# FINAL GUIDELINES FOR THE PREPARATION OF THE ENVIRONMENTAL IMPACT STATEMENT FOR THE CACOUNA ENERGY PROJECT

*CANADIAN ENVIRONMENTAL ASSESSMENT AGENCY*

**OCTOBER 2005**

**TABLE OF CONTENTS**

## Foreword

TransCanada PipeLines Limited and Petro-Canada are jointly proposing to implement the Cacouna Energy Project (the "project"), which involves the construction of a liquefied natural gas (LNG) terminal at Cacouna on the south shore of the St. Lawrence estuary east of Rivière-du-Loup.

The Cacouna Energy project is subject to the *Canadian Environmental Assessment Ac*t (the Act) because it requires a lease with Transport Canada as well as authorizations under the *Navigable Waters Protection Act* and *Fisheries Act.* At the request of the federal ministers of Transport and Fisheries and Oceans, the federal Minister of the Environment referred the environmental assessment of the project to a review panel.

The project is also subject to the provincial environmental impact assessment and review process under the Quebec *Environment Quality Act.* Under the *Canada-Quebec Agreement on Environmental Assessment Cooperation* (the "Agreement", May 2004), a cooperative environmental assessment committee has been established. The committee's main objective is to coordinate the various stages of the federal and provincial processes. It is also responsible for reviewing the conformity of the environmental impact study with the requirements of the guidelines.

In May 2004, the Environmental Assessment Branch of the Quebec *Ministère du Développement durable, de l'Environnement et des Parcs* (Department of Sustainable Development, Environment and Parks (MDDEP)) issued guidelines for this project entitled *Directive pour le projet Cacouna – Implantation d'un terminal méthanier et des infrastructures connexes.* Pursuant to the *Agreement*, the present guidelines supplement the Québec guidelines, providing, where relevant, the additional information required to meet the requirements of the Act. They follow the same format in terms of table of contents, structure and numbering as the Quebec guidelines and must therefore be read in conjunction with the Quebec guidelines, which are reproduced in full in this document[1].

These draft guidelines, taken together with the Quebec guidelines, constitute the consolidated guidelines provided for under the Agreement. The proponent is invited to produce an environmental impact statement that meets the requirements of these consolidated guidelines.

These draft guidelines are available for consultation for a 30-day period, during which the public may submit written comments to the Canadian Environmental Assessment Agency. Once the comments received during the consultation period have been taken into consideration, the federal guidelines will be approved by the federal Minister for the Environment, and then forwarded to the proponent and made public.

[1] Please note that the French version of the Québec guidelines prevails.

## Project Scope

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The scope of the project as determined for the environmental assessment purposes comprises the various components of the project as described by the proponent in the document entitled *Projet Énergie Cacouna. Description du projet – Loi canadienne sur l'évaluation environnementale. Septembre 2004.* , as well as the activities and works described in these guidelines.

The scope of the project as determined for the environmental assessment purposes includes the construction, operation, maintenance and foreseeable modifications, and, where applicable, the cessation of operations, decommissioning and remediation of sites related to the liquefied natural gas (LNG) terminal as a whole and, more specifically, the following works and activities:

- transportation of the LNG by carriers within the boundaries of the St. Lawrence estuary until its arrival at the terminal;
- marine facilities consisting of a jetty extending approximately 350 meters into the St. Lawrence river, with unloading arms and mooring and breasting dolphins, designed to accommodate liquefied natural gas carriers with a capacity of up to 250,000 cubic metres of LNG, as well as all the related unloading facilities;
- cryogenic lines to move the liquefied natural gas from the jetty to the terminal;
- a terminal consisting of two storage tanks with an approximate capacity of 160 000 cubic metres each;
- a regasification facility consisting of pumps and vaporizers to warm and convert the LNG to the gaseous phase, as well as piping and related equipment, including a unit for nitrogen addition to natural gas, capable of processing approximately 500 million cubic feet of natural gas per day;
- all related works and activities, including all temporary facilities required for construction of the terminal, namely:
    - permanent and temporary access roads;
    - electrical power sources and temporary or permanent power supply lines required to supply the site;
    - water supply and wastewater treatment;
    - dredging and sediment disposal, if necessary;
    - construction worksites and storage areas;
    - handling, storage and use of explosives, petroleum products and hazardous materials;
    - buildings, including all the temporary facilities required for construction of the LNG terminal.

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|---|---|
| **INTRODUCTION** | |
| This section provides a general description of an environmental impact assessment statement and the related departmental and governmental requirements. It also proposes to the project proponent integration of sustainable development objectives, adoption of an environmental and sustainable development policy and public consultation at the beginning of the assessment and review procedure. | |
| **1. CHARACTERISTICS OF THE IMPACT STATEMENT** | |
| *The environmental impact statement is a planning tool...* The environmental impact statement is a key tool in planning land and resource development and use. It takes environmental concerns into account at each stage of the project, from design to operation, including its termination, if applicable, and helps the proponent design a project that is more compatible with the receiving environment without compromising its technical or economic feasibility. | In this document, the term "territory" refers not only to the project area, but also to surrounding areas that may be directly or indirectly affected by the project. In the context of a federal environmental assessment, the proponent must therefore consider as part of the territory the land and waters on and around the work site that are owned by or are under the jurisdiction of federal authorities. |
| *...that takes all environmental factors into account.* The environmental impact statement takes into account all components of the biophysical and human environments that could be affected by the project. It is used to analyze and interpret the relationships and interactions between the factors affecting ecosystems, resources and the quality of life of individuals and communities. | |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|---|
| *While focusing on significant aspects...* | The environmental impact statement identifies the environmental components on which the project will have a significant impact. The relative significance of an impact is used in determining the critical elements on which to base choices and decisions. | |
| *...it considers the interests and expectations of the parties involved...* | The environmental impact statement considers the views, reactions and main concerns of individuals, groups and communities. It discusses how the various parties were involved in the project planning process and takes the results of any consultations and negotiations into account. | |
| *....in order to help them make informed choices and decisions.* | Comparison and selection of the different options are an intrinsic part of the environmental assessment process. The environmental impact statement clearly identifies the objectives and the criteria justifying the option retained by the proponent.<br><br>The environmental assessment conducted by the Quebec Environment Department (*Ministère du Développement durable, de l'Environnement et des Parcs du Québec* (MDDEP)) and the report of the *Bureau d'audiences publiques sur l'environnement* (BAPE) also contribute to the government's decision-making process. | |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **2. DEPARTMENTAL AND GOVERNMENT REQUIREMENTS** | |
| The environmental impact statement is designed and prepared utilizing a scientific approach and must meet departmental and government requirements regarding project analysis, public consultation and the decision-making process. It provides an overall understanding of the project development process. More specifically, it:<br>❑ specifies the characteristics and justification of the project, taking into account the context in which it is implemented;<br>❑ provides as accurate a description as possible of the receiving environment and any changes to it during and after implementation of the project;<br>❑ demonstrates how the project will be integrated to the environment through a comparative analysis of the impacts of each project alternative and a description of the measures intended to minimize or eliminate adverse impacts and maximize positive impacts;<br>❑ proposes monitoring and follow-up programs to ensure compliance with government requirements and the proponent's commitments, and to monitor certain environmental components affected by the project. | Exchanges between the proponents and federal authorities are encouraged in order to ensure that the environmental impact statement properly responds to the information requested, the recommended methodology, and requirements under the various federal legislation. The proponents will find, in the references, several guides that provide information on the approaches proposed by certain federal government departments and agencies.<br>With respect to the project approval process, the proponents shall contact the federal authorities, namely Transport Canada, Environment Canada, and Fisheries and Oceans Canada, to ensure that they meet their respective regulatory requirements to obtain the necessary permits, authorizations and statements of conformity. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **3. INTEGRATION OF SUSTAINABLE DEVELOPMENT OBJECTIVES** | |
| Sustainable development is aimed at meeting the essential needs of present generations without compromising the ability of future generations to meet their own. The three objectives of sustainable development are the preservation of environmental integrity, improvement of social equity and improvement of economic efficiency. Thus designed to address the challenge of sustainable development must integrate and strike a balance between these three objectives in the planning and decision-making processes and must provide for public participation. The project, as well as any alternatives, must take into consideration the relationships and interactions between the ecosystem components and the needs of the communities. | See provincial guidelines. |
| **4. ENCOURAGEMENT TO ADOPT AN ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT POLICY** | |
| MDDEP relies on the accountability of project proponent to support sustainable development. To this end, it strongly encourages organizations to adopt their own environmental policies, to implement voluntary responsible environmental management programs including a code of ethics and concrete, measurable objectives, or to develop any other means to integrate environmental concerns into their day-to-day management. | See provincial guidelines. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| More specifically, depending on the type of proponent or project, an environmental and sustainable development policy can include the following:<br><br>❑ prevention as a means of minimizing environmental impacts and the risk of accidents;<br><br>❑ appointment of key personnel in positions of authority to implement the environmental policy;<br><br>❑ conservation and rational use of resources (reduction at source, efficient use, recycling, re-use, composting, etc.);<br><br>❑ product life-cycle analysis;<br><br>❑ regular environmental auditing (ISO 14 000, etc.);<br><br>❑ dissemination of a best practices guide;<br><br>❑ ongoing research and development to improve activities;<br><br>❑ employee information and training in environmental protection;<br><br>❑ inclusion of environmental requirements in calls for tenders sent to suppliers of goods and services;<br><br>❑ human and financial support for local projects to compensate unavoidable residual impacts (compensation for the biotic environment or for citizens);<br><br>❑ information to neighboring communities and creation of an environmental monitoring committee to address particular environmental issues;<br><br>❑ feedback to senior management regarding policy implementation;<br><br>❑ inclusion of a section on the environmental measures taken by the company in its annual report . | |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **5. ENCOURAGING PUBLIC CONSULTATION AT THE BEGINNING OF THE PROCESS** | |
| MDDEP encourages the project proponent to to take advantage of the ability of residents and communities to articulate their views and concerns regarding projects that affect them. To this end, the MDDEP supports the proponent's public consultation initiatives.<br><br>In more concrete terms, MDDEP strongly encourages the proponent to adopt communication plans and to consult all stakeholders (individuals, groups and communities as well as government departments and public and quasi-public agencies) when or even before, a written notice of the project is filed with the Minister. It is useful to initiate the consultation process as early as possible in the project planning process so that stakeholders' comments can have a real influence on issues, choices and decisions. The earlier the consultations are in the decision-making process, the greater the impact residents will have on the project as a whole and the greater the chance the project will be socially acceptable. | The proponents are encouraged to take local knowledge into account, including local aboriginal communities, in preparing the environmental impact statement. For the purposes of this environmental assessment, local knowledge can be defined as the knowledge, understanding and values held by local populations that affect the determination of the impacts of the project and the proposed mitigation measures.<br><br>The proponents shall describe any consultation and information sessions held in connection with the project at the local, regional or national levels. They shall specify the approaches used, the meeting locations, the persons and organizations met, the concerns raised, and the extent to which concerns have been addressed in the project design and the environmental impact statement. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **PART I – CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT** | |
| The content of the impact statement can be divided into seven main sections: project overview, description of the receiving environment, description of the project and project alternatives, impact assessment, accident risk management and environmental monitoring and follow-up programs.<br><br>The scope of the environmental impact statement depends on the complexity of of the project and the significance of the anticipated impacts. | |
| **1. PROJECT OVERVIEW** | |
| This section of the environmental impact statement is intended to provide a general background to the project. It includes a brief presentation of the proponent and the proposal, as well as a description of the background and purpose of the project. It also presents any alternative considered and the analysis leading to the selection of the best option and makes reference to related facilities and projects. | See provincial guidelines. |
| **1.1 Presentation of the Proponent** | |
| The impact statement introduces the project proponent and, where applicable, its environmental consultant. It includes general information on proponent's background in connection with the project and, as appropriate, the fundamental principles of its environmental and sustainable development policy. | See provincial guidelines. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **1.2 Project Background and Justification** | |
| The environmental impact statement provides the geographic coordinates of the project and its key technical characteristics, as they appear in the initial planning stage.<br><br>The statement also discusses the project background and justification, describing the current situation in the economic sector in question. It sets out the project objectives, explains the problems or needs that the project is designed to address and identifies the constraints or requirements related to its implementation. No economic or energy-related justification of the project is required if the proponent can demonstrate that it is consistent with the requirements of an agency regulating natural gas transportation or distribution (National Energy Board or Régie de l'Énergie). The proponent must at the very least explain any representations it has made before such an agency and provide a brief summary of the results in the impact statement. The proponent must also indicate the market targeted by the project.<br><br>If the proponent has held public consultations, this section must describe the outcome of the consultations and the consultation process used.<br><br>The description of the context and justification of the project should illustrate the environmental, social, economic and technical issues associated with the project at the local, regional, national and international levels, where applicable. Table 1 lists the main aspects to be considered in the presentation of the project. | See provincial guidelines. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **TABLE 1 : USEFUL INFORMATION TO CONSIDER IN PROJECT BACKGROUND AND JUSTIFICATION**<br><br>❑ project objectives<br>❑ problems, needs and market opportunities in the sector of activity of the project<br>❑ interests and main concerns of the various stakeholders, taking into account the particular characteristics of Aboriginal communities where applicable<br>❑ principal ecological constraints of the environment<br>❑ technical and economic requirements regarding the implementation and operation of the project, particularly in terms of magnitude and project schedule<br>❑ government policies in the sector of activity in relation to land use planning, resource management, energy, and public safety<br>❑ negotiations and agreements with Aboriginal communities, where applicable | |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **1.3 Alternatives to the Project** | |
| The impact statement summarizes all alternatives, including abandoning or postponing the project, and any solutions that may have been proposed during preliminary consultations conducted by the proponent.<br><br>The impact statement justifies the solution chosed in light of the objectives sought, the environmental, social, economic and technical issues involved, and. current and proposed land use. It also presents the arguments and criteria guiding the final choice. | See provincial guidelines. |
| **1.4 Related Projects and Facilities** | |
| The impact statement mentions any existing facilities or projects in the planning or implementation that might influence the design or impacts or the proposed project. This information provided must describe potential interactions with the proposed project. In this case, the cogeneration plant and gas pipeline, for which several corridors are being studied are considered related projects. | See provincial guidelines. |
| **2. DESCRIPTION OF RECEIVING ENVIRONMENT** | |
| This section of the environmental impact statement defines the study area and describes the components of the biophysical and human environment relevant to the project. | See provincial guidelines. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **2.1 Delineation of Study Area** | |
| The environmental impact statement delineates a study area and justifies its boundaries. If necessary, the area can be made up of different sections delineated according to the impacts studied. The study area must be large enough to include all of proposed activities, as well as any activities required to complete the project (including the sector affected by the dispersion of sediments in water due to shoreline excavation or dredging, or by borrow pits required for backfilling) and to cover direct and indirect impacts on the biophysical and human environment. | The proponent shall define the project's area of influence. Accordingly, the project time frame must cover all project phases, i.e. construction, operation, maintenance and foreseeable modifications, dismantling of temporary structures and, where relevant, the shut down and restauration of affected sites. |
| **2.2 Description of Relevant Aspects** | |
| The environmental impact statement describes the state of the environment prior to project implementation. Through the use of qualitative and quantitative surveys, it provides as accurate a description as possible of the components of the biophysical and human environments that may be affected by the project. If the data available through governmental, municipal, Aboriginal or other sources are insufficient or non-representative, the proponent must conduct its own scientific surveys, in accordance with accepted practices, to complete this description.<br><br>Whenever possible, the description must specify the relationships and interactions among the various aspects of the environment in order to identify high potential ecosystems or ecosystems of particular interest. It should indicate the presence and abundance of wildlife species as a function of their life cycle, migration pattern and feeding habits. Surveys should reflect the social, cultural and economic values associated with the components described. | In describing the main components of the environment, proponents shall use, without being limited to, the following:<br><br>Biophysical environment<br>1. description of substrate (clay, silt, sand, gravel, cobble, rock, etc.) in the part of the St. Lawrence estuary that will be affected by the marine terminal;<br>2. water levels attained at high tide (HW), higher high water large tide (HHWLT), low tide (LW), and at lower low water large tide (LLWLT);<br>3. physical and chemical characterization of contaminants found in the deposits that will be resuspended or that are at risk of being resuspended;<br>4. mapped delineation of water levels at different recurrences;<br>5. seismology;<br>6. ice conditions, including shore ice, ice cover, ice movement and bed scour ;<br>7. climate change trends and how they affect the study area;<br>8. underwater noise levels in the vicinity of the marine terminal; |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| The environmental impact statement provides all information that facilitated the understanding or interpretation of the data (methodology, inventory dates, location of sampling sites, etc.). When, during the course of the project, sediment must be dredged, excavated, deposited in open water, and used for filling and backfilling, the proponent shall characterize said sediments along with the sediment and soil in the receiving environment in which they are deposited. The proponent shall have its sediment or soil characterization program, including the sampling plan (location and depth of samples), the choice of parameters, and the sampling and analysis methods, approved by MDDEP prior to the sampling.<br><br>Table 2 is a list of the principal components that may be described in the environmental impact statement. It focuses on those components that are relevant to the project issues and impacts, and contains only the data required to assess the impacts. The selection of the components to be studied and the level of detail of their description must correspond to their social and environmental significance or value. Table 4 summarizes the criteria used to assess the significance of a component. The impact statement must specify the reasons and criteria used to select the components to be considered. | Biological Environment<br><br>9. description and location of all wetlands in the study area, including the type, functions and surface area of each wetland;<br><br>10. all marine mammal individuals or populations likely to occur in the St. Lawrence estuary, with particular emphasis on resident species; the proponents shall, without being limited to and depending on the circumstances :<br><br>▪ provide the list of marine mammal species likely to use the project area and indicate the aquatic at-risk species listed or under review by the Committee on the Status of Endangered Wildlife in Canada, along with their abundance;;<br><br>▪ locate and describe the use and concentration areas that may be considered essential (haulouts, feeding areas, calving area, seasonal movements, migration, socialization, etc.) ;<br><br>▪ provide a summary of observations made of individual or groups of marine mammals on land and sea in the project area, based on currently available information, with emphasis on the last 10 years; |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **TABLE 2 - MAIN ENVIRONMENTAL CONSIDERATIONS**<br><br>❑ the cadastral location (lot, range, township and municipality affected)<br>❑ land ownership status (public water domain, municipal land, provincial or federal parks, private properties, Indian reserves, etc.), including property rights and easements that have been granted, describing the procedure for acquiring them or reporting the status of agreements to be reached where applicable; in the case of public land, the location must be shown on the original survey and property rights must be confirmed by the land registry<br>❑ lakes and streams, their quality and their use<br>❑ hydrogeological regime (groundwater classification, physicochemical quality of groundwater, identification of aquifers, vulnerability of groundwater to pollution, direction of groundwater flow<br>❑ easements and rights of way<br>❑ high, low and mean water levels<br>❑ presence of tides and their characteristics, including mixing of salt and fresh water in marine estuaries<br>❑ ice regime, including frazil, freeze-up, ice jams and break-up<br>❑ bathymetry and hydrodynamic conditions (surface and bottom currents) | 11. all freshwater, saltwater and diadromous fish species in the study area, including the characteristics of their habitats (e.g. spawning, nursery, growing, feeding and wintering areas, migratory routes) likely to be affected by the project; the proponents shall, without being limited to and depending on the circumstances:<br><br>▪ provide a list of fish species within the meaning of the Fisheries Act which are likely to use the environment affected by the project, indicating at-risk aquatic species listed or under review by the Committee on the Status of Endangered Wildlife in Canada;<br><br>▪ specify the site and surface areas of potential or confirmed fish habitat and describe, on the basis of physical (substrate, slope, current, bathymetry, etc.) and biological attributes (vegetation, benthos), the use of such areas by fish (spawning, nursery, growing, overwintering, feeding, migration, pre-breeding reproduction, seasonal movement, larval drift zone);<br><br>▪ locate and provide an accurate description of habitats favourable to federally listed at-risk species that occur in the project area;<br><br>▪ describe the migration and local movement conditions and needs (upstream/downstream migration) of the various fish species present in the environment (migratory or non-migratory) for areas where a component of the project might constitute an obstacle to the free passage of fish; |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| ❑ sediment regime (erosion zones, sediment transport, accumulation zones), particularly in dredging and filling areas, and potential open water sediment-disposal sites<br>❑ littoral and riparian areas, wetlands, and existing or future flood plains<br>❑ unconsolidated deposits, lithology, slopes, excavation areas, areas susceptible to erosion and ground movements<br>❑ in cases of suspected chemical contamination:<br>– physicochemical characterization of dredged sediments and their toxicity if applicable, through bioassays, for example<br>– physicochemical characterization of soils in the excavation area, both on dry land or riparian, with a description of past uses, and of surface water and groundwater<br>❑ topography, drainage, geology and hydrogeology in the area of potential on-land sediments or soils disposal sites (with the exception of sites already approved by MDDEP)<br>❑ local weather conditions (temperature, precipitation, wind)<br>❑ ambient air (current concentration of contaminants, detectable odours)<br>❑ noise environment (at the boundaries of the site and at sensitive points) | ▪ describe and map aquatic grass beds (floating, submerged) and aquatic and riparian vegetation (tree, shrub and herbaceous), including the floodplain, in the sectors affected by the project and indicate its functions in respect of the fish habitat (e.g. spawning grounds, shelter, cover, thermal protection, etc.);<br>12. bird species present in the study area or are likely to use it, including the characteristics of their habitats (e.g. nesting, feeding, migration) that could be affected by the project. In this respect, the proponents shall, without being limited to and depending on the circumstances :<br>▪ provide a list of bird species that are likely to use the environment targeted by the project and indicate species at risk appearing on federal and provincial lists;<br>▪ specify the location and surface area of bird habitats and describe, on a quantitative basis (e.g. number of nesting couples/ha), how they are used (nesting, feeding, resting, migration);<br>▪ accurately locate and describe habitats that are favourable to listed at-risk species that appear on the federal list and have been or are likely to occur in the study area; |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **TABLE 2 - MAIN ENVIRONMENTAL CONSIDERATIONS (CONT'D)**<br><br>❑ aquatic, riparian and upland vegetation, with particular attention to species designated or likely to be designated threatened or vulnerable, as well as species of economic or cultural interest<br>❑ wildlife species and their habitat (in terms of abundance, distribution and diversity), with particular attention to species designated or likely to be designated threatened or vulnerable, or species of social, economic or cultural interest<br>❑ if the project is to be implemented on public lands, existing and planned uses of the area, with reference to the planning tools associated with the vocation of public lands and recreational development<br>❑ existing and planned land uses, with reference to municipal and regional land use and development policies, diagrams and by-laws:<br>– limits of urban development, settlements and housing, urban areas, planned residential development, subdivisions<br>– commercial, industrial and other zones and development projects<br>– agricultural areas, farming operations (buildings, crops, structures, etc.), agricultural drainage to control water table level, cadastral plan<br>– forested areas, woodlot operations and maple production areas | ▪ provide a list of bird species present in the study area that are of scientific, social, economic or cultural interest, with particular focus on species valued by Aboriginal communities;<br><br>13. terrestrial and aquatic wildlife and plant species of special interest (in terms of abundance, distribution and diversity) and their significant habitats, with particular focus on species that are rare, vulnerable, threatened, likely to be designated as threatened or vulnerable, and endangered. More specifically, the proponents shall describe the use of the environment and habitats by the endangered species designated in the Schedule of the federal *Species at Risk Act* (SARA). The proponents shall provide a list of federally and provincially listed at-risk species;<br><br>14. mapping of all exceptional wildlife habitats requiring special protection, including the proposed boundaries for the St. Lawrence estuary marine protected area;<br><br>Human Environment<br><br>15. commercial and recreational navigation, including commercial fishing, as well as harbour operations at the Gros-Cacouna port facilities under the jurisdiction of Transport Canada (e.g. transport and mooring activities in the area, support services for maritime traffic in the terminal sector and the approaches, routes commonly used by vessels, transshipment of merchandise at Transport Canada's commercial dock, handling of merchandise on Transport Canada's inside and outside storage areas, ship manoeuvring within breakwaters);<br><br>16. commercial and recreational fishing (e.g. location of regional fisheries and seasonal variations in fishing);<br><br>17. nature activities, including bird watching, hiking and biking; |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| - protected and conservation areas or areas of recreational, aesthetic, historical, educational or spiritual value<br>- public utilities and service infrastructure (roads, railways, power lines, aqueducts, sewers, etc.), and community and institutional infrastructure (hospitals, schools, etc.)<br>- water supply systems, including private wells, municipal wells and other surface and groundwater collection systems, as well as their protective buffer zones<br>❑ boating in the study area (type, density, traffic, etc.)<br>❑ archaeological and cultural heritage: known archaeological sites, areas with archaeological potential, historic and built environments<br>❑ scenery, including a visual study if the scenic quality is exceptional and reflecting the value associated with visitation to the area (observability of the environment and appeal of the landscape)<br>❑ social, economic, cultural and socio-sanitary profiles of the population concerned (demographic characteristics, composition of the social fabric, traditional way of life, local culture, health factors, etc.)<br>❑ the local and regional economy (agriculture, forestry, mining, industry, commerce, services, tourism, etc.)<br>❑ hunting, fishing, trapping (for commercial purposes or sport, or as a traditional activity for nutritional, ritual or social purposes)<br>❑ concerns, opinions and reactions of local communities, notably those directly affected | 18. current use of land, wildlife and plant resources, both terrestrial and aquatic, including their use for traditional purposes by Aboriginal communities;<br>19. human health, including those factors such as noise environment, air quality, traditional food consumption, as well as social and cultural aspects. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **3. DESCRIPTION OF PROJECT AND PROJECT ALTERNATIVES** | |
| This section of the environmental impact statement describes possible project alternatives and identifies, using discriminating criteria, the most relevant alternative or alternatives. The consideration of a number of options allows the proponent to review and improve certain aspects of the project. The statement then describes the alternative or alternatives selected for a detailed impact analysis. | See provincial guidelines. |
| **3.1 Determination of feasible alternatives** | |
| The statement identifies all possible alternatives likely to meet project objectives, including the most favourable alternative in tems of environmental protection. These alternatives can deal with site selection, the main technologies available and the location of tanks and plants. The varous project alternatives are identified on the basis of the information gathered during environmental surveys and the proposals received during preliminary public consultations, where applicable. | The proponents shall present alternatives for the following elements :<br>▪ shipping routes used by the LNG tankers (options of routes used by the LNG tankers to reach the jetty and to moor) (refer to Section 3.2 of TERMPOL);<br>▪ location of the jetty, the LNG terminal (land-based) and its components, layout of the LNG terminal (location of two storage tanks, plans for a third, etc.);<br>▪ jetty design (refer to Section 3.10 of TERMPOL);<br>▪ location of temporary and permanent road and power line corridors, location of worksites (water supply and sewer systems);<br>▪ location of storage areas for hazardous materials;<br>▪ dredging and disposal methods for dredged material, where applicable;<br>▪ blasting operations on land, in water or near water, where applicable. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **3.2 Selection of Appropriate Project Alternatives** | |
| The proponent selects the most appropriate alternatives, focusing on the distinctive environmental, social, technical and economic aspects that are likely to influence the selection of the preferred options. The impact statement describes the advantages and disadvantages of the main technologies considered by the proponent, taking account of the technology that appears to be the most favourable in terms of the most environmental protection. This exercise may result in the selection of a single alternative. The environmental impact statement explains how the selected alternative differs from the other alternatives considered and why the latter were not selected for a detailed impact analysis.<br><br>Selection of the most appropriate alternatives or, if applicable, the best alternative, is based on a clearly defined method that comprises, at the very least, the following criteria:<br><br>❑ the ability to meet demand (objectives, problems, needs, opportunities);<br>❑ technical and legal feasibility (accessibility, land tenure, zoning, availability of services, implementation schedule, availability of labour, etc.);<br>❑ implementation at a cost that does not compromise the project's economic viability;<br>❑ the ability to minimize adverse impacts on the biophysical and human environments, and to maximize the positive effects.<br><br>The impact statement describes the criteria used to determine potential project sites. This description must be sufficiently detailed to provide a clear understanding of the basic aspects in order to allow a comparison of their respective benefits from the environmental, social, technical, and economic viewpoints. It includes the following : | Selection of the alternative shall take into consideration federal legislative and regulatory constraints, including the *Migratory Birds Regulations* and the *Species at Risk Act*.<br><br>In addition, the project shall comply with the Federal Policy on Wetland Conservation, as it is to be carried out on federal land. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| ❑ physical and hydrogeological constraints;<br>❑ possible technical and financial constraints;<br>❑ extent of certain impacts associated with the project;<br>❑ social and economic context.<br><br>In selecting the alternatives, the proponent must comply with all applicable regulations and adhere to the following environmental principles:<br>❑ dredging or excavation in aquatic environments, whether for construction or maintenance, must be minimized in order to reduce environmental impacts;<br>❑ filling in aquatic environments will be approved only in cases of absolute necessity;<br>❑ all project activities must take account of the objective of no net loss of habitats in the biophysical environment;<br>❑ blasting in aquatic environments must be kept to a strict minimum;<br>❑ contaminated sediments must be managed in accordance with the Interim Criteria for Quality Assessment of St. Lawrence River Sediment;<br>❑ the management of contaminated soils and sediments on land must comply with the Politique de réhabilitation des terrains contaminés (Contaminated Sites Rehabilitation Policy);<br>❑ reuse of dredged sediments must be considered, with preference given to the low-impact options of those deemed feasible, taking account of financial constraints;<br>❑ the project must observe navigation safety standards and regulations during the construction and operational phases. | |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|

## 3.3 Description of the Alternative(s) Selected

The impact statement describes all known and anticipated characteristic of the chosen alternative or alternatives selected for a detailed impact analysis. The description covers planned activities, facilities, installations, developments and works, at all phases of the project, as well as the location of any temporary, permanent and ancillary installations and infrastructure. The statement must list all technical characteristics of the project, of the transport, receiving and storage of inputs, of industrial processes, waste management, and of the storage, transport and disposal of waste products and other refuse. Any activities likely to entail the emission of contaminant into the environment (including noise, odours and dust) shall be indicated, described and localized, along with the means and mechanisms provided to mitigate the problems. The environmental statement must also include a cost estimate for each project alternative and a schedule of the various project phases.

Table 3 list the main project characteristics that can be described in this section. The list is not necessarily exhaustive, and the proponent must include all other relevant characteristics. The choice of characteristics will depend largely on the size and nature of the project and the context in which each alternative would be integrated into the receiving environment.

**TABLE 3 : PRINCIPAL PROJECT CHARACTERISTICS**

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| – General plan of the project components at an appropriate scale, including the location of tanks and other planned facilities and structures, indicating, where appropriate, how they will integrate with existing structures |

The proponents shall describe, without being limited to, the following components:

- type, capacity and current and future features of the tankers that will transport the LNG, including air and water noise levels (frequencies and decibels) during the various phases of operation, along with LNG tanker speed in the estuary and when approaching the marine facilities;
- frequency of deliveries, and the main navigational routes that will be used, including seasonal variations due to climate or other causes, and the mooring plan;
- marine facilities, including the jetty, piers, boat slip and mooring areas, refuelling station, mooring dolphin, tugboat moorage areas, unloading arms, supervisory control systems for tanker movements and unloading, and all other relevant facilities, on the jetty and on land, and the air and water noise levels during the various stages of operation of the facilities;
- dimensions, operating mechanisms, controls and couplings for transferring LNG from the tankers;
- construction techniques or criteria used to determine the techniques proposed for all of the work carried out in the St. Lawrence River;
- dredging work that will be required, with special attention to the distinction between dredging during construction and maintenance dredging, indicating the location, surface area, volume and dredging and disposal methods, where applicable;
- backfilling in water, indicating the location, surface area and volume;
- cryogenic equipment (pumps, pipes and installations for pressure control and metering);

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **For the construction phase**<br>❑ Development and construction activities and planned operations, including :<br>– demolition and removal of concrete, scrap metal and other wastes, including the safe management of contaminated demolition waste<br>– moving of buildings and other structures or infrastructure<br>– forest clearing<br>– water crossings<br>– blasting in terrestrial or aquatic environments<br>– dredging in aquatic environments and disposal of dredged material, including the dispersion plume created by the re-suspension of sediments at dredging sites and, as applicable, open-water disposal<br>– runoff and drainage water (collecting, control, diversion, containment)<br>– filling activity in water<br>– fill and backfill material (volume, source, transport, storage and disposal)<br>– materials used (characteristics, source, transport, etc.)<br>– atmospheric emissions (point and non-point source)<br>– solid wastes (type, volume, disposal sites and methods)<br>❑ permanent facilities associated with port activities per se :<br>– dock lines<br>– boat launching and docking areas<br>– handling equipment<br>– receiving, handling and storage areas<br>❑ tanks<br>– temporary marine structures, as well as equipment used to perform the work<br>❑ Facilities and related infrastructures: pipeline (various corridors considered), cogeneration plant, etc. | ▪ the LNG terminal, including a description of the following elements :<br>o storage tanks;<br>o equipment and tubing (technical design) ;<br>o LNG plant and storage capacity;<br>o location, design, and control mechanisms of the LNG shutoff valves on the storage tanks as well as pumping, compression and vaporization facilities;<br>o process flow chart and instrumentation diagram;<br>o technical characteristics of the feedstock and product;<br>o secondary containment systems;<br>o maintenance, control and administration buildings;<br>o metering station together with all related facilities, including gas fractioning installations;<br>o gas vapour treatment systems;<br>o combustible gas system;<br>▪ technical data on all pressure vessels and boilers;<br>▪ ventilation equipment for all of the project areas;<br>▪ LNG spill confinement measures in all project areas;<br>▪ all related works and activities including all temporary installations required for the construction of the above-mentioned facilities, in particular :<br>o permanent and temporary access roads;<br>o telecommunications networks; |

**TABLE 3 : PRINCIPAL PROJECT CARACTERISTICS (CONT'D)**

- industrial installations
- garages and warehouses
- hangars for machinery, fuel and waste oil
- offices and parking lots
- water intakes and sewers
- boat and cradle storage areas

**For the operations phase**

- transshipment, bulk and containers
- fueling stations
- processes and equipment, as well as diagrams and mass balances for each stage of the processes
- liquid, solid and gaseous waste
- wastewater treatment
- waste disposal areas
- maintenance dredging and sediment disposal
- maintenance of buildings, facilities and installations
- undertaking to provide decommissioning plans for installations a few years before activities are wound up

**Other information**

- schedule for each phase of the project
- duration of work (general dates and sequences)
- required manpower and daily work schedules for each phase of the project
- life cycle of the project and future development phases
- estimated costs of project and project options

- all temporary and permanent power supply lines;
- required railway facilities, where applicable;
- construction worksites, garages and storage areas;
- handling and storage of petroleum products and hazardous materials;
- handling, storage and use of explosives, where applicable, indicating the location and blasting plan (number of blasts required, type of explosives, blasting period, blasting number and frequency, etc.). Include air and water noise levels resulting from the use of explosives;
- drinking and process water supply;
- characteristics of the lighting systems that will be implemented and increase in light levels, particularly on ground, above and under water;

- Other information
  - proponents should refer to the TERMPOL guide, including section 3.10;
  - scheduling changes that could affect the project;
  - detailed schedule of activities that could affect aquatic fauna, wildlife, wildlife habitats, protected areas and their uses;
  - planned changes to the project;
  - timing for the decommissioning and wind-up of the various project components.

The proponents shall explain how their project design incorporates the objectives targeted by the proposed St. Lawrence Estuary Marine Protected Area.

The proponents shall also explain how the infrastructure and operations will be adapted to take account of seasonal climate variations and the presence of ice.

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **4. IMPACT ASSESSMENT FOR THE OPTIONS(S) SELECTED** | |
| This section of the impact statement identifies and assesses the impacts of the selected alternative or alternatives at every stage of the process, and proposes measures for mitigating adverse effects or compensating for inevitable residual impacts. If more than one option is considered, a comparative assessment is conducted to determine the optimal option. | In addition to the impact determination and assessment criteria presented in Table 4 of the Quebec guidelines, the proponents shall consider the reversible or irreversible nature of the impacts. |
| **4.1 Determination and Assessment of Impacts** | |
| The proponent identifies the impacts of the selected alternative or alternatives during the preparation, construction and operation stages, and assesses the significance of the impacts using appropriate methods and criteria. Positive, negative, direct and indirect impacts, as well as the cumulative, synergistic and irreversible effects, must be considered.<br><br>Whereas project impacts are identified on the basis of anticipated occurrences, their assessment involves a value judgment. The assessment can be used not only to determine the thresholds or levels of acceptability, but also to establish impact mitigation criteria or monitoring and follow-up requirements.<br><br>The significance of an impact depends primarily on the affected component, namely its intrinsic value to the ecosystem (uniqueness, ecological significance, rarity) and on its social, cultural, economic and aesthetic value to the public. Thus, the more valuable an ecosystem component is to the community, the more significant the impact on this component is likely to be. The concerns of the local population also influence the assessment of impacts, especially when certain elements of the project pose a risk to public health or safety or a threat to historical and archaeological sites. | The assessment of the project's environmental impacts shall include, without being limited to, the following:<br><br>1. changes in the riverbed and shoreline of the St. Lawrence River in the study area;<br>2. sedimentology of the site used for the disposal of dredged sediment, in the event of a spill into the aquatic environment (forecasted stability of the disposal site in the short, medium and long terms, based on the grain size and cohesion of the sediment). If the site is dispersive, the proponents shall specify where the sediments will be transported after being deposited, in the short, medium and long terms;<br>3. areas that have been temporarily or permanently encroached upon, drained or altered as a result of the project, with a description of these environments with respect to the various types of fish habitats (potential or confirmed);<br>4. physical and chemical changes in the environment taking into account the effects of these changes on fish species and their habitats (turbidity, contaminants, exotic species, etc.), with particular focus on the possible effect of increased turbidity on herring, and on the different stages of the rainbow smelt life-cycle; |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| The significance of an impact also depends on the degree of change undergone by the environmental components affected. Thus, the greater the scope, frequency, duration or intensity of the impact, the more significant it will be. When relevant, the impact must be identified at the scale of the study area, region or province (e.g., biodiversity loss).<br><br>The environmental impact statement describes the methodology used, as well as any associated uncertainties or biases. The methods and techniques used must be objective, concrete and reproducible. The reader must be able to easily follow the proponent's reasoning in identifying and evaluating the impacts. The environmental impact statement presents a mechanism for assessing the project activities and presence of structures against the components of the receiving environment. It may take the form of matrices, checklists or impact sheets.<br><br>The environmental impact statement clearly defines the criteria and terms used to determine the anticipated impacts and to classify them according to their significance. Criteria such as those presented in Table 4 may be helpful in identifying and assessing the impacts.<br><br>**TABLE 4 : IMPACT IDENTIFICATION AND ASSESSMENT CRITERIA**<br><br>❑ intensity or scope of the impact (degree of environmental disturbance, which depends on the sensitivity or vulnerability of the various ecosystem components)<br>❑ extent of the impact (spatial dimensions such as length or area)<br>❑ duration of the impact (length of time, irreversible nature)<br>❑ frequency of the impact (intermittent nature)<br>❑ probability of the impact occurring<br>❑ ripple effect (link between the affected component and other components)<br>❑ sensitivity or vulnerability of the component<br>❑ uniqueness or rarity of the component | 5. changes in hydrological and hydrometric conditions and their impact on fish habitat and the fish species' lifecycle activities (e.g. reproduction, rearing, movements, etc.), with particular focus on rainbow smelt, which occurs in the study area;<br>6. geomorphological changes and their impact on hydrodynamic conditions and fish habitats (e.g. modification of substrates, dynamic imbalance, silting of spawning beds, etc.);<br>7. changes in migration conditions or local movements (upstream and downstream migration, and lateral movements) following the construction and operation of the works;<br>8. changes in species occurrence and of ichthyological functions (spawning, nursery and feeding grounds, migration corridor, etc.) at dredging and disposal sites, during and after dredging work;<br>9. where applicable, the effects related to the use of explosives and demonstration of compliance with *Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters* (Wright and Hopky 1998) when using explosives. If this is not the case, a request for authorization under Section 32 of the *Fisheries Act* shall be submitted to Fisheries and Oceans Canada;<br>10. the project's contribution to atmospheric emissions, and particularly greenhouse gas emissions;<br>11. increase in light levels on ground, and above and under water;<br>12. potential effects on soil quality;<br>13. the impact of project and terminal operations on marine mammal individuals or populations (taking account of the objectives of the proposed St. Lawrence Estuary Marine Protected Area), evaluating the following :<br>• risk of collision with tankers;<br>• disruption of activities (feeding, calving, movement, migration, etc.) and alteration of habitat;<br>• effect of noise on the behaviour and habits of marine mammals, which are particularly sensitive to low frequencies (including the future commissioning of larger tankers);<br>• effect of increased turbidity on the feeding activities of beluga whales; |

- sustainability of the component and ecosystems
- value attributed to the component by the population
- formal recognition of the component by an act, policy, regulation or official decision (park, ecological reserve, agricultural zone, threatened or vulnerable species, wildlife or plant habitat, known and classified archeological site, historical sites and districts, etc.)
- risks to the health, safety or well-being of the local population

Table 5 summarizes the impacts and aspects that the proponent must cover in the impact statement.

**TABLE 5 : MAIN IMPACTS OF THE PROJECT**

- the extent of dredging and filling activity
- changes in hydrodynamic conditions (current velocity and distribution), ice conditions and thermal regime
- shoreline and bank erosion
- effects of sediment transport
- effects on contamination of the environment
- temporary drying up of streams during various project phases
- effects on surface and ground water quality (particularly with respect to drinking water)
- effects on vegetation, wildlife and wildlife habitats, particularly with respect to endangered or vulnerable species or species likely to be so designated, and on species of heritage, sporting or commercial importance
- biodiversity loss
- impacts on existing and anticipated use of land, resources, shorelines and bodies of water, notably on use of land for industrial, commercial, agricultural or forestry purposes, urbanization perimeters, recreational activities, tourism, fishing and boating

- effect of oil and chemical spills;

14. modifications in the use of the environment and habitats by designated at-risk species;
15. losses of fish and marine mammal habitat (disruption, deterioration and destruction) along with related functions;
16. wetland losses, wetland fragmentation and losses of wetland functions;
17. losses of bird habitat (quality, area, function), with particula focus on species at risk and species of particular social, economic and cultural interest;
18. risk of causing significant effects on renewable resources and compromising the capacity of these resources to meet the needs of present and future generations;
19. effects on the current use of terrestrial and aquatic resources by Aboriginal communities for traditional purposes;
20. effects of a delayed LNG tanker on maritime traffic (commercial, fishing and recreational) and port activities at the Transport Canada harbour;
21. potential effects of intensified shipping and port activities on regional shipping networks, recreational boating and fishing;
22. effects on underwater noise level at different operating sites (including for the tanker during transit, during water pumping for the ballasts, etc.);
23. effects on noise level at site boundaries and sensitive sites (e.g. residential sectors, schools, hospitals);
24. effects on port activities at the Gros-Cacouna port facilities under the jurisdiction of Transport Canada, taking into account activities currently scheduled as part of the project (tanker arrival/ departure, terminal operations, etc.), as well as anticipated modifications (refer to the TERMPOL guide, including Section 3.2);
25. effects on commercial and recreational navigation, including commercial fishing, during construction and operation (manoeuvring area, assistance required from tugboats, additional navigational aids, etc.) (refer to the TERMPOL guide, including Section 3.2);
26. effects of the projects and its components and activities (including blasting and the presence of structures) on migratory birds, especially on their life cycle, feeding and resting areas and activities, nesting sites and nesting, breeding success and productivity of the

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|

**TABLE 5 : MAIN IMPACTS OF THE PROJECT (CONT'D)**

- impact on the area's natural and cultural heritage, including effects on archeologically significant property, and on heritage buildings, the surface area of properties, the dissolution of existing subdivisions, the break up of property into smaller parcells and the expropriation of building, where applicable
- impacts on the quality of landscape and points of visual interest
- impacts on the public utilities and community infrastructure, such as roads, railways, existing or anticipated power lines, water intakes, public security services, parks and other natural sites of special interest, etc.
- impacts on the operation and management of existing maritime infrastructure
- social impacts of the project as a whole, i.e. its effects on the population itself and its composition, quality of life and community relations, such as lifestyle changes or relocation of individuals and activities, etc.
- impacts on the well-being and quality of life of the communities involved, such as nuisance effects of noise, odours or dust, or the inconvenience of traffic slowdowns and reduced river access, etc.
- potential impacts on public health (based on public health criteria and on baseline noise levels in the receiving environment), more specifically the risks associated with impacts on drinking water quality, water bodies used for recreational purposes and fishery resources, and health and safety risks associated with handling hazardous waste and the dust generated by product handling
- the local and regional economic spinoffs associated with the project (construction and operation) and other economic impacts for residents (e.g. possibility of employment, development of ancillary services, land and property values), businesses (e.g. products involved, potential savings, concurrent use of infrastructure), and local government (tax base and revenues)

environment, effects on uses and users of the resource;

27. effects of the projects and its components and activities (including blasting and the presence of structures) on eat-risk species on federal land that may be directly or indirectly affected by the project, with particular focus on species targeted by the *Species at Risk Act*, specifically aspects related to their life cycle, survival and recovery;
28. effects of the projects and project activities on federal lands set aside for protection or conservation, particularly on the value, management, use and users of the land.

**Effects of the environment on the project**

As part of their analysis, the proponents shall take into account the effects of the environment on the project, namely exceptional meteorological conditions (e.g. strong winds, tides, fog and lightning), stability of the riverbed, sediment dynamics, shore zone physical processes, and ice conditions. The proponents shall provide an analysis of the risks associated with seismic activity in the area surrounding the LNG terminal. The proponents shall demonstrate that this information was integrated in both project planning and emergency measures planning.

**Cumulative Effects**

The proponents shall identify and assess the cumulative effects that the project, combined with other works or the implementation of other projects or activities, may have on the environment. Cumulative effects may result if :

- implementation of the project being studied causes direct residual negative effects on environmental components, taking into account the application of technically and economically feasible mitigation measures,; and
- the same environmental components are affected by other past or present projects or activities, as well as future projects or activities that will or may be carried out (pipeline, other LNG projects, etc.).

The environmental components that will not be affected by the project or will be affected positively by the project can, therefore, be omitted from the cumulative effects assessment.

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| | Accordingly, the proponents shall :<br>• identify and justify the choice of the main valued environmental components that will be included in the cumulative effects assessment (note: at-risk species likely to be affected by the project are valued environmental components);<br>• present a justification for the geographic and temporal limits of the cumulative effects assessment; these limits can vary from one environmental component to the next;<br>• describe and justify the choice of projects and activities selected for the cumulative effects assessment, including past activities and projects and those being carried out and any future project or activity likely to be carried out (i.e. already in the process of obtaining approval, pipeline, other LNG projects in the province of Québec);<br>• describe technically and economically feasible mitigation measures and determine the significance of the cumulative effects and, where applicable, compensation measures. In order to clearly define the predicted effects, they shall assess the significance of the long-term residual effects. In cases where measures exist that could be effectively applied to mitigate these effects, but that are beyond the scope of the proponents' responsibility, the proponents shall identify these effects and the parties that have the authority to act. In such cases, the proponents shall summarize the discussions that took place with the other parties in order to implement the necessary measures over the long term;<br>• consider the need for a follow-up program to verify the accuracy of the assessment or to eliminate any uncertainty regarding certain cumulative effects.<br>The proponents shall discuss the scope of the cumulative effects assessment, including the selection of the environmental components, the choice of future projects and the determination of the temporal and spatial boundaries, with the federal authorities since they are responsible for making decisions on these aspects. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **4.2 Mitigation of Impacts of the Options(s) chosen** | |
| The purpose of impact mitigation is to ensure the best possible integration of the project into the receiving environment. The environmental impact statement identifies the measures, structures, corrective action or additions planned at the various stages of implementation to eliminate the adverse effects associated with each option or reduce their intensity. Particular attention must be focused on river crossings during construction. The statement includes an evaluation and cost estimate of the proposed mitigation measures.<br><br>For instance, the following mitigation measures may be considered :<br><br>❑ procedures and measures for protecting the soil, shorelines, surface and ground water, air, plant life, wildlife, wildlife habitats, including temporary measures;<br>❑ techniques to minimize sediment suspension in water;<br>❑ landscape management and restoration of the vegetation of disturbed sites;<br>❑ visual integration of structures and infrastructure, notably tanks and stations;<br>❑ acoustic integrity of facilities and activities;<br>❑ scheduling of work to avoid disturbing sensitive areas or compromising fishing or recreational activities, etc.);<br>❑ choice of itineraries and work schedules established in order to avoid nuisances (noise, dust, rush hour, safety, etc.);<br>❑ boating safety measures during construction and operation.<br><br>The environmental impact statement outlines the measures considered to promote or maximize positive impacts such as the hiring of local manpower or the award of certain contracts to local businesses. | The proponents shall describe the practices, policies and commitments that constitute the mitigation measures and that will be applied as part of standard practice, regardless of location. The proponents shall then describe their environmental protection plan and their environmental management system through which they will deliver this plan. The plan shall provide an overview of how potentially adverse effects will be managed over time. The proponents shall discuss any requirements with contractors and sub-contractors to ensure that these parties comply with these commitments and policies. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| **4.3 Selection of the Best Option and Compensation of Residual Impacts** | |
| When the impact analysis addresses more than one possible option, a comparative assessment of each option must be provided. It will rate the various options by total residual impacts, i.e. those impacts that remain even after mitigation measures have been applied, taking into account the costs associated with each option and the possibility of compensation for unavoidable residual impacts in the biological environment or for the residents and communities affected. Loss of aquatic or wetland habitat should be compensated by the creation or improvement of equivalent habitats. The possibility of re-using temporary installations or equipment for public or community purposes should also be considered as compensatory measures.<br><br>The proponent finally selects the best project alternative. The alternative selected should preferably be that which is most socially and environmentally acceptable and that which best meets the target requirements and objectives without compromising the project's technical or economic feasibility. The impact statement presents the criteria and rationale for seclecting a particular alternative. | In the event of inevitable residual effects, the proponents may propose compensation measures for the biological environment, for residents and communities affected. Fish habitat losses shall be compensated by the creation or improvement of equivalent habitats. It is important to note that the term "compensation" does not refer to financial compensation, except in the case where the adverse effect relates to an economic loss. With regard to expropriations that may be required, the proponents shall explain how financial compensation will be negotiated and who will be responsible for this process. They shall also describe the recourse available to owners in the event of a dispute.<br><br>The impact statement shall include an evaluation of the significance of the residual effects, taking into account the application of technically and economically feasible mitigation measures in a manner that is rigorous and as objective as possible. The method selected and the criteria used to determine the significance of the effects must be clearly described and explained. The analysis of the significance of the effects shall be sufficiently detailed to enable the authorities concerned and the public to understand and evaluate the proponents' rationale.<br><br>If significant adverse effects are identified, the proponents shall determine the likelihood that they will occur. The proponents shall also address the degree of scientific uncertainty associated with the data and methods used within the framework of their environmental analysis. |
| **4.4 Project Summary** | |
| The proponent provides a summary of the project, indicating the important elements to be included in the plans and specifications. The summary describes the procedures for implementing the project and operating regime, focusing on the key impacts and mitigation measures. The summary also includes an | The proponents shall include a summary of the project's residual effects after implementation of the mitigation and compensation measures in order to determine the real consequences of the project, the degree of mitigation and the effects that cannot be mitigated. A table summarizing the effects on the various |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| overview of how the three objectives of sustainable development applicable to the project will be taken into account. These objectives are the preservation of environmental integrity, improvement of social equity and improvement of economic efficiency. | environmental components prior to mitigation, the mitigation and compensation measures applied and the residual effects shall be included. |
| **5. ACCIDENT RISK MANAGEMENT** | |
| Industrial ports, tanks and gas pipelines projects can generate major technological accidents (the consequences of which could extend beyond the limits of the project). The impact statement thus requires an analysis of the risks of technological accidents for these projects.<br><br>All projects require a description of the safety measures and preliminary emergency response plan for the construction and operation phases. | See provincial guidelines. |
| **5.1 Risk of Technological Accidents** | |
| The analysis of the risks of technological accidents consists in determining the specific hazards involved (product hazards, system failures, sources of malfunctions or breakdowns, etc.) and then developing accident scenarios. A report on accident history (approximately five-year period) having occurred in the context of similar projects—or failing that, for projects making use of similar processes—will provide additional information for developing such scenarios. All activities associated with the project (handling, operation, transport, etc.) must be included in the report.<br><br>If the proponent is able to demonstrate that there is no risk of a major technological accident, it simply uses the information collected for the emergency response planning. To this end, the proponent may use the "standard scenario" proposed by MDDEP, or the "worst-case scenario" developed by the EPA.<br><br>If the proponent is unable to demonstrate that there is no possibility of a major technological accident, it carries on with risk analysis, thoroughly analyzing each hazard and disaster scenario in order to determine the associated impacts and risks. | The proponents shall address, without being limited to, the following factors:<br>1. properties of liquefied natural gas and its behaviour during an accidental spill, on land or at sea;<br>2. the risks of an accident for all project phases and for future proposed improvements (increase in ship size, third tank, etc.);<br>3. modelling of the dispersion of gas vapours, including :<br>• a description of the gas vapour dispersion models used for spills on land or at sea, including any formulated hypotheses, accompanied by supporting documentation and the results of the modelling;<br>• an evaluation of the existing gas vapour dispersion models regarding LNG spills on land or at sea and a rationale for the choice of models to be used.<br><br>At the site of the terminal (terrestrial and marine), the proponents shall assess the probability of accidents resulting from marine traffic or the environment (e.g. presence of ice, seasonal climatic variations and seisms). For the assessment of the risks associated with navigation, the proponents shall refer to sections 3.8 and 3.15 of the TERMPOL guide. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| The analysis identifies sensitive elements in the environment that may be affected such that the consequences of the accident become significant or worse (residential areas, hospitals, natural sites of particular interest, zoning, etc.).<br><br>The impact statement also presents a discussion of the impacts associated with the accident scenarios. The purpose of this stage is to define the zones within which the safety of neighboring communities and the integrity of the natural and human environments could be affected, as well as the presence of the sensitive elements previously identified. This information will be retained for emergency planning purposes.<br><br>Where there are sensitive elements in areas likely to be affected, the frequency of occurrence and risks associated with the project must also be evaluated. These risks must be described in the impact statement, indicating their geographical location relative to the project site. A discussion on the results of the risk assessment is presented.<br><br>Safety measures (e.g., retention dykes or safe-distance limits) having an effect on the potential consequences or risks associated with the accident scenarios must be included and discussed with any analysis of such scenarios.<br><br>A brief analysis of external events that may lead to a major technological accident on the project site must also be included in the impact statement. Both natural (e.g. floods, earthquakes) and human elements or events (e.g. nearby plant, train derailment, plane crash) are considered. This information is used to develop the emergency response plan.<br><br>Risk assessment is carried out in accordance with generally accepted practices. The proponent should provide its rationale for using specific data, design assumptions and calculation methods, indicating the constraints of the method used and any uncertainties, and providing references. Risk analysis must take into account all applicable laws, regulations and codes of practice. | For the purposes of the federal environmental assessment, the report and analysis of past accidents should cover at least the last 10 years. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
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| **5.2 Safety Measures** | |
| The environmental impact statement describes the safety measures planned for the project site itself and, where applicable, for areas off the main site, specifically in respect of marine safety. The aspects described include :<br>❑ restricted access to project sites;<br>❑ safety systems and prevention measures (marine safety, surveillance systems, firefighting systems, automatic sprinklers, emergency power system, leakage detector, high level alarms, containment basins, safe distances, etc.);<br>❑ product storage based on their associated risk. | The proponents shall provide, without being limited to, the following information:<br>• how the design of the facilities and management of their operation will minimize the risks of accidents and hazards;<br>• description and justification of the location and area of restricted zones or buffer zones (on land and offshore);<br>• description of the safety measures that may affect federal protected areas or their management as well as lands reserved for that purpose;<br>• with respect to shipping and transshipping at the terminal, the proponents shall provide the information required by sections 3.15 and 3.8 in the TERMPOL guide. |
| **5.3 Emergency Response Plan** | |
| The environmental impact statement presents a preliminary emergency plan for ensuring an effective response in the event of an accident. The plan sets out the principal response measures to be considered in the event of an incident/ accident and describes links with municipal authorities as well as the emergency notification mechanisms.<br>For accidents that could have consequences (real or anticipated) on surrounding communities, the proponent is responsible for ensuring that its emergency response plan is consistent with that of the municipality.<br>Generally speaking, an emergency response plan includes the following elements :<br>❑ description of the accident scenarios retained for planning purposes as defined in the accident risk assessment: consequences (quantity or concentration of contaminants released, thermal radiation, overpressure), probability of occurrence, areas affected, etc.;<br>❑ a description of the possible and probable scenarios; | The proponents shall comply with the requirements of the *Environmental Emergency Regulations* of the *Canadian Environmental Protection Act*.<br>The proponents shall provide the information described in Section 3.18 of the TERMPOL guide.<br>The proponents shall indicate how their emergency response plan will tie in with the emergency measures of the Gros-Cacouna port for construction, maintenance and future proposed modifications. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| ❑ relevant information in the event of an emergency (individuals in charge, available equipment, site plans and maps indicating emergency entrances, gathering points, safety equipment, etc.);<br>❑ emergency response structure and internal decision-making mechanisms;<br>❑ means of communicating with outside public security organization;<br>❑ emergency response measures for spills, fires, accidental releases to the atmosphere, containment leaks, explosions, etc.;<br>❑ planned response to emergency warnings (operations shut down, in-house transmission of warning, emergency calls, evacuation plan, etc.);<br>❑ measures to be considered to protect communities that could be affected;<br>❑ planned measures for effectively alerting communities that could be affected, in co-operation with the appropriate municipal and government organizations (alerting public authorities and subsequent information about the situation);<br>❑ safety measures in place on accident site;<br>❑ emergency response updating and re-evaluation program.<br><br>The environmental impact statement also includes a temporary emergency response plan for the construction phase. It sets out the risks to the safety of individuals and property, describes the measures planned to protect the public and the receiving environment in the event of an accident (oil spill, explosion, etc.) and provides contact information for the persons in charge on the site.<br><br>The proponent is encouraged to consult Canadian Standards Association standard CAN/CSA-Z731-95 in developing the emergency response plan. A final emergency response plan will have to be completed by the proponent before the project is brought on-line. | |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
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| **6. ENVIRONMENTAL MONITORING** | |
| Environmental monitoring is carried out by the proponent in order to ensure compliance with :<br><br>❑ the measures proposed in the impact statement, including mitigation and compensation measures;<br>❑ the conditions set out in the order-in-council;<br>❑ the proponent's commitments as stipulated in ministerial authorizations;<br>❑ the requirements under relevant acts and regulations.<br><br>Environmental monitoring is carried out throughout project construction, operation, closure and dismantling phases. It can serve as a basis for reorienting the work and improving the progress of construction activities and the implementation of the various elements of the project.<br><br>The proponent must propose an environmental monitoring program in the impact statement that describes the mechanisms to be put in place to ensure compliance with legal and environmental requirements. It helps to ensure the proper operation of the work, equipment and facilities and to monitor any environmental disturbance caused by the construction, operation, closure or dismantling of the facilities.<br><br>The monitoring program must indicate :<br><br>❑ a list of aspects requiring environmental monitoring;<br>❑ the measures considered to protect the environment;<br>❑ the characteristics of the monitoring program, where foreseeable (location of the activities, protocols, a list of parameters, analysis methods, management schedule, human and financial resources allocated to the program); | If the project is likely to affect an at-risk species covered by the *Species at Risk Act*, the proponents shall provide a detailed description of the elements of the program and measures that will be implemented to monitor the project's impacts on that species (see s. 79 of SARA). |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| ❑ response mechanisms in the event of the non-compliance with legal or environmental requirements or failure to meet the proponent's commitments;<br>❑ proponent's commitments in terms of filing monitoring reports (number, frequency, content). | |
| **7. ENVIRONMENTAL FOLLOW-UP** | |
| Environmental follow-up is conducted by the proponent to verify, through experience in the field, the accuracy of the assessment of certain impacts and the effectiveness of certain mitigation or compensation measures for which there is still some uncertainty.<br><br>The knowledge acquired from previous follow-up programs may be used not only to improve predictions and assessment of the impacts of similar new projects, but also to develop mitigation measures and possibly to review standards, guidelines or policies regarding environmental protection.<br><br>The proponent shall propose a preliminary environmental monitoring program in the impact statement. This preliminary program shall be completed, if applicable, once authorization for the project has been obtained. The follow-up program must include the following elements :<br><br>❑ the reasons for environmental follow-up, including a list of environmental aspects that require follow-up;<br>❑ the objectives of the environmental follow-up program and the components to be included in the program (e.g. validation of impact assessment, assessment of the effectiveness of mitigation measures for water, air, soil, etc.);<br>❑ the number of follow-up studies and their principal characteristics (protocols and scientific methods considered, a list of parameters to be measured, implementation schedule);<br>❑ details relating to the production of follow-up reports (number of reports, frequency, format); | See provincial guidelines. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| ❑ mechanisms to respond to unforeseen degradation of the environment;<br>❑ the proponent's commitments for communicating the results of the environmental follow-up to the communities concerned.<br><br>A guide for planning and implementing the environmental follow-up program is available from MDDEP's Environmental Assessment Branch. | |
| **PART II – FORMAT OF THE ENVIRONMENTAL IMPACT ASSESSMENT STATEMENT** | |
| The second part of the guidelines addresses the format of the environmental impact statement, which must meet the requirements of section III of the *Regulation Respecting Environmental Impact Assessment and* Review. | See provincial guidelines. |
| **1. METHODOLOGICAL CONSIDERATIONS** | |
| The environmental impact statement must be clear and concise and should be limited to those elements that are required for a proper understanding of the project and its impacts. Where possible, diagrams and/or maps, at appropriate scales, should be provided. The methods and criteria used must be presented and explained, indicating, where possible, their reliability, degree of accuracy and interpretation limitations. The proponent must include the elements necessary for an accurate evaluation of the quality of the environment (location of inventory and sampling stations, inventory dates, techniques, limitations). The sources of information must be provided as references. The name, profession and position of the individuals who contributed to the environmental impact statement must also be provided. In addition to the project collaborators, the proponent is required to comply with the requirements of the *Act Respecting Access to Documents Held by Public Bodies and the Protection of Personal Information* and the *Act Respecting the Protection of Personal Information in the Private Sector* and must exclude such information in the impact statement.<br><br>Where possible, the information must be summarized in a table and the data (quantitative as well as qualitative) submitted in the impact statement must be analyzed on the basis of appropriate documentation. | See provincial guidelines. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
|---|---|
| In the interest of conciseness, information that may facilitate the reader's understanding or interpretation of the data, such as inventory techniques, should be provided in a separate section. | |
| **2. CONFIDENTIALITY** | |
| During the public participation phase of the environmental impact assessment and review process, MDDEP forwards the environmental impact statement and all documents submitted by the proponent supporting its application for a certificate of authorization to the *Bureau d'audiences publiques sur l'environnement* (s.12 of the *Regulation Respecting Environmental Impact Assessment and Review*).<br><br>Furthermore, Section 31.8 of the *Environment Quality Act* stipulates that: "The Minister may withdraw from a public consultation any information or data concerning industrial processes and prolong, in the case of a given project, the minimum period of time provided for by regulation of the Government during which the Minister may be required to hold a public hearing."<br><br>As a result, when the proponent transmits to MDDEP information concerning industrial processes that it considers to be confidential, it must submit a request to the Minister to have it excluded from the public consultation. The proponent must support such a request by:<br>❑ demonstrating that the information or data concerns an industrial process;<br>❑ demonstrating why the information is confidential and the prejudice that would be caused by its disclosure.<br><br>It is recommended that the proponent provide this information in a separate document and clearly identify that it is confidential.<br><br>Before the public consultation phase, the Minister will inform the proponent whether or not he will avail himself of the powers under section 31.8 of the Act to exclude the information from the public consultations. | Section 55 of the *Canadian Environmental Assessment Act* provides for the establishment of the Canadian environmental assessment registry to facilitate the public access to records relating to environmental assessments.<br><br>The information provided to a responsible authority may be excluded from the Canadian environmental assessment registry (accessible to the public) if the information meets the conditions for exclusion indicated in subsections 55.5 (1) and (2) of the *Canadian Environmental Assessment Act*. |

| *Quebec Guidelines for the Cacouna Project – Construction of an LNG Terminal and Related Infrastructure* | *Federal Guidelines for the Preparation of the Environmental Impact Statement for the Cacouna Energy Project* |
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| **3. REPORT WRITING REQUIREMENTS** | |
| When the impact statement is presented to the Minister, the proponent must provide 30 copies of the complete file (article 5 of the *Règlement sur l'évaluation et l'examen des impacts sur l'environnment*), and two copies of the impact statement in RTF format (Rich Text Format).<br><br>To facilitate the retrieval of information and the analysis of the impact study, the information found in the electronic copy must be divided into chapters or sections. To that end, it is recommended that the proponent contact the project manager in charge of analyzing the document to agree on how the information should be presented in the electronic version. Addenda produced subsequent to MDDEP's questions and comments must also be provided in 30 copies and in electronic format.<br><br>Since the environmental impact study must be made available to the public for consultation, the proponent must also provide a summary in lay terms of the main points and conclusions of the study (section 4 of the *Regulation Respecting Environmenal Impact Assessment and Review*), as well as any other document required to complete the file. The summary includes a general plan of the project and a diagram illustrating its impacts, mitigation measures and residual impacts. The summary must be provided in 30 copies, as well as two copies in RTF format before the environmental impact statement is released by the Minister of the Environment. It reflects the changes made to the environmental impact statement following questions and comments by MDDEP on the admissibility of the impact statement.<br><br>Given that the electronic copy of the impact statement and summary will be posted on the web site of the *Bureau d'audiences publiques sur l'environnement*,, the proponent must also provide a letter attesting to the consistency between the hard and electronic copies of the impact statement and summary. However, it is not required that maps or other documents that prove difficult to convert to electronic format be included with the electronic copies of the impact statement and the summary.<br><br>To facilitate the identification of the documents submitted and their coding in | The proponents shall provide 10 hard copies of the complete environmental impact statement to the federal authorities, as well as 10 electronic copies in an appropriate format. If addenda are produced in response to questions and comments from government agencies, they must also be provided in an equivalent number of copies. |

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| the electronic database, the title page of the environmental impact statement must contain the following information:<br>❑ project name and site;<br>❑ title of the document, including the terms "Environmental impact statement" submitted to the Minister of the Environment;<br>❑ subtitle of the document (e.g. summary, main report, appendix, addendum);<br>❑ proponent's name;<br>❑ consultant's name, where applicable;<br>❑ date. | |
| **4. OTHER DEPARTMENTAL REQUIREMENTS** | |
| When applying for a certificate of authorization under section 22 of the *Environment Quality Act* (R.S.Q., c.Q-2) following government authorization issued under section 31.5 of the Act, a proponent must provide certificates of regulatory compliance obtained from local municipalities under section 8 of the *Regulation respecting the application of the Environmental Quality Act* (R.R.Q., c. Q-2, r. 1.001). The proponent must pay special attention to the location of its project in relation to flood plains and the related regulation. | |

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