migration, wintering), and in the daily 24-hour cycle;
  - consider that rare species require more survey effort to detect than common species, and this needs to be accounted for in survey design by increasing the number and duration of surveys;
  - collect data in a manner to allow for reliable extrapolations in space (i.e., at minimum in the project area, LSA, and RSA) and in time (i.e., over the years);
  - design surveys so that they represent the spatial and temporal targets of modelling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of the effectiveness of mitigation measures. Survey designs should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project area, LSA, RSA), any departures from predictions, and the effectiveness of mitigation measures. Justify the selection of modeling techniques based on current and recent scientific literature;

- use spatially balanced and randomly chosen sampling sites, preferably using stratified random sampling that covers all habitat types. When major habitat edges are identified, sampling should be designed such that it is possible to sufficiently describe the importance not only of the types of habitat, but also of the edges between the types of habitat;
- provide the criteria and document any simulations used to select sample sites and sample sizes;
- plan the sample size and survey design to ensure sufficient assessment of the project area in the context of the LSA and RSA. Survey design will need to represent the heterogeneity of RSA habitat and to plan the number of sites by land cover or by habitat class so that aggregation of post hoc habitat classes is not necessary;
- design sampling effort per unit area - field survey effort to be most intensive within the project area. The level of effort per unit area may be similar or somewhat less within the remainder of the LSA, but should be scaled to the likelihood that project effects will affect species within that zone. Efforts outside the project study area should be carefully designed to ensure that estimates comparing within and across the project area, LSA, and RSA are unbiased and as precise as possible;
- use simulation modelling in designing surveys and statistical methods to assess if methods are expected to have levels of bias and precision that ensure the estimates are useful for comparison between project area, LSA, and RSA and to compare performance of potential survey design;
- if necessary to constrain or adjust site selection based on access limitations, simulation modelling should provide evidence that this sampling strategy has not resulted in the introduction of bias. Minimize, quantify, and understand bias(es) in estimates of abundance that impair extrapolation and statistical inference; and
- provide estimates of confidence or error for all estimates of abundance and distribution. Estimates should be defined (e.g., mean across years, mean across sites, modeled prediction) and, if appropriate, confidence or other intervals should be defined (e.g., 95% confidence intervals, credible intervals);

- preferably use stratified random sampling of habitat. Sample sites must be selected using a random procedure such as a GIS grid overlay;
- plan to include several sampling stations and several visits to each station to support all required assessment analyses. Inventories and analyses should be conducted by qualified experts; and
- consult recovery plans for which a survey schedule would have been created to identify information gaps for these species, including for the designation of critical habitat.

The proponent should:

- submit complete data sets from all survey sites. These should be in the form of complete and quality assured relational databases, with precisely georeferenced site information, precise observation/visit information and with observations and measurements in un-summarized form; and
- provide documentation and digital files for all results of analyses that allow for a clear understanding of the methods and a replication of the results (raw scripts or workflows are preferred in place of descriptive documentation).

The proponent should contact provincial or local government authorities to determine additional data sources and survey methods.

Appendix 2 – Resources and Guidance

Atmospheric, acoustic and visual environment

Air Quality Management System (AQMS) and the Canadian Ambient Air Quality Standards (CAAQS). Canadian Council of Ministers of the Environment (CCME). Available at https://ccme.ca/en/current-activities/air

Convention on Long-range Transboundary Air Pollution. United Nations Economic Commission for Europe (UNECE). 1979. Available at https://unece.org/convention-and-its-achievements

Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks. Canadian Council of Ministers of the Environment (CCME). 1993. Available upon request to CCME.

ISO 12913-1:2014 Acoustics—Soundscape—Part 1: Definition and conceptual framework. International Organization for Standardization. 2014. Available at https://www.iso.org/cms/render/live/en/sites/isoorg/contents/data/standard/05/21/52161.html

Best Practices for the Reduction of Air Emissions From Construction and Demolition Activities. Cheminfo. Prepared for Environment Canada Transboundary Issues Branch. 2005. Available at: http://www.bv.transports.gouv.qc.ca/mono/1173259.pdf

Birds and their habitat

Atlantic Canada Conservation Data Centre Data Request. Atlantic Canada Conservation Data Centre. Available at: AC CDC | HOME

Audubon Christmas Bird Count. Audubon. Available at http://netapp.audubon.org/CBCObservation/Historical/ResultsByCount.aspx

Avoiding harm to migratory birds. Environment and Climate Change Canada. Available at https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds.html

Barker, R. J., Schofield, M. R., Link, W. A., Sauer, J. R. 2018. *On the reliability of N-mixture models for count data*. Biometrics, 74(1), 369–377. Available at https://doi.org/10.1111/biom.12734

Bird Conservation Regions and strategies. Environment and Climate Change Canada. Available at https://www.canada.ca/en/environment-climate-change/services/migratory-bird-conservation/regions-strategies.html

Bird surveys. Environment and Climate Change Canada. Available at https://www.canada.ca/en/environment-climate-change/services/bird-surveys.html

Canada-US convention protecting migratory birds. Environment and Climate Change Canada. 1999. Available at https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-countries-regions/north-america/canada-united-states-protecting-migratory-birds.html

Canadian Migration Monitoring Network (CMMN). Birds Canada. 2019. Available at https://www.birdscanada.org/bird-science/canadian-migration-monitoring-network-cmmn/*eBird Canada*. Available at https://ebird.org/canada/home

Fact sheet: Nest Protection under the Migratory Birds Regulations, 2022. Available at https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/fact-sheet-nest-protection-under-mbr-2022.html

General nesting periods of migratory birds. Environment and Climate Change Canada. Available at https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html

Guidelines to avoid harm to migratory birds. Government of Canada. 2023. Available at: Guidelines to avoid harm to migratory birds - Canada.ca.

General nesting periods of migratory birds – Nesting zones and periods. Government of Canada. 2023. Available at: Nesting periods - Canada.ca.

Hanson, A., Goudie, I., Lang, A., Gjerdrum, C., Cotter, R., Donaldson, G. 2009. *A Framework for the Scientific Assessment of Potential Project Impacts on Birds*. Technical report series No. 508. Environnement Canada – Canadian Wildlife Service. Available at http://publications.gc.ca/collections/collection_2010/ec/CW69-5-508-eng.pdf

Migratory Birds Regulations, 2022. Available at https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-105/index.html

Milko, R. 1998. *Migratory birds environmental assessment guideline*. Environment Canada – Canadian Wildlife Service. Available at http://publications.gc.ca/site/fra/9.647049/publication.html

North American Breeding Bird Survey Website - Results. Available at https://wildlife-species.canada.ca/breeding-bird-survey-results/P001/A001/?lang=e

NatureCounts. Birds Canada, Avian Knowledge Network. Available at https://www.birdscanada.org/birdmon/default/searchquery.jsp

Nesting Calendar Query Tool. Birds Canada. Available at https://www.birdscanada.org/apps/rnest/index.jsp

North American Waterfowl Management Plan. NAWMP Canada. 2013. Available at http://nawmp.wetlandnetwork.ca/what-is-nawmp/

Second Atlas of Breeding Birds of Southern Quebec

Yip, D. A., L. Leston, E. M. Bayne, P. Sólymos, and A. Grover. 2017. *Experimentally derived detection distances from audio recordings and human observers enable integrated analysis of point count data*. Avian Conservation and Ecology 12(1):11. Available at https://www.ace-eco.org/vol12/iss1/art11

Wildtrax. Available at: WildTrax - Manage, store, process, and share sensor data.

Fish and fish habitat

Aquatic Invasive Species Regulations. Fisheries and Oceans Canada. 2019. Available at: Aquatic Invasive Species Regulations (dfo-mpo.gc.ca).

A science-based framework for assessing the response of fisheries productivity to state of species or habitats. Fisheries and Oceans Canada. 2013. Available at: https://waves-vagues.dfo-mpo.gc.ca/Library/360944.pdf.

Bradford, M.J., R.G. Randall, K.S. Smokorowski, B.E. Keatley and K.D. Clarke. 2014. *A framework for assessing fisheries productivity for the Fisheries Protection Program.* Fisheries and Oceans Canada, Canadian Science Advisory Secretariat. Available at https://waves-vagues.dfo-mpo.gc.ca/Library/359758.pdf

Bradford, M.J., Smokorowski, K.E. Clarke, K.D., Keatley, B.E. and Wong, M.C. 2016. *Equivalency metrics for the determination of offset requirements for the Fisheries Protection Program.* Fisheries and Oceans Canada, Canadian Science Advisory Secretariat. Available at https://waves-vagues.dfo-mpo.gc.ca/Library/364029.pdf

Braun, D.C., Smokorowski, K.E., Bradford, M.J., and Glover, L. 2019. *A review of functional monitoring methods to assess mitigation, restoration, and offsetting activities in Canada.* Fisheries and Oceans Canada, Canadian Science Advisory Secretariat. Available at https://www.dfo-mpo.gc.ca/csas-sccs/Publications/ResDocs-DocRech/2019/2019_057-eng.pdf

Code of practice: Culvert maintenance. Fisheries and Oceans Canada. 2023. Available at: Code of practice: Culvert maintenance (dfo-mpo.gc.ca)

Framework for Assessing Ecological Flow Requirements to Support Fisheries in Canada. Fisheries and Oceans Canada, Canadian Science Advisory Secretariat. 2013. Available at https://waves-vagues.dfo-mpo.gc.ca/Library/348881.pdf

Pathways of Effects. Fisheries and Oceans Canada. Available at https://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html

A field guide to oil spill response on marine shorelines. Environment and Climate Change Canada. 2016. Available at https://publications.gc.ca/site/eng/9.820227/publication.html?wbdisable=true

*Policy for applying measures to offset adverse effects on fish and fish habitat under the Fisheries Ac*t. Fisheries and Oceans Canada. 2019. Available at https://www.dfo-mpo.gc.ca/pnw-ppe/reviews-revues/policies-politiques-eng.html

Smokorowski, K.E., Bradford, M.J., Clarke, K.D., Clément, M., Gregory, R.S., Randall, R.G. 2015. *Assessing the effectiveness of habitat offset activities in Canada: Monitoring design and metrics.* Canadian Technical Report of Fisheries and Aquatic Sciences 3132. Available at http://publications.gc.ca/collections/collection_2015/mpo-dfo/Fs97-6-3132-eng.pdf

Sooley, D. R., E. A. Luiker and M. A. Barnes. 1998. Standard Methods Guide for Freshwater Fish and Fish Habitat Surveys in Newfoundland and Labrador: Rivers & Streams. Fisheries and Oceans, St. John's, NF. iii + 50 pp.

Guidelines for Watercourse Crossings in Quebec. Fisheries and Oceans Canada. 2016. Available at https://www.qc.dfo-mpo.gc.ca/infoceans/en/infocean/protecting-fisheries-watercourse-crossings

Gender-based analysis plus

A Literature Synthesis Report on the Impacts of Resource Extraction for Indigenous Women. Canadian Research Institute for the Advancement of Women. 2018. Available at: https://www.criaw-icref.ca/wp-content/uploads/2021/04/Impacts-of-Resource-Extraction-for-Indigenous-Women.pdf

By the Numbers: Gender Diversity in Canada's Natural Resource Industries and Science, Technology, Engineering and Math (STEM), *Submitted Brief.* Natural Resources Canada. Available at https://www.ourcommons.ca/Content/Committee/421/FEWO/Brief/BR8745320/br-external/NRC-e.pdf

Demystifying GBA Plus Job Aid. Women and Gender Equality Canada. Available at: https://women-gender-equality.canada.ca/gbaplus-course-cours-acsplus/assets/modules/Demystifying_GBA_job_aid_EN.pdf

GBA Plus in Impact Assessment Fact Sheet. Impact Assessment Agency of Canada. 2019. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/gender-based-analysis-plus-impact-assessment-fact-sheet.html

Gender-based Analysis Plus. Women and Gender Equality Canada. 2022. Available at https://women-gender-equality.canada.ca/en/gender-based-analysis-plus.html

Gender Diversity and Inclusion: A Guide for Explorers. Prospectors and Developers Association of Canada. 2020. Available at https://www.pdac.ca/priorities/responsible-exploration/gender/gender-diversity-and-inclusion-guidance-document

Gender, diversity and inclusion statistics. Statistics Canada. Available at https://www.statcan.gc.ca/eng/topics-start/gender_diversity_and_inclusion

Guidance: Gender-based Analysis Plus in Impact Assessment. Impact Assessment Agency of Canada. 2019. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/gender-based-analysis.html

Intersectionality Job Aid. Status of Women Canada. 2018. Available at https://women-gender-equality.canada.ca/gbaplus-course-cours-acsplus/assets/modules/Intersectionality_tool_job_aid_EN.pdf

Indigenous Gender-based Analysis for Informing the Canadian Minerals and Metals Plan. Native Women's Association of Canada. 2018. Available at: https://www.minescanada.ca/sites/minescanada/files/2022-06/indigenous-gender-based-analysis-cmmp_.pdf

Indigenous Women and Impact Assessment Final Report. Native Women's Association of Canada. 2020. Available at: https://www.nwac.ca/assets-knowledge-centre/NWAC-Impact-Assessment-Final-Report-ENG-2020.pdf

Tool – Assessing the Quality of a GBA Plus in the Impact Statement, Impact Assessment Agency of Canada. 2022. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/tool-assessing-quality-gba-plus-impact-statement.html

Greenhouse gases and climate change

Draft technical guide related to strategic assessment of climate change. ECCC. 2021. Available at: https://www.canada.ca/en/environment-climate-change/corporate/transparency/consultations/draft-technical-guide-strategic-assessment-climate-change.html

Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/considering-environmental-obligations.html

Strategic Assessment of Climate Change. Environment and Climate Change Canada. 2020. Available at https://www.strategicassessmentclimatechange.ca

Human health

Bhatia, R., Farhang, L., Heller, J., Lee, M., Orenstein, M., Richardson, M., Wernham, A. *Minimum Elements and Practice Standards for Health Impact Assessment, Version 3*. 2014. Available at https://pdfs.semanticscholar.org/040d/8ff2749f8ef2ec8b8233b7bffae9f7a38a12.pdf

Canadian Best Practices Portal – Food Security. Public Health Agency of Canada. Available at https://cbpp-pcpe.phac-aspc.gc.ca/public-health-topics/food-security/

Canadian Drinking Water Guidelines. Health Canada. Available at https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html

Community and health system characteristics – Community. Health Indicators E-Publication. Canadian Institute for Health Information. Available at https://www.cihi.ca/en/health-indicators-e-publication

First Nations Food, Nutrition & Environment Study. University of Ottawa, Université de Montréal, Assembly of First Nations. 2019. Available at: https://www.fnfnes.ca/docs/FNFNES_Quebec_Regional_Report_ENGLISH_2019-06-18.pdf

Guidance for Evaluating Human Health Impacts in Impact Assessment: Air Quality. Health Canada. 2023. Available at https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-1-2023-eng.pdf

Guidance for Evaluating Human Health Impacts in Impact Assessments: Country Foods. Health Canada. 2023. Available at https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-5-2023-eng.pdf.

Guidance for Evaluating Human Health Impacts in Impact Assessments: Noise. Health Canada. 2023. Available at https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-3-2023-eng.pdf

Guidance for Evaluating Human Health Impacts in Environmental Assessments: Radiological Impacts available at https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-4-2023-eng.pdf *Guidance for Evaluating Human Health Impacts in Environmental Assessments: Drinking and Recreational Water Quality* available at https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-2-2023-eng.pdf. Health Canada. 2013.

Guidance for Evaluating Human Health Impacts in Impact Assessment: Human Health Risk Assessment. Health Canada. 2023. Available at https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidance-evaluating-human-health-impacts-risk-assessment.html *Health Impact Assessments.* National Collaborating Centre for Environmental Health. Available at https://www.ncceh.ca/environmental-health-in-canada/health-agency-projects/health-impact-assessments

Health Inequalities and Social Determinants of Aboriginal Peoples Health. National Collaborating Centre for Indigenous Health. 2013. Available at https://www.nccih.ca/en/publicationsview.aspx?sortcode=2.8.10.16&id=46

Key Health Inequalities in Canada. A National Portrait. Public Health Agency of Canada. 2018. Available at: https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/science-research/key-health-inequalities-canada-national-portrait-executive-summary/hir-full-report-eng.pdf

Lewis, D., James, S. Thom, O., Doxtator, S., Nahmahbin-Hiltz, M., and Beacock, E. *Intangible Impacts - More-than-mental health: Indigenous identity, culture, community and relationship with land are integral to Indigenous wellbeing* (training manual). Western University. 2021. Available at: https://indigenousimpacts.uwo.ca/training_resources/indigenous_impacts_story_map.html

Positive Mental Health Indicator Framework. Public Health Agency of Canada, 2019. Available at *https://health-infobase.canada.ca/positive-mental-health/*

Rotenberg, C. 2016. *Social determinants of health for the off-reserve First Nations population, 15 years of age and older, 2012*. Statistics Canada. Available at https://www150.statcan.gc.ca/n1/pub/89-653-x/89-653-x2016010-eng.htm

Salerno, T., Tam, J., Page, J., Gosling, S., and Firelight Research Inc. *Indigenous Mental Wellness and Major Project Development: Guidance for Impact Assessment Professionals and Indigenous Communities* Final Report. May 7, 2021. Available at https://www.canada.ca/content/dam/iaac-acei/documents/research/indigenous-mental-wellness-and-ia-en.pdf

Social Determinants of Health and Health Inequalities available at https://www.canada.ca/en/public-health/services/health-promotion/population-health/what-determines-health.html. Public Health Agency of Canada. 2019.

Tools and approaches for assessing and supporting public health action on the social determinants of health and health equity. National Collaborating Center for Healthy Public Policy (NCCHPP) and the National Collaborating Centre for Determinants of Health (NCCDH). 2012. Available at: https://nccdh.ca/resources/entry/tools-and-approaches

The social determinants of health impacts of resource extraction and development in rural and northern communities: A summary of impacts and promising practices for assessment and monitoring. Northern Health. 2018. Available at: https://www.northernhealth.ca/sites/northern_health/files/services/office-health-resource-development/documents/impacts-promising-practices-assessment-monitoring.pdf

Indigenous participation and engagement

The Agency expects proponents to keep apprised of updated or new practitioner guidance or policies published on the Agency's website as may be the case over the course of a multi-year IA process. Best practices and current published guidance should be relied upon to the extent possible by proponents in developing their Impact Statement, and the following list of resources may be updated from time to time.

Indigenous Knowledge under the Impact Assessment Act: Procedures for Working with Indigenous Communities. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/indigenous-knowledge-under-the-impact-assessment-act.html

Guidance: Assessment of Potential Impacts on the Rights of Indigenous Peoples. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessm ent-act/guidance-assessm ent-potential-im pacts-rights-indigenous-peoples.html

Guidance: Collaboration with Indigenous Peoples in Impact Assessments. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/collaboration-indigenous-peoples-ia.html

Guidance: Indigenous Participation in Impact Assessment. Impact Assessment Agency of Canada. 2019. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-im pact-assessment-act/guidance-indigenous-participation-ia.htm l

Policy Context: Indigenous Participation in Impact Assessment. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/policy-indigenous-participation-ia.html

Policy Context: Assessment of Potential Impacts on the Rights of Indigenous Peoples. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessm ent-act/assessm ent-potential-impacts-rights-indigenous-peoples.html

Protecting Confidential Indigenous Knowledge under the Impact Assessment Act – Supplementary Guidance to Indigenous Knowledge in Impact Assessment: Procedures for Working with Indigenous Communities. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/protecting-confidential-indigenous-knowledge-under-the-impact-assessment-act.html

United Nations Declaration on the Rights of Indigenous Peoples. United Nations. 2007. Available at https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html

Public participation

Framework: Public Participation under the Impact Assessment Act. Impact Assessment Agency of Canada. 2019. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/framework-public-participation.html

Guidance: Public Participation for Impact Assessment under the Impact Assessment Act. Impact Assessment Agency of Canada. 2019. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-public-particaption-impact.html

Purpose and need

Guidance: "Need for," "Purpose of," "Alternatives to" and "Alternative means." Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-need-for-purpose-of-alternatives-to-and-alternative-means.html

Policy Context: "Need for," "Purpose of," "Alternatives to" and "Alternative means." Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/need-for-purpose-of-alternatives-to-and-alternative-means.html

Social and economic conditions

Analyzing Health, Social and Economic Effects under the Impact Assessment Act. Impact Assessment Agency of Canada. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/analyzing-health-social-economic-effects-impact-assessment-act.html

Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing. Impact Assessment Agency of Canada. 2015. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/technical-guidance-assessing-physical-cultural-heritage-or-structure-site-or-thing.html

Species at risk

Canadian National White-nose Syndrome Decontamination Protocol for entering bat hibernacula. Canadian Wildlife Health Cooperative. 2016. Available at: http://www.cwhc-rcsf.ca/docs/WNS_Decontamination_Protocol-Nov2016.pdf

Caribou (Rangifer tarandus) some populations : COSEWIC assessment and status report 2017. 2017. Available at: Caribou (Rangifer tarandus) some populations: COSEWIC assessment and status report 2017 - Canada.ca

COSEWIC Status Reports. Committee on the Status of Endangered Wildlife in Canada. Available at: https://cosewic.ca/index.php/en-ca/status-reportsMaster, L. L., Faber-Langendoen, D., Bittman, R., Hammerson, G. A., Heidel, B., Ramsay, L., Snow, K., Teuche, A., Tomaino, A. 2012. *NatureServe Conservation Status Assessments: Factors for Evaluating Species and Ecosystem Risk*. Available at https://www.natureserve.org/publications/natureserve-conservation-status-assessments-factors-evaluating-species-and-ecosystem

Operational Framework for Use of Conservation Allowances. Environment and Climate Change Canada. 2012. Available at https://www.canada.ca/en/environment-climate-change/services/sustainable-development/publications/operational-framework-use-conservation-allowances.html*Species at Risk Act Permitting Policy*. Government of Canada. 2016. Available at https://species-registry.canada.ca/index-en.html#/consultations/2983

Species at risk public registry. Environment and Climate Change Canada. Available at https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

Sustainability and environmental obligations

Canada's national biodiversity clearing-house. Federal, provincial and territorial working group on biodiversity. Available at https://biodivcanada.chm-cbd.net/

Guidance: Considering the Extent to which a Project Contributes to Sustainability under the Impact Assessment Act. Impact Assessment Agency of Canada. 2019. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/guidance-considering-extent-project-contributes-sustainability.html

Policy Context: Considering Environmental Obligations and Commitments in Respect of Climate Change under the Impact Assessment Act. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/considering-environmental-obligations.html

Water quality

Canadian Drinking Water Guidelines. Available at: Canadian Drinking Water Guidelines - Canada.ca

Canadian Water Quality Guidelines for the Protection of Aquatic Life. Canadian Council of Ministers of the Environment. Available at https://ccme.ca/en/resources/water-aquatic-life

Global Acid Rock Drainage Guide. INAP: The International Network for Acid Prevention. Available at http://www.gardguide.com

Guidelines for the Assessment of Alternatives for Mine Waste Disposal. Environment and Climate Change Canada. Available at https://www.canada.ca/en/environment-climate-change/services/managing-pollution/publications/guidelines-alternatives-mine-waste-disposal.html.

Mine Environment Neutral Drainage (MEND) Report 1.20.1 Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials. William A. Price. Natural Resources Canada. 2009. Available at http://mend-nedem.org/mend-report/prediction-manual-for-drainage-chemistry-from-sulphidic-geologic-materials/

Mine Environment Neutral Drainage (MEND) Report 3.50.1 - Study to Identify BATEA for the Management and Control of Effluent Quality from Mines. 2014*. Available at:* http://mend-nedem.org/mend-report/study-to-identify-batea-for-the-management-and-control-of-effluent-quality-from-mines/

Wetlands

Canada – Ramsar website. Available at https://www.ramsar.org/wetland/canada

Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar). Environment and Climate Change Canada. 1983. Available at https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-organizations/important-wetlands-ramsar-convention.html

Canadian Wetland Classification System. Developed by the National Wetlands Working Group. Available at http://www.wetlandpolicy.ca

Federal Policy on Wetland Conservation. Canadian Wildlife Service. Environment Canada.1991. *Available at: https://publications.gc.ca/site/eng/100725/publication.html*

Hanson, A., L. Swanson, D. Ewing, G. Grabas, S. Meyer, L. Ross, M. Watmough, and J. Kirkby. 2008. *Wetland Ecological Functions Assessment: An Overview of Approaches*. Canadian Wildlife Service, Environment and Climate Change Canada. Technical Report Series No. 497. Atlantic Region. 59 pp Available at: http://publications.gc.ca/site/eng/343283/publication.html.

Wetland Network. 2024. Available at: WetlandNetwork - Home

Other references

Assessing cumulative environmental effects under the Canadian Environmental Assessment Act, 2012. Canadian Environmental Assessment Agency. 2018. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/assessing-cumulative-environmental-effects-under-canadian-environmental-assessment-act-2012.html

Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under CEAA 2012. Canadian Environmental Assessment Agency. 2015. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/determining-whether-designated-project-is-likely-cause-significant-adverse-environmental-effects-under-ceaa-2012.html

Introduction to Ecological Land Classification (ELC) 2017. Statistics Canada. 2017. Available at: https://www.statcan.gc.ca/eng/subjects/standard/environment/elc/2017-1

*Ecozones Introduc*tion. Canadian Council of Ecological Areas (CCEA). 2014. Available at: https://ccea-ccae.org/ecozones-introduction/

Ecological Risk Assessment Guidance Document. Canadian Council of Ministers of the Environment. 2020. Available at https://ccme.ca/en/res/eraguidance_e.pdf

Guidelines for Wildlife Response Plans. 2022. Environment and Climate Change Canada – National Wildlife Emergency Response Framework. Available at: Guidelines for Wildlife Response Planshttps://www.canada.ca/content/dam/eccc/documents/pdf/faune-wildlife/wildlife-plants-species/7_NWER_GuidelinesForWildlifeResponsePlans_EN.pdf

Operational Guidance: Framework for determining whether a Monitoring Committee is warranted for a Designated Project under the Canadian Environmental Assessment Act 2012 and under the Impact Assessment Act. Impact Assessment Agency of Canada. 2020. Available at https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/framework-determining-monitoring-committee.html

Agency guidance documents are available from the Practitioner's Guide to Federal Impact Assessments under the Impact Assessment Act.