



**Route 389 Improvement Project between Fire Lake
and Fermont (kilometre 478 to 564)**

Final Guidelines
for the Preparation of an Environmental Impact Statement Pursuant to the
Canadian Environmental Assessment Act

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LIST OF ACRONYMS

CEAR: Canadian Environmental Assessment Registry

CSR: Comprehensive Study Report

DFO: Fisheries and Oceans Canada

EA: Environmental assessment

EC: Environment Canada

EIS: Environmental impact statement

GHGs: Greenhouse gases

NWPA: Navigable Waters Protection Act

TC: Transport Canada

The Act: Canadian Environmental Assessment Act

The Agency: Canadian Environmental Assessment Agency

VEC: Valued ecosystem component

DISCLAIMER

These Guidelines have no legal standing and are not intended to provide legal advice or guidance. They are offered solely for information purposes and do not replace the Canadian Environmental Assessment Act or its associated regulations, or any other federal statute. In the event of a discrepancy, the Canadian Environmental Assessment Act and its associated regulations shall take precedence. Parts of the Canadian Environmental Assessment Act have been paraphrased in the Guidelines and must not be cited for legal purposes. It may be permissible to deviate from the procedures described in these Guidelines depending on the particular circumstances of a project.

1 INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

The purpose of this document is to describe the various phases in the comprehensive study process in accordance with the Canadian Environmental Assessment Act and the information required to prepare the Environmental Impact Statement for the Route 389 Improvement Project between Fire Lake and Fermont (kilometre 478 to 564). These guidelines specify the nature, scope and extent of the information required.

The EIS must present the characteristics and purpose of the project as well as the environment in which the project will be carried out. The EIS will identify the potential adverse environmental effects of the project, including cumulative effects, propose technically and economically feasible measures to mitigate those effects, and evaluate whether the proposed project will result in any significant adverse environmental effects.

It is the responsibility of the proponent to provide sufficient data and analyses on any potential environmental effects of the project to permit proper evaluation by the Canadian Environmental Assessment Agency, expert and regulatory departments, Aboriginal groups and the public. The EIS Guidelines describe the minimum information requirements, but give the proponent the flexibility to choose the most appropriate methods for compiling and analyzing data for the EIS.

1.2 PROJECT OVERVIEW

The Ministère des Transports du Québec (MTQ) is proposing to carry out road improvements of Route 389 between Fire Lake and Fermont (kilometre 478 to 564). The work includes building 55.8 kilometres of new right-of-way road and improving the existing road, for a total length of 69.5 kilometres.

The project is located entirely within the province of Quebec, in the regional county municipality of Caniapiscau. The northern section is in the municipality of Fermont and the rest is in the unorganized territory of Rivière-Mouchalagane. The geographic coordinates of Fire Lake are 52°21'N and 67°22'W, and those of Fermont are 52°47'N and 67°05'W.

This project is part of the Route 389 Improvement Program, which covers 570 kilometres between Baie-Comeau and Fermont. The program aimed at improving road safety and traffic flow on Route 389, enhancing links with Newfoundland and Labrador and promoting access to natural resource is a component of the Quebec government's Plan Nord.

The proponent plans to submit the environmental impact statement for the project in 2013 and will begin construction in 2015.

1.3 APPLICATION OF THE CANADIAN ENVIRONMENTAL ASSESSMENT ACT¹

The Act applies to federal authorities when they contemplate certain actions or decisions in relation to a project that would enable the project to proceed in whole or in part. Under paragraphs 5(1)(a) to (d) of the Act, a federal environmental assessment may be required if a federal authority is the proponent of a project, provides financial assistance to the proponent, provides access to federal lands for the purposes of the project or issues a permit, licence or any other approval concerning one of the provisions listed in the Law List Regulations.

The Act applies to the Route 389 Improvement Project between Fire Lake and Fermont since, on the basis of the information received from the proponent, the following federal authorities may have to issue authorizations and approvals:

- Fisheries and Oceans Canada pursuant to section 32 and subsection 35(2) of the Fisheries Act;
- Transport Canada (TC) – pursuant to subsection 5(1) of the Navigable Waters Protection Act.

The Agency has determined that the project must be subject to a comprehensive study since components of the project, as proposed by the proponent, are described in section 29(b) of the Comprehensive Study List Regulations:

29(b) an all-season public highway that will be more than 50 km in length and either will be located on a new right-of-way or will lead to a community that lacks all-season public highway access.

1.4 COMPREHENSIVE STUDY PROCESS²

In accordance with section 11.01 of the Act, the Agency will perform the duties and functions of the responsible authority in relation to the environmental assessment of Route 389 Improvement Project between Fire Lake and Fermont. The Agency will work closely with the federal authorities to coordinate their participation in the environmental assessment process and facilitate communication and cooperation between them and the other participants for the purpose of preparing the CSR. During the process, the Agency will provide the public and Aboriginal communities with various consultation opportunities.

To perform the analysis of the project, the Agency has established a federal environmental assessment committee (federal committee)³ composed of representatives of Fisheries and Oceans Canada, Environment Canada and Natural Resources Canada. Representatives of other departments may be added if necessary.

The federal committee has established the scope of the environmental assessment to guide the analysis of the proponent's environmental impact statement (see section 2). The proponent will submit its environmental impact statement assessing the environmental effects of the project to the Agency for review and comment. A comprehensive study report detailing the conclusions of the Agency and the federal committee on the environmental effects of the

¹ See Appendix 1 for the guiding principles of the environmental assessment process.

² See Appendix 2 for flow charts of the comprehensive study process and the public consultation process.

³ See Appendix 3 for a list of contacts.

project will then be prepared. This report will be submitted to the federal Minister of the Environment (the Minister) and will also be made available for public review and comment. The Minister will review the CSR as well as the results of public and Aboriginal consultations. If the Minister concludes that additional information or specific actions are needed to address the concerns of the public or Aboriginal groups, the Minister may require the Agency or proponent to ensure that additional information is gathered or that measures are taken to resolve those issues.

Once all the necessary information has been provided, the Minister will issue an environmental assessment decision statement. This statement sets out the Minister's opinion as to whether the project is likely to cause significant adverse environmental effects, taking into account the implementation of the mitigation measures and follow-up program that the Minister considers appropriate.

Once the Minister has issued an environmental assessment decision statement, the project is referred back to the federal authorities for their respective decisions under section 37 of the Act. The federal authorities can then take appropriate regulatory actions, such as issuing permits, licences or approvals, depending on the outcome of the environmental assessment.

1.5 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Scoping establishes the boundaries of the federal environmental assessment in order to focus the assessment on the relevant issues and concerns for decision making. The scope of the environmental assessment determines: the components of the proposed project that must be included in the environmental assessment, the main environmental components likely to be affected by implementation of the project, as well as the spatial and temporal boundaries of the analysis.

1.5.1 Scope of the project

For the purposes of a federal EA, the scope of the project under review includes all the components, infrastructure and related and ancillary works comprising the project submitted by the proponent. The scope also includes all other works, permanent or temporary structures or activities related to the project and associated with the construction, operation or decommissioning of the project.

Based on the information contained in the project description received from the proponent as well as the supplementary information provided in response to the Agency's requests, the project includes preparatory activities, the construction, operation and maintenance of the newly constructed or upgraded infrastructure and the restoration of sites used during the course of the project as well as any work associated with these phases in the approximately 69-kilometre section between kilometre 478 and kilometre 564 from Fire Lake to Fermont. Specifically, the project scope includes the following physical works and activities:

- forest clearing, grubbing, burning and removal of wood waste;
- soil stripping, excavation, blasting, earthwork and grading;
- stream diversion, stream crossings, drainage of parts of streams, construction of

- drainage ditches;
- laying of the road bed;
- culvert installation and bridge construction;
- temporary installations and infrastructure (temporary access roads, retaining walls, work areas, bridges, culverts, wharves, dry material disposal sites, temporary contaminated soil storage sites, cofferdams, etc.);
- construction of rest areas;
- modification, relocation or removal of existing structures;
- operation, closure and restoration of borrow pits (including quarries), excavated material stockpiles and storage areas (volumes, provenance, transport, reuse and disposal) and access roads to these sites;
- management and removal of wastes and hazardous materials;
- set-up and take-down of construction site equipment;
- restoration of stream banks/shorelines, rights-of-way, work areas, borrow pits and other areas temporarily affected by the work;
- work relating to compensation of fish habitat loss; and
- road restoration work.

In the operation phase:

- maintenance of roadways, ditches and bridges;
- winter maintenance activities, such as snow removal and use of abrasives and de-icing salt (or other ice-melting agents);
- vegetation control in the right-of-way;
- maintenance or repair of stream crossings; and
- maintenance of rest areas.

The closure and decommissioning of the road are not included in the scope of the project because the road will be part of the permanent provincial road network infrastructure under MTQ's responsibility.

1.5.2 Factors to be considered

The environmental assessment will include consideration of the following factors, listed in paragraphs 16(1)(a) to (e) and subsection 16(2) of the Act:

- the purpose of the project;
- alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternative means;
- the 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 projects or activities that have been or will be carried out;
- the significance of the effects referred to above;
- the capacity of renewable resources that are likely to be significantly affected by the project to meet the needs of the present and those of the future;
- the observations of the public and Aboriginal communities received during the environmental assessment;

- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project; and
- the development of a follow-up program in respect of the project and its requirements.

Environmental effects, as defined in subsection 2(1) of the Act, mean any change the project may cause in the environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the Species at Risk Act, any effect of any of these changes on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes by Aboriginal persons, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and any change to the project that may be caused by the environment.

1.5.3 Scope of factors to be considered

The effects analysis will be based on the state of the environment in the study area prior to project implementation. The study area includes as a minimum the project components and activities listed in Section 1.5.1 and their entire area of influence, meaning the area within which the direct and indirect environmental effects of the project components will occur.

The proponent will clearly identify and justify the spatial boundaries determined for each component of the environment under study. A summary table indicating these boundaries and the rationale must be included in the EIS to facilitate the reader's understanding.

The temporal boundaries chosen for the analysis should span all phases of the project: construction, operation, temporary closure, foreseeable modifications, decommissioning and restoration of the sites affected by the project. The temporal boundaries should also consider seasonal and annual variations related to the VECs for all phases of the project, where relevant.

The proponent is encouraged to consult federal and provincial government departments and agencies, Aboriginal groups and the public, in order to confirm the spatial and temporal boundaries used in the EIS.

1.6 PRESENTATION OF THE ENVIRONMENTAL IMPACT STATEMENT

The proponent shall provide the Agency with fifteen (15) hard copies of the environmental impact statement in French and six (6) copies in English as well as the electronic versions. The supplemental information documents produced in response to the Agency's questions and comments must comply with the same submission requirements.

The proponent is also required to prepare a separate report summarizing the information contained in the EIS. In addition to submitting an English and French version of this summary report, 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.

The summary shall include in particular:

- a concise description of all the key facets of the project;
- a succinct description of the consultations conducted with Aboriginal groups, the public and government agencies, with a summary of the issues raised and solutions found and/or suggested during these consultations;
- an overview of the main effects of the project and of the proposed mitigation measures; and
- the proponent's conclusions and important decisions resulting from the assessment.

1.7 CANADIAN ENVIRONMENTAL ASSESSMENT REGISTRY

In implementing the Act, 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. In connection with this commitment, section 55 of the Act requires the responsible authority to maintain a public registry concerning every project for which an environmental assessment is carried out.

All documents prepared or submitted by the proponent or any other stakeholder in relation to the environmental assessment are included in the CEAR and made available to the public on request. Certain confidential or sensitive information that should be protected and not made public may be excluded from the CEAR. In such cases, the Agency, which is responsible for maintaining the CEAR, must be provided with arguments demonstrating a likely risk of harm.

Observations, comments and concerns expressed by the public during the comprehensive study process will be included in the CEAR and made available to the public on request. Personal information will be protected under the Privacy Act.⁴

2 PREPARATION OF THE ENVIRONMENTAL IMPACT STATEMENT

2.1 PROJECT BACKGROUND

2.1.1 Presentation of the proponent

The EIS shall include in particular:

- the proponent's contact information;
- the identification of the legal entity that will plan, manage and operate the mine as well as the related works; and
- the identification of key personnel, contractors or subcontractors responsible for preparing the EIS.

⁴ The CEAR website can be consulted at: www.ceaa.gc.ca

2.1.2 Project overview

The EIS must briefly summarize the project by presenting the project components, associated and ancillary works, activities, scheduling details, the timing of each phase of the project and other key features. If the project is part of a larger sequence of projects, the proponent must outline the larger context and, if necessary, present the relevant references. The purpose of this overview is to provide the key components of the project.

2.1.3 Project location

The EIS must contain a concise description of the geographic setting in which the project will take place. The description must include the area affected not only by the project components, but also by the activities required for the implementation of the project (excavated material stockpiles, borrow pits, set up and take down of construction site equipment, clearing, grubbing and disposal of wood waste, etc.) and any other significant environmental characteristics. The following information must be included, preferably in the form of maps where possible:

- the geographic coordinates of the project;
- an overall plan of the project components at an appropriate scale and a representation of all planned works and undertakings;
- a regional development plan presenting the future natural resource exploitation activities, plans regarding the establishment of protected areas, major land use issues, anticipated community, economic and recreation/tourism development;
- boundaries of designated ecological areas and environmentally sensitive areas such as national, provincial and regional parks, ecological reserves, protected areas and other sensitive areas; and
- a description of the local and Aboriginal communities potentially affected by the project.

2.1.4 Environmental assessment participants

The EIS should clearly identify the main environmental assessment participants, including government authorities, Aboriginal groups, community groups, environmental organizations, etc.

2.1.5 Regulatory framework and the role of government

This section should identify the government bodies involved in the environmental assessment. More specifically, it must provide:

- 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, and planning or study initiatives relevant to the project and/or EA, and a discussion of their implications;
- any treaty, claim or agreement between governments and Aboriginal groups relevant to the project and/or EA;

- all land use maps depicting municipal boundaries, Crown land tenure, private land tenure and land use designations.

2.2 PROJECT DESCRIPTION

2.2.1 Purpose of and need for the project

The “purpose of” and “need for” the project must be established from the perspective of the proponent. 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. If the project objectives are related or contribute to public- or private-sector policies, plans or programs (regional transportation plans, land use plans, etc.), this information should also be included.⁵

2.2.2 Project components, activities and schedule

The proponent must provide a detailed description of the planned work and activities for all phases of the project including construction, operation, temporary closure, foreseeable modifications, decommissioning, restoration of sites and follow-up activities. The EIS must also describe in detail the construction, operation, maintenance, predictable modifications and if necessary, the closure, the closing down and restorations of sites and ancillary works of the project. The description must include an implementation timetable for all the activities planned during each phase of the project, the location and the scale of every activity as well as the expected results. If the project is part of a larger sequence of projects, the proponent must describe the broader context and, if necessary, present the relevant references.

Although a complete list of project activities is expected (including the planned activities on the banks and bed of each stream affected by the project), 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 concerns. The EIS should highlight activities that involve periods of increased environmental disturbance or the release of materials into the environment. It should also contain a detailed schedule that includes time of year, frequency and duration of all project activities.

2.2.3 Project alternatives and alternative means of carrying out the project

2.2.3.1 Project alternatives

The proponent must present project alternatives. Project alternatives are functionally different ways to meet the project’s need and achieve the project’s purpose. The EIS must discuss the advantages and disadvantages of each alternative, from an environmental, technical and economic perspective. The proponent is also encouraged to show how the project alternatives are developed from a sustainable development perspective and to indicate whether they may

⁵ For more information, see the Operational Policy Statement entitled *Addressing “Need for”, “Purpose of”, “Alternatives to” and “Alternative Means” under the Canadian Environmental Assessment Act*, available on the Agency website (www.ceaa-acee.gc.ca/default.asp?lang=En&n=5C072E13-1).

have any potential adverse effects on potential or established Aboriginal or treaty rights.

2.2.3.2 *Alternative means analysis*

The EIS must present an analysis of alternative means of carrying out the project that are technically and economically feasible for the implementation of the various project components.

The level of detail for the analyses underlying the choice of alternative means of carrying out the project must be sufficient to allow the Agency, technical and regulatory bodies, the public and Aboriginal groups to assess their respective advantages from an environmental, technical and economic perspective. The alternative means analysis, supported by illustrating each of the sites and their surrounding area, will have to take into account the physical and biological considerations of the environment, technical constraints and the significance of the effects associated with the alternatives chosen.

2.2.4 Restoration

The EIS shall provide an overview of the decommissioning and restoration plan for all components associated with the project. The plan will be used to provide guidance on the specific measures and activities to be implemented in order to reduce the risks of long-term environmental degradation during the decommissioning or closing of facilities.

2.3 DESCRIPTION OF THE EXISTING ENVIRONMENT

2.3.1 Methodology

The EIS will provide a baseline description of the environmental components, their interrelations and interactions as well as their variability over time scales appropriate to this 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.

For the description of the human environment, the proponent must ensure that enough information is provided to allow for assessment of the impacts of the project on people and communities in the study area.

The baseline description should include information allowing the description of the area prior to any physical disruption of the environment due to initial site preparation.

For the biological environment, baseline data in the form of surveys 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. When little or no information is available, specific studies must be designed in order to collect more information on the populations and

densities of the species.

The habitat at the regional and local scale must be indicated on an ecological map of the types and species of aquatic and terrestrial vegetation (e.g., ecological land classification mapping). Habitat uses must be characterized by type of use (e.g. breeding, migration, feeding, overwintering), frequency and duration. This assessment must cover all the relevant seasonal variations as well as range and probability of natural variations over time. The proponent must address issues such as habitat, nutrient and chemical cycles, food chains and productivity, where necessary to understand the effect of the project on ecosystem health and integrity.

The EIS will describe the sampling methods used for data collection in order to ensure that they are correctly understood and interpreted. If the data have been extrapolated or otherwise modified to depict environmental conditions, the modelling methods shall be described.

The valued ecosystem components should be described in sufficient detail to allow the reviewer to fully understand their importance and to assess the potential for environmental effects arising from the project activities.

The proponent must ensure that the EIS considers, without limitation, the main components of the environment described in the following sections.

2.3.2 Physical environment

The proponent shall describe, without limitation, the following components of the physical environment in the study area:

- hydrology and water quality;
- geology, geomorphology, seismology, sensitivity to erosion;
- atmospheric conditions and climate change⁶ (including areas of fog or blowing snow, and extreme atmospheric conditions);
- acoustic environment (including the identification of sources and types of noise and sensitive receptors);
- air quality (including ambient air quality data for the study area, characterization of baseline concentrations of potential contaminants and identification of sources of air emissions, dust and other contaminants); and
- greenhouse gases (GHG) (identification and estimate of all sources of GHG be produced during the life cycle of the project), include the mitigation measures proposed for reducing them, situate the project in terms of its contribution to GHG emissions (low, medium or high).

⁶ 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).

2.3.3 Biological environment

2.3.3.1 Fish and fish habitat⁷

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.

Description of the environment and fish species

The EIS shall:

- provide a brief description of the streams affected (width, depth, substrate, stream buffers, ditches, rapids, slope, barriers nearby, etc.) at the work sites. The descriptions must be accompanied by photographs and a location map
- indicate whether the wetlands affected by the work correspond to fish habitat; and
- provide a description of the aquatic and riparian vegetation present in the project areas (presence of aquatic grass beds, trees, shrubs, grasses and forbs).

2.3.3.2 Wildlife species (other than fish) 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 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 the bird fauna likely to be present in the study area for all four seasons (spring migration, breeding season, fall migration, winter).⁸ The description

⁷ For more information, the following reference documents can be consulted on the Fisheries and Oceans Canada Web site: *Proponent's Guide to Information Requirements for Review under the Fish Habitat Protection Provisions of the Fisheries Act*, 2009 (<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); *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); *Quebec Operational Statement, Version 3.0, Bridge Maintenance*, 2007 (www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/bridge-eng.asp). The document entitled *Bonnes pratiques pour la conception et l'installation de ponceaux de moins de 25 mètres* (2010) can be obtained from DFO.

⁸ For more information, the following reference documents can be consulted on the Environment Canada Web site (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*.

will be based on existing data 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, the focus will be on at-risk or priority species;
 - 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.
- a description of designated ecological areas and environmentally sensitive areas, such as national, provincial and regional parks, ecological preserves, protected areas, wetlands, estuaries, habitats of federally and provincially designated species at risk and other sensitive areas.

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.⁹

2.3.3.3 *Vegetation*

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 and bound 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
- use a sequential approach to first prevent, then minimize, or, as a last resort,

⁹ For more information, see the Environment Canada Web site (www.ec.gc.ca/paom-itmb).

compensate for degradation or loss of wetland functions.¹⁰

2.3.3.4 *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 Canada¹¹ (in particular the Woodland Caribou) 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.

2.3.4 **Human environment**

Current use of land and resources by Aboriginal people

The EIS must also provide a description of the land and resource use by the Aboriginal communities within the study area. To this end, the EIS shall describe:

- the locations, resources and species of social, economic, heritage or cultural value for the Aboriginal communities; and
- the activities undertaken on the territory (camps, travel, hunting, fishing, trapping, harvesting, etc.).

Outdoor recreation and tourism

The EIS shall, at a minimum:

- indicate current use of the area for hunting, sport fishing, and other recreational activities; and
- identify the land access routes to the area (snowmobile trails, forest roads, etc.) in the vicinity of the road project.

Navigable waters

The EIS shall indicate all navigable waters (lakes and streams) that will be directly affected

¹⁰ For more information, the following reference documents can be consulted on the Environment Canada Web site (www.ec.gc.ca/publications): *Federal Policy on Wetland Conservation* CW-9627-E (<http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=BBAAE735-EF0D-4F0B-87B7-768745600AE8>) and *Wetland Ecological Functions Assessment: An Overview of Approaches* (<http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=B8737F25-B456-40ED-97E8-DF73C70236A4>)

¹¹ The website of the Species at Risk Public Registry can be consulted at: www.sararegistry.gc.ca

by the project. The proponent is encouraged to apply the Minor Works and Waters Order (Navigable Waters Protection Act) to determine the minor works and waters that do not require an assessment under the NWPA.¹²

The proponent must then provide a list of the stream crossings that require approvals under the NWPA, indicating the main characteristics, dimensions and location of the streams as well as the crossing structures planned as part of the project. The proponent is invited to include photographs taken upstream, downstream and across all potentially affected waterways.

Any known navigational use of the lake or stream shall be identified. The EIS shall provide information on current and/or historic usage of all waterways and water bodies that will be directly affected by the project development, including current Aboriginal uses, where available.¹³

Cultural heritage and archaeological sites

The EIS shall identify and locate the terrestrial and aquatic areas, sites and infrastructure components of historical, archaeological, paleontological, architectural or cultural value. A description of the value attached to these sites must be provided.

A cultural heritage resource is a human work or a place that gives evidence of human activity or has spiritual or cultural meaning, and that has historic value.

2.4 ENVIRONMENTAL EFFECTS ASSESSMENT

2.4.1 Assessment methodology

This section will describe the potential effects of the project on the environment (as defined in the Act). Potential effects of all components of the project must be documented. The proponent must indicate the project's effects during preparatory activities, 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 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 must consider the direct and indirect, reversible and irreversible, short- and long-term cumulative environmental effects of the project. In predicting and assessing the project's effects, the proponent must 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

¹² For more information, consult the following websites for reference documents on the *Navigable Waters Protection Act*: <http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-menu-1978.htm>, www.gazette.gc.ca/rp-pr/p1/2009/2009-05-09/pdf/g1-14319.pdf (starting on page 1403), <http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-minorworks-menu-1743.htm>

¹³ For additional information, see the guide available on the Transport Canada website: <http://www.tc.gc.ca/eng/marinesafety/oep-nwpp-menu-1978.htm>

and their overall impact.

In undertaking the environmental effects assessment, the proponent shall use the best available information and methods. The adverse effects on environmental components identified during the environmental assessment shall be documented and considered. All conclusions on the project's effects must be justified. The proponent must present the assessment method selected as well as the associated uncertainty or bias. The methods used must be objective and reproducible and must be sufficiently clear and concrete so that the public can easily understand the reasoning followed in determining the effects.

The assessment of the project's effects on wildlife must document the impacts on wildlife as well as quantify the harmful alteration, disruption or destruction of wildlife habitats. The quantification of wildlife habitats that may be affected by the project, by type and duration, will also consider habitat suitability and functions (breeding, feeding, migration, etc.).

It is also important that the assessment methodology include the consideration of views from the public and Aboriginal groups, including any perceived changes attributed to the project.

2.4.2 Valued ecosystem components

Based on the description of the environment, the environmental components that will be affected by one or more project activities must be identified. Of these components, special attention must be paid to the VECs. The proponent shall describe how the VECs were selected and what methods were used to predict and assess the adverse environmental effects of the project on these components. The value of a component may be assigned by its role in the ecosystem and its sensitivity, but also by the scientific, legislative or popular importance attached to it.

The boundaries for each VEC may differ. The proponent will clearly identify and justify the spatial delimitation chosen for each environmental component studied. This list of VECs in the EIS shall be modified as appropriate by the proponent, following consultations with the public, Aboriginal groups, federal and provincial government departments and relevant stakeholders.

2.4.3 Mitigation measures

The Act defines "mitigation" as the elimination, reduction or control of the adverse environmental effects of a project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means. Every comprehensive study conducted under the Act must take into account measures that would mitigate any significant adverse environmental effects of the project.

The EIS must specify the actions, works, best available technology, corrective measures or additions planned during the project's various phases to eliminate or reduce the significance of adverse effects. The EIS must also present an assessment of the effectiveness of the proposed mitigation measures. The reasons for determining whether the mitigation measure reduces the significance of an adverse effect must 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, should those measures not be effective.

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 (see Appendix 4). In accordance with the principle of no net loss, set out in DFO's Policy for the Management of Fish Habitat, unavoidable and authorized loss of fish habitat must be compensated. It should be noted that if the proponent is unable to comply with the Guidelines for the use of explosives in or near Canadian fisheries water,¹⁴ the proponent will also have to submit an application for authorization under section 32 of the Fisheries Act.

Description of the project components that will have impacts on fish habitat

- Describe the work planned on the banks and bed of each stream affected by the project (riprap in streams, stream restoration, routing, drainage, clearing, excavation, backfilling, temporary access road, cofferdams, bank stabilization, machinery used, blasting, etc.).
- Where possible, estimate the areas of fish habitat that will be harmfully altered, disrupted or destroyed by the installation of culverts, diversion of streams, placement of fill, demolition of culverts, and related works or activities (including, but not limited to channel straightening upstream and downstream from the culverts, access roads, cofferdams, riprap protection, armour stone, etc.). It is important to note that fish habitat is generally located below the natural high water mark where the recurrence interval is 0-2 years.
- Provide the schedule (period and duration) of work in streams affected by the reconstruction of this section of Route 389.
- If information is available, provide a list of the main fish species present or likely to use the streams affected by the work, indicating federally and provincially designated at-risk species. To quickly prepare this list, the proponent may consult local fishing associations or the Quebec Department of Natural Resources and Wildlife.

Free fish passage

Where permanent culverts have been installed, the guiding principle of DFO's approach to ensuring free fish passage is to preserve the natural hydraulic characteristics of the stream. To do this, the existing physical characteristics of the stream (width, slope and substrate) must be maintained to the extent possible.

The assessment of the need to ensure free fish passage at each stream crossing site is based on the current and natural capacity of fish to undertake movements and on the requirement of the fish to pass through the future stream crossing. This analysis could have a significant impact on the number of culverts that should be designed to ensure free fish passage.

¹⁴ Available on the DFO Web site at: publications.gc.ca/collections/Collection/Fs97-6-2107E.pdf

DFO has no requirements regarding free fish passage for culverts that are not installed in fish habitat (e.g., culverts in drainage ditches not connected to a stream defined as being fish habitat).

For information, DFO recommends using the criteria and measures presented in the documents “Bonnes pratiques pour la conception et l’installation de ponceaux permanents de moins de 25 mètres” and “Recommandations pour la conception des traversées de cours d’eau où le libre passage du poisson doit être assuré – Projets routiers et autoroutiers.”¹⁵ DFO believes that complete compliance with the design criteria and measurements outlined in these documents will ensure free fish passage.

To ensure free fish passage, the proponent must:

- clearly indicate whether the design of the structure allows free fish passage¹⁶; or
- propose other design criteria that will achieve the same results;
- if the proponent believes that it is not necessary to ensure free fish passage, it must explain why by demonstrating that there is a barrier to free fish passage at or near the site of the work, or that the habitat upstream of the work is of marginal quantity and quality.

Stream crossings

In the event of the redevelopment or permanent diversion of a stream, DFO recommends the use of the criteria and measures described below to recreate fish habitat. In planning its project, the proponent must integrate these aspects, which will be analyzed by DFO when available.

- In redeveloping streams, reproduce its original characteristics (natural shoreline with native plant species, grain size, diversity of flow facies, identical slope and width).
- If necessary, plan the reprofiling of the bank slope to ensure stability.
- Select the proper substrate for the stream bed in order to ensure optimal flow above the substrate by minimizing interstitial flow, i.e., minimize water loss through the substrate.
- The surface substrate (armouring) of the stream bed will be composed of a natural granular layer. Plan a preferential flow path (thalweg) in the stream bed.
- To optimize fish habitat quality, limit the height of the riprap on the banks of the section of recreated stream to the extent possible and revegetate the stream buffer from the boundary of the riprap using recognized bioengineering techniques employing overhanging shrub and herb layers. In certain circumstances, justified beforehand,

¹⁵ Refer to the Fisheries and Oceans Canada documents *Bonnes pratiques pour la conception et l’installation de ponceaux de moins de 25 mètres* [best management practice for the design and construction of permanent culverts less than 25 metres] and *Recommandations pour la conception des traversées de cours d’eau où le libre passage du poisson doit être assuré - projets routiers et autoroutiers* [recommendations for design of stream crossings where free fish passage is required - road and highway projects].

¹⁶ For more information refer to the Fisheries and Oceans Canada 2007 document Operational Statement for Quebec, version 3.0, *Clear Span Bridges*. <http://www.dfo-mpo.gc.ca/habitat/what-quoi/os-eo/qc/pdf/span-eng.pdf>

more extensive riprap stabilization could be approved by DFO.

- For the riprap, use clean stone or any other material that would allow for natural revegetation (if required).
- Ensure free fish passage by avoiding excessive slopes and impassable barriers.

2.5 RESIDUAL EFFECTS

The EIS should present and describe any residual effects of the project on the biophysical and human environments after the mitigation measures have been taken into account.

The EIS must include a summary of the project's residual effects so that the reader can clearly understand the real consequences of the project and the extent to which the effects can be mitigated or compensated.

The EIS must identify the criteria used to assign significance ratings to any predicted adverse effects as well as a detailed analysis of the significance of the potential residual adverse environmental effects. The EIS must contain clear and sufficient information to enable the Agency, technical and regulatory agencies, Aboriginal groups and the public to properly understand the proponent's judgment of the significance of effects. The following elements may be used in determining the significance of residual effects:

- the nature or impact of the effect (positive, negative, direct or indirect);
- geographic extent;
- magnitude;
- timing, duration and frequency;
- permanence of the effect; and
- reversibility.

In assessing the significance against these criteria, the EIS shall, where possible, employ relevant existing regulatory documents, environmental standards or guidelines, such as prescribed maximum levels of emissions or discharges of specific hazardous agents into the environment. The EIS must include a section explaining the assumptions, definitions and limitations of the above-mentioned criteria.

If significant adverse effects are identified, the proponent shall determine the probability that they will occur. The proponent shall also address the degree of scientific uncertainty associated with the data and methods used within the framework of its environmental analysis.

2.6 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

Environmental hazards that may affect the project will be described, and their predicted effects and how they were considered in the design of the project will be documented. The proponent will address the following factors:

- geohazards;
- influence of climatic conditions;
- forest fires; and

- presence of sources of contamination in the area of influence of the work.

2.7 MALFUNCTIONS AND ACCIDENTS

The probability of possible malfunctions or accidents during construction, operation, modification or any other undertaking in relation to the project, and the potential significant adverse environmental effects of such events, will be identified and described in the environmental assessment. The description will include, without limitation, the following:

- accidental spills of hazardous materials (chemicals, petroleum products or tailings);
- risk of fire and explosion at the site; and
- contingency plans and measures for responding to emergencies.

2.8 CUMULATIVE ENVIRONMENTAL EFFECTS

The proponent shall identify and assess the cumulative environmental effects of the project in combination with other past, present or reasonably foreseeable activities and/or projects within the study area. Cumulative effects may result if the implementation of the project under study should cause direct residual adverse effects on the environmental components, taking into account the application of mitigation measures and/or if the same environmental components are affected by other past, present or reasonably foreseeable future activities or projects (which have a high probability of implementation).

This section should include a definition of and justification for the VECs chosen as well as the spatial and temporal boundaries of the cumulative effects assessment. It should be noted that these boundaries may vary depending on the components selected for cumulative effects assessment. The proponent should also propose and justify the choice of projects and activities selected for the cumulative effects assessment. The approach and methods used to identify and assess the cumulative effects should be explained.¹⁷

The EIS shall identify measures that will mitigate any significant adverse cumulative environmental effects and provide an assessment of the effectiveness of these measures. In cases where measures exist that are beyond the scope of the proponent's responsibility, the proponent shall identify these effects and the parties that have the authority to act. In such cases, the proponent shall summarize the discussions that took place with the other parties in order to implement the necessary measures.

2.9 CAPACITY OF RENEWABLE RESOURCES

The environmental assessment shall consider the capacity of the renewable resources likely to be significantly affected by the project. The proponent shall identify those resources likely to be significantly affected by the project and describe how the project could affect their

¹⁷ The Agency's Operational Policy Statement entitled *Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act* as well as the document entitled *Cumulative Effects Assessment Practitioners Guide* can be consulted on the Agency website (www.ceaa.gc.ca/default.asp?lang=En&n=DACB19EE-1).

sustainable use, and shall also describe the criteria used to determine whether their sustainable use will be compromised.

2.10 PUBLIC AND ABORIGINAL CONSULTATION¹⁸

Public and Aboriginal participation is a crucial component of the federal environmental assessment process. When the public has the opportunity to participate fully in the process, the quality and credibility of the environmental assessment is enhanced.

Public consultation

The Act requires that the Agency provide three formal opportunities for public participation in order to collect public opinions, comments and concerns:

- First consultation – the project and the conduct of the comprehensive study. At this stage, a federal guidelines document intended to provide guidance to the proponent in preparing the environmental impact statement is submitted for public consultation. Following the public consultation, the Agency may, if necessary, amend these guidelines to take the comments received into account.
- Second consultation – the results of the environmental assessment of the project. During this stage, it is essential that the proponent be present. The proponent in particular must contribute by preparing appropriate materials (executive summaries, visual aids, maps, tables, etc.) to facilitate consultation.
- Third consultation – the comprehensive study report. This stage takes place after the environmental assessment of the project has been completed and the Agency has presented its analysis in the comprehensive study report to the Minister of the Environment.

In addition to the consultations conducted by the Agency, the proponent must describe the consultations under way and proposed and the information sessions on the project. The proponent must provide a summary of the discussions, the venue, the individuals and organizations consulted, the concerns expressed, 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 them enter and the changes which result from it.

Aboriginal consultation

When the Crown contemplates conduct that may have potential adverse impacts on established or potential Aboriginal or treaty rights, it has a legal duty to consult with Aboriginal groups before making a decision to proceed with the proposed conduct. In addition, pursuant to the Act, the federal environmental assessment must assess the project's potential environmental effects on the current use of lands, streams and resources for

¹⁸ This section essentially concerns the consultations conducted in the context of the environmental assessment. The federal authorities may have to conduct other consultations in the context of their regulatory processes. For example, if the project involves a regulatory amendment in order to designate water bodies for the storage of tailings, as provided for in Schedule 2 of the MMER, Environment Canada will have to hold public consultations concerning this proposed amendment.

traditional purposes by Aboriginal communities. In addition, under the Act, one of the objectives of an environmental impact assessment is the participation of Aboriginal groups that may be affected by the project.

As a result, the proponent must consult with and involve Aboriginal communities likely to be affected by the project. 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 to 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. The guiding principles of the environmental assessment, described in Appendix 1 of these guidelines, provide further details on the requirements with respect to consultation.

To that end, the EIS shall contain:

- a summary of the proponent’s analysis regarding its selection of communities to consult;
- a list of potential impacts on each of the communities that may be affected by the project;
- a description of the project’s effects on traditional land use and occupation;
- a detailed map overlaying the project infrastructures and impact zones on the areas of land and resource use. The purpose of the map is to support the collection of data from Aboriginal traditional knowledge during consultation activities;
- a description of the information and consultation activities conducted by the proponent with the Aboriginal communities concerned;
- the concerns expressed in the communities and the extent to which these concerns were incorporated in the project design and EIS. This description must make it possible to understand the proponent’s response to each concern.

The description of the consultation activities conducted by the proponent with Aboriginal communities must include a summary of the discussions and of the issues and concerns raised, and describe any asserted or established Aboriginal or treaty rights potentially affected by the project. The government will take this information into account in its environmental assessment responsibilities and in the application of regulations.

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.

2.11 BENEFITS

2.11.1 Economic and social benefits of the project

Information on the predicted economic and social benefits of the project should be presented. This information will be reviewed during the assessment of the justifiability of any significant adverse environmental effect, if necessary.

2.11.2 Benefits of environmental assessment

The proponent is also encouraged to describe how the environmental assessment process has helped to enhance the project. Factors to be considered include:

- increased environmental benefits created as a result of the project going through the environmental assessment process;
- contribution of the EA to supporting sustainable development: describe how the EA process for the project contributed to the concept of sustainable development for a healthy environment and economy;
- public participation: describe how public participation in the EA influenced the project design and the environmental effects analysis;
- technological innovations: describe any new technology developed to address environmental impacts that could be used for other projects;
- scientific knowledge: describe any new scientific information collected through the EA that could be useful for other projects;
- social and community benefits: describe any changes in project design that resulted in indirect benefits to communities and/or social benefits (e.g., greater access to natural environments for recreational purposes).

2.11.3 Monitoring and Follow-up Programs

The purpose of a monitoring program is to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of the project, and to provide action plans and emergency response procedures to protect 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.

A follow-up program is designed to verify the accuracy of the EA and to determine the effectiveness of the measures implemented to mitigate the adverse environmental effects of the project. The EIS must describe the proposed follow-up program plan 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 EIS assumptions and the effectiveness of mitigation measures

The follow-up program must include:

- 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;
- the planned actions in the event of unanticipated environmental degradation; and
- the method for informing the population concerned of the follow-up results.

3 CONCLUSION

This section of the report shall summarize the overall findings with emphasis on the main environmental issues identified. It shall include (ideally in table format) the proponent's key commitments to implementing mitigation measures, contingency plans, monitoring and taking corrective actions, as well as site restoration and the measures intended to offset unavoidable project effects as well as the timetable for the implementation of these measures.

APPENDICES

Appendix 1: Guiding principles of environmental assessment

Environmental assessment as a planning tool

Environmental assessment is a planning tool that is used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate the possible adverse effects of development on the environment and to encourage decision makers to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and healthy economy.

Consequently, the EA of this project must, in a manner consistent with the above-mentioned needs, identify the project's possible environmental effects, propose measures to mitigate adverse effects and predict whether significant adverse environmental effects are likely after technically and economically feasible mitigation measures are implemented. The preparation and review of the EIS, as components of the EA process, are essential to the attainment of this objective.

Public participation

One of the purposes of the Act is to ensure opportunities for timely and meaningful public participation throughout the EA process. The Act ensures that, throughout the comprehensive study process, the public will have the opportunity to comment on the project and the conduct of the comprehensive study and the comprehensive study report and, in addition to the planned public consultations, to take part in the comprehensive study. The Minister of the Environment shall take into account public input when issuing the environmental assessment decision statement.

Meaningful involvement in the EA takes place when all parties involved 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.

Aboriginal consultation

Pursuant to the Act, one of the objectives of the EA is to involve potentially affected Aboriginal peoples so that the EA can identify any changes that the project may cause in the environment as well as the effects of any such changes on the current use of lands and resources for traditional purposes by Aboriginal persons. The proponent shall ensure that it engages with Aboriginal peoples that may be affected by the project and that have established or potential Aboriginal or treaty rights. In preparing the EIS, the proponent must ensure that Aboriginal peoples have access to the information that they require in respect of the project and how the project may impact them. The proponent is required to provide up-to-date information describing the project to the relevant Aboriginal groups and, especially, to the communities likely to be most affected by the project. The proponent shall also involve Aboriginal groups in determining how best to deliver that information (e.g. the types of information required, formats and the number of community meetings required).

Traditional and local knowledge

Section 16.1 of the Act states that “community knowledge and aboriginal traditional knowledge may be considered in conducting an environmental assessment” and the definition of environmental effect in the Act includes the current use of lands and resources for traditional purposes by Aboriginal persons.

Traditional and local knowledge represents a significant contribution to environmental assessment. Traditional and local knowledge refers to a broad base of knowledge held by individuals and collectively by communities that may be based on spiritual teachings, personal observation and experience or passed on from one generation to another through oral and/or written traditions. Traditional and local knowledge, in combination with other information sources, is valuable in achieving a better understanding of the potential effects of projects. Traditional and local knowledge may, for example, contribute to the description of the existing physical, biological and human environments, natural cycles, resource distribution and abundance, short- and long-term trends, and the use of lands, and land and water resources. It may also contribute to project siting and design, identification of issues, the assessment of potential and cumulative effects and their significance, the assessment of the effectiveness of proposed mitigation or compensation measures, and the consideration of monitoring and follow-up programs and, where applicable, adaptation measures.

Certain issues relevant to the review process are firmly grounded in traditional and local knowledge, such as harvesting, land use, and physical and cultural heritage resources. Although the basis for traditional and local knowledge and science-based knowledge can differ, they may, on their own or together, contribute to the understanding of these issues.

The EA shall promote and facilitate the contribution of traditional and local knowledge to the review process. It is recognized that approaches to traditional and local knowledge, customs and protocols may differ among communities and persons with respect to the use, management and protection of this knowledge. The proponent shall incorporate into the EIS the traditional and local knowledge to which it has access or that it may reasonably be expected to acquire through appropriate due diligence, in keeping with appropriate ethical standards and without breaching obligations of confidentiality.

Sustainable development

Sustainable development, as defined in the Act, means development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. Environmental assessment provides an effective means of integrating environmental factors into the planning and decision-making process in order to promote sustainable development.

Appendix 2: Comprehensive study process and public participation process

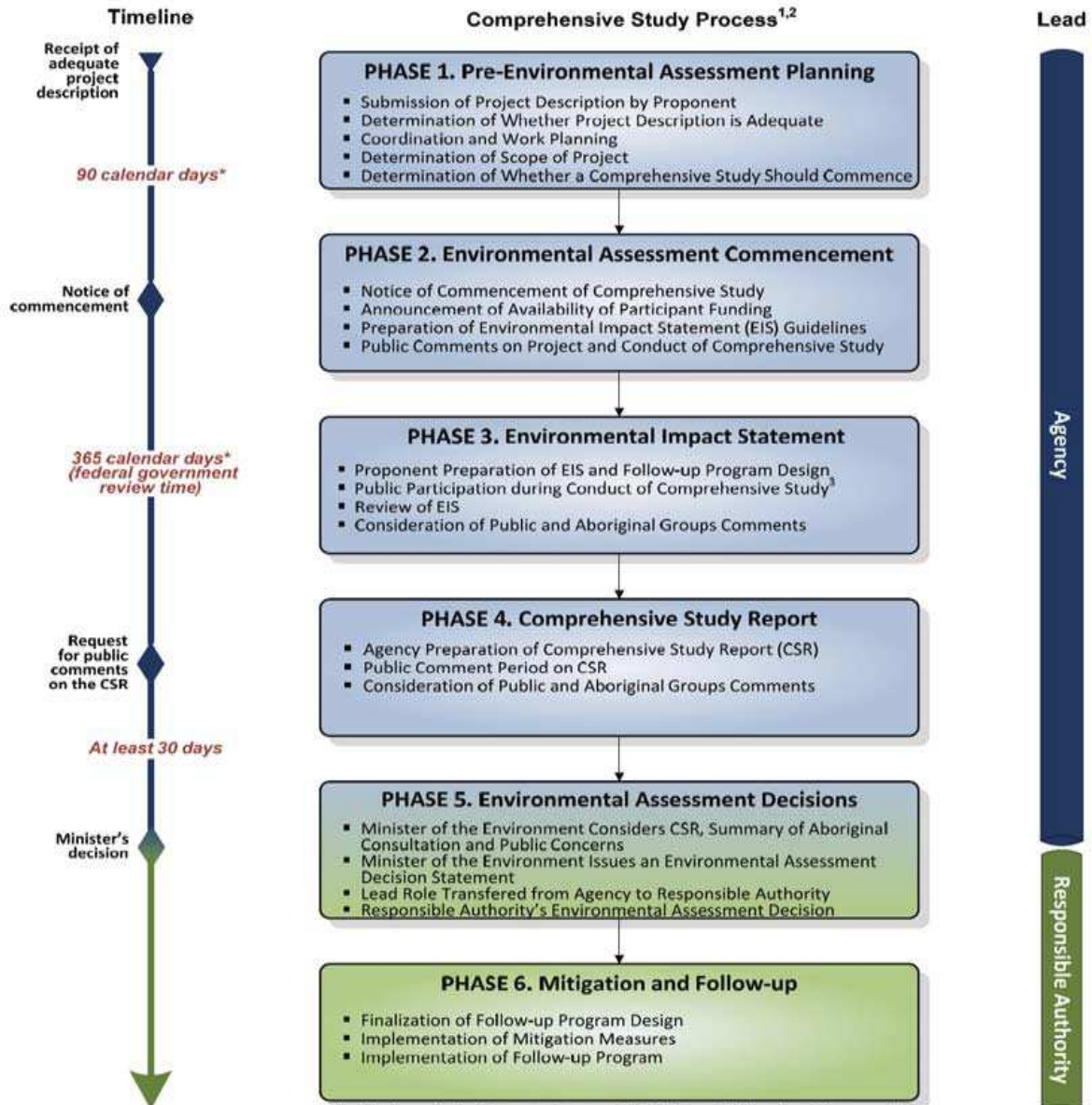


Canadian Environmental Assessment Agency

Agence canadienne d'évaluation environnementale

COMPREHENSIVE STUDY PROCESS *at a glance*

For Comprehensive Studies conducted by the Canadian Environmental Assessment Agency



*See proposed Establishing Timelines for Comprehensive Studies Regulations

¹Aboriginal consultation is a separate process that is integrated throughout the comprehensive study to the greatest extent possible

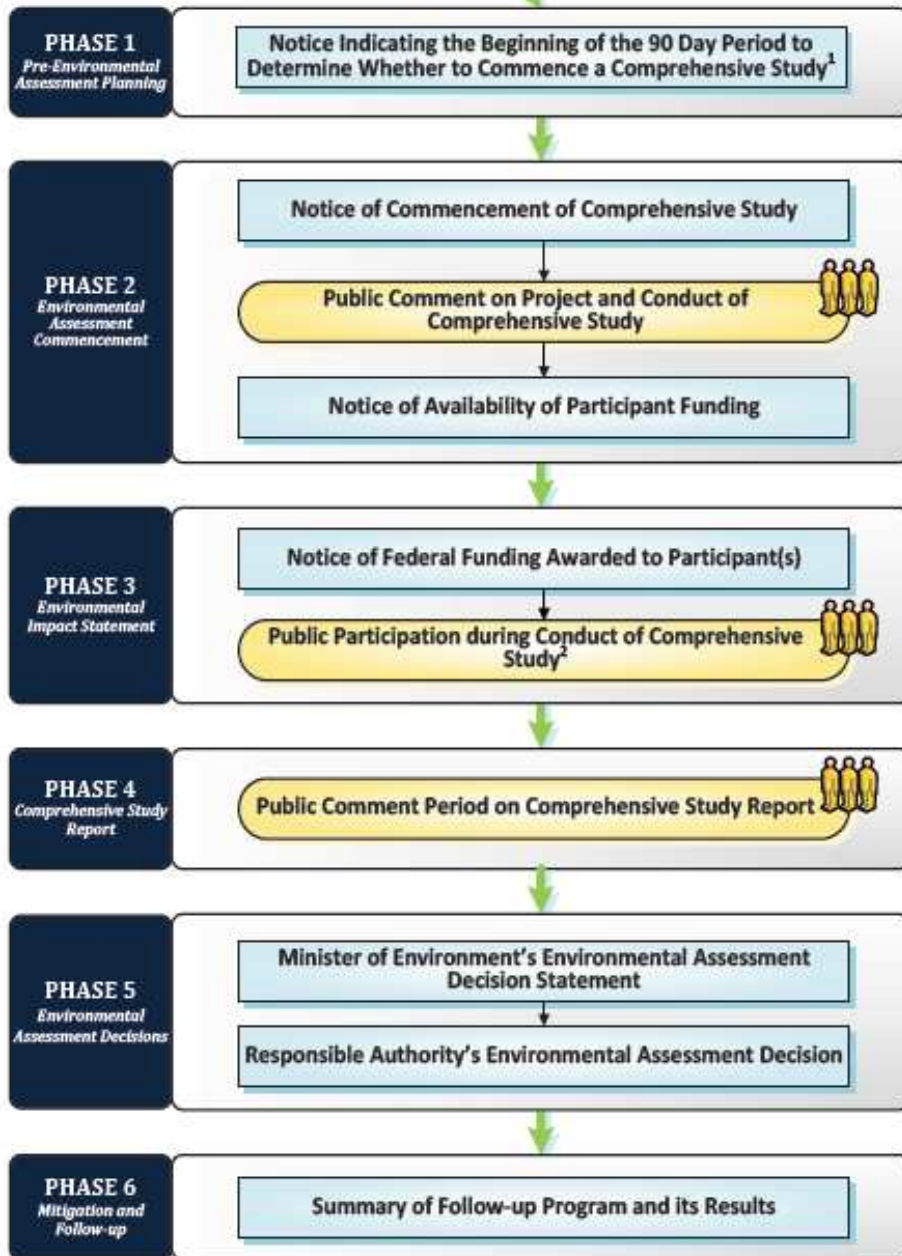
²As long as the Canadian Environmental Assessment Act's requirements are met, process described may be adjusted to coordinate with process of other jurisdictions

³Timing and nature of this public participation opportunity can vary depending on the process





Adequate Project Description Submitted by Proponent 



Public participation opportunity (may be coordinated with other jurisdictions)



Public notice posted on the Canadian Environmental Assessment Agency's Internet Site or Registry Internet Site (www.ceaa.gc.ca)



Aboriginal consultation is a separate process that is integrated throughout the comprehensive study to the greatest extent possible

¹ The Agency must post the notice of commencement of an environmental assessment in the Canadian Environmental Assessment Registry no later than 14 days after the determination that a comprehensive study should commence.

² Timing and nature of this public participation opportunity can vary depending on the process.

Appendix 3: Contacts

The contact information of the personnel responsible for the federal environmental assessment of this project is provided below:

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Appendix 4: Fish and fish habitat

Measures to mitigate the effects on fish habitat

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. The proponent must demonstrate that every effort has been made to minimize the project's effects on fish and fish habitat. The reasoning followed to determine whether the proposed measure reduces the significance of the effect on fish habitat must be explained.

The proponent can use the pathways of effects (available on DFO's website at www.dfo-mpo.gc.ca/habitat/what-quoi/pathways-sequences/index-eng.asp) to identify the potential effects and the mitigation measures that can be applied to reduce or eliminate effects on fish habitat.

DFO has developed operational statements (OS) that provide advice on standard protection measures as they apply to certain works that have little impact on fish habitat. Some activities associated with your project could be likely to align with the operational statements listed in the reference document section.

DFO recommends incorporating the following mitigation measures into the environmental assessment of your project:

General

Perform work outside sensitive periods for fish species present in the stream.

Temporary structures

Ensure, at all times, the free circulation of water and a sufficient volume of water to maintain fish habitat functions (feeding, nursery, spawning) downstream of the work area. Take the necessary measures to prevent impacts: flooding, water recession, suspended matter, erosion, etc., upstream and downstream of the work area.

Temporary works must be protected from erosion by stabilization, e.g., suitable geotextile membrane or riprap. In addition, temporary works must be designed to withstand any maximum flows likely to occur during the work period.

Control of erosion and sediment resuspension

Take all necessary precautions to prevent deposition of fine particulate matter into the aquatic environment beyond the immediate work area.

Encourage the use of turbidity curtains to prevent sediment transport in the water.

Dispose of excavated material at a site designated for that purpose.

Do not carry out earthwork or excavation work close to water during flood periods or periods of heavy rain.

Divert drainage ditches towards stable vegetated areas, located more than 20 metres from the natural high water mark. If it is impossible to divert the ditches, the potential sediment loading from the structures must be controlled by means of an appropriate, effective system to prevent leaching.

Machinery

Prohibit stream fording by machinery.

Site reclamation

Restore the banks and beds of streams affected by the work to their original condition (grain size, streambed profile, etc.) following dismantling of the temporary works on all disturbed sites.

Stabilize all reworked areas, particularly in side slopes, as the work is completed. If a period of time is required for permanent stabilization, erosion control measures must remain in place in order to prevent erosion and capture any eroded material.

Restore ditches damaged by machinery: damage to gradient, embankment shoulders, etc.

Limit the installation of riprap along streambanks to the height of the natural high water mark (2-year recurrent interval), and revegetate the stream buffer starting at the riprap boundary using recognized bioengineering techniques promoting overhanging shrub and herb layers. Replanting must be done as soon as possible after grading work is complete, with preference given to indigenous species.

Coffer dam Installation

Give preference to the types of cofferdams that minimize encroachment on fish habitat.

If the use of stone cofferdams is justified, they must be constructed using clean granular material and a membrane must be installed to ensure that the structure is watertight.

Before being returned to the stream, water pumped outside the cofferdams must be decanted or pumped into vegetation located over 15 metres from the stream.

Restrict encroachment to no more than one third the width of the river, calculated from the natural high water mark.

Recover any fish trapped in the cofferdams and immediately return them to the aquatic environment to avoid fish mortality.

Installation of temporary piers

Clean material must be used for the construction of a temporary pier (including the surface of the pier).

Encroachment by the base of the temporary piers must be limited to no more than one third of the width of the stream, calculated from the natural high water mark.

Install a sediment collection mechanism on the downstream side of the temporary piers

during their installation and dismantling. The approaches used will have to take account of the streamflow of affected streams during the dismantling work.

Diking and pumping of water from upstream to downstream

Before being returned to the river, dike water pumped from upstream to downstream will have to be decanted or pumped into vegetation more than 15 metres from the stream.

Install a structure (e.g., screen) at the opening of the pumping hose to prevent intake of fish.

Direct the outlet of the pumping hose downstream to limit the risk of causing pockets of erosion to form along the shoreline.

Dismantling of existing work

Do not dispose of any debris, concrete waste or wet mortar in the aquatic environment. Any debris that accidentally enters the water must be removed as quickly as possible.

Temporary stream diversion

Free fish passage must be maintained in the temporary stream diversion channel.

Construct a low-flow channel in the temporary diversion to allow preferential flow during low-flow periods.

Ensure even, continuous placement of riprap on the banks and bed of the temporary stream diversion channel to properly seal the substrate and minimize interstitial flow through the rock.

Ensure a smooth connection between the downstream end of the temporary diversion channel and the natural stream to limit the risk of causing pockets of erosion to form in the opposite bank.

Effects on fish and fish habitat after application of the mitigation measures

The proponent must demonstrate that every effort has been made to minimize the project's effects on fish and fish habitat. The effects of the project that remain, despite the application of mitigation measures, should be assessed based on the various works or activities.

Compensation of residual effects on fish habitat

Background

When a project requires authorization for harmful alteration, disruption or destruction (HADD) of fish habitat under subsection 35(2) of the Fisheries Act, the proponent must develop a compensation project to meet the no net loss of fish habitat principle of the Policy for the Management of Fish Habitat (1986).

A compensation project consists essentially of a development that is beneficial to fish and should target species of importance to fisheries to the greatest extent possible. Following the development work, the compensation project also involves the production of a report on the work and the implementation of a monitoring program aimed at assessing the achievement of objectives.

Although DFO can advise proponents throughout the process, it is the responsibility of the proponent to find, propose, carry out and monitor the effectiveness of a compensation project to offset the residual HADD of fish habitat for which the proponent is responsible. Once a satisfactory compensation project has been identified, it constitutes a condition of authorization issued under subsection 35(2) of the Fisheries Act.

In some instances, DFO may require a letter of credit from a bank covering the costs of the compensation and follow-up monitoring measures. In this case, the proponent will have to provide DFO with a breakdown of these costs.

DFO does not require the plans and specifications of the compensation project in order to issue the section 35(2) authorization. However, the proponent must first undertake to compensate fish habitat losses caused by the project through a detailed compensation project approved by DFO.

Information required

The proponent must therefore submit, as early as possible, a fish habitat development project that compensates for the HADD of fish habitat. The following information is typically required by DFO to assess the validity of a compensation project:

- Exact location (latitude and longitude, lot number, municipality, RCM, etc.) of each site to be developed and its ownership.
- The baseline conditions of the site targeted by the development using a description of the environmental characteristics (biological, hydrological, physical and chemical), an estimate of the quality of the aquatic environment targeted and a description of the problem to be corrected. Ideally, the description of the environment should be accompanied by photographs taken from the ground and dated.
- Description of the nature of the compensation work (action, structure, method, schedule).
- Fish species covered by the development.
- Fish habitat functions that will be generated (feeding, reproduction, nursery, refuge, growth, migration).
- The benefits for fish habitat (extent (area), effectiveness, interest) over the current situation.
- The repercussions for components of the environment other than fish habitat.