



DRAFT GUIDELINES FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

pursuant to the

Canadian Environmental Assessment Act, 2012

Marine Terminal Project on the North Shore of the Saguenay

Saguenay Port Authority

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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* or its regulations. In the event of a discrepancy, the *Canadian Environmental Assessment Act, 2012* and its regulations prevail. Portions of the *Canadian Environmental Assessment Act, 2012* have been paraphrased in this document, but will 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 for a designated project¹ to be assessed pursuant to the *Canadian Environmental Assessment Act, 2012* (the Act). This document specifies the nature, scope and extent of the information required. Part 1 of this document defines the scope of the environmental assessment and provides guidance and general instruction on the preparation of the Environmental Impact Statement. Part 2 outlines the information that must be included in the Environmental Impact Statement.

The Act requires an assessment of the potential effects of a proposed project as identified in section 5 of the Act. The Canadian Environmental Assessment Agency (the Agency) will use the proponent's environmental impact statement and other information received during the environmental assessment process to prepare an environmental assessment Report that will inform the issuance of a decision statement by the Minister of the Environment. Therefore the environmental impact statement must include a full description of the changes the project will cause to the environment that may result in adverse effects on areas of federal jurisdiction (i.e. section 5 of the Act) including changes that are directly linked or necessarily incidental to any federal decisions that would permit the project to be carried out. It is the responsibility of the proponent to provide sufficient data and analysis on potential changes to the environment to ensure a thorough evaluation of the environmental effects of the project by the Agency.

2 GUIDING PRINCIPLES

2.1 Environmental assessment as a planning tool

An environmental assessment is a planning tool used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate possible environmental effects and to encourage decision makers to take actions that promote sustainable development.

2.2 Public participation

One of the purposes identified in the Act is to ensure opportunities for meaningful public participation during an environmental assessment. The Act requires that the Agency provide the public with an opportunity to participate in the environmental assessment and an opportunity to comment on the draft environmental assessment report. Meaningful public participation is best achieved when all parties have a clear understanding of the proposed project as early as possible in the review process. The proponent is required to provide current information about the project to the public and especially to the communities likely to be most affected by the project.

2.3 Aboriginal engagement

A key objective of the Act is to promote communication and cooperation with Aboriginal peoples which includes, First Nations, Inuit and Métis. The proponent is expected to engage with Aboriginal groups that may be affected

¹ In this document, "project" has the same meaning as "designated project" as defined in the Act.

by the project, as early as possible in the project planning process. The proponent will provide Aboriginal groups with opportunities to learn about the project and its potential effects, make their concerns known about the project's potential effects and discuss measures to mitigate those effects. The proponent is strongly encouraged to work with Aboriginal groups in establishing an engagement approach. The proponent will make reasonable efforts to integrate traditional Aboriginal knowledge into the assessment of environmental impacts.

Information gathered through the environmental assessment process and associated engagement by the proponent with Aboriginal groups will be used to inform decisions under the Act. In providing information to the Agency, the proponent will respect any confidentiality commitments made to Aboriginal groups (see section 4.3.2 for further information on this subject). This information will also contribute to the Crown's understanding of any potential adverse impacts of the project on potential or established Aboriginal or Treaty rights and the effectiveness of measures proposed to avoid or minimise those impacts.

For more information on how Aboriginal traditional knowledge can aid in the preparation of the environmental impact statement, please refer to the Agency's reference guide entitled "Considering Aboriginal traditional knowledge in environmental assessments conducted under the *Act, 2012*".

2.4 Application of the precautionary approach

In documenting the analyses included in the environmental impact statement, the proponent will demonstrate that all aspects of the project have been examined and planned in a careful and precautionary manner in order to avoid significant adverse environmental effects.

3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

3.1 Designated Project

On April 14, 2015, the Saguenay Port Authority, the proponent of the Marine Terminal Project on the North Shore of the Saguenay, submitted a description of the project to the Agency. Based on this description, the Agency has determined that an environmental assessment is required under the Act and will include the construction, operation, decommissioning and closure of the following components:

- wharf;
- 1- to 1.5-km access road to the wharf for operational and maintenance purposes;
- sediment disposal site(s) in the aquatic environment (if necessary);
- apatite ore transshipment, storage and handling areas;
- operations related to apatite ore transshipment, storage and handling;
- temporary facilities needed for the construction of the project;
- waste management, cargo residues and hazardous materials;
- management of runoff, drinking water and wastewater;
- main area, including the administrative and technical buildings and the electrical substation;
- marine transportation within the boundaries of the terminal or area of jurisdiction of the Saguenay Port Authority if it is expanded to include the project site.

The 6.8-km access road between Route 172 and the truck unloading site is excluded from the project scope because it will be built and operated by Arianne Phosphate Inc. The power line along this access road will be installed and operated by Hydro-Québec and is also excluded from the project scope.

3.2 Factors to be considered

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

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

3.3 Scope of factors

3.3.1 Changes to the Environment

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

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

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

3.3.2 Valued components to be examined

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

The environmental impact statement will identify the valued components linked to section 5 of the Act, including the ones identified in Part 2 (section 6.2) that maybe affected by changes in the environment, as well as species at risk and their critical habitat as per the requirement outlined in section 79 of the *Species at Risk Act*. Section 5 of the Act defines environmental effects as:

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

The final list of valued components to be presented in the environmental impact statement will be completed according to the evolution and design of the project and reflect the knowledge acquired on the environment through public consultation and Aboriginal engagement. The environmental impact statement will describe what methods were used to predict and assess the adverse environmental effects of the project on these components.

The valued components will be described in sufficient detail to allow the reviewer to understand their importance and to assess the potential for environmental effects arising from the project activities. The environmental impact statement will provide a rationale for selecting specific valued components and for excluding any valued components or information specified in these guidelines. Challenges may arise regarding particular exclusions, so it is important to document the information and the criteria used to make each determination. Examples of justification include primary data collection, computer modelling, literature references, public consultation, expert input or professional judgement. The environmental impact statement will identify those valued components, processes, and interactions that either were identified to be of concern during any workshops or meetings held by the proponent or that the proponent considers likely to be affected by the project. In doing so, the environmental impact statement will indicate to whom these concerns are important and the reasons why, including environmental, Aboriginal, social, economic, recreational, and aesthetic considerations. If comments are received on a component that has not been included as a valued component, these comments will be summarised.

3.3.3 Spatial and Temporal boundaries

The spatial and temporal boundaries used in the environmental assessment may vary depending on the valued component. The proponent is encouraged to consult with the Agency, federal and provincial government departments and agencies, local government and Aboriginal groups, and take into account public comments when defining the spatial boundaries used in the environmental impact statement.

The environmental impact statement will describe the spatial boundaries to be used in assessing the potential adverse environmental effects of the project and provide a rationale for each boundary. Spatial boundaries will be defined taking into account the appropriate scale and spatial extent of potential environmental effects, community and Aboriginal traditional knowledge, current land and resource use by Aboriginal groups, ecological, technical and social and cultural considerations.

The temporal boundaries of the environmental assessment will span all phases of the project determined to be within the scope of this environmental assessment as specified under section 3.1 above. Community and Aboriginal traditional knowledge should factor into decisions around temporal boundaries.

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

4 PREPARATION AND PRESENTATION OF THE ENVIRONMENTAL IMPACT STATEMENT

4.1 Guidance

The proponent is encouraged to consult relevant Agency policy and guidance² on topics to be addressed in the environmental impact statement, and with the Agency during the planning and development of the environmental impact statement.

During its planning of the project and the development of the impact statement and technical support documentation, the proponent is also encouraged to consult the Environment Canada document “Guidance for the Preparation of an Environmental Impact Statement and Useful References” (2015), which is available from that department, and the Health Canada document “Useful Information for Environmental Assessments”³.

Submission of regulatory and technical information necessary for federal authorities to make their regulatory decisions during the conduct of the environmental assessment is at the discretion of the proponent. Although that information is not necessary for the environmental assessment decision, the proponent is encouraged to submit it concurrent with the environmental impact statement.

4.2 Study strategy and methodology

The proponent is expected to respect the intent of these 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. 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 environmental impact statement as long as they are justifiable and replicable.

²Visit the Canadian Environmental Assessment Agency website: www.ceaa-acee.gc.ca/default.asp?lang=En&n=F1F30EEF-1

³ http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/enviro_n_assess-eval/index-fra.php

It is possible these guidelines may include matters which, in the judgement of the proponent, are not relevant or significant to the project. If such matters are omitted from the environmental impact statement, the proponent will clearly indicate it, and provide a justification so 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 will require the proponent to provide the specified information.

The assessment will include the following general steps:

- ✓ identifying the activities and components of the project;
- ✓ predicting potential changes to the environment;
- ✓ predicting and evaluating the likely effects on identified valued components;
- ✓ identifying technically and economically feasible mitigation measures for any significant adverse environmental effects;
- ✓ determining any residual environmental effects; and
- ✓ determining the potential significance of any residual environmental effect following the implementation of mitigation.

For each valued component, the environmental impact statement will describe the methodology used to assess project-related effects. The environmental impact statement will document how scientific, engineering, traditional and local knowledge were used to reach conclusions. Assumptions will be clearly identified and justified. All data, models and studies will be documented such that the analyses are transparent and reproducible. All data collection methods will be specified. The uncertainty, reliability and sensitivity of models used to reach conclusions must be indicated.

The environmental impact statement will identify all significant gaps in knowledge and understanding related to key conclusions, and the steps to be taken by the proponent to address these gaps. Where the conclusions drawn from scientific, engineering and technical knowledge are inconsistent with the conclusions drawn from traditional knowledge, the environmental impact statement will contain a balanced presentation of the issues and a statement of the proponent's conclusions.

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

In describing and assessing effects to the physical and biological environment, the proponent will take an ecosystem approach that considers both scientific and traditional knowledge and perspectives regarding ecosystem health and integrity. The proponent will consider the resilience of relevant species populations, communities and their habitats.

In describing and assessing effects related to Aboriginal peoples, the proponent will consider the use of both primary and secondary sources of information regarding baseline information, changes to the environment and the corresponding effect on health, socio-economics, physical and cultural heritage or current use of lands and

resources for traditional purposes. Primary sources of information include traditional land use studies, information obtained directly from Aboriginal groups, socio-economic studies, heritage surveys or other relevant studies conducted specifically for the project and its environmental impact statement. Secondary sources of information include previously documented information on the area, not collected specifically for the purposes of the project, or desk-top or literature-based information. The proponent will provide Aboriginal groups the opportunity to review and provide comments on the information used for describing and assessing effects on Aboriginal peoples (further information on engaging with Aboriginal groups is provided in Part 2, Section 5 of this document). Where there are discrepancies in the views of the proponent and Aboriginal groups on the information to be used in the environmental impact statement, the environmental impact statement will document these discrepancies and the rationale for the proponent's selection of information.

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

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

4.3 Use of information

4.3.1 Scientific advice

Section 20 of the Act requires that every federal authority with specialist or expert information or knowledge with respect to a project subject to an environmental assessment 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 environmental impact statement, along with, as appropriate, expert and specialist knowledge provided by other levels of government.

4.3.2 Community knowledge and Aboriginal traditional knowledge

Sub-section 19(3) of the Act states that "the environmental assessment of a designated project may take into account community knowledge and Aboriginal traditional knowledge". For the purposes of these guidelines, community knowledge and Aboriginal traditional knowledge refers to knowledge acquired and accumulated by a community or an Aboriginal community, through generations of living in close contact with nature.

The proponent will incorporate into the environmental impact statement the community and Aboriginal traditional knowledge to which it has access or that is acquired through Aboriginal and public engagement activities, in keeping with appropriate ethical standards and obligations of confidentiality. Agreement should be obtained from Aboriginal groups regarding the use, management and protection of their existing traditional knowledge information during and after the environmental assessment.

4.3.3 Existing information

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

4.3.4 Confidential information

In implementing the Act, the Agency 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 and made available to the public on request. For this reason, the environmental impact statement will 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,
- may cause harm to a person or harm to the environment through its disclosure.

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

4.4 Presentation and organization of the Environmental Impact Statement

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

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

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

For purposes of brevity and to avoid repetition, cross-referencing is preferred. The environmental impact statement 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. Detailed studies (including all relevant and supporting data and

methodologies) will be provided in separate appendices and will be referenced by appendix, section and page in the text of the main document. The environmental impact statement will explain how information is organized in the document. This will include a list of all tables, figures, and photographs referenced in the text. A complete list of supporting literature and references will also be provided. A table of concordance, which cross references the information presented in the environmental impact statement with the information requirements identified in the environmental impact statement Guidelines, will be provided. The proponent will provide copies of the environmental impact statement and its summary for distribution, including paper and electronic version in an unlocked, searchable PDF format, as directed by the Agency.

4.5 Summary of the Environmental Impact Statement

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

- A concise description of all key components of the project and related activities;
- 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 expected changes to the environment;
- An overview of the key environmental effects of the project and proposed technically and economically feasible mitigation measures; and
- The proponent's conclusions on the residual environmental effects of the project after taking mitigation measures into account and the significance of those effects.

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

1. Introduction and environmental assessment context
2. Project overview
3. Alternative means of carrying out the project
4. Public consultation
5. Aboriginal engagement
6. Summary of environmental effects assessment for each valued components, including:
 - a. description of the baseline
 - b. anticipated changes to the environment
 - c. anticipated effects
 - d. mitigation measures
 - e. significance of residual effects
7. Follow-up and monitoring programs proposed

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

Part 2 – Content of the Environmental Impact Statement

1 INTRODUCTION AND OVERVIEW

1.1 The proponent

In the environmental impact statement, the proponent will:

- 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;
- describe corporate and management structures;
- specify the mechanism used to ensure that corporate policies will be implemented and respected for the project; and
- identify key personnel, contractors, and/or sub-contractors responsible for preparing the environmental impact statement.

1.2 Project Overview

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

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

1.3 Project Location

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

- the UTM coordinates of the main project site;
- current land use in the area;
- distance of the project facilities and components to any federal lands;
- the environmental significance and value of the geographical setting in which the project will take place and the surrounding area;
- environmentally sensitive areas, such as national, provincial and regional parks, ecological reserves, wetlands, estuaries, and habitats of federally or provincially listed species at risk and other sensitive areas;
- local and Aboriginal communities; and
- traditional Aboriginal territories, treaty lands, Indian reserve lands.

1.4 Regulatory framework and the role of government

The environmental impact statement will identify:

- any federal power, duty or function that may be exercised that would permit the carrying out (in whole or in part) of the project or associated activities;
- the environmental and other 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 environmental assessment and their implications;
- any treaty or self-government agreements with Aboriginal groups that are pertinent to the project and/or environmental assessment;
- any relevant land use plans, land zoning, or community plans; and
- regional, provincial and/or national objectives, standards or guidelines that have been used by the proponent to assist in the evaluation of any predicted environmental effects.

2 PROJECT JUSTIFICATION AND ALTERNATIVES CONSIDERED

2.1 Purpose of the project

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

The environmental impact statement will also describe the predicted environmental, economic and social benefits of the project. This information will be considered in assessing the justifiability of any significant adverse residual environmental effects, if such effects are identified.

2.2 Alternative means of carrying out the project

The environmental impact statement will 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;
- identify the effects of each technically and economically feasible alternative means;
- select the approach for the analysis of alternative means (i.e., identify a preferred means or bring forward alternative means);
- assess the environmental effects of the alternative means.

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

- the location of the marine terminal;
- the construction of wharfs: location, orientation, configuration and construction;
- dredging methods, if applicable;
- sediment management and sediment disposal sites, if applicable.

For further information regarding the “purpose of” and “alternative means”, please consult the Agency’s Operational Policy Statement entitled “Addressing “Purpose of” and “Alternative Means” under the *Act, 2012*”.

The Agency recognizes that projects may be in the early planning stages when the environmental impact statement is being prepared. Where proponents have not made final decisions concerning the placement of project infrastructure, the technologies to be used, or that several options may exist for various project components, they are strongly encouraged to conduct an environmental effects analysis at the same level of detail assessment of the various options available (alternative means) within the environmental impact statement.

3 PROJECT DESCRIPTION

3.1 Project components

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

- port infrastructure and works, specifying the types of vessels that will be used, the wharf construction methods (filling, sheet piling, piling, dredging), and the dimensions of the wharf, berthing areas and anchorage area at the terminal and in the navigation channel;
- apatite ore transshipment, storage and handling areas, including service and power supply infrastructure and work surfaces;
- terrestrial access roads at the site of the terminal, including their surface area, size, location, and orientation with respect to the wharf to be built;
- permanent and temporary linear infrastructure (including conduits, power lines, etc.), indicating the route of the infrastructure concerned and their locations;
- permanent and temporary works related to dredging (including maintenance dredging), if applicable, specifying the sediment management method and the size, type and volume of sediment to be disposed of;
- temporary structures required for project construction;
- water management.

The EIS shall include maps and bathymetric data of the project site, at an appropriate scale. The maps shall show the location of the sediment disposal sites, indicate the surface area (land and water) required for the project and identify the owners. The maps shall also show the boundaries of the proposed site including UTM coordinates, the major existing infrastructure, adjacent land uses and any important environmental features.

3.2 Project activities

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

Although a complete list of project activities should be provided, the emphasis will be on activities with the greatest potential to have environmental effects. Sufficient information will be included to predict environmental

effects and address public concerns identified. Highlight activities that involve periods of increased environmental disturbance or the release of materials into the environment.

The environmental impact statement 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.

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

It should also include a description of the following elements:

- activities to the prepare the site for the construction of the marine terminal, tree clearing, blasting (if applicable), placement of fill, any necessary water diversions, construction of outer and inner dikes or cofferdams, grading, boring, densification, preloading and compaction of soil;
- construction methods used to build the terminal (including concreting, filling and ground densification, installation of riprap, pile and sheet-pile driving);
- dredging activities for the construction of the wharf, specifying the location, depth, surface area, volume and nature of the sediment to be dredged (i.e. physical and chemical characteristics)⁴, dredging methods (e.g. equipment used, duration and frequency), sediment management plans (terrestrial and aquatic) and modes of transporting the sediment to the construction or disposal sites, including management of dewatering basins, if necessary;
- construction methods and dimensions of anchorage areas at the terminal and in the navigation channel, if applicable;
- ship traffic, including the anticipated increase in traffic in the port waters (including the number, type, size, tonnage and capacity of the ships, the schedule of operations of the marine terminal, and the increase over current traffic);
- activities related to resupplying ships;
- operations related to the transshipment, storage and handling of goods;
- water management, including the shaping of ditches and sedimentation basins and the construction of well(s) and treatment and disposal system(s) for stormwater and wastewater (e.g. runoff from the site and ballast and bilge management, including invasive species management plans);
- road traffic (including the number, type, size and capacity of trucks, as well as the approximate arrival and departure times and the increase in traffic relative to the current situation);
- maintenance of the structures, infrastructure and facilities, including maintenance dredging operations (surface area, volume and frequency based on the sediment budget for the body of water, dredged sediment management and methods);
- management of waste, cargo residues and hazardous materials;
- management of waste snow.

⁴ The Agency recommends that the proponent submit its sediment sampling plan to Environment Canada.

4 PUBLIC CONSULTATION AND CONCERNS

The environmental impact statement will describe the ongoing and proposed consultations and the information sessions that the proponent will hold or that it has already held on the project. It will provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process. The environmental impact statement will indicate the methods used, where the consultation was held, the persons and organizations consulted, the concerns voiced and the extent to which this information was incorporated in the design of the project as well as in the environmental impact statement. The environmental impact statement will provide a summary of key issues raised related to the environmental assessment as well as describe any outstanding issues and ways to address them.

5 ABORIGINAL ENGAGEMENT AND CONCERNS

For the purposes of developing the environmental impact statement, the proponent will engage with Aboriginal groups that may be affected by the project, to obtain their views on:

- effects of changes to the environment on Aboriginal peoples (health and socio-economic issues; physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; and current use of lands and resources for traditional purposes); and
- potential adverse impacts of the project on potential or established Aboriginal or Treaty rights.

With respect to the above matters and in addition to information requirements outlined in Part 2, Sections 6.19 and 6.35, of these guidelines, the environmental impact statement will document:

- valued components suggested by Aboriginal groups for inclusion in the environmental impact statement, whether they were included, and the rationale for any exclusions;
- 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 or available through public records;
- based on the proponent's perspective, the potential adverse impacts of each of the project components and physical activities, in all phases, on potential or established Aboriginal or Treaty rights. This assessment is to 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. Include the perspectives of Aboriginal groups where these were provided to the proponent by the groups;
- based on the proponent's perspective, the measures identified to mitigate or accommodate potential adverse impacts of the project on the potential or established Aboriginal or Treaty rights. These measures will be written as specific commitments that clearly describe how the proponent intends to implement them;
- based on the proponent's perspective, the effects of changes to the environment on Aboriginal peoples or potential adverse impacts on potential or established Aboriginal or Treaty rights that have not been fully mitigated or accommodated as part of the environmental assessment and associated engagement with Aboriginal groups, including the potential adverse effects that may result from the residual and cumulative environmental effects. Include the perspectives of Aboriginal groups where these were provided to the proponent by the groups;

- specific suggestions raised by Aboriginal groups for mitigating the effects of changes to the environment on Aboriginal peoples or accommodating potential adverse impacts of the project on potential or established Aboriginal and Treaty rights;
- views expressed by Aboriginal groups on the effectiveness of the mitigation or accommodation measures;
- from the proponent’s perspective, any potential cultural, social and/or economic impacts or benefits to Aboriginal groups that may arise as a result of the project. Include the perspectives of Aboriginal groups where these were provided to the proponent by the groups;
- comments, specific issues and concerns raised by Aboriginal groups and how the key concerns were responded to or addressed;
- changes made to the project design and implementation directly as a result of discussions with Aboriginal groups;
- where and how Aboriginal traditional knowledge was incorporated into the environmental effects assessment (including baseline conditions and effects analysis for all valued components) and the consideration of potential adverse impacts on potential or established Aboriginal or Treaty rights and related mitigation measures; and
- any additional issues and concerns raised by Aboriginal groups in relation to the environmental effects assessment and the potential adverse impacts of the project on potential or established Aboriginal and Treaty rights.

Information provided related to potential adverse impacts on potential or established Aboriginal or Treaty rights will be considered by the Crown in meeting its common law duty to consult obligations as set out in the *Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* (2011)⁵.

5.1 Aboriginal Groups to Engage & Engagement Activities

With respect to engagement activities, the environmental impact statement will document:

- the engagement activities undertaken with Aboriginal groups prior to the submission of the environmental impact statement, including the date and means of engagement (e.g., meeting, mail, telephone);
- any future planned engagement activities; and
- how engagement activities by the proponent allowed Aboriginal groups to understand the project and evaluate its effects on their communities, activities, potential or established Aboriginal or Treaty rights and other interests.

In preparing the environmental impact statement, the proponent will ensure that Aboriginal groups have access to timely and relevant information on the project and how the project may adversely impact them. The proponent will structure its Aboriginal engagement activities to provide adequate time for Aboriginal groups to review and comment on the relevant information. Engagement activities are to be appropriate to the groups’ needs and should be arranged through discussions with the groups. The environmental impact statement will describe all efforts, successful or not, taken to solicit the information required from Aboriginal groups to support the preparation of the environmental impact statement.

⁵ Visit the Aboriginal Affairs and Northern Development Canada website at: www.aadnc-aandc.gc.ca/eng/1100100014680/1100100014681

The proponent will ensure that views of Aboriginal groups are recorded. The proponent will keep detailed tracking records of its engagement activities, recording all interactions with Aboriginal groups, the issues raised by each Aboriginal group and how the proponent addressed the concerns raised. The proponent will share these records with the Agency.

The proponent should consider translating information for Aboriginal groups into the appropriate Aboriginal language(s) in order to facilitate engagement activities during the environmental assessment.

The proponent will hold meetings with the following potentially affected Aboriginal groups and facilitate these meetings by making key environmental assessment summary documents (baseline studies, environmental impact statement, key findings, plain language summaries) accessible.

- Essipit
- Pekuakamiulnuatsh Takuhikan

For the above groups, the proponent will ensure there are sufficient opportunities for individuals and groups to provide oral input in the language of their choice. The proponent will ensure that these Aboriginal groups' views are heard and recorded.

There are additional Aboriginal groups that are expected to be less affected by the project and its related effects. The proponent will make key EA summary documents (draft/final EIS, key findings, plain language summaries) accessible to these Aboriginal groups and ensure their views are heard and recorded. These Aboriginal groups include:

- Pessamit

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

Upon receipt of knowledge or information of potential effects to an Aboriginal group not listed above, the proponent shall provide that information to the Agency at the earliest opportunity.

6 EFFECTS ASSESSMENT

6.1 Project setting and baseline conditions

Based on the scope of project described in section 3 (Part 1), the environmental impact statement will present baseline information in sufficient detail to enable the identification of how the project could affect the valued components and an analysis of those effects. Should other valued components be identified during the conduct of the environmental assessment, the baseline condition for these components will also be described in the environmental impact statement. To determine the appropriate spatial boundaries to describe the baseline information, refer to section 3.3.3 (Part 1). As a minimum, the environmental impact statement will include a description of:

6.1.1 Air quality, noise environment and climate

- ambient air quality at the project site and in the airshed likely to be affected by the project, including the following contaminants: total suspended particulates, PM2.5, PM10, CO, SOx, NOx and all other toxic air pollutants (mobile and stationary sources);

- current ambient noise levels at key receptor points (e.g., local and Aboriginal communities, and seasonal dwelling), including the results of a baseline ambient noise survey and information on typical sound sources, geographic extent and temporal variations;
- current underwater noise levels, including the results of a sound propagation study in the project area;
- existing ambient night-time light levels at the project site, including spill-over light, night-time glare from point light sources and skyglow, and in any other areas where project activities could have an effect on light levels; the EIS will describe night-time light levels during different seasons and weather conditions;
- multi-seasonal weather and climatic information, including historical data and baseline information on precipitation, mean, maximum and minimum temperatures, humidity, wind (duration, direction and strength), fog (frequency, duration) and extreme weather events.

6.1.2 Geomorphology and watercourses characteristics

- relief, drainage, nature of the soils and surficial deposits;
- the hydrographic network of the watercourses and water bodies concerned, along with the longitudinal profile and water levels (during peak flows, low flows and mean conditions) for segments of the watercourses directly affected by the project;
- the bathymetry and hydrological regime, including the mean annual flows of watercourses that could be affected by the project, mean daily and monthly flows, and low and peak flows;
- for the Saguenay River, surface and underwater current patterns and speeds, waves, tidal regime and water levels from tide gauges located nearby, at the port site and, if applicable, along shipping routes;
- available bathymetric data for proposed shipping routes, if applicable;
- for the Saguenay River, characterization of the bottom sediment, including quality and thickness, particle size and mobility at the site where the structures will be built;
- the sediment regime, including areas that are input sources (erosion), sediment transport and accumulation zones, particularly in dredging and backfilling areas and around potential open-water sediment disposal sites;
- physicochemical characterization of sediments to be dredged and their toxicity, if applicable, using toxicity tests⁶;
- physicochemical characterization of sediments at open-water disposal sites;
- physicochemical characteristics of the affected watercourses;
- ice dynamics in the study area, including ice formation, thickness, ridging, control activities and movement;
- ice conditions along shipping routes should also be analyzed, taking into account predicted climate change and its possible effect on the timing of ice formation in the future.

⁶ Environment Canada (2002), Sediment Sampling Guide for Dredging and Marine Engineering Projects in the St. Lawrence River, volumes 1 and 2. The Agency recommends that the proponent consult Environment Canada regarding the sediment sampling plan and the sediment analysis strategy.

6.1.3 Soils, riparian and terrestrial environments

- description of the geological hazards that exist in the in the areas planned for the project facilities and infrastructure, including:
- history of seismic activity in the area;
- isostatic rebound or subsidence;
- landslides, slope erosion and the potential for ground and rock instability, and subsidence following project activities.
- characterization of soils in the excavation area, in terrestrial and riparian environments, with a description of past uses;
- topography, drainage, geology and hydrogeology, and the physicochemical characteristics of potential on-land sediment or soil disposal sites, with the exception of sites already authorized by the Quebec government;
- the littoral zone, shorelines and riverbanks, wetlands (marshes, swamps, bogs, etc.) and existing or future floodplains;
- plant and animal species (abundance, distribution and diversity) and their habitats, with a focus on species that have special status or are of social, economic, cultural or scientific significance as well as invasive alien species.

6.1.4 Fish and fish habitat

It should be noted that under the Act and this document, the definition of “fish” is that set out in section 2 of the *Fisheries Act*, which includes shellfish, crustaceans and other marine animals (e.g. marine mammals).

- description of freshwater and marine habitats by homogeneous section, including the vertical wall and the seabed, specifying the length of the section, depth, type of substrate, vegetation and benthos presence, abundance and diversity, and photos;
- characterization of fish populations that occur or migrate in the local and regional study areas, including the species, abundance, distribution and life stages, as well as information on surveys conducted and sources of available data (e.g. locations of sampling stations, sampling methods, date of capture, species surveyed);
- list of rare fish species known to be present;
- a description of natural obstacles or existing structures (e.g. water crossings) that hinder the free passage of fish;
- maps, at a suitable scale, indicating the surface area of potential or confirmed fish habitat for spawning, nursery, feeding, overwintering, migration routes, etc. These data must be related to the water depths (bathymetry) to identify the extent of the littoral zone of the water bodies;
- the description and location of suitable habitats for fish species at risk that appear on federal and provincial lists and that are found or are likely to be found in the study area.

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

6.1.5 Marine plants (other aquatic species)

- characterization of marine plants likely to be affected by the project, including benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton;
- maps, at a suitable scale, indicating the surface area or zones occupied by the different types of algae surveyed.

6.1.6 Birds and their habitat⁷

- the various ecosystems found in the project area likely to be affected based on existing information;
- migratory and non-migratory birds (including waterfowl, raptors, shorebirds, marsh birds and other land birds);
- use of the sector by migratory and non-migratory birds during the year (e.g. winter, spring migration, breeding season, fall migration), taking into account preliminary data from existing sources.

6.1.7 Species at Risk

- a list of all potential or known federally listed species at risk that may be affected by the project (fauna and flora), using existing data and literature as well as surveys to provide current field data;
- a list of all federal species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) for listing on Schedule 1 of the Species at Risk Act. This will include those species in the risk categories of extirpated, endangered, threatened and special concern⁸;
- any published studies that describe the regional importance, abundance and distribution of species at risk; and
- 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.

6.1.8 Aboriginal peoples

With respect to potential effects on Aboriginal peoples and the related valued components, baseline information will be provided for each Aboriginal group identified in section 5 (and any groups identified after these guidelines are finalized). Baseline information will describe and characterize the following, based on the spatial and temporal scope selected for the assessment:

- location of traditional territory (including maps where available);
- location of reserves and communities;
- location of hunting camps and cabins;
- drinking water sources (permanent, seasonal, periodic, or temporary);
- reliance on country foods;

⁷ Surveys should be designed with reference to the Canadian Wildlife Service's guidance such as Technical Report No. 508, *A Framework for the Scientific Assessment of Potential Project Impacts on Birds* (Hanson *et al.* 2009). Appendix 3 of the Framework provides examples of project types and recommended techniques for assessing impacts on migratory birds.

⁸ See COSEWIC website: http://www.cosewic.gc.ca/eng/sct0/index_e.cfm

- commercial activities (e.g. fishing, trapping, hunting, forestry, outfitting);
- recreational uses;
- traditional uses currently practiced or practiced in recent history;
- fish, wildlife, birds, plants or other natural resources of importance for traditional use;
- places where fish, wildlife, birds, plants or other natural resources are harvested;
- access and travel routes for conducting traditional practices;
- frequency, duration or timing of traditional practices;
- cultural values associated with the area affected by the project and the traditional uses identified; and,
- physical and cultural heritage⁹ (including any site, structure or thing of archaeological, paleontological, historical or architectural significance).

Any other baseline information that supports the analysis of predicted effects on Aboriginal peoples will be included as necessary. The environmental impact statement will also indicate how input from Aboriginal groups was used in establishing the baseline conditions related to health and socio-economics, physical and cultural heritage and current use of lands and resources for traditional purposes with wetlands most likely to be affected by project activities according to their location, size, type (wetland class and form), species composition and ecological function (Canadian Wetland Classification System, National Wetlands Working Group, 1997).

6.1.9 Human environment

- the rural and urban settings likely to be affected by the project;
- federal lands likely to be affected by the project;
- the current use of land in the study area, including a description of hunting, recreational and commercial fishing, trapping, gathering, outdoor recreation, use of seasonal cabins, outfitters;
- existing and proposed protected areas, special management areas and conservation areas in the regional study area;
- sources of drinking water in the study area, indicating surface water and groundwater collection facilities, private wells, wells serving more than 20 people, and municipal water intakes;
- current use of all waterways and water bodies in the study area that will be directly affected by the project, including commercial and recreational uses, where available;
- location and proximity of any permanent, seasonal or temporary residences or camps;
- characterization of the landscape surrounding the project that can be perceived from the sensitive receptors and valued sites;
- health¹⁰ and socio-economic conditions, including the functioning and health of the socio-economic environment, encompassing a broad range of matters that affect communities in the study area in a way that recognizes interrelationships, system functions and vulnerabilities;

⁹ Heritage resources to be considered will include but not be limited to, physical objects (e.g. middens, culturally-modified trees, historic buildings), sites or places (e.g. burial sites, sacred sites, cultural landscapes) and attributes (e.g. language, beliefs).

¹⁰ The proponent should refer to Health Canada's Useful Information for Environmental Assessments document in order to include the appropriate baseline information relevant to human health. This document can be obtained at http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php

- physical and cultural heritage, including structures, sites or things of historical, archaeological, paleontological or architectural significance.

6.2 Predicted Changes to the Physical Environment

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

6.2.1 Changes to the Atmospheric Environment

- changes in air quality: The proponent will carry out atmospheric dispersion modelling of the main contaminants in order to estimate the contaminant concentrations present in the entire area that could potentially be affected by atmospheric emissions;
- changes in ambient noise levels;
- changes in night-time light levels.

6.2.2 Changes to geomorphology and watercourses characteristics

- changes in the physicochemical quality of the water (turbidity, oxygen content, etc.);
- effects of runoff or drainage on the quality of surface water and groundwater (particularly drinking water);
- impact of the changes on hydrodynamic conditions (current velocity and distribution), the ice regime and the thermal regime;
- shoreline and bank erosion;
- impact of the changes in the sediment regime.

6.2.3 Changes to soils, riparian and terrestrial environments

- overall description of changes related to landscape disturbance;
- changes to the habitat of migratory and non-migratory birds, with a distinction made between the two birds category, including losses, structural changes and fragmentation of habitat and wetlands frequented by birds (types of cover, ecological unit of the area in terms of quality, quantity, diversity, distribution and functions);
- changes to critical habitat for federally listed species at risk;
- changes to key habitat for plant and animal species, including those that are important to the current use of resources by Aboriginal and non-Aboriginal people.

6.3 Predicted Effects on Valued Components

Based on the predicted changes to the environment identified in section 6.2, the proponent is to assess the environmental effects of the project on, but not limited to, the followings valued components. The valued components were identified on the basis of the elements cited in subsections 5(1) and 5(2) of the Act. The

acquisition of land necessary for the construction of the terminal and its related infrastructure by the Saguenay Port Authority is considered the exercise of a power or the performance of a duty or function.

6.3.1 Fish and Fish Habitat

- the identification of any potential harmful alteration, disruption or destruction of fish habitat, including the calculations of any potential habitat loss (temporary or permanent) in terms of surface areas (e.g. spawning grounds, fry-rearing areas, feeding), and in relation to watershed availability and significance. The assessment will include a consideration of:
 - ✓ the geomorphological changes and their effects on hydrodynamic conditions and fish habitats (e.g. modification of substrates, dynamic imbalance, silting of spawning beds);
 - ✓ the modifications of hydrological and hydrometric conditions on fish habitat and on the fish species' life cycle activities (e.g. reproduction, fry-rearing, movements);
 - ✓ potential impacts on riparian areas that could affect aquatic biological resources and productivity taking into account any anticipated modifications to fish habitat;
 - ✓ any potential imbalances in the food web in relation to baseline.
- the effects of changes to the aquatic environment on fish and their habitat, including:
 - ✓ the anticipated changes in the composition and characteristics of the populations of various fish species, included shellfish and forage fish;
 - ✓ any modifications in migration or local movements (upstream and downstream migration, and lateral movements) following the construction and operation of works (physical and hydraulic barrier;
 - ✓ any decline in fish populations because of potential overfishing due to improved access to the project area;
 - ✓ any modifications and use of habitats by federally or provincially fish species with a special status.
- a discussion of how project construction timing correlates to key fisheries windows for freshwater and anadromous species, and any potential impacts resulting from overlapping periods;
- a discussion of how vibration caused by blasting or in-stream work may affect fish behaviour, such as spawning or migrations.

6.3.2 Marine plants

- the effects of changes to the aquatic environment on marine plants, including all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton.

6.3.3 Birds

- mortality of migratory and non-migratory birds, with a distinction made between the two birds category, that could be directly caused by tree clearing, site clearing, or birds and nests being in contact with contaminated substances;
- indirect effects caused by increased disturbance (e.g. noise, light, etc), relative abundance movements and changes in migratory and non-migratory bird habitat;
- collision risk of migratory and non-migratory birds with any project infrastructures.

6.3.4 Terrestrial plants and animals

- for each habitat unit, the potential effects of the project on terrestrial plants and animals.

6.3.5 Species at Risk

- for each habitat unit, the potential effects of the project on federally listed species at risk and those species listed by the Committee on the Status of Endangered Wildlife in Canada classified as extirpated, endangered, threatened or of special concern (flora and fauna) and their critical habitat.

6.3.6 Aboriginal peoples

With respect to Aboriginal peoples, a description and analysis of how changes to the environment caused by the project will affect:

- the current uses of land and resources for traditional purposes, including, but not limited to:
 - ✓ any effects on resources (fish, wildlife, birds, plants or other natural resources) used for traditional uses (e.g. hunting, fishing, trapping, collection of medicinal plants, use of sacred sites);
 - ✓ any effects of alterations to access into the areas used for traditional uses, including development of new roads, deactivation or reclamation of access roads and changes to waterways that affect navigation;
 - ✓ any effects on cultural value or importance associated with traditional uses or areas affected by the project (e.g. inter-generational teaching of language or traditional practices, communal gatherings);
 - ✓ how project construction timing correlates to the timing of traditional practices, and any potential impacts resulting from overlapping periods;
 - ✓ the regional value of traditional use of the project area and the anticipated effects to traditional practice of the Aboriginal group, including alienation of lands from Aboriginal traditional use;
 - ✓ indirect effects such as avoidance of the area by Aboriginal peoples due to increased disturbance (e.g. noise, presence of workers); and
 - ✓ an assessment of the potential to return affected areas to pre-disturbance conditions to support traditional practices.
- human health, considering, but not limited to, potential changes in air quality, quality and availability of country foods, drinking water quality, and noise exposure. When risks to human health due to changes in one or more of these components are predicted, a complete Human Health Risk Assessment (HHRA) examining all exposure pathways for pollutants of concern may be necessary to adequately characterize potential risks to human health;
- socio-economic conditions, including but not limited to;
 - ✓ the use of navigable waters;
 - ✓ commercial fishing, hunting, trapping, and gathering activities;
 - ✓ commercial outfitters and recreational use;
 - ✓ the use of the sector by individuals and outfitters for recreational purposes.
- physical and cultural heritage, and structure, site or thing of historical, archaeological, paleontological or architectural significance to Aboriginal groups, including but not limited to:
 - ✓ the loss or destruction of physical and cultural heritage;
 - ✓ changes to access to physical and cultural heritage;
 - ✓ changes to the cultural value or importance associated with physical and cultural heritage.

6.3.7 Human environment

With respect to the human environment, apart from Aboriginal peoples covered in the previous section, a description and analysis of how changes to the environment caused by the project will affect:

- health and socioeconomic status, including, but not limited to, effects on:
 - ✓ resources (fish, wildlife species, birds, plants or other natural resources) used for recreational or commercial purposes (e.g. hunting, fishing, trapping);
 - ✓ human health in relation to air quality, possible contamination of local foods, drinking water quality, and exposure to light and noise. When risks to human health due to changes in one or more of these components are predicted, a complete Human Health Risk Assessment (HHRA) examining all exposure pathways for pollutants of concern may be necessary to adequately characterize potential risks to human health;
 - ✓ the visual environment and effects that changes to the aesthetic quality of the landscape could have on businesses that rely on the aesthetic and recreational interest of the area;
 - ✓ land uses and access to the project area;
 - ✓ navigation, including, if applicable, the distinction between the various types of navigation and vessels (commercial, recreational, traditional), taking into account these distinctions in the description and assessment of the effects.
- physical and cultural heritage, and structures, sites or things of historical, archaeological, paleontological or architectural significance to Aboriginal groups, including, but not limited to, effects on:
 - ✓ unique sites or special characteristics, such as ecologically sensitive zones, reserves or protected areas.

6.4 Mitigation

Every environmental assessment conducted under the Act will consider measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project. Each measure will be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation. Mitigation measures may be considered for inclusion as conditions in the environmental assessment decision statement and/or in other compliance and enforcement mechanisms provided by other authorities' permitting or licensing processes.

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

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

The environmental impact statement will then describe mitigation measures that are specific to each environmental effect identified. Measures will be written as specific commitments that clearly describe how the proponent intends to implement them and the environmental outcome the mitigation is designed to address. Where mitigation measures have been identified in relation to species and/or critical habitat listed under the *Species at Risk Act*, the mitigation measures will be consistent with any applicable recovery strategy and action plans.

The environmental impact statement 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 impact statement will 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 will be made explicit.

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

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 will be clearly and concisely described. In addition, the environmental impact statement 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 requirements of the follow-up program.

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

6.5 Significance of residual effects

After having established the technically and economically feasible mitigation measures, the environmental impact statement will present any residual environmental effects of the project on the valued components identified in section 6.3. The residual effects, even if very small or deemed insignificant will be described.

The environmental impact statement will then provide an analysis of the significance of the residual environmental effects that are considered adverse, using guidance described in section 4 of the Agency's reference guide *Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects*¹¹.

The environmental impact statement will identify the criteria used to assign significance ratings to any predicted adverse effects. It will contain clear and sufficient information to enable the Agency, technical and regulatory agencies, Aboriginal groups and the public to review the proponent's analysis of the significance of effects. The environmental impact statement will document the terms used to describe the level of significance.

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

- magnitude;

¹¹ Visit the Canadian Environmental Assessment Agency's website at: www.ceaa-acee.gc.ca/default.asp?lang=En&n=D213D286-1&offset=&toc=hide

- geographic extent;
- duration;
- 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 proponent will, where possible, use 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 environmental impact statement will contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each valued component.

Where significant adverse effects are identified, the environmental impact statement 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.

6.6 Other effects to consider

6.6.1 Effects of potential accidents or malfunctions

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

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

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

The environmental impact statement will describe the safeguards that have been established to protect against such occurrences and the contingency and emergency response procedures in place if such events do occur.

6.6.2 Effects of the environment on the project

The environmental impact statement will take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events (e.g. flooding, drought, ice jams, landslides, avalanches, erosion, subsidence, fire, outflow conditions and seismic events) could adversely affect the project and how this in turn could result in impacts to the environment (e.g., extreme environmental conditions result in malfunctions and accidental events). These events will be considered in different probability patterns (i.e. 5-year flood vs. 100-year flood). Longer-term effects of climate change will also be discussed up to the projected post-closure phase of the project. This discussion will include a description of climate data used.

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

6.6.3 Cumulative effects assessment

The proponent will identify and assess the project's cumulative effects using the approach described in the Agency's Operational Policy Statement entitled *Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012*.

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

- implementation of the project being studied may cause direct residual adverse effects on the valued components, taking into account the application of technically and economically feasible mitigation measures; and
- the same valued components may be affected by other past, present or reasonably foreseeable physical activities.

Valued components that would not be affected by the project or would be affected positively by the project can, therefore, be omitted from the cumulative effects assessment. A cumulative effect on an environmental component may, however, be important even if the assessment of the project's effects on this component reveals that the effects of the project are minor.

In its environmental impact statement, the proponent will:

- Identify and provide a rationale for the valued components that will constitute the focus of the cumulative effects assessment, emphasizing this assessment on the valued components most likely to be affected by the project and other project and activities. To this end, the proponent must consider, without limiting itself thereto, the following components likely to be affected by the project:
 - ✓ fish and fish habitat;
 - ✓ marine plants;
 - ✓ migratory and non-migratory birds;
 - ✓ terrestrial plants and animals;
 - ✓ species at risk;
 - ✓ Aboriginal peoples;
 - ✓ human environment (other than Aboriginal peoples).
- Identify and justify the spatial and temporal boundaries for the cumulative effect assessment for each valued component selected. The boundaries for the cumulative effects assessments will generally be different for each valued component considered. These cumulative effects boundaries will also generally be larger than the boundaries for the corresponding project effects;
- Identify the sources of potential cumulative effects. Specify other projects or activities that have been or that are likely to be carried out that could cause effects on each selected valued component within the boundaries defined, and whose effects would act in combination with the residual effects of the project. This assessment may consider the results of any relevant study conducted by a committee established under section 73 or 74 of the Act;

- Describe the mitigation measures that are technically and economically feasible. The proponent shall assess the effectiveness of the measures applied to mitigate the cumulative effects. In cases where measures exist that are beyond the scope of the proponent's responsibility that could be effectively applied to mitigate these effects, the proponent will identify these effects and the parties that have the authority to act. In such cases, the environmental impact statement will summarize the discussions that took place with the other parties in order to implement the necessary measures over the long term;
- Determine the significance of the cumulative effects;
- Develop a follow-up program to verify the accuracy of the assessment or to dispel the uncertainty concerning the effectiveness of mitigation measures for certain cumulative effects.

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

7 SUMMARY OF ENVIRONMENTAL EFFECTS ASSESSMENT

The environmental impact statement will contain a table summarising the following key information:

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

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

8 FOLLOW-UP AND MONITORING PROGRAMS

A follow-up program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project. 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.

8.1 Follow-up Program

The duration of the follow-up program shall be as long as required for the environment to regain its equilibrium and to evaluate the effectiveness of the mitigation measures.

The environmental impact statement shall present a preliminary follow-up program in particular for areas where scientific uncertainty exists in the prediction of effects. This program shall include:

- objectives of the follow-up program and the valued components targeted by the program;
- list of elements requiring follow-up;
- number of follow-up studies planned as well as their main characteristics (list of the parameters to be measured, planned implementation timetable, etc.);
- intervention mechanism used in the event that an unexpected deterioration of the environment is observed;
- mechanism to disseminate follow-up results among the concerned populations;
- accessibility and sharing of data for the general population;

- opportunity for the proponent to take advantage of the participation of Aboriginal groups and stakeholders on the affected territory, during the implementation of the program;
- involvement of local and regional organizations in the design, implementation and evaluation of the follow-up results as well as any updates, including a communication mechanism between these organizations and the proponent.

8.2 Monitoring

The proponent will prepare an environmental monitoring program for all phases of the project. This program will help ensure that the project is implemented as proposed, that the mitigation or compensation measures proposed to minimize the project's environmental effects are effectively implemented, and that the conditions set at the time of the project's authorization and the requirements pertaining to the relevant laws and regulations are met. The monitoring program will also make it possible to check the proper operation of works, equipment and facilities. If necessary, the program will help reorient the work and possibly make improvements at the time of construction and implementation of the various elements of the project.

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

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

Appendix 1 Example - Summary Table of Environmental Assessment

Valued Component affected	Area of federal jurisdiction ¹² (v)	Project Activity	Potential adverse effects	Proposed mitigation measures	Residual adverse effects	Magnitude	Duration	Frequency	Reversibility	Other criteria used to determine significance	Significance of residual adverse effect
Fish and fish habitat											
Marine plants											
Migratory birds											
Terrestrial animals											
Species at risk											
Current use of land and resource for traditional purpose	v 5(1)(c)(iii)										
Human environment											
Any other valued components identified											

¹² Indicate by a check mark which valued components can be considered “environmental effects” as defined in section 5 of the Act, and specify which subsection of this Act is relevant. For example, for the valued component “Use of land and resources by Aboriginal people”, the appropriate cell would indicate, section 5(1)(c)(iii).