SCOPING DOCUMENT / DRAFT 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
in cooperation with the Canadian Environmental Assessment Agency

to

Irving Oil Limited

January 23, 2002

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1.0 INTRODUCTION

1.1 Purpose

These guidelines are to be used by the Irving Oil Limited as a framework for conducting an Environmental Impact Assessment (EIA), of the proposed receiving, storage and processing facilities for liquefied natural gas (LNG). More specifically, three LNG storage tanks (each with a capacity of approximately 140,000 m^3), a re-gasification plant, two natural gas pipelines connecting the LNG terminal and the Irving Oil Refinery and related equipment and structures are proposed for the storage and processing facilities. Additionally, Irving Oil Limited proposes to construct a multi-purpose pier, which will include facilities for the receiving and unloading of LNG from LNG seagoing vessels. The LNG marine terminal and multi-purpose pier would be located on the south side of the Red Head Road, the immediate area referred to as Mispec Point, in the Municipality of Saint John, adjacent to the existing Irving Canaport Crude Oil Offloading and Storage Facility. The throughput capacity of the proposed Terminal will be 600,000 cubic meters of natural gas per hour. The project is subject to assessment by the Province of New Brunswick and by Canada under the requirements of the *Canadian Environmental Assessment Act*.

The proposed receiving, storage and processing of the LNG will be referred to as the proposal, undertaking or project in these guidelines.

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 impacts.

On November 19, 2001 the Canadian Environmental Assessment Agency (the Agency) determined that the project was subject to federal regulatory review under the *Navigable Waters Protection Act*. An environmental assessment must be completed in accordance with the *Canadian Environmental Assessment Act* (CEAA), at the comprehensive study level, before a permit under the *Navigable Waters Protection Act* may be issued. There are several steps to the CEAA 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 harmonized federal and provincial 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. 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 has provided the basis for this Draft Guidelines/Scoping Document, which the Review Committee has also examined. This Guidelines/Scoping Document outlines the approach the proponent should follow in conducting the EIA. It identifies important issues, which must be considered in assessing the impacts/environmental effects of the proposal.

Members of the public are invited to comment on this Draft Guidelines/Scoping Document and to identify any issues of concern, which do not appear in the document. Following public input, the Minister will issue the Final Guidelines/Scoping Document 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 harmonization to ensure that the public and the proponent are provided with a simplified process, avoiding confusion and duplication. There will be only one Draft Guidelines/Scoping Document and then one EIA/Canadian Environmental

Assessment Act Report, which will satisfy both the provincial and federal environmental assessment requirements.

The principle objective of the EIA is to predict the impacts/environmental effects, which can be expected should the project proceed. The EIA study, conducted in consultation with the residents from the area of potential impacts/environmental effects, is also expected to identify methods of optimizing positive impacts/environmental effects and minimizing negative impacts/environmental effectss resulting from the project.

Information gathered during the study is compiled in a draft EIA/Canadian Environmental Assessment Act Report. The draft report is evaluated by the Review Committee to determine whether the study adequately addresses the issues raised in the Final Guidelines/Scoping Document. Should the Review Committee determine that the report does not adequately address the Guidelines, the proponent should make revisions to address any identified deficiencies in order to advance the EIA process.

If, on the advice of the Review Committee, the Responsible Authority and the provincial Environment Minister are satisfied that the EIA/Canadian Environmental Assessment Act Report is adequate, the next step is, through consultation, to involve the public in evaluating the potential impacts/environmental effects anticipated from this project and their significance.

A summary of the final EIA/Canadian Environmental Assessment Act Report is to be prepared, on behalf of the Responsible Authority and the 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 EIA/Canadian Environmental Assessment Act Report. 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 submits the Canadian Environmental Assessment Act Report to the federal Environment Minister, through the Canadian Environmental Assessment Agency, for public review and comment. It is anticipated that the federal review period will be coincident with the 30 day 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 EIA/Canadian Environmental Assessment Act Report. 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. 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.

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. 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.

Any comments regarding the Draft Guidelines/Scoping Document may be forwarded directly to:

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Project Assessment Branch
NB Department of the Environment and Local Government
P.O. Box 6000
364 Argyle St.
Fredericton, NB
E3B 5H1
e-mail: 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

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.

"Environment" means the components of the earth and includes:

a) air, water, or land, including all layers of the atmosphere,
b) all organic and inorganic matter and living organisms,
c) the social, economic, cultural and aesthetic conditions that influence the life of humans or a community as they are related to the matters described in (a) and (b) and
d) a part or combination of those things referred to in paragraphs (a) to (c) and the interrelationships between two or more of them;

"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;

"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 impacts/environmental effects and identification of procedures that may be used to mitigate these effects. The EIA/Canadian Environmental Assessment Act Report is also expected to identify methods of optimizing positive impacts/environmental effects and minimizing negative impacts/environmental effects resulting from the proposed conversion.

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 EIA/Canadian Environmental Assessment Act Report through a scoping exercise. The method for conducting this exercise and the criteria for determining VECs must be clearly stated by the proponent. The proponent is encouraged to seek local public knowledge for identification of appropriate VECs.

Presented in Section 4.0 of these Guidelines are a number of specific issues for study. However, this framework must not limit the proposed EIA/Canadian Environmental Assessment Act Report. Should additional issues arise from discussion with members of the Review Committee, regulatory agencies or members of the public, the proponent should incorporate these issues into the assessment of the project's potential impacts/environmental effects.

2.2 Study Boundaries and Scope of Factors

The review must consider the potential 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 effect on, components of the environment. Irving Oil Limited must clearly define the boundaries of the study in time and space. The temporal boundaries of the study (the length of time over which project impacts/environmental effects are anticipated to occur) must reflect the construction period, the operating life of the project, and any potential impacts/environmental effects that may remain beyond the operating period, including decommissioning.

Spatial boundaries should reflect the extent to which project activities are anticipated to occur in the existing environment. Boundaries such as administrative, technical, biophysical, socioeconomic and project area should be defined and related to the impact assessment process. In determining appropriate spatial boundaries, consideration should be given to impacts/environmental effects from the proposal on a local, regional and national scale.

The scope of the factors to be examined during a comprehensive study of a project is itemized in subsections 16(1) and (2) of *CEAA*. These factors have been included in this Guideline/Scoping Document.

2.3 Prediction of Environmental Effects

The main focus of the EIA is to predict impacts/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 or synergistic effects and those effects that may result from accidents or malfunctions. These predictions should incorporate potential impacts of the environment on the project such as by extreme weather events and should include climate change considerations.

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.

EIA predictions are generally based on a combination of objective and subjective evaluation. The use of objective (measurable) analysis is strongly preferred. However, in recognition of any factor that may limit the ability to predict environmental responses, it is expected that under certain circumstances, predictions may be based in part 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, magnitude, duration, distribution and significance of the project's impacts/environmental effects. These predictions must:

- facilitate decision-making with respect to the proposed project;
- clearly specify any degree of uncertainty inherent in the projections;
- clearly identify impacts 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 effects from those that will have lesser effects, the Proponent must define "significant" for the EIA. 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 EIA/Canadian Environmental Assessment Act Report. 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 effects is required. Significance should be determined in the context of project-specific and cumulative effects and after taking into account the implementation of appropriate mitigation measures.

2.4 Mitigation, Contingency and Compensation

The study must describe general and specific measures of technical and economical feasibility that Irving Oil Limited proposes to implement to mitigate (eliminate, prevent and minimize) the potentially adverse environmental effects of the project. This should include a description of contingency measures that have been designed to address potential accidents and malfunctions that could result in spills or unplanned releases of contaminants 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 impacts/environmental effects, attributable to the project, which are detected through monitoring. This plan must be designed to be implemented should impacts/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 impacts 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.

2.5 Commitment to Monitoring

A well-defined program of monitoring the effects of the project must be outlined in the EIA. 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. This program must provide information:

- to establish baseline conditions;
- to test the predictions of the EIA/Canadian Environmental Assessment Act Report;
- to evaluate the effectiveness of the measures used to prevent or minimize environmental impacts/effects.

Monitoring 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 field work and laboratory testing.

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

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

2.6 Public Consultation

Public consultation is an essential component of this environmental impact assessment. Irving Oil Limited has already commenced consultation with persons and organizations potentially affected by the project, and should continue to incorporate their concerns into the study throughout the entire EIA process. The objectives of this consultation should be:

- to ensure that the potentially affected public 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 EIA/Canadian Environmental Assessment Act Report should document the dates and formats for public consultation undertaken, the material presented to the public, the opportunity for receiving public input, 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.

2.7 Terms of Reference

The proponent must submit detailed Terms of Reference in response to the Final EIA Guidelines/Scoping Document. 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 Study.

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 EIA/Canadian Environmental Assessment Act Report 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 EIA/Canadian Environmental Assessment Act Report 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 EIA/Canadian Environmental Assessment Act Report:

- Executive Summary
- Introduction
- Application of the CEAA/Regulation 87-83
- Scope of the Project
- Scope of the Environmental Assessment
- Purpose and Description of the Project
- Alternatives 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 Program – Comments Received
- 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 shall include all undertakings proposed by Irving Oil Limited or likely to be carried out in relation to the physical works proposed, including: The construction, operation, decommissioning of the Liquified Natural Gas Marine Terminal and Multi-Purpose Pier Project, as well as all ancillary undertakings in relation to the above.

The project description must include, but not be limited to:

- the shipping sea transportation profile;
- the regulatory standards to which the components of this project will be built and operated;
- the LNG design ship's operation characteristics;
- the LNG ship's cargo containment characteristics;
- the construction methodology and design description for the multi-purpose marine pier;
- the LNG piping and tunnel system;
- the LNG storage tanks;
- secondary containment systems;
- the re-gasification unit;
- the natural gas distribution pipeline and corridor selected;
- 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
- the history of LNG and general information on existing infrastructure around the world.

It should be noted that any additional modifications of decommission/abandonment activities would also likely be subject to examination under the Environmental Impact Assessment Regulation – *Clear Environment Act* and the *Canadian Environmental Assessment Act*, as appropriate.

In consideration of the marine component of the proposed project, it should further be noted that Transport Canada administers the voluntary TERMPOL Code, which was drafted in cooperation with Environment Canada, Fisheries and Oceans Canada, Public Works and Government Services Canada and with substantial input from the marine industry. The Code was first published in 1977 to assist with the Technical Review Process of Marine Terminal Systems. The latest edition of the Code was published in 2001. It encompasses almost a quarter of a century of expertise and cooperation at the federal and provincial levels and is intended to provide guidance to proponents to ensure the best protection of the public and the environment.

3.2 Project Rationale

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 indicted 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. 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.

(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 should be discussed, and a comparative evaluation conducted.
II. Alternative shipping corridors considered.

3.4 Description of the Existing Environment

The EIA/Canadian Environmental Assessment Act Report should describe the existing environment focusing on the Valued Environmental Components as they occur within the study boundaries.

A description of the existing environment 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
- freshwater and marine aquatic biological components (including fish, fish habitat and fisheries resources)
- marine vessel traffic routes
- 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
- current and foreseeable land use and zoning restrictions
- existing public health and safety concerns
- ambient noise levels (near potentially affected habitation)
- transportation (traffic volumes and types during construction)

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/Scoping Document are addressed in the report, is required. This index must be submitted with the Draft EIA/Canadian Environmental Assessment Act Report.

4.0 POTENTIAL IMPACTS

Presented here are a number of specific issues for study. However, this framework does not limit the proposed EIA/Canadian Environmental Assessment Act Report. Should additional issues arise from 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 impacts.

4.1 Impacts on Air Quality

Predict the impacts and estimate the quantities of emissions of air pollutants (including greenhouse gases) from the various components of the project, both locally and regionally. Process upset conditions should be considered in an air quality impact analysis. The scale, likelihood and effect of an upset should be indicated. Estimates of greenhouse gases should be placed in context with total emissions for New Brunswick and within the industry nationally. A discussion of Irving Oil's Voluntary Challenge and Registry (VCR) commitment and proposed measures should also be included.

Identify sources and characteristics of contaminants as defined in the *N.B. Clean Environment Act.*

A discussion of air quality monitoring options and their feasibility for implementation should be completed.

A discussion of the climatology of the area shall be provided.

The cumulative effects of methane leaking from the vessels/facility/pipeline to the atmosphere should be examined. Any effects to the Saint John airshed should be determined.

4.2 Impacts on the Bay of Fundy

The impact of construction, operation and maintenance activities on surface water quality and the benthic environment should be assessed. Predict the impact of any potential deterioration in water quality on valued environmental components.

Predict the risk to the valued environmental components in the Bay of Fundy ecosystem 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.

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

Predict the impacts to the valued environmental components in the Bay of Fundy ecosystem from an increase in ship traffic and from the construction of the marine terminal. Predict the impacts to the valued environmental components and the fishing industry in the Bay of Fundy ecosystem of a cold-water plume, should seawater vapourization be employed.

Predict the impacts to the fisheries resources in the vicinity of the proposed terminal and in the new shipping channel approaches to the terminal. For this exercise, the definition of "fish" is presented in Section 2 of the *Fisheries Act*, and includes fish, shellfish, crustaceans and marine mammals. Please delineate any fishing exclusion zones.

4.3 Transportation Issues

Predict the impacts of increased ground transportation in the region and specifically traffic to and from Canaport, with reference to noise, safety, air quality and impact to the local road infrastructure, specifically the Red Head Road, with a history of unstable slopes.

4.4 Socioeconomic Impacts

Predict the environmental, social and economic benefits and costs of the project. A regional economic impact assessment should be included.

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

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

4.5 Impacts on Terrestrial and Wetland Environments

The potential for impacts of construction, operation and maintenance of the project on terrestrial and wetland environments should be discussed.

4.6 Impacts on Migratory Birds

The impacts of navigation and the infrastructure on migratory birds should be discussed.

4.7 Impacts on Groundwater

A Water Supply Source Assessment Process should be undertaken if the volume of groundwater to be used is greater than 50 m^3 per day, including water for fire protection.

The potential for interference with domestic wells during the construction phase should be examined.

4.8 Impacts of Navigation on Safety

An analysis of the safety of the route selected by the proponent through waters under Canadian jurisdiction should be undertaken. The LNG industry's historical marine accident survey and ship casualty analysis should be provided. An analysis of the safety of ship operations within the ship terminal zone including berthing facilities should be included.

4.9 Impacts 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 worst-case scenario situations be included in the risk analysis. The methodology and assumptions employed in the risk analysis should be clearly identified. The input data and assumptions for the risk assessment should be provided to local experts, the appropriate members of the Review Committee and interested public and will include, but not be limited to vapour plume travel distances and meteorological conditions.

Describe the specific, important malfunction and accident events that have a reasonable probability of occurring during the operation life of the project.

Provide a description of the source, quantity, mechanism, rate, form and characteristics of contaminants and other sources likely to be released to the environment causing a worker exposure during a postulated malfunction and accident event.

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, spill detection, spill response plan 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 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.

4.10 Impacts on First Nations Interests

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

4.11 Impacts of the Environment on the Project

Sensitivity of the project to variations in meteorological conditions, including extreme events, should be fully investigated in an assessment of effects of the environment on the project. Among the parameters to be considered are the impact 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;
- 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; and,
- in cases where the climate data are uncertain, a commitment to acquire such data on an ongoing basis, and to periodically review and analyze the data to make adjustments to the initial design values where warranted

Climate change may have an impact over the lifespan of the facility. More intense storms may increase the risk of spills and with higher sea levels expected coastal flooding could be exacerbated and there may be greater potential for infrastructure damage from extreme storm surge events. The sensitivity of the project to climate variability should be identified and discussed.