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**FINAL GUIDELINES  
FOR AN ENVIRONMENTAL IMPACT ASSESSMENT  
LIQUIFIED NATURAL GAS RECEIVING, STORAGE AND PROCESSING FACILITY**

**Issued by the Minister of the Environment and Local Government  
for the Province of New Brunswick  
and Fisheries and Oceans Canada**

**to**

**Irving Oil Limited**

**March 25, 2002**

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## 1.0 INTRODUCTION

### 1.1 Purpose

These Guidelines are to be used by Irving Oil Limited to guide the preparation of an Environmental Impact Assessment (EIA) Report of its proposed liquefied natural gas (LNG) undertaking (“the Project”) in Saint John New Brunswick. The EIA Report is intended to meet the requirements of the New Brunswick Clean Environment Act Environmental Impact Assessment Regulation (87-83).

The Guidelines are also intended to determine the scope of the project, and the factors and scope of those factors to be considered in the preparation of a Comprehensive Study Report to meet the requirements of an environmental assessment under the Canadian Environmental Assessment Act (CEAA). The word “Project” is intended to represent “undertaking” and “project” as defined under the two Acts, respectively. The term “environmental effect” is intended to represent “impact” and “environmental effect” as defined under the two Acts, respectively. The EIA Report and Comprehensive Study Report, for simplicity, will be one report referred to as the Environmental Impact Statement or EIS.

### 1.2 Federal/Provincial Environmental Impact Assessment Processes

Under Regulation 87-83 of the Provincial Clean Environment Act, Irving Oil Limited, as the proponent of the Project, was required to register the Project as an undertaking for Environmental Impact Assessment (EIA) review. The proposal was registered on July 25, 2001. On December 14, 2001 the Minister of the Environment and Local Government determined that the completion of an Environmental Impact Assessment (EIA) was required to assess the nature and significance of the proposal's potential environmental effects.

On November 19, 2001 Fisheries and Oceans Canada determined that the project was subject to federal regulatory review under the Navigable Waters Protection Act. As a result, an environmental assessment must be completed in accordance with the Canadian Environmental Assessment Act (CEAA) pursuant to Section 5(1)(d), at the comprehensive study level before a permit under the Navigable Waters Protection Act may be issued. There are several steps to the comprehensive study process, including an initial one to establish the scope of the project, determine the factors to be considered in the assessment and the scope of these factors to be assessed.

The Federal Coordination Regulation process, in addition to identifying DFO (Navigable Waters Protection) as the Responsible Authority for this project, has identified Transport Canada – Marine Safety, Environment Canada and Natural Resources Canada as departments in possession of specialist or expert information or knowledge. DFO (Habitat Management) conducted a preliminary review of works proposed in or near the water (i.e. multi-purpose pier) and concluded this undertaking will not likely result in the harmful alteration, disruption, or destruction of fish habitat and therefore will not likely require an authorization pursuant to Section 35(2) of the Fisheries Act.

The provincial Minister of the Environment and Local Government has appointed a Review Committee comprised of technical specialists from various government agencies whose jurisdictions may be affected by the undertaking. The agencies include:

NB Department of the Environment and Local Government  
NB Department of Natural Resources and Energy  
NB Department of Health and Wellness  
NB Department of Transportation  
NB Culture and Sport Secretariat  
NB Workers Health, Safety and Compensation Commission  
NB Department of Public Safety  
City of Saint John  
Environment Canada  
Fisheries and Oceans Canada  
Transport Canada – Marine Safety

The Review Committee will include those listed above, with the addition of the Canadian Environmental Assessment Agency, the Saint John Port Authority and Natural Resources Canada. As such, the Review Committee will provide a federal-provincial harmonized review for the EIA/EA. The Review Committee has reviewed the initial registration document provided by Irving Oil Limited, has requested additional information from Irving Oil Limited and has attended an information session provided by Irving Oil Limited. This screening exercise provided the basis for the Draft Guidelines, which the Review Committee had also examined. The Guidelines outline the approach the proponent should follow in conducting the EIA. It identifies important issues, which must be considered in assessing the environmental effects of the proposal.

Members of the public were invited to comment on the Draft Guidelines and to identify any issues of concern, which did not appear in the document. Following public input, the Minister issued the Final Guidelines for the EIA.

Upon receipt of the Final Guidelines, Irving Oil Limited and/or its consultant must provide the Minister with detailed Terms of Reference, which describe the approach to be used in the EIA. The Terms of Reference will be evaluated through a consultative process involving the proponent and the appropriate government review agencies.

The Provincial Department of the Environment and Local Government will be the lead agency for this review and is responsible for ensuring that the Responsible Authority is furnished with all the documentation and correspondence. It is the intent of this harmonized process to ensure that the public and the proponent are provided with a simplified process, avoiding confusion and duplication. It is the intention that the Final Guidelines outline the requirements of the EIA Regulation and CEAA. One report will be prepared by the proponent. That report will meet the requirements of an Environmental Impact Assessment Report and a Comprehensive Study Report under both pieces of legislation. For convenience, the report will be referred to as the

Environmental Impact Statement or EIS. The EIS will include a clear statement of its regulatory context in respect of both legislative requirements.

Pursuant to subsection 17(1) of CEAA, Fisheries and Oceans Canada formally delegates the responsibility for preparation of an acceptable Comprehensive Study Report to Irving Oil Limited, the project proponent.

The principle objective of the EIS is to predict the environmental effects, which can be expected should the project proceed. The significance of these environmental effects shall be discussed. The EIA study, conducted in consultation with the residents from the area of potential environmental effects, is also expected to identify methods of optimising positive environmental effects and minimizing negative environmental effects resulting from the project.

Information gathered during the study is compiled in a draft EIS. The draft report is evaluated by the Review Committee to determine whether the study adequately addresses the issues raised in the Final Guidelines. Should the Review Committee determine that the report does not adequately address the Guidelines, the proponent shall make revisions to address any identified deficiencies in order to advance the EIA process.

If, in consideration of the advice of the Review Committee, the Responsible Authority and the provincial Environment Minister are satisfied that the EIS is complete, the next step is, through consultation, to involve the public in evaluating the potential environmental effects anticipated from this project and their significance.

A summary of the final EIS is to be prepared, on behalf of the Responsible Authority and the provincial Minister, to assist members of the public in becoming familiar with the information. The Review Committee will prepare a General Review Statement summarizing its comments on the EIS. These documents are released for a period of at least 30 days for public review and comment, after which, the schedule and location(s) of public meeting(s) will be announced. The Responsible Authority will submit the EIS (formally referred to as the Comprehensive Study Report) to the federal Environment Minister and the Canadian Environmental Assessment Agency, for public review and comment. The federal review period will be coincident with the consultation period described above.

Public meetings generally take place near the area where the project is being proposed and provide all interested parties with an opportunity to make comments, raise concerns, or ask questions about any matter covered in the EIS. Following the public meeting, a period of fifteen days will be reserved for members of the public to submit written comments to the Minister of the Environment and Local Government. These comments will be shared with the federal government. At the end of this period, a summary of public participation is made available to the public and presented to the Ministers. At any time after this date, the Cabinet (Lieutenant-Governor in Council) may render a decision to issue or deny an approval for the project. Similarly, the federal Minister of the Environment makes his determination on next steps and so advises the Responsible Authority. Best

efforts will be made to ensure coordination of the announcement of decisions.

Specific procedures to be followed in conducting an EIA may be found in Regulation 87-83, *Environmental Impact Assessment Regulation - Clean Environment Act*. A procedural summary is available in the publication entitled "Environmental Impact Assessment in New Brunswick". These documents may be obtained from the NB Department of the Environment and Local Government at the address below:

Germaine Pataki-Therault  
Project Assessment Branch  
NB Department of the Environment and Local Government  
P.O. Box 6000  
20 McGloin Street  
Fredericton, NB  
E3B 5H1  
e-mail: [EIA-EIE@gnb.ca](mailto:EIA-EIE@gnb.ca)

or to the  
Saint John Regional Office  
Regional Services Branch  
NB Department of the Environment and Local Government  
8 Castle Street  
Saint John, NB  
E2L 3B8

Guidance related to the federal environmental assessment process may be found on the website of the Canadian Environmental Assessment Agency at <http://www.ceaa-acee.gc.ca> or by contacting the Agency's Atlantic Regional Office at (902) 426-0564.

### **1.3 Definitions**

"Alternative means" are defined as the various ways that are technically and economically feasible, that the project can be implemented or carried out. This could include, for example, alternative locations, routes and methods of development, implementation and mitigation.

"Alternatives to" the project is defined as functionally different ways to meet the project need and achieve the project purpose.

Under CEAA, "Environment" means the components of the earth and includes:

- a) air, water and land, including all layers of the atmosphere,
- b) all organic and inorganic matter and living organisms,
- c) the interacting natural systems that include components referred to in paragraphs (a) and (b)

Under the provincial Clean Environment Act, “Environment” means the air, water or soil.

“Environmental Effect” means, in respect of a project

- a) any change that the project may cause in the environment, including any change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, and
- b) any change to the project that may be caused by the environment whether any such change occurs within or outside Canada;

“Fish” is defined in Section 2 of the Fisheries Act, and includes fish, shellfish, crustaceans and marine mammals.

“Responsible Authority”, in relation to a project, means a federal authority that is required, pursuant to subsection 11(1) of the *Canadian Environmental Assessment Act*, to ensure that an environmental assessment of the project is conducted.

## **2.0 METHODOLOGICAL APPROACH TO EIA**

### **2.1 General**

The federal and provincial Environmental Impact Assessment processes result in a detailed study of potential environmental effects and the significance of these effects and identification of procedures that may be used to mitigate these. The EIS is also expected to identify methods of optimizing positive environmental effects and minimizing negative environmental effects resulting from the project. These guidelines outline the scope of the project, factors to be considered and scope of factors to be considered pursuant to Sections 15 and 16 of CEAA as determined by the Responsible Authority, Fisheries and Oceans Canada.

To provide a focus for the EIA, environmental components of principal concern, commonly referred to as Valued Environmental Components (VEC), must be identified early in the EIS. The method for determining VECs must be clearly stated by the proponent. The proponent is encouraged to seek local public knowledge for identification of appropriate VECs. The VECs proposed will be reviewed and accepted by DFO and DELG in the early phases of the EA study.

Presented in Section 4.0 of these Guidelines are a number of specific issues for study. However, this framework must not limit the proposed EIS. Should additional issues arise from ongoing discussion with members of the Review Committee, regulatory agencies or members of the public, the proponent shall incorporate these issues into the assessment of the project's potential environmental effects.

### **2.2 Study Boundaries and Scope of Factors**

Pursuant to Section 16 of CEAA, the review must consider the potential environmental effects of the proposed project within the spatial and temporal boundaries which encompass the periods and areas during and within which the project may potentially interact with, and have an environmental effect on, components of the environment. Irving Oil Limited must clearly describe the boundaries of the study in time and space used in the evaluation of environmental effects for each of the Valued Environmental Components. The temporal boundaries of the study (the length of time over which project environmental effects are anticipated to occur) must reflect the construction period, the operating life of the project, and the geographical extent of any potentially significant environmental effects that may remain beyond the operating period, including decommissioning and any potential accidents or malfunctions.

Spatial boundaries should reflect the extent to which project activities are anticipated to occur in the existing environment and the extent of anticipated/environmental effects, including cumulative environmental effects on the Valued Environmental Components. Boundaries such as administrative, technical, biophysical, socio-economic and project area should be defined and related to the impact assessment process as appropriate or applicable. In determining appropriate



spatial boundaries, consideration should be given to environmental effects from the proposal on a local, regional and national scale.

### **2.3 Prediction of Environmental Effects**

The main focus of the EIA is to predict environmental effects to the environment, which may result from the proposed undertaking and their significance. Predictions must consider all aspects and phases of the project, and any indirect, cumulative environmental effects and those effects that may result from accidents or malfunctions. These predictions should consider potential effects of the environment on the project such as by extreme weather events, lightning strikes, terrorist attacks and seismic activity and should include climate change considerations.

EIA predictions are generally based on a combination of objective and subjective evaluation. The use of objective (measurable) analysis is strongly preferred where it is technically feasible and reasonable to do so. However, in recognition of any factor that may limit the ability to predict environmental responses, it is expected that, predictions may be based on subjective evaluation using professional judgement and experience. In consideration of this, predictive statements should be accompanied by a discussion of the limitations of the analysis, references to supporting documentation and the qualifying credentials of those making the predictions.

Predictions must be made regarding the nature (adverse or positive), magnitude, duration, frequency, geographic extent and irreversibility of the project's environmental effects. The significance must also be determined. These predictions must:

- facilitate decision-making with respect to the proposed project;
- clearly specify any degree of uncertainty inherent in the projections;
- clearly identify environmental effects with respect to human health and tolerance levels of organisms in the environment; and
- be amenable to testing where possible through ongoing monitoring.

To clearly distinguish the significant environmental effects from those that will have lesser effects, the Proponent must define "significant". The definition should be based on scientific determinations, social values, public concerns, and economic judgements, and shall be developed in consultation with the Review Committee. In particular, the significance of project-induced changes on valued environmental components should be clearly stated in the EIS. The thresholds for significant adverse effects on the valued environmental components should be related in terms of applicable criteria. Quantifiable reference to the magnitude, geographical extent, duration, frequency, reversibility and ecological context of the potential environmental effects is required. Significance should be determined in the context of project-specific and cumulative environmental effects and after taking into account the implementation of appropriate mitigation measures.

## **2.4 Cumulative Environmental Effect**

The term cumulative environmental effect means those effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out. Cumulative environmental effects must be given consideration. Cumulative environmental effects should be considered individually for each valued environmental component selected.

## **2.5 Mitigation, Contingency and Compensation**

The study must describe general and specific measures that are technically and economically feasible that Irving Oil Limited proposes to implement to mitigate (eliminate, prevent, avoid and minimize) the potentially adverse environmental effects of the project. This should include a description of contingency measures (including emergency response plans for construction and operation) that have been designed to address potential accidents and malfunctions that could result in spills or unplanned releases of contaminants or products to the environment. Specific circumstances under which mitigative measures will be implemented must be clearly defined by the proponent. Mitigation options should be considered in a hierarchical manner with a clear priority placed on impact avoidance and pollution prevention opportunities. Opportunities to contribute to a regional approach to management of cumulative effects should be emphasized.

An outline for contingency plans must be provided:

- for use in the event of an environmental emergency attributable to the project, within the spatial boundaries of the study;
- for use in the event of significant environmental effects, attributable to the project, which are detected through monitoring. This plan must be designed to be implemented should environmental effects be detected during construction and operation.

The study must consider compensation mechanisms to be used in the event that any accidental or residual environmental effects occur. The outline for the compensation plan must be developed through consultation with federal and provincial agencies and other stakeholders, as appropriate. Compensation should be recognized as a last resort, but may be required if effects of the construction and operation cannot be otherwise mitigated.

## **2.6 Commitment to Monitoring and Follow-up**

A well-defined program of monitoring and follow-up regarding the potential environmental effects of the project must be outlined in the EIS. Irving Oil Limited must describe their proposal for monitoring and follow-up programs for the project, including their objectives, content, implementation and reporting of results. These programs must provide information:

- to establish baseline conditions;
- to test the predictions of the EIS; and
- to evaluate the effectiveness of the measures used to prevent or minimize environmental effects.

Monitoring and follow-up programs should include protocols that would guide interpretation of monitoring results and timely implementation of appropriate corrective actions.

The monitoring program must be based upon accurate baseline information of the existing physical, biological and socioeconomic environments. The proponent is expected to collect the necessary information through existing data sources or through primary research such as fieldwork and laboratory testing, as required.

Where the EIS predictions are not based on objective information, the monitoring program must be designed, where possible, to collect relevant data not previously available.

Documentation from similar operations elsewhere in the world indicating their ability to achieve standards should be provided. The standards should be included for those other facilities, in addition to the standards to which this project will be constructed, operated and maintained.

## **2.7 Public Consultation**

Public consultation is an essential component of this environmental impact assessment/environmental assessment. Irving Oil Limited has already commenced consultation with persons and organizations potentially affected by the project, and should continue to inform and engage individuals, interest groups, local governments and other stakeholders in this assessment. Irving Oil Limited will be expected to hold appropriate public consultation events and to use various media to engage public consultation. The stakeholder consultation program of Irving Oil Limited is to be reviewed and accepted by DELG and DFO in the early stages of the study.

Various stakeholders will be consulted throughout the environmental assessment process, including interested parties from First Nations and aboriginal communities; neighbouring residents; general public; non-government organizations and interest groups. The objectives of this consultation should be:

- to ensure that the potentially affected public is engaged in meaningful discussion and is well informed prior to the government's decision, as to the nature and extent of environmental effects attributable to the proposed project;
- to ensure that the values and concerns of the public are incorporated and adequately addressed in the study.

The EIS should document the dates and formats for public consultation undertaken, the material

presented to the public, the opportunity for receiving public input, a summary review of the concerns expressed by the public and how these concerns were addressed. It should be clear how the input from consultations was used in the assessment and what changes to the process or project were made as a result of comments provided.

## **2.8 Terms of Reference**

The proponent must submit detailed Terms of Reference in response to the Final EIA Guidelines. These should clearly describe the methods proposed for carrying out the EIA, and the means by which Irving Oil Limited will consult with the public during the course of the EIA process.

The Proponent is required to provide, as part of the Terms of Reference, a cross-referenced index showing where the content and issues of the Final Guidelines have been addressed.

The Review Committee will examine the Terms of Reference and comments may be provided to the proponent.

### **3.0 CONDUCT OF THE STUDY AND CONTENT OF REPORT**

The EIS should be written in the clearest language possible. Where the complexity of the issues addressed requires the use of technical language, a glossary defining technical words and acronyms should be included.

The EIS must provide a complete and accurate description of the project from planning through construction, operation, maintenance and decommissioning, supported with appropriate maps and diagrams. Emphasis will be placed on describing those aspects of the project, including accidents and malfunctions that have a reasonable probability of occurrence and that could be expected to affect the environment. An identification of how potential environmental and man-made hazards have influenced the design and operation of the project will also be provided.

The following titles may be used as a framework for the development of the EIS:

- Executive Summary
- Introduction
- Application of CEAA/Regulation 87-83
- Scope of the Project
- Scope of the Environmental Assessment
- Purpose and Description of the Project
- Alternative Means of Carrying Out the Project and their Environmental Effects
- Description of the Existing Environment
- Environmental Effects, Including Effects of Malfunctions and Accidents and Cumulative Environmental Effects
- Mitigation Measures
- Significance of Residual Effects
- Public Consultation
- Monitoring and Follow-Up Programs
- The Capacity of Renewable Resources that are Likely to be Significantly Affected by the Project
- Conclusions and Recommendations

#### **3.1 Project Description – Scope of Project**

The scope of the project to be assessed pursuant to Section 15(1) of CEAA and Regulation 87-83 shall include: the construction, operation, and decommissioning of the Liquefied Natural Gas Marine Terminal and Multi-Purpose Pier Project. It will also include shipping of LNG as specified below.

The project to be assessed pursuant to Section 15(1) of CEAA and its description in the EIS must include:

- the shipping sea transportation profile;
- the regulatory standards to which the components of this project will be built and operated;
- LNG ship operation characteristics;
- LNG ship cargo containment characteristics;
- the construction methodology and design description for the multi-purpose marine pier;
- the LNG offloading system (including piping and tunnel system);
- the LNG storage tanks;
- secondary containment systems;
- the re-gasification unit;
- the natural gas distribution pipeline and corridor selected from the marine terminal to the Refinery;
- power generating infrastructure;
- project use and anticipated future use for the multi-purpose pier;
- properties of the LNG, its behaviour in the marine environment and its behaviour in the case of an accidental release, whether at sea or on land;
- required land and marine exclusion zones;
- transportation, handling and storage systems of any additives and by-products used in the project;
- the construction methodology and design description for the re-gasification unit;
- the layout of the road, laydown, storage and office infrastructure;
- upsets of environmental control equipment from operations of the facility, which may change the nature of emissions and/or effluent;
- infrastructure used to prevent and/or control releases of LNG/vapourized natural gas from storage tanks, delivery or distribution pipelines;
- fire prevention and control equipment; and
- the history of LNG and general information on existing infrastructure around the world.

As applicable, the project description will be based on the elements of the Termpol Review Process (TP743E) that are necessary to support the evaluation of the environmental effects of the project as outlined in Section 4.0 of these Guidelines.

### **3.2 Project Rationale**

Pursuant to Section 16(1)(e) of CEAA and Regulation 87-83, the purpose of the project must be clearly identified. The report must provide clear justification for the project in order to allow for an evaluation of the relative environmental effects of the proposed development.

### **3.3 Identification and Analysis of Alternatives**

Using the approach indicated below, the study should evaluate alternatives to the project as proposed that are technically and economically feasible and alternative means of carrying out the project should be undertaken pursuant to the Section 16(1)(2) and (3) of CEAA and the EIA Regulation, as applicable. This analysis will contribute to a further understanding of the project rationale and will facilitate decision-making with respect to its acceptability.

- (a) The null or "do nothing" alternative. The study must examine the implications of not proceeding with the project with reference to economic, environmental and social factors.
- (b) Alternative locations that may have been examined for this facility that would be technically and economically feasible.
- (c) Assessment of the various dispersion models available for the vapour dispersion model and exclusion zone definition.
- (d) Alternative means of carrying out the project and the environmental effects of such alternative means, including but not limited to
  - I. Alternative re-gasification technology that is technically and economically feasible should be discussed, and a comparative evaluation conducted
  - II. Alternative shipping corridors that are technically and economically feasible considered for the approach from where the LNG ship would leave the established shipping lanes to the berth at the pier.

### **3.4 Description of the Existing Environment**

The EIS should describe the existing environment focusing on the Valued Environmental Components as they occur within the study boundaries.

A description of the existing environment in the study area should consider, but not be limited to, the following:

- coastal, climatic and oceanographic data
- topography
- geology/hydrogeology
- localized seismic activity
- ambient air quality
- surface water
- groundwater
- terrestrial environmental components

- wetlands
- current and potential marine and land use and zoning restrictions
- freshwater and marine aquatic biological components (including fish, fish habitat and fisheries resources)
- the geographical locations of regional fishing operations
- the seasonal variations of fishing activities
- airplane flight paths
- migratory routes for both birds and marine mammals
- rare and endangered species and their habitats
- ecologically sensitive or significant areas
- archaeological resources
- local road networks
- local economy
- existing public health and safety concerns
- ambient noise levels (near potentially affected habitation)
- transportation (traffic volumes and types of vehicles)
- current use of land and resources for traditional purposes by aboriginal persons
- if the current right-of-way from Canaport to the Refinery will be used for the natural gas pipeline, the integrity of the existing fuel oil pipeline from Canaport to the Refinery shall be submitted.

### **3.5 Cross-Referenced Index**

To assist the readers, a cross-referenced index, which shows where the content and issues outlined in the Final Guidelines are addressed in the report, is required. This index must be submitted with the Draft EIS.



## **4.0 POTENTIAL ENVIRONMENTAL EFFECTS**

Presented here are a number of specific issues for study. The scope of the factors that need to be considered in addition to those described in Section 3.0 for this assessment pursuant to the Section 16(3) of CEAA and Regulation 87-83 are described in this section. However, this framework does not limit the proposed EIS. Should additional issues of potentially significant environmental effects arise or be identified through discussion with members of the Review Committee, regulatory agencies or members of the public, Irving Oil Limited should incorporate these issues into the assessment of the project's potential environmental effects.

### **4.1 Effects on Air Quality**

Predict the environmental effects of the project-related air emissions (including greenhouse gases) on Air Quality. The analysis shall include the identification and characteristics of any sources as defined in the *Clean Environment Act*. Any substantive emissions shall first be quantified for each phase of the Project. This shall be done on a local (Saint John air shed) and regional (Southern New Brunswick) basis. This shall include an analysis of routine air emissions and upset conditions, including accidents and malfunctions. The effects of transportation on the Red Head Road to and from the Canaport shall be considered including impacts on air emissions and noise levels. The likelihood, magnitude, duration and geographic extent of non-routine events shall be considered. The contribution of the project-related environmental effects in addition to the emissions of other existing and future projects in the Saint John air shed will be considered in the cumulative environmental effects analysis for air quality on the local basis. Only the cumulative environmental effects of greenhouse gases shall be considered at the regional, provincial and national scale.

Estimates of greenhouse gases should be placed in context with total emissions for New Brunswick and within the industry nationally.

A discussion of air quality monitoring options and the need and the feasibility for implementation should be included.

The effect of the construction and operation of the project from a noise perspective shall be discussed.

### **4.2 Effects on the Marine Environment**

VECs to be considered in the Marine Environment shall include Fish and Fish Habitat, Migratory Birds and Fisheries Resource Harvesting in the area affected by the project.

Predict effects to the VECs in the Bay of Fundy ecosystem from an increase in vessel traffic and from the construction of the marine terminal.

Predict effects to the VEC, fisheries resource harvesting, in the vicinity of the marine terminal, the shipping channel approaches (between where the LNG ship leaves the existing shipping lanes and the pier), any new anchorages, any associated exclusion zones and as a result of a cold-water plume, should seawater vaporization be employed.

The impact of construction, operation and maintenance activities on marine water quality and the benthic environment will be assessed. Predict the environmental effect of any potential deterioration in water quality on the valued environmental components of the Marine Environment.

Evaluate the risk to the valued environmental components in the Bay of Fundy Marine Environment from an accidental release of LNG during transportation and unloading.

Describe the procedures for the development and the anticipated components of a spill prevention, spill response plan and contingency plan for the marine environment.

#### **4.3 Effects on Freshwater Fish and Fish Habitat**

Predict the environmental effects of the project on freshwater fish and fish habitat within the environmental assessment boundaries.

#### **4.4 Effects on Species of Special Conservation Status**

Predict environmental effects of the project on species of special conservation status. Include consideration particularly on the environmental effects of the project on the right whale in their summer residence area at the entrance to the Bay of Fundy. Include also, consideration of any species of special conservation status known to occur within the zones of influence of the project and for which there are potential Project-VEC interactions anticipated that could result in significant environmental effects.

#### **4.5 Effects on Terrestrial and Wetland Environments**

The potential for effects of construction, operation and maintenance of the project on terrestrial and wetland environments should be discussed within the boundaries identified for the assessment (i.e., where there is potential for significant project-VEC interaction).

#### **4.6 Effects on Migratory Birds**

The effects of navigation structures, terminal and related infrastructure on migratory birds and migratory bird habitat should be evaluated.

#### **4.7 Effects on Groundwater Resources**

A Water Supply Source Assessment Process should be undertaken if the volume of groundwater to be used is greater than 50 m<sup>3</sup> per day, including water for fire protection. The potential for interference with domestic wells during the construction phase should be examined to evaluate environmental effects on groundwater resources.

#### **4.8 Effects of Navigation on Safety**

An explanation of the management of vessel traffic in the Bay of Fundy should be provided, along with a prediction of the effect of increased ship traffic on existing ship traffic in the Bay of Fundy and Saint John Harbour.

#### **4.9 Effects on the Road Transportation Network**

Predict the environmental effect of increased ground transportation on Red Head Road to and from Canaport, with reference to safety and the integrity of infrastructure.

#### **4.10 Socio-economic effects**

Predict the benefits of the project on Labour and Economy within the greater Saint John area and the Province of New Brunswick. Evaluate the environmental effects of the project on Land Use in the immediate vicinity of the project (i.e., within the defined environmental assessment boundaries of the project).

Discuss any potential visual impacts of the project on Mispec Beach.

The effect of the project on local property values and insurance rates should be undertaken.

#### **4.11 Effects on Public Health and Safety**

Predict the risk to the local community and the larger City of Saint John in the event of an accident during the shipping, handling, storage and transportation of LNG and the re-vapourized natural gas.

It is anticipated that defined worst-case scenario situations, in light of recent world events, be included in the risk analysis. The methodology and assumptions employed in the risk analysis should be clearly identified.

Identify circumstances where there may be increased impacts on human health and suggest possible programs for offsetting any increases.

Describe the specific, important malfunction and accident events that have a reasonable probability of occurring during the operation life of the project. Describe under what conditions a fire or explosion could occur at this facility or in the pipelines to the refinery.

Itemize past abnormal LNG operations, accidents and spills to the extent that they are relevant to the current assessment.

Describe the anticipated components of a spill prevention, detection, response and contingency plan for operation of the facility including, but not limited to unloading, storage, re-gasification and piping of the LNG and natural gas.

Describe the anticipated components of an emergency response plan for construction and operation.

Describe the key components relevant to safety during the construction activity.

Identify sources and characteristics of any potential risks to workers during construction and subsequent operation.

Describe how the infrastructure of the facility and management of the operation of the facility will minimize risk. Key components relevant to the management of malfunctions and accidents that may occur during the construction and subsequent operations should be described. Itemize safety qualification/certification required for construction and operation of the project.

#### **4.12 Effects on Aboriginal Land and Resource Use**

Project effects on the current use of lands and resources for traditional purposes by Aboriginal persons should be examined.

#### **4.13 Effects of Natural Hazards on the Project**

The assessment must take into account how natural hazards could adversely affect the project; for example, severe meteorological conditions and seismic events.

Sensitivity of the project to variations in meteorological conditions, including extreme events,

and lightening episodes should be fully investigated. Among the parameters to be considered are the effect of extreme precipitation events on site water management and the influence of wind and waves on the multi-purpose pier and on LNG transport and unloading. Consideration of applicable climate elements should include:

- an estimate of its importance to the project;
- an estimate of how sensitive the project is to variations of this element; and
- a discussion of climate data used including quality and record length, how representative these data are of the project area (in space and time), and how these factors affect the accuracy of the information derived;
- change in sea level.

The sensitivity of the project to climate variability should be identified and discussed.