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**Draft Guidelines for the preparation of an  
Environmental Impact Statement for an  
environmental assessment conducted pursuant to the  
*Canadian Environmental Assessment Act, 2012.***

**Hopes Advance Iron Ore Mining Project – Nunavik, Québec  
By Oceanic Iron Ore Corporation**

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## **DISCLAIMER**

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

# Part 1 - Background

## 1 INTRODUCTION

The purpose of this document is to identify for the proponent the information requirements for the preparation of an Environmental Impact Statement (EIS) for a designated project<sup>1</sup> to be assessed pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). This document specifies the nature, scope and extent of the information required.

It is the responsibility of the proponent to provide sufficient data and analysis on any potential changes to the environment to permit a thorough evaluation of the environmental effects of the project by the Canadian Environmental Assessment Agency (the Agency). The EIS Guidelines set out minimum information requirements. It is the proponent's responsibility to provide any additional information required to assess the environmental effects of the project. Except where specified by the Agency, the proponent has the discretion to select the most appropriate methods to compile and present data, information and analysis in the EIS.

## 2 GUIDING PRINCIPLES

### 2.1 Environmental assessment as a planning tool

Environmental Assessment (EA) is a planning tool used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate the possible adverse effects of projects on the environment. It encourages decision makers to take actions that promote sustainable development.

### 2.2 Public participation

One of the purposes of CEAA 2012 is to ensure opportunities for meaningful public participation during an EA. The public will have an opportunity to provide their comments and concerns on the proponent's EIS. The public will also have an opportunity to provide their comments on the Agency's draft report.

For the public to participate effectively, the proposed project must be well explained and the information must be available as early as possible in the review process. The proponent is required to provide current information about the project. The Agency could hold one or two information evenings on the EIS during the public consultation period. During this stage, it is essential that the proponent be present. The proponent must contribute by preparing appropriate materials to facilitate consultation (executive summaries, visual aids, maps, tables, etc.).

The proponent must adopt a communications plan and involve in the planning of its project all parties concerned, individuals, groups, communities, government departments, and public and parapublic organizations.

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<sup>1</sup> In this document, "project" has the same meaning as "designated project" as defined in the CEAA 2012.

### **2.3 Aboriginal consultation**

One of the purposes of CEEA 2012 is to promote communication and cooperation with Aboriginal peoples. To work toward this goal, the proponent must ensure that it engages with Aboriginal people and groups that may be affected by the project, or that have potential or established Aboriginal and Treaty rights and related interests in the project area, as early as possible in the project planning process. The proponent must make a real effort to come to an agreement on a mutually acceptable consultation process with them. In addition, the Aboriginal persons involved must have access to all relevant information that allows them understand the proposed project and to determine its impacts on their rights and interests. The proponent must make reasonable efforts to integrate “traditional Aboriginal knowledge” that will contribute to the assessment of environmental impacts.

All information gathered through the EA process and associated consultation and engagement with Aboriginal peoples will be used to inform decisions under CEEA 2012, as well as the Crown’s understanding of the potential adverse impacts of the project on potential or established Aboriginal and Treaty rights and related interests, and the effectiveness of measures proposed to avoid or minimise those impacts.

## **3 PREPARATION AND PRESENTATION OF THE EIS**

### **3.1 Agency guidance**

The proponent is encouraged to consult relevant Agency Policy and Guidelines<sup>2</sup> on topics to be addressed in the EIS. The proponent is further encouraged to consult with the Agency and federal authorities (see section 3.4.1) during the planning and development of the EIS materials.

### **3.2 Study strategy and methodology**

The proponent is expected to respect the intent of the EIS Guidelines and to consider the effects that are likely to arise from the project (including situations not explicitly identified in these guidelines), the technically and economically feasible mitigation measures that will be applied, and the significance of any residual effects. It is possible that the EIS Guidelines may include matters that, in the judgement of the proponent, are not relevant or significant to the project. If such matters are omitted from the EIS, they must be clearly indicated and the justification for their conclusion provided so that the Agency, federal authorities, Aboriginal groups, the public and any other interested party have an opportunity to comment on this decision. Where the Agency disagrees with the proponent's decision, it may require the proponent to provide the specified information.

In describing methods, the proponent will document how it used scientific, engineering, traditional and local knowledge to reach its conclusions. Assumptions must be clearly identified and justified. All data, models and studies should be documented such that the analyses are transparent and reproducible. All data collection methods should be specified. The uncertainty, reliability and sensitivity of models used to reach conclusions should be indicated.

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<sup>2</sup> Visit the Canadian Environmental Assessment Agency website at: [www.ceaa-acee.gc.ca/default.asp?lang=En&n=F1F30EEF-1](http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=F1F30EEF-1)

All significant gaps in knowledge and understanding related to key conclusions presented in the EIS should be identified. The steps to be taken by the proponent to address these gaps should also be identified. The EIS must discuss situations where the conclusions drawn from scientific and technical knowledge are inconsistent with the conclusions drawn from traditional knowledge.

### **3.3 Integration of EA, Aboriginal and public consultation information**

In preparing the EIS, the proponent is encouraged to integrate Aboriginal and public consultation outcomes into the consideration and mitigation of environmental effects at the appropriate EA analytical steps shown on the next page (Figure 1). The proponent must ensure that public and Aboriginal concerns are well documented at each stage of the environmental assessment. The proponent must identify and explain all unresolved questions or concerns as part of its analysis of the impacts of the project.

This information will help the Crown assess adequacy of consultation, the as set out in the [Updated Guidelines for Federal Officials to Fulfill the Duty to Consult](#) (2011)<sup>3</sup>.

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<sup>3</sup> Visit the Aboriginal Affairs and Northern Development Canada website at: [www.aadnc-aandc.gc.ca/eng/1100100014680/1100100014681](http://www.aadnc-aandc.gc.ca/eng/1100100014680/1100100014681)

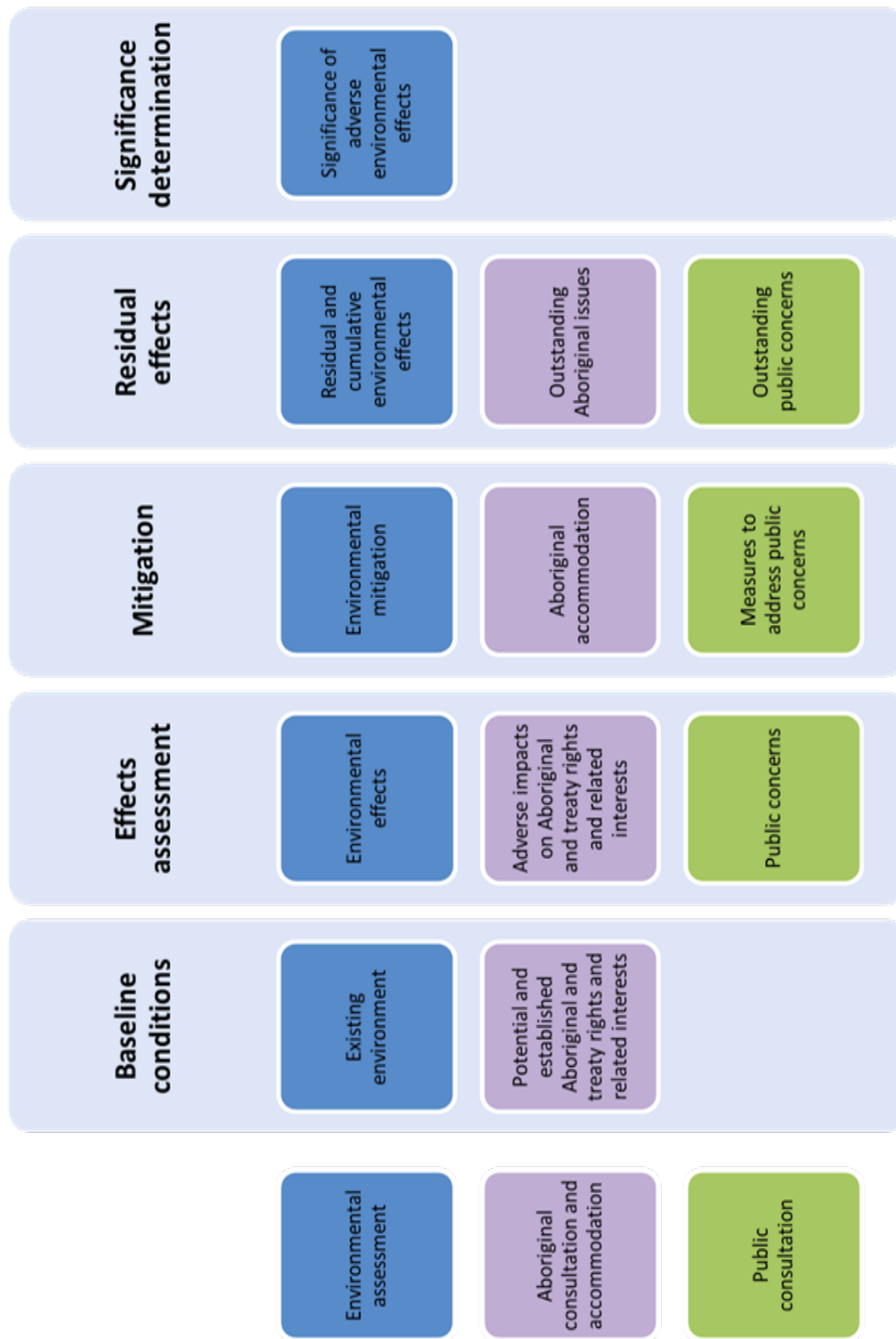


Figure 1. Integration of environmental assessment, Aboriginal and public consultation information into the Environmental Impact Statement.



### **3.4 Use of information**

#### **3.4.1 Scientific advice**

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

#### **3.4.2 Community knowledge and Aboriginal traditional knowledge**

Sub-section 19(3) of the Act states that “community knowledge and Aboriginal traditional knowledge may be considered in conducting an EA”. For the purposes of these guidelines, community knowledge and Aboriginal traditional knowledge should be understood to refer to knowledge acquired and accumulated by a community or an Aboriginal community, through generations of living in close contact with nature.

The proponent shall incorporate into the EIS the community and Aboriginal traditional knowledge to which it has access or that is acquired through Aboriginal engagement activities, in keeping with appropriate ethical standards and without breaking obligations of confidentiality, if any. Agreement should be obtained from Aboriginal groups regarding the use, management and protection of their existing traditional knowledge information during and after the EA.

#### **3.4.3 Existing information**

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

#### **3.4.4 Confidential information**

In implementing CEAA 2012, the Government of Canada is committed to promoting public participation in the environmental assessment of projects and providing access to the information on which environmental assessments are based. All documents prepared or submitted by the proponent or any other stakeholder in relation to the environmental assessment are included in the Canadian Environmental Assessment Registry (CEAR) and made available to the public on request. For this reason, the EIS should not contain:

- Information that is sensitive or confidential (i.e., financial, commercial, scientific, technical, personal, cultural or other nature), that is treated consistently as confidential, and the person affected has not consented to the disclosure; or,
- Information that is likely to endanger the life, liberty or security of a person through its disclosure.

The proponent must advise the public and Aboriginal communities that all information in the EIS is considered public. The proponent should consult with the Agency regarding whether specific information requested by these guidelines should be treated as confidential.

### 3.5 Presentation and organization of the EIS

To facilitate the identification of the documents submitted and their placement in the CEAR, the title page of the EIS and its related documents should contain the following information:

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

The EIS should be written in clear, precise language. A glossary defining technical words, acronyms and abbreviations shall be included. The proponent shall provide charts, diagrams, tables, maps and photographs, where appropriate, to clarify the text. Perspective drawings that clearly convey the various components of the project shall also be provided. Wherever possible, maps shall be presented in common scales and datum to allow for comparison and overlay of mapped features.

For purposes of brevity and to avoid repetition, cross-referencing is preferred. The EIS may make reference to the information that has already been presented in other sections of the document, rather than repeating it. The exception to this preference is the cumulative effects assessment, which should be provided in a stand-alone section as described in section 12.2.1. Detailed studies (including all relevant and supporting data and methodologies) shall be provided in separate appendices and shall be referenced by appendix, section and page in the text of the main document of the EIS. The EIS shall specify the organization of the document. This should include a list of all tables, figures, and photographs referenced in the text of the EIS. A complete list of supporting literature and references should also be provided.

The proponent is encouraged to prepare an EIS that meets the requirements of the provincial and federal processes. If the proponent chooses this option, a Table of Concordance, which cross references the information presented in the EIS with the information requirements identified in the EIS Guidelines, should be provided.

The proponent shall provide 20 copies of the EIS for distribution in English and 20 copies in French, including an electronic version in an unlocked, searchable PDF format. This also applies to the summary that is to be provided as a separate document. It is strongly recommended that the proponent have the summary translated into the appropriate Aboriginal language(s) in order to facilitate consultation activities during the environmental assessment.

# Part 2 – Content and Structure of the EIS

## 4 SUMMARY

The proponent will prepare a summary of the EIS which will include the following:

- A concise description of all key components of the project;
- A summary of the consultation conducted with Aboriginal groups, the public, and government agencies, including a summary of the issues raised and the proponent's responses;
- An overview of the key effects of the project and proposed technically and economically feasible mitigation measures; and
- The proponent's conclusions on the environmental effects of the project and the significance of adverse environmental effects after taking mitigation commitments into account.

The summary is to be provided as a separate document, in French and English. It is to include a summary of the EIS, the proponent's analysis approach, and the activities conducted for data collection and consultations. The summary must have a sufficient level of detail for the reader to learn and understand the entire project, the potential impacts, the measures proposed by the proponent, the residual effects and the conclusions. The proponent is advised to follow the outline provided in Appendix A.

## 5 INTRODUCTION AND PROJECT OVERVIEW

### 5.1 Project overview and Geographical setting

The EIS should contain a concise description of the geographical setting in which the project will take place. This description should focus on those aspects of the project and its setting important for understanding the potential environmental effects of the project. In particular:

- the daily ore production capacity, the ore processing location, and the means and location of shipping the ore;
- the expected operating life and the possibility of carrying out other development phases on the mine site and port;
- the project components, as per Section 6.3.1 and their UTM coordinates;
- environmentally sensitive areas, such as national, provincial and regional parks, ecological reserves, wetlands, estuaries, and habitats of provincial or federally listed species at risk and other sensitive areas;
- current land use in the area and the relationship of the project facilities and components with any federal lands;
- a description of the local and Aboriginal communities potentially affected by the project;
- traditional Aboriginal territories, treaty lands and claimed lands, Indian reserve lands
- the environmental significance and value of the geographical setting in which the project will take place and the surrounding area.

A map illustrating the boundaries of the proposed site, including the above-mentioned components, must accompany the text. This map must be in large format, as it could be used during consultations. In addition, site plans/sketches and photographs showing the project location, site features and intended locations of project components should be included.

## **5.2 Regulatory framework and the role of governments**

To understand the context of the EA, this section should identify, for each jurisdiction, the government bodies involved in the EA as well as the EA processes. More specifically identify:

- any federal power duty or function to be exercised that may permit the carrying out (in whole or in part) of the project or associated activities
- the environmental and other specific regulatory approvals and legislation that are applicable to the project at the federal, provincial, regional and municipal levels;
- government policies, resource management, planning or study initiatives pertinent to the project and/or EA and discuss their implications. The proponent must indicate if they intend on submitting a request to Transport Canada's Marine Safety Directorate to implement the TERMPOL Review Process (TRP)<sup>4</sup>;
- any treaty or self government agreements with Aboriginal groups that are pertinent to the project and/or EA;
- any relevant Land Use Plans, Land Zoning, or Community Plans;

## **5.3 Participants in the environmental assessment**

Clearly identify the main participants in the EA including jurisdictions other than the federal government, Aboriginal groups, community groups, and environmental organizations.

# **6 PROJECT DESCRIPTION**

## **6.1 The proponent**

The proponent shall:

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

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<sup>4</sup> TERMPOL Code: Code of Recommended Standards for the Safety and Prevention of Pollution for Marine Transportation Systems and Related Assessment Procedures

## 6.2 Purpose of the project

The proponent shall establish the fundamental rationale for the project, explaining the background, the problems or opportunities that project is intended to satisfy and the stated objectives. The 'purpose of' the project should be established from the perspective of the proponent. If the objectives of the project are related to or contribute to broader private or public sector policies, plans or programs, this information should also be included.

## 6.3 Scope of Project

The scope of project for the purposes of the EA includes the components, physical activities listed in section 6.3.1 and involve federal decisions listed in section 6.3.2. The proponent will consider all the components, activities and decisions identified in these sections as part of the effects assessment.

### 6.3.1 Designated project

Based on the information contained in the project description received from the proponent, the Agency defines the scope of the project to be assessed as a minimum all components, infrastructure, ancillary structures and the following physical activities<sup>5</sup>:

- the operation of an open-pit mines;
- storage areas for ore, waste rock and unconsolidated deposits (including organic material);
- tailings sites;
- water-retaining structures, retention basins, dikes;
- ore processing plant that includes crushing, milling, magnetic separation and flotation areas;
- diverting water and draining water bodies;
- capture, management and treatment of run-off, process water, surface water, groundwater and dewatering water;
- the pipeline to transport the concentrate;
- marine terminal, with its wharfs, storage areas, conveyors and water filtration plant;
- marine transportation (ore and supplies);
- dredging areas and ocean sediment disposal sites;
- the shipping channel, marine routes and icebreaking;
- the central electrical panel and associated electrical lines;
- storage of oil and gas (petroleum, liquefied natural gas (LNG), etc.);
- administrative offices and service buildings;
- storage of dangerous goods other than oil and gas;
- explosives manufacturing plan and storage;
- explosives manufacturing and storage;
- access roads;
- the landing strip and air transportation service buildings;
- the workers' camp, the associated services and structures (location of the landfill, wastewater management, etc.); and
- site restoration.

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<sup>5</sup> Following the alternative means analysis, the scope of the project could be broadened to include the related projects not described in the project description received from the proponent.

### 6.3.2 Decisions by federal authorities

Based on the information contained in the project description received from the proponent, the following federal authorities may have to exercise a duty or function to permit the project or the related physical activities to be carried out, in full or in part,

- Fisheries and Oceans Canada pursuant to section 32 and paragraph 35(2)(b) of the *Fisheries Act*;
- Natural Resources Canada pursuant to subsection 7(1) of the *Explosives Act*;
- Transports Canada (TC) pursuant to subsection 5(1) of the *Navigable Waters Act*;
- Environment Canada (EC) pursuant to the *Disposal at Sea Regulations* of the *Canadian Environmental Protection Act, 1999*;
- The Governor in Council may have to issue a decision concerning the amendment of the *Metal Mining Effluent Regulations* to authorize the deposit of tailings in a body of water frequented by fish. Such an amendment is required in order to list a body of water as a tailings impoundment area in Schedule 2 of the MMR pursuant to paragraphs 36(5)(a) to (e) of the *Fisheries Act*, and
- The Governor in Council under section 23 of the *Navigable Waters Protection Act* could exempt the proponent from the prohibition on depositing their tailings in a navigable water body.

The proponent must clearly indicate in its EIS all functions or duties (funding, authorizations, permits, etc.) the federal jurisdictions could have to exercise to carry out the project, in whole or in part.

## 6.4 **Project Description**

The EIS shall include expanded descriptions of the construction, operation, maintenance, foreseeable modifications, and where relevant, closure, decommissioning and restoration of sites and facilities associated with the proposed project. Although a complete list of project activities is required, the emphasis should be on activities with the greatest potential to have environmental effects. Sufficient information should be included to predict environmental effects and address public and aboriginal concerns. Highlight activities that involve periods of increased environmental disturbance or the release of materials into the environment.

The proponent must provide sufficient detail on the components of the project related to federal decisions listed in section 6.3.2.

The EIS must include, but is not limited to, a description of:

- the activities that will impact the aquatic and riparian environment, including those affecting intermittent streams, flood risk areas and wetlands (peatlands, marshes and swamps) and the marine environment (intertidal et subtidal areas);
- the dikes, specifying their location, size and construction materials used;
- the storage areas for waste rock, ore, overburden and tailings, specifying the locations, deposition and containment methods (including a plan, cross section, elevation, etc.), dimensions and any water bodies affected, if applicable;
- the permanent and temporary access infrastructure, specifying the route for each of the road accesses as well as the location, type of structures used for the crossing (e.g. bridge, culvert) and the characteristics of the physical works at each river or stream crossing. For bridges, the characteristics include in particular the type, the clear span and the number of pillars, while for culverts, the characteristics include the type (arch or closed-bottom), the shape (round, square, arched, etc.), the material (steel, concrete, plastic, etc.), the dimensions (diameter, length, width and height), the slope, and whether or not there are weirs;
- port infrastructures and facilities specifying the type of vessels that will be used, the construction methods for the wharfs (backfilling, sheet piling, pile dredging) as well as the dimensions of the wharfs, berthing areas, anchorage areas at the main terminal and in the navigation channel, and the features and locations of the navigational aids;

- capital and maintenance dredging work specifying the nature and the volume of sediments, dredging methods (type of dredge, duration, frequency, etc.), surface area of the areas to be dredged, sediment management (land and aquatic) specifying the sediment disposal area, if necessary, etc.
- navigation activities (number and frequency of trips) and icebreaking (time of year, frequency, duration, expected start and end dates); and
- the project's surface water and groundwater supply requirements, as well as discharge and intake volumes (including dewatering water). The water discharge and intake infrastructures must be located on a plan or map to scale. The EIS must describe in particular:
  - all the other water intakes, indicating their location, dimensions, depth at which the water will be removed, quantity of monthly and annual removals, dimensions of the structures that will keep the water intakes in place and their area of encroachment below the natural high water mark;
  - the volumes of water required for operations (mining, ore processing, fire control, pipeline, drinking and sanitary water, etc.);
  - wastewater and domestic water treatment ponds and units;
  - the effluent discharge points, alterations to the receiving environment at the effluent discharge point (riprap, diking, etc.) and an estimate of the projected average monthly and annual effluent volumes;
  - the collector and/or diversion ditches and canals;
  - an estimate of the volume of groundwater that will be pumped daily for dewatering of the pit and indicate whether it will be necessary to lower the water table in the vicinity of the pit and, if applicable, describe the methods that will be used to achieve this;
  - seepage from waste rock piles, tailings impoundment area and general mine site;
  - various water balances for the site, including an estimate of anticipated precipitation and details on drainage conditions. The EIS should make it possible to assess the anticipated changes to the hydrological and hydrogeological regime and associated impacts, and to estimate the effluent mixing zone, etc.

The proponent must provide maps drawn to an appropriate scale, showing the topography and all the physical components of the project (pit, overburden, ore and waste rock stockpiling areas, tailings impoundment area, dikes, mine water and treatment ponds, main road, secondary roads, effluent discharge points, water intakes, fuel depot, main buildings, etc.). The map should show the dimensions of the components and distinguish between existing components and proposed components.

The physical works and activities affecting the marine environment must be presented on a nautical chart of the area. The proponent should refer to the Canadian Hydrographic Service website at: [www.charts.gc.ca/charts-cartes/paper-papier/index-eng.asp?step=1](http://www.charts.gc.ca/charts-cartes/paper-papier/index-eng.asp?step=1). The proponent must provide a bathymetric survey of the marine terminal area, the navigation channel and the sediment disposal site.

The proponent shall provide the following information concerning explosives manufacturing and storage:

- explosives to be manufactured;
- maximum quantity of explosives at each facility;
- a detailed site plan with distances to vulnerable features such as dwellings, roads, camps, railways, bodies of water, etc. Infrastructures for manufacturing or storing explosives should be identified and include: explosives and detonator magazines, fuel storage, ammonium nitrate storage, maintenance/wash area, process vehicles and their parking area, any offices, warehouses, buildings, etc. The proponent needs to demonstrate that safety distances required by the Explosives Regulatory Division (ERD) of NRCan have been considered and met);
- fuel and ammonium nitrate storage plans; storage of ammonium nitrate is to be in conformance with ERD guidelines ;
- liquid effluent disposal plans;
- evaluation of worst case scenario (i.e. accidental explosion);

- spill contingency plans;
- details on any temporary explosive facilities to be used for starting the project (same as above).

## 7 SCOPE OF ASSESSMENT

### 7.1 Factors to be considered

#### 7.1.1 Effects of the project on the environment

The proponent will identify the Environmental Components (ECs) deemed appropriate to ensure the full consideration of the factors listed in subsection 19(1) of CEEA 2012 as well as the 2012 amendment to section 79 of the *Species at Risk Act*. A list of minimum required ECs is provided in section 9.1 of this document. This list must be completed according to the evolution and design of the project and according to the knowledge acquired on the environment and on public and Aboriginal concerns. The proponent will describe how other ECs were selected.

The ECs should be described in sufficient detail to allow the reviewer to understand their importance and assess the potential for environmental effects arising from the project activities. The rationale for selecting these components as ECs and for excluding others should be stated. Challenges may arise regarding particular exclusions, so it is important to document the information and the criteria used to make each determination. Examples of justification include primary data collection, computer modelling, literature references, public consultation, expert input or professional judgement.

#### 7.1.2 Effects of potential accidents or malfunctions

The proponent must identify the probability of potential accidents and malfunctions related to the project, including an explanation of how those events were identified, potential consequences (including the environmental effects), the worst case scenarios and the effects of these scenarios.

The geographical and temporal boundaries for the assessment of malfunctions and accidents may be different than those in the scope of factors for each EC. This must include an identification of the magnitude of an accident and/or malfunction, including the quantity, mechanism, rate, form and characteristics of the contaminants and other materials likely to be released into the environment during the accident and malfunction events.

The EIS must also describe the safeguards that have been established to protect against such occurrences and the contingency/emergency response procedures in place if accidents and/or malfunctions do occur. Detailed contingency and response plans should be presented.

#### 7.1.3 Effects of the environment on the project

The EIS must take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events (e.g. flooding, ice jams, rock slides, landslides, fire, outflow conditions and seismic events) could adversely affect the project and how this in turn could result in impacts to the environment (e.g., extreme environmental conditions result in malfunctions and accidental events). These events should be considered in different probability patterns (i.e. 5-year flood vs. 100-year flood). Longer-term effects of climate change must also be discussed up to the projected post-closure phase of the project (rise of sea levels, coastal erosion etc.). The impacts related to changes in the permafrost regime related to climate change or enhanced by project activities must be described and analyzed. This discussion should include a description of climate data used.



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

## **7.2 Scope of the factors**

Scoping establishes the boundaries of the EA and focuses the assessment on relevant issues and concerns. The spatial and temporal boundaries used in the assessment may vary depending on the EC.

### **7.2.1 Spatial boundaries**

The EIS will clearly indicate the spatial boundaries to be used in assessing the potential adverse environmental effects of the proposed project and provide a rationale for each boundary. It is recognized that the spatial boundaries for each EC may not be the same.

Study boundaries must be defined taking into account as applicable the appropriate scale and spatial extent of potential environmental effects, community and Aboriginal traditional knowledge, current land and resource use by Aboriginal groups, ecological, technical and social and cultural considerations. The description of the project setting must be presented in sufficient detail to address the relevant environmental effects of the project. The limits must include all main and related work and the zone of influence of activities inherent to the project.

The proponent is advised to consult with the Agency, federal and provincial government departments and agencies, local government and Aboriginal groups, and take into account public comment when defining the spatial boundaries used in the EIS.

### **7.2.2 Temporal boundaries**

The temporal boundaries of the EA should span all phases of the project: construction, operation, maintenance, foreseeable modifications, and where relevant, closure, decommissioning and restoration of the sites affected by the project. Temporal boundaries shall also consider seasonal and annual variations related to ECs for all phases of the project, where appropriate. Community and Aboriginal traditional knowledge should factor into decisions around appropriate temporal boundaries.

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

## **8 ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT**

The EIS must identify and consider the effects of alternative means of carrying out the project that are technically and economically feasible. The proponent will complete the following procedural steps for addressing alternative means:

- identify the alternative means to carry out the project.
  - develop criteria to determine the technical and economic feasibility of the alternative means; and,
  - identify those alternative means that are technically and economically feasible, describing each alternative means in sufficient detail.
- identify the effects of each alternative means.

- identify those elements of each alternative means that could produce effects in sufficient detail to allow a comparison with the effects of the project; and
- the effects referred to above include both environmental effects and potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests.
- identify the preferred means.
  - identify the preferred means based on the relative consideration of effects; and of technical and economic feasibility; and
  - determine criteria to examine the effects of each remaining alternative means to identify the preferred means.

In its alternative means analysis, the proponent must address, as a minimum, the following project components: ore processing, mine waste disposal, location and configuration of the marine terminal, dredging, sediment disposal, icebreaking, location of the access roads, location of the pipeline, transportation and accommodation of workers, and power source to operate the mining complex.

*Specific considerations for the mine waste disposal alternative means analysis*

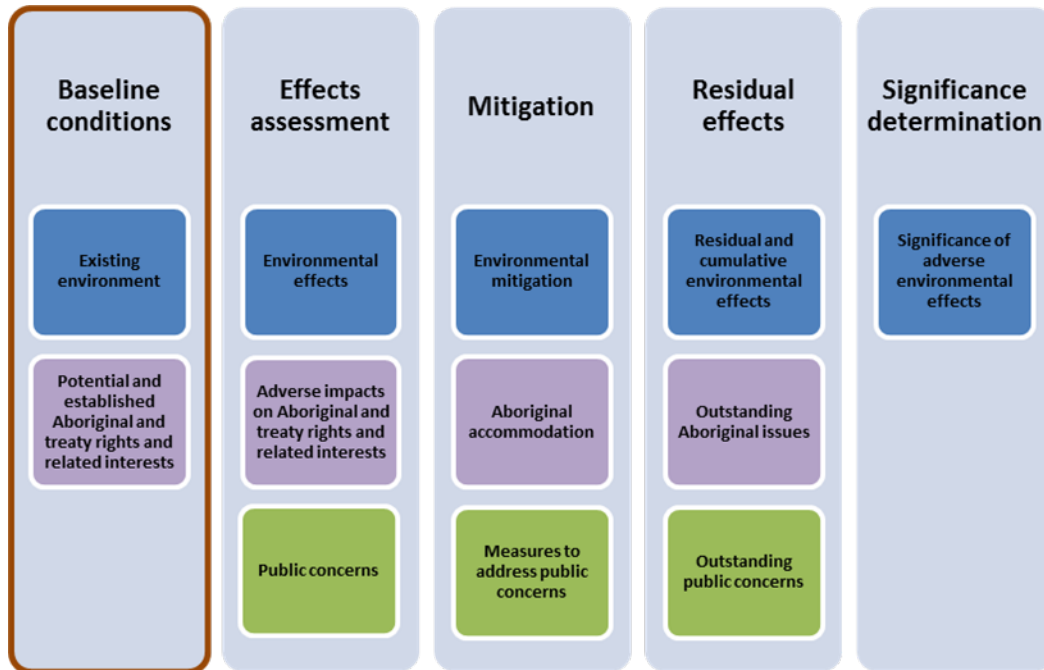
The proponent has identified the potential need to use water bodies frequented by fish for the disposal of mine waste, including tailings and waste rock, as well as for the management and treatment of wastewater. Before water bodies frequented by fish can be used for disposal of mine waste, they must be designated as tailings impoundment areas in Schedule 2 of the MMER, which requires a federal legislative action.

The regulatory process provided for by the MMER will be initiated when the proponent has completed a detailed assessment of alternatives for mine waste disposal. The proponent is required to utilize the methodology provided by Environment Canada to conduct a robust and thorough assessment of alternatives for mine waste disposal<sup>6</sup>. To reduce the time required and facilitate a thorough, transparent review of the options, the proponent is encouraged to align the alternatives assessment required in the EIS with that required by the MMER regulatory process.

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<sup>6</sup> For more details, the proponent should consult the *Guidelines for the Assessment of Alternatives for Mine Waste Disposal*, available on the Environment Canada website ([www.ec.gc.ca/pollution/default.asp?lang=En&n=C6A98427-1](http://www.ec.gc.ca/pollution/default.asp?lang=En&n=C6A98427-1))

## 9 BASELINE CONDITIONS



### 9.1 Existing environment

#### 9.1.1 Methodology

The EIS must include a description of the environment, including the components of the existing environment and environmental processes, their interrelations and interactions as well as the variability in these components, processes and interactions over time scales appropriate to the EIS. The description should be sufficiently detailed to characterize the environment before any disturbance to the environment due to the project and to identify, assess and determine the significance of the potential adverse environmental effects of the project.

In describing the physical and biological environment, the proponent should take an approach that considers both scientific and traditional knowledge. The proponent must identify and justify the indicators and measures of ecosystem health and integrity used for analysis.

For the biophysical environment, baseline data in the form of inventories alone are not sufficient to assess effects. The proponent shall consider the resilience of relevant species populations, communities and their habitats. The proponent shall summarize all pertinent historical information on the size and geographic extent of relevant animal populations as well as density, based on best available information. Where little or no information is available, specific studies shall be designed to gather further information on species populations and densities.

The habitat at regional and local scales should be defined by type of use frequency and duration (e.g. spawning, breeding, migration, feeding, nursery, rearing, wintering). The assessment must cover all relevant seasonal variations in the use by all ECs as appropriate. Emphasis must be on those species, communities and processes identified as ECs. However, the interrelations of these components and their relation to the entire ecosystem and communities of which they are a part must be indicated. The

proponent must address issues such as habitat, nutrient and chemical cycles, food chains, productivity, to the extent that they are appropriate to understanding the effect of the project on ecosystem health and integrity. Range and probability of natural variation over time must also be considered.

If the baseline data have been extrapolated or otherwise manipulated to depict environmental conditions in the study areas, modelling methods and equations must be described and must include calculations of margins of error and other relevant statistical information, such as confidence intervals and possible sources of error.

### 9.1.2 Environmental components

The definition of environmental components should be interpreted broadly when evaluating whether the project may result in environmental effects under CEAA 2012. Based on the scope of project described in section 6.3, the following ECs should be identified and described in the relevant sections of the EIS.

#### *Physical environment*

The EIS shall describe the following components:

- hydrology, hydrogeology, water quality, including:
  - hydrological interactions between surface water and groundwater;
  - physicochemical quality of groundwater, identification of aquifer formations, their vulnerability and extent, direction of flow;
  - description of groundwater sources used as drinking water in the study area, their current use and potential for future use;
- geology, geomorphology, isostatic rise and geohazards (e.g. seismic activity, landslides);
- permafrost conditions: distribution, thermal conditions, ground ice, thaw sensitivity and active layer thickness;
- ore mineralogy, including sulphide types;
- characteristics of the geochemical behaviour of waste rock, ore, tailings, overburden and potential construction materials, including:
  - potential for acid generation, neutralization and contaminated neutral drainage;
  - assessment of metal leaching properties.
- weather conditions, climate and climate change<sup>7</sup>;
- ice regime, including frazil ice, formation of ice cover, freeze-ups and break-ups;
- physicochemical quality of the dredged sediment, its toxicity, if necessary by toxicity testing;
- acoustic environment (including the characterization of baseline noise levels and the identification of sources and types of noise and sensitive receptors); and
- air quality.

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<sup>7</sup> The document entitled *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners* can be consulted on the Agency website ([www.ceaa-acee.gc.ca/default.asp?lang=En&n=DACB19EE-1](http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=DACB19EE-1)).

## *Biological environment*

### *Fish and fish habitat<sup>8</sup>*

In order to permit analysis of the project's effects pursuant to the *Fisheries Act*, the EIS must document the physical and biological characteristics of the fish habitat likely to be directly or indirectly affected by the project.

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

The EIS must illustrate, on a topographic scale map, the hydrographic network (water bodies and watercourses) including intermittent streams, flood risk areas and wetlands. It must also indicate the boundaries of the watershed and subwatersheds of the study area.

The emphasis must be placed on the watercourses and water bodies likely to be affected by the project, their physical characteristics, physico-chemical quality and hydraulic regime.

Hence, for all the watercourses and water bodies on which effects are anticipated, the EIS must describe the biophysical characteristics, including:

- for each watercourse, indicate the name of the watercourse and provide a description of the habitat by homogeneous section. The parameters which must be determined are length of the section, width of the channel from the high water mark, depth, type of flow facies, type of substrate, aquatic and riparian vegetation. It is recommended that photos be attached to the description;
- for each lake or water body affected, indicate the name of the water body and provide a description. The parameters that must be determined are total area, bathymetry, maximum and mean depths, water level, type of substrate, surface area and location of the submerged and emergent aquatic vegetation, and water quality parameters (e.g. water temperature, turbidity, pH, dissolved oxygen profiles);
- monthly/seasonal/annual volume data and outflow data;
- seasonal flows and annual hydrography (maximum and minimum flows);
- natural obstacles or existing structures that hinder the free passage of fish.

The proponent shall provide at least bathymetric maps of the marine environment that will be affected by the port infrastructures, navigated or anchorage areas and disposal sites, if necessary. The EIS shall identify or describe the following components:

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<sup>8</sup> For more information, the following reference documents can be consulted on the Fisheries and Oceans Canada website: *Proponent's Guide to Information Requirements for Review under the Fish Habitat Protection Provisions of the Fisheries Act*, 2009 ([www.dfo-mpo.gc.ca/habitat/role/141/1415/14155/requirements-exigences/index-eng.pdf](http://www.dfo-mpo.gc.ca/habitat/role/141/1415/14155/requirements-exigences/index-eng.pdf)); *Quebec Operational Statement, Version 1.0, Temporary Stream Crossing*, 2009 ([www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/crossings-eng.asp](http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/crossings-eng.asp)); *Operational Statement, Version 3.0, Ice Bridges and Snow Fills*, 2007 ([www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/ice-eng.asp](http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/ice-eng.asp)); *Quebec Operational Statement, Version 3.0, Bridge Maintenance*, 2007 ([www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/bridge-eng.asp](http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/bridge-eng.asp)). The document entitled *Guidelines for Planning River Crossings in Quebec, 2012* can be obtained from DFO.

- different tidal levels (higher high water large tide, high water average tide and chart datum), substrates, aquatic vegetation (grass beds and seaweed fields) and water quality parameters (salinity, turbidity, etc.);
- bathymetry measured at the sites of various structures;
- tidal amplitude recorded at the project site;
- surface and bottom currents from the longshore drift, the time of year, and the climatic conditions that modify these characteristics.

For all the fish species present in the study area, the EIS must describe the components of their habitats likely to be affected by implementation of the project. The description of the aquatic environment and fish habitat shall include information on the physico-chemical quality of sediments and on benthic invertebrate communities, including their diversity and abundance.

A fish samplings must be carried out. The survey methods used must be described in order to allow experts DFO to ensure the quality of the information provided. If sectoral studies on fish and fish habitat were carried out previously, they are to be submitted with the EIS.

Hence, for all watercourses or water bodies on which the project is likely to have effects, the EIS must:

- describe the fish species present on the basis of the surveys carried out and the data available (e.g. electric and experimental fishing, government and historical databases, sport fishing data, etc.); identify the sources of the data and provide the information concerning the fishing carried out (e.g. location of the sampling stations, catch methods, date of catches, species);
- specify the location and surface area of the potential or confirmed fish habitats and describe how they are used by fish (spawning, rearing, growth, feeding, migration, overwintering);
- describe the marine environment, the main species and the communities present (grass beds and seaweed fields, benthic communities, fish communities, marine mammals) on the basis of the surveys carried out and the data available (cross cut, videos and/or photos, experimental fishing, government and historical databases, sport fishing data, etc.). Identify the sources of the data and provide the information concerning the fishing carried out (e.g. location of the sampling stations, catch methods, date of catches, species, etc.). It is recommended to include the photos and videos with the description;
- locate and describe the suitable habitats for species at risk on federal and provincial lists found or likely to be found in the study area. For marine mammals, indicate the nature and periods of use of the environment;
- for the site where it is expected to install, construct or modify a watercourse crossing, determine the need to ensure free passage of fish. If the proponent believes that it is not necessary to ensure free passage of fish, it must explain why by demonstrating that there is a natural barrier to free passage of fish at or near the site of the work, or that the habitat upstream of the work is of marginal quantity and quality. The proponent can consider the anticipated state of the watercourse following the mine operations to justify its conclusion.

#### *Migratory birds*<sup>9</sup>

- a description of the bird fauna likely to be present in the study area for all four seasons (spring migration, breeding season, fall migration, winter).<sup>10</sup> The description will be based on existing data

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<sup>9</sup> Migratory birds as defined in subsection 2(1) of the *Migratory Birds Convention Act, 1994*

or on recent surveys carried out in the study area according to recognized methods. The description will make it possible to:

- identify all the species likely to be present in the study area, particularly species for which breeding is confirmed in the study area, as well as the species at risk or priority species;
- identify the location and extent of the various types of bird habitat;
- identify areas of concentration of migratory birds, such as breeding areas, colonies, spring and fall migration staging areas, wintering areas, and the breeding and nesting areas of birds of prey;
- assess the abundance, distribution and density for each bird species and by the various types of habitat;
- present the various data sources used and the survey methods used, the raw data as well as the analysis results used to predict the impacts on birds.

It should be noted that many activities carried out during the breeding season may inadvertently cause the destruction of nests and eggs of migratory birds. This “incidental take” of nests and eggs contravenes the *Migratory Birds Regulations*. According to paragraph 6(a) of these Regulations, no person shall disturb, destroy or take a nest or egg of a migratory bird.<sup>11</sup>

#### *Other biological components*

##### *Vegetation cover*

The EIS shall characterize the baseline vegetative communities within the area potentially affected by the project. In particular, the EIS will include information (distribution, extent and functions) on the following key communities, species groups or ecosystems that have intrinsic ecological or social value:

- forests;
- riparian ecosystems;
- plant species and ecological communities of conservation concern; and
- wetland ecosystems.

If the project involves activities that interfere with the ecological or socio-economic functions of wetlands, the proponent shall:

- describe the wetland or wetlands present in the study area using a recognized methodology that encompasses soil characteristics, hydrology and vegetation;
- determine the functions (e.g. hydrological, biogeochemical, ecological, socio-economic) of each wetland;
- determine the local, regional or even national importance of each wetland.<sup>12</sup>

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<sup>10</sup> For more information, the following reference documents can be consulted on the Environment Canada Web site ([www.ec.gc.ca/publications](http://www.ec.gc.ca/publications)): *Migratory Birds Environmental Assessment Guideline*, *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada*, *Guide for Impact Assessment on Birds* and *Environmental Assessment Guideline for Forest Habitat of Migratory Birds*.

<sup>11</sup> For more information, see the Environment Canada Web site ([www.ec.gc.ca/paom-itmb](http://www.ec.gc.ca/paom-itmb)).

<sup>12</sup> For more information, the following reference documents can be consulted on the Environment Canada Web site ([www.ec.gc.ca/publications](http://www.ec.gc.ca/publications)): *Federal Policy on Wetland Conservation and Wetland Ecological Functions Assessment: An Overview of Approaches*.

### *Wildlife species (other than Fish and Migratory Birds) and their habitats*

The EIS must present, without limitation, the following information concerning wildlife species and their habitats:

- A description of the species present (mammals, non migratory birds and amphibians) and the functions of their habitat, based on the surveys carried out and available data, in terms of abundance, distribution and diversity, as well as habitat use, including a detailed description of the methodology (survey description, timing, etc.) for each of these species;
- A description of all protected and conservation areas established by federal, provincial and municipal jurisdictions (e.g. ecological reserves, parks, sites of historical or ecological importance, nature reserves, federal migratory bird sanctuaries and national wildlife areas).

### *Species at risk*

The EIS shall describe and identify any biological species of conservation status and their habitat, i.e. species listed in Schedule 1 of the federal *Species at Risk Act*, species with a status designation proposed by the Committee on the Status of Endangered Wildlife in Canada and species listed in the *Quebec Act respecting threatened or vulnerable species*.

The EIS will summarize the methods and results of wildlife surveys conducted over the course of the seasons and at various times of day which facilitate detection of the target species or species groups. This includes information pertaining to species of conservation concern that may occur at any point throughout the year in the project area, including their conservation status, relative abundance, distribution and habitat use. The website of the Species at Risk Public Registry can be consulted at: [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)

### *Human environment*

In the study area, the EIS must describe:

- current land use for hunting, recreational fishing, wilderness lodges or cottages as well as any recreational/tourism facilities or infrastructure;
- all harvesting (small fruits, plants, etc.);
- access roads to the area, land and aquatic (snowmobile trails, navigation routes, etc.) and modes of travel (season, types of vessel, etc.);
- land and aquatic areas, sites and infrastructure of historical, archeological, architectural or cultural value. A description of the value of these sites should be provided; and
- places, resources and species that are of social, economic, heritage or cultural value to the Aboriginal communities.

## **9.2 Potential or established Aboriginal and Treaty rights and Related Interests**

For the purposes of developing the EIS, the proponent shall engage with Aboriginal groups whose potential or established Aboriginal rights and Treaty rights and related interests may be affected by the project.

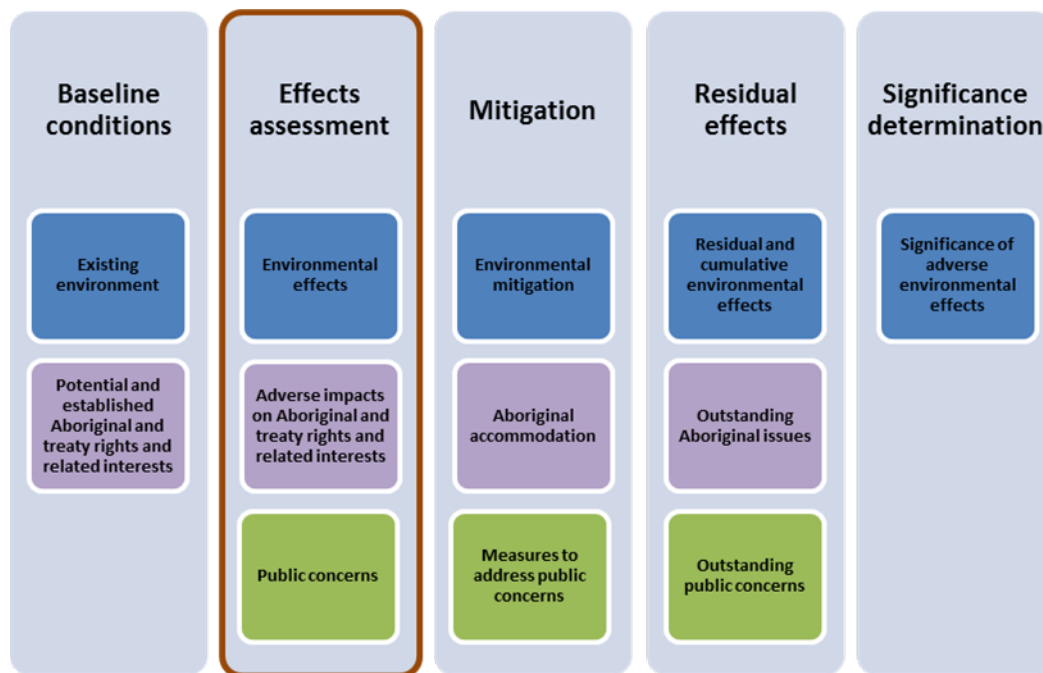
At a minimum, the EIS will summarize available information on the potential or established Aboriginal and Treaty rights and related interests of the named Aboriginal groups that have the potential to be adversely impacted by the project. As part of this summary, the EIS will include for each Aboriginal group:



- background information and a map of the group's traditional territory;
- a summary engagement activities conducted prior to the submission of the EIS, including the date and means of engagement (e.g., meeting, mail, telephone);
- information on each group's potential or established rights (including geographical extent, nature, frequency, timing), including maps and data sets (e.g. fish catch numbers) when this information is provided by a group to the proponent;
- an overview of key comments and concerns provided by each group to the proponent;
- concerns expressed and the extent to which this information was incorporated in the project design as well as in the EIS, and any resulting changes. This description has to allow to understand the answer of the proponent to each of those concerns; and
- future planned engagement activities.

If the proponent is unable to obtain all the information required to assess the project's impacts on the traditional use of the land by Aboriginals or on Aboriginal rights, the proponent shall describe in the EIS the efforts undertaken to obtain this information. The Agency will provide additional instructions to the proponent in cases where further research and/or consultation effort is required to support Canada's ability to fulfil the duty to consult with one or more Aboriginal groups that may be adversely affected by the project.

## 10 EFFECTS ASSESSMENT



## 10.1 Environmental effects

### 10.1.1 Methodology

The proponent shall indicate the project's effects during construction, operation, maintenance, foreseeable modifications, and where relevant, closure, decommissioning and restoration of sites and facilities associated with the project, and describe these effects using appropriate criteria. To the maximum extent possible, this documentation should include, for each potential project-related environmental effect, an indication of the nature of the effect, mechanism, magnitude, direction, duration, frequency and timing, geographic extent, and the degree to which it may be reversible. The proponent shall consider both the direct and indirect, reversible and irreversible, short- and long-term environmental effects of the project. In predicting and assessing the project's effects, the proponent shall indicate important details and clearly state the elements and functions of the environment that may be affected, specifying the location, extent and duration of these effects and their overall impact.

The assessment of the effects of each of the project components and physical activities, in all phases, shall be based on a comparison of the biophysical and human environments between the predicted future conditions with the project and the predicted future conditions without the project. In undertaking the environmental effects assessment, the proponent will use best available information and methods. All conclusions must be substantiated. Predictions shall be based on clearly stated assumptions. The proponent shall describe how it has tested each assumption. With respect to quantitative models and predictions, the proponent shall discuss the assumptions that underlie the model, the quality of the data and the degree of certainty of the predictions obtained.

#### *Risk assessment framework*

The proponent is expected to employ standard ecological risk assessment frameworks that categorize the levels of detail and quality of the data required for the assessment. These tiers are as follows:

- Tier 1: Qualitative (expert opinion, including traditional and local knowledge, literature review, and existing site information);
- Tier 2: Semi-quantitative (measured site-specific data and existing site information); and,
- Tier 3: Quantitative (recent field surveys and detailed quantitative methods).

Thus, if the Tier 2 assessment still indicates a potential for effects to ECs, a Tier 3 assessment would need to be conducted to reduce the level of uncertainty. If the risk characterization component is uncertain this may necessitate the probabilistic modelling of the population-level consequences of the proposed project.

#### *Impact matrix*

An impact matrix methodology in combination with identification of ECs should be used to evaluate various social and environmental effects of the proposed project, including those related to Aboriginal peoples. The assessment should include the following general steps:

- identification of the activities and components of the project;
- predicting/evaluating the likely effects on identified valued components;

- identification of technically and economically feasible mitigation measures for any significant adverse environmental effects;
- determination of any residual environmental effects;
- ranking of each residual adverse environmental effect based on various criteria; and,
- determination of the potential significance of any residual environmental effect following the implementation of mitigation.

*Application of precautionary approach*

In documenting the analyses included in the EIS, the proponent shall:

- demonstrate that all aspects of the project have been examined and planned in a careful and precautionary manner in order to ensure that they would not cause serious or irreversible damage to the environment, especially with respect to environmental functions and integrity, system tolerance and resilience, and/or the human health of current or future generations;
- outline and justify the assumptions made about the effects of all aspects of the project and the approaches to minimize these effects;
- ensure that in designing and operating the project, priority has been and would be given to strategies that avoid the creation of adverse effects;
- develop contingency plans that explicitly address accidents and malfunctions; and
- identify any proposed follow-up and monitoring activities, particularly in areas where scientific uncertainty exists in the prediction of effects.

10.1.2 Changes to the environment

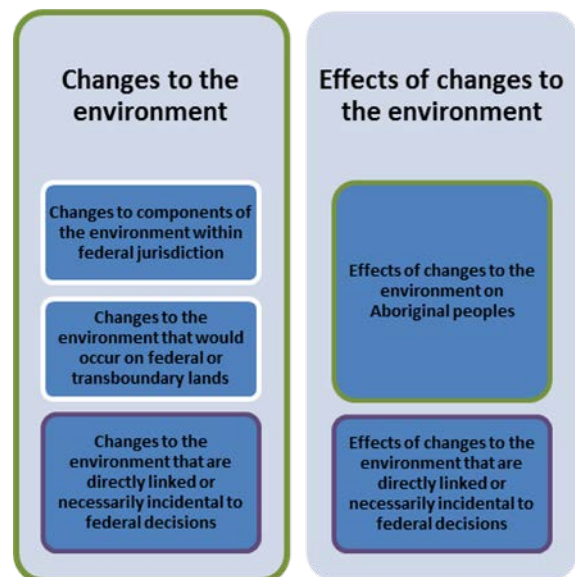
Section 5 of CEAA 2012 describes specific categories of direct and indirect environmental effects that must be considered in a federal EA (see figure 2).

*Changes to components of the environment within federal jurisdiction 5(1)(a)*

The EIS will include a stand-alone section that summarises those changes that may be caused by the project on the components of the environment, namely fish and fish habitat, aquatic species within the meaning of the *Species at Risk Act* and migratory birds.

*Changes to the environment that would occur on federal or transboundary lands 5(1)(b)*

The EIS will include a stand-alone section that summarises any change the project may cause to the environment that may occur on federal lands or



lands outside the province in which the project is to be located. Environment is defined as the components of the Earth, including: land, water and air, including all layers of the atmosphere; all organic and inorganic matter and living organisms; and the interacting natural systems that include the components described in section 9.

*Changes to the environment that are directly linked or necessarily incidental to federal decisions 5(2)(a)*

In situations where the project requires one or more federal decisions identified in section 6.3.2, the EIS will also include a stand-alone section that describes any change that may be caused by the project on the environment that is directly linked or necessarily incidental to these decisions. These descriptions shall be integrated into the sections on effects assessment of each component identified in section 9.1.

10.1.3 Effects of changes to the environment

*Effects of changes to the environment on Aboriginal peoples 5(2)(c)*

The EIS will describe the effects of any changes the project may cause to the environment, with respect to Aboriginal peoples, on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

*Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions 5(2)(b)*

In situations where the EIS has identified changes to the environment that are directly linked or necessarily incidental to federal decisions identified in section 6.3.2, the EIS will also include a stand-alone section that describes the effects of these changes on health and socio-economic conditions, physical and cultural heritage, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, other than as they pertain to Aboriginal peoples (who are considered in the previous section).

## **10.2 Adverse Impacts on Aboriginal and Treaty Rights and Related Interests**

The EIS will describe the potential adverse impacts of the project on the ability of Aboriginal peoples to exercise the potential or established Aboriginal and Treaty rights and related interests identified in section 9.2. As part of this description, this section will summarise:

- potential adverse impacts (on potential or established Aboriginal and Treaty rights and related interests) that were identified through the environmental effects described in sections 10.1.2 et 10.1.3;
- specific issues and concerns raised by Aboriginal groups in relation to the potential adverse impacts of the project on potential or established Aboriginal and Treaty rights and related interests;
- where and how Aboriginal traditional knowledge or other Aboriginal views were incorporated into the consideration of environmental effects and potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests; and

- efforts undertaken to engage with Aboriginal groups as part of collecting the information identified above.

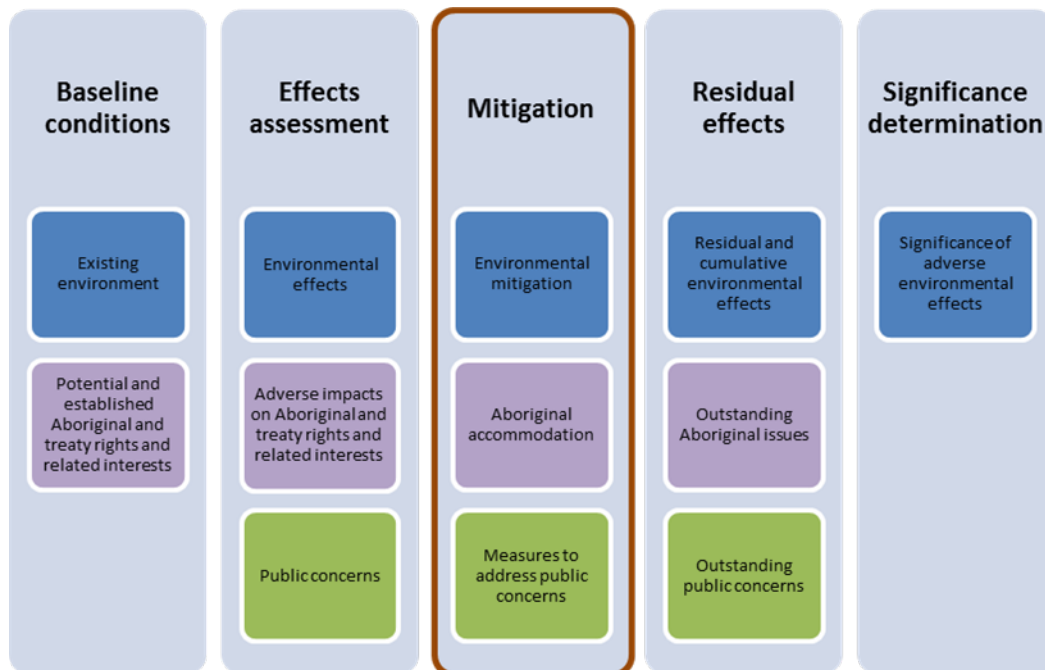
The assessment of the potential adverse impacts of each of the project components and physical activities, in all phases, shall be based on a comparison of the exercise of the identified rights between the predicted future conditions with the project and the predicted future conditions without the project. It is recommended that the impact matrix methodology described in section 10.1.1 be adapted for this purpose.

### 10.3 Public concerns

This section will provide a summary of public concerns raised in relation to the project, including through public consultation conducted in the preparation of the EIS.

For any consultations undertaken with the general public, the EIS will describe the ongoing and proposed consultations and information sessions with respect to the project at the local, regional and provincial levels, where applicable. The EIS will provide a summary of discussions, indicate the methods used and their relevance, locations, the persons and organizations consulted, the concerns raised, the extent to which this information was incorporated in the design of the project as well as in the EIS, and the resultant changes. The proponent will also provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process

## 11 MITIGATION



## 11.1 Environmental mitigation

### 11.1.1 Methodology

Every EA conducted under CEAA 2012 must consider clear, enforceable measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project. The measures must be drafted as a specific commitment that clearly describes how the proponent intends to implement them.

As a first step, the proponent is encouraged to use an approach based on the avoidance and reduction of the effects at the source. Such an approach may include the modification of the design of the project or relocation of project components. In particular, when it is determined that a work or an activity will have adverse effects on fish habitat, the proponent must, after having considered and documented the possibility of relocating or modifying the project, plan mitigation measures in an effort to reduce the project's effects on fish habitat<sup>13</sup>. In accordance with the principle of no net loss, set out in DFO's Policy for the Management of Fish Habitat, unavoidable and authorized HADD of fish habitat must be compensated.

The EIS will specify the actions, works, minimal disturbance footprint techniques, best available technology, corrective measures or additions planned during the project's various phases (to eliminate or reduce the significance of adverse effects). The environmental impact statement shall also present an assessment of the effectiveness of the proposed technically and economically feasible mitigation measures. The reasons for determining if the mitigation measure reduces the significance of an adverse effect shall be made explicit.

Where mitigation measures are proposed to be implemented for which there is little experience or for which there is some question as to their effectiveness, the potential risks and effects to the environment should those measures not be effective should be clearly and concisely described. In addition, the EIS will identify the extent to which technology innovations will help mitigate environmental effects. Where possible, it will provide detailed information on the nature of these measures, their implementation, management and the development of the Follow-up Program as described in section 11.4.

Adaptive management is not considered a valid mitigation measure, but if the Follow-up Program indicates that corrective action is required, the proposed approach for managing the response could be identified.

### 11.1.2 Environmental mitigation measures

In addition, the EIS will summarise the mitigation measures, follow-up and related commitments identified to address the categories of environmental effects specified in sections 10.1.2 and 10.1.3:

- Changes to components of the environment within federal jurisdiction;

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<sup>13</sup> The proponent can use the pathways of effects (available on the Fisheries and Oceans Canada website at: [www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp](http://www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp)) to identify the potential effects and mitigation measures that will be implementing to reduce or avoid impacts on fish habitat.

- Changes to the environment that would occur on federal or transboundary lands;
- Changes to the environment that are directly linked or necessarily incidental to federal decisions;
- Effects of changes to the environment on Aboriginal peoples; and
- Effects of changes to the environment that are directly linked or necessarily incidental to federal decisions.

## **11.2 Measures to address aboriginal concerns**

This section will describe the measures identified to mitigate the potential adverse impacts of the project described in section 10.2 on the potential or established Aboriginal and Treaty rights and related interests identified in section 9.2. These measures should be written as specific commitments that clearly describe how the proponent intends to implement them. This description will include a summary of:

- specific suggestions raised by Aboriginal groups for accommodating the potential adverse impacts of the project on potential or established Aboriginal and Treaty rights and related interests in relation to environmental effects specified in sections 10.1.2 and 10.1.3
- environmental mitigation measures identified in section 11.1 that also serve to mitigate potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests ;
- any potential cultural, social and/or economic impacts or benefits to Aboriginal groups that may arise as a result of the project;
- where and how Aboriginal traditional knowledge or other Aboriginal views were incorporated into the mitigation of environmental effects of potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests; and
- efforts undertaken to engage with Aboriginal groups as part of developing the information identified above.

In preparing the EIS, the proponent shall ensure that Aboriginal people and groups have access to the information that they require in respect of the Project and of how it may impact them. The proponent will describe all efforts, successful or not, taken to solicit the information required to prepare the EIS.

The proponent will structure its Aboriginal engagement activities to provide adequate time for Aboriginal groups to have reviewed the relevant information in advance and to ensure there are sufficient opportunities for individuals and groups to provide oral input in the language of their choosing. Consultation activities must be appropriate to the groups' needs and should be arranged through discussions with the groups.

## **11.3 Measures to address public concerns**

This section will summarize measures identified for addressing public concerns in relation to the project identified in section 10.3. Measures should be written as specific commitments that clearly describe how the proponent intends to implement them.

## **11.4 Follow-Up Program**

A Follow-up Program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project. The EIS should

describe the proposed Follow-up Program in sufficient detail to allow independent judgment as to the likelihood that it will deliver the type, quantity and quality of information required to reliably verify predicted effects (or absence of them), and to confirm both the assumptions and the effectiveness of mitigation. The Follow-up Program should include specific commitments that clearly describe how the proponent intends to implement them.

The Follow-up Program must incorporate:

- the objectives of the follow-up and the list of components requiring environmental follow-up;
- a schedule indicating the frequency and duration of the effects monitoring mechanism;
- a description of the proposed follow-up methods and the list of parameters to be measured and the thresholds;
- the planned actions in the event of unanticipated environmental degradation: emergency adaptive, mitigation and compensation measures; and
- the method for informing the population concerned of the follow-up results.

The Follow up Program must also be designed to monitor the implementation of mitigation and accommodation measures resulting from Aboriginal consultation, including:

- verifying predictions of environmental effects with respect to Aboriginal peoples;
- determining the effectiveness of mitigation measures as they relate to environmental effects with respect to Aboriginal peoples in order to modify or implement new measures where required;
- supporting the implementation of adaptive management measures to address previously unanticipated adverse environmental effects with respect to Aboriginal peoples or unanticipated adverse impacts to Aboriginal rights;
- verifying measures identified to prevent, mitigate or otherwise accommodate potential adverse effects of the project on potential or established Aboriginal and Treaty rights; and,
- providing information that can be used to improve and/or support future EAs and Aboriginal consultation processes.

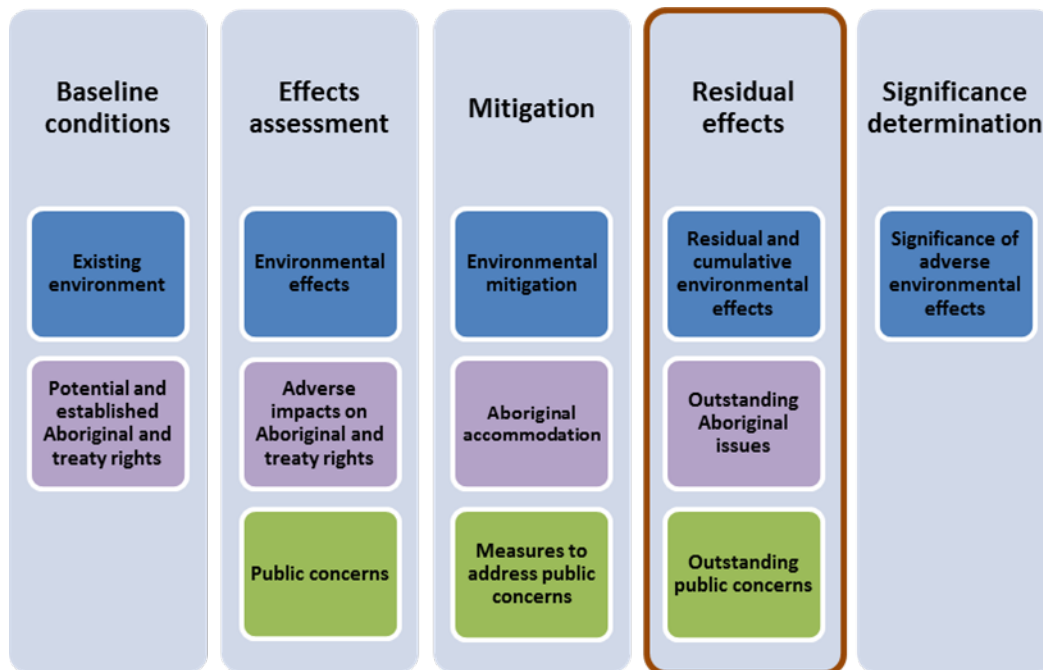
Where appropriate, the Follow-up Program can also encompass measures identified to address public concerns identified in section 11.3.

## **11.5 Proponent commitments**

Proponent commitments identified in the EIS, including environmental mitigation, Aboriginal accommodation, measures to address public concern, and Follow-up Program elements, will be considered for inclusion as conditions in the EA decision statement (see Appendix B) and/or as part of other compliance and enforcement mechanisms. Each commitment should be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation.



## 12 RESIDUAL EFFECTS



### 12.1 Residual and cumulative environmental effects

#### 12.1.1 Residual environmental effects

After having established the technically and economically feasible mitigation measures, the EIS should present any residual environmental effects of the project on the biophysical and human environments after these mitigation measures have been taken into account. The residual effects, even if very small or deemed insignificant should be described.

#### 12.1.2 Cumulative environmental effects

The proponent shall identify and assess the project's cumulative effects using the approach described in the Agency's Operational Policy Statement [Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act](#) (November 2007).

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

- implementation of the project being studied caused direct residual negative effects on the environmental components, taking into account the application of technically and economically feasible mitigation measures; and/or,
- the same environmental components are affected by other past, present or reasonably foreseeable physical activities.

The EIS must describe the analysis of the total cumulative effect on a VC over the life of the project, including the incremental contribution of all current and proposed physical activities, in addition to that of

the project. The EIS must include different forms of effects (e.g. synergistic, additive, induced, spatial or temporal) and identify impact pathways and trends.

The cumulative effects assessment may consider the results of any relevant study conducted by a committee established under section 73 or 74 of CEAA 2012.

### 12.1.3 Summary of residual environmental effects

In addition, the EIS will summarise the residual environmental effects (including cumulative environmental effects) identified in relation to the categories of environmental effects specified in sections 10.1.2 and 10.1.3:

- changes to components of the environment within federal jurisdiction;
- changes to the environment that would occur on federal or transboundary lands;
- changes to the environment that are directly linked or necessarily incidental to federal decisions;
- effects of changes to the environment on Aboriginal peoples; and
- effects of changes to the environment that are directly linked or necessarily incidental to federal decisions.

## **12.2 Outstanding Aboriginal issues**

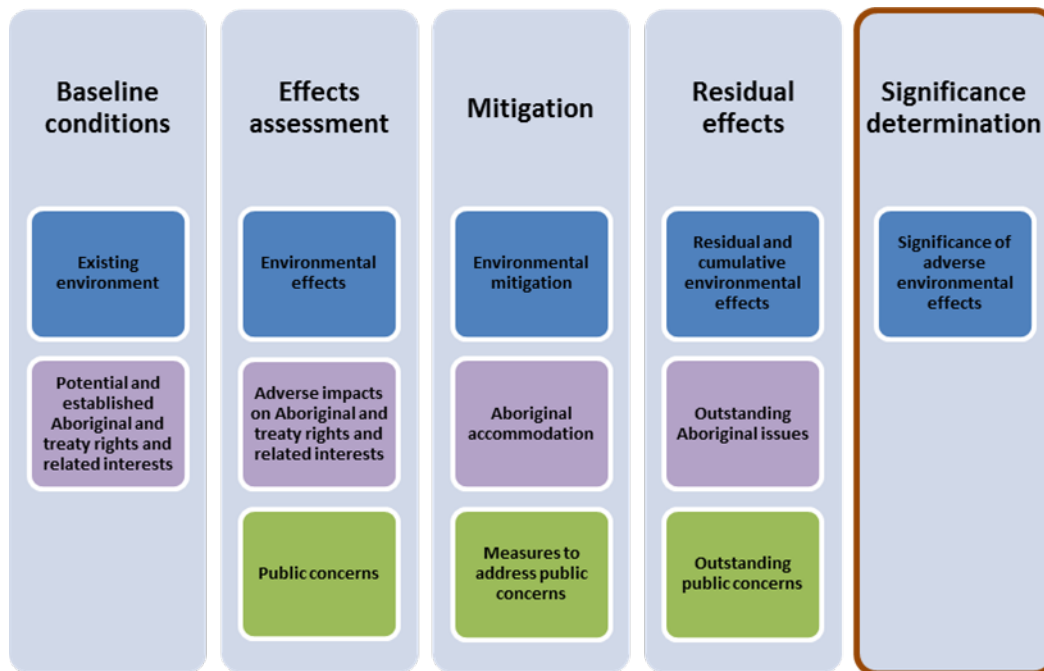
This section will describe the potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests that have not been fully mitigated as part of the environmental assessment and associated consultations with Aboriginal groups. This includes potential adverse impacts (on potential or established Aboriginal and Treaty rights and related interests) that may result from the residual and cumulative environmental effects described in section 12.1.

The information in this section will assist the Crown in assessing the adequacy of consultation and accommodation as set out in the [Updated Guidelines for Federal Officials to Fulfill the Duty to Consult](#) (2011).

## **12.3 Outstanding public concerns**

This section will describe the outstanding public concerns in relation to the project that have not been resolved as a result of changes to the project, mitigation measures, or public consultation. The proponent must explain why they are not able to resolve the outstanding public concerns.

## 13 SIGNIFICANCE DETERMINATION



### 13.1 Significance of adverse environmental effects

#### 13.1.1 Methodology

This section will provide a detailed analysis of the significance of the residual environmental effects (including cumulative environmental effects) that are considered adverse, using the approach described in the Agency's Reference Guide [Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects](#) (November 1994).

The EIS must identify the criteria used to assign significance ratings to any predicted adverse effects. It must contain clear and sufficient information to enable the Agency, technical and regulatory agencies, Aboriginal groups and the public to understand and review the proponent's judgment of the significance of effects. The proponent must define the terms used to describe the level of significance.

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

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

In assessing significance against these criteria the EIS must, where possible, employ relevant existing regulatory documents, environmental standards, guidelines, or objectives such as prescribed maximum

levels of emissions or discharges of specific hazardous agents into the environment. The EIS should contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each EC.

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

#### 13.1.2 Summary of significant adverse environmental effects

In addition, the EIS will summarise the significant adverse environmental effects identified in relation to the categories of environmental effects specified in sections 10.1.2 et 10.1.3 :

- changes to components of the environment within federal jurisdiction;
- changes to the environment that would occur on federal or transboundary lands;
- changes to the environment that are directly linked or necessarily incidental to federal decisions;
- effects of changes to the environment on Aboriginal peoples; and
- effects of changes to the environment that are directly linked or necessarily incidental to federal decisions.

## 14 SUMMARY TABLES

The EIS should contain a series of tables summarising the following key information:

- potential environmental effects (section 10.1), adverse impacts on potential or established Aboriginal and Treaty rights and related interests (section 10.2) and public concerns (section 10.3);
- proponent commitments identified in relation to environmental mitigation (section 11.1), Aboriginal accommodation (section 11.2), measures to address public concerns (section 11.3), and Follow-up Program (section 11.4);
- potential residual and cumulative environmental effects (section 12.1); outstanding Aboriginal issues (section 12.2) and outstanding public concerns (section 12.3);
- comments from the public and responses;
- comments from Aboriginal groups and individuals and responses; and
- relationship of the identified EC to Aboriginal groups' potential or established Aboriginal and Treaty rights and related interests (section 9.2).

The summary tables will be used in the EA Report prepared by the Agency; proponent commitments will be considered for inclusion as conditions in the EA decision statement (see Appendix B) and/or as part of other compliance and enforcement mechanisms.

## **15 BENEFITS TO CANADIANS**

### **15.1 Changes to the project since initially proposed**

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

### **15.2 Benefits of the project**

The EIS will include a section describing the predicted environmental, economic and social benefits of the project. This information will be considered in assessing the justifiability of the significant adverse environmental effects, if necessary.

## **16 ENVIRONMENTAL MANAGEMENT**

### **16.1 Monitoring implementation of mitigation measures**

The goal of a monitoring program is to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of project development, and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety. In the EIS, the proponent shall describe the monitoring activities at all stages of the project, the proponent's commitment to implementing these activities and the resources provided for this purpose. The program must describe the contacts, protocols, measured parameters, deadlines, intervention in case of non-compliance of legal requirements, production of monitoring reports, etc.

Simply referring to the company's environmental management plan (EMG) is not sufficient in this section. If the proponent refers to an EMG, the EIS must describe and explain how each project step is sufficiently controlled within the context of the EMG.

The finalization of detailed the monitoring program will occur through consultation with federal and provincial government agencies, Aboriginal groups, the public and other stakeholders. This may occur after the environmental assessment but must be consistent with the information presented in the EIS. Pertinent legislation, regulations, industry standards, documents and legislative guides shall be used in the development of the monitoring program.

### **16.2 Decommissioning and reclamation plan**

The EIS shall provide the preliminary outline of a decommissioning and reclamation plan for any components associated with the project. This shall include ownership, transfer and control of the different project components as well as the responsibility for monitoring and maintaining the integrity of some of the structures. The full preparation and submission of the plan to appropriate authorities will occur prior to the decommissioning of the temporary components of the project. The plan would serve to provide guidance on specific actions and activities to be implemented to decrease the potential for environmental degradation in the long-term during decommissioning and abandonment activities for temporary facilities, and to clearly define the proponent's ongoing environmental commitments. A conceptual discussion on how decommissioning could occur shall be provided for permanent facilities.

## **Appendix A – Outline of EIS Summary**

1. Introduction and environmental assessment context
2. Project overview
3. Scope of project and assessment
4. Alternative means of carrying out the project
5. Advice and consultation activities
6. Summary of environmental effects assessment
7. Proponent commitments
8. Proposed significance determination

## Appendix B – EA Decision Statement

Under CEAA 2012 the Minister of the Environment (the Minister) must decide, taking into account the implementation of any mitigation measures, whether the designated project:

- Is likely to cause significant adverse environmental effects on components of the environment within federal legislative jurisdiction (subsection 5(1)); or
- Is likely to cause significant adverse environmental effects linked to or necessarily incidental to a federal decision (subsection 5(2)).

If the Minister decides that the designated project is likely to cause significant environmental effects in either case (subsection 5(1) or 5(2)), then the decision is referred to the Governor in Council to determine if the environmental effects can be justified in the circumstances.

If the Minister decides that the designated project will not result in significant environmental effects, or the Governor in Council decides that environmental effects can be justified, the Minister must establish conditions in relation to the environmental effects with which the proponent must comply. Conditions must be established for both the subsection 5(1) and 5(2) environmental effects.

The EA Decision Statement will inform the proponent of the Ministers' decision and will describe the conditions that the proponent must comply with for the project to proceed. The conditions will consist of the implementation of mitigation measures that were taken into account in the decision making and the implementation of a follow-up program.

Under section 6 of CEAA 2012, the proponent must not proceed with any part of the project that could have an environmental effect referred to in section 5, unless the proponent complies with the conditions included in the EA Decision Statement. Contravention of section 6 is an offence under section 99.