

## **DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) GUIDELINES**

**FOR THE REVIEW OF THE PROPOSED**

### **BATHURST INLET ROAD AND PORT PROJECT**

**APRIL 2002**

**ISSUED BY**

**THE NUNAVUT IMPACT REVIEW BOARD AND THE NUNAVUT WATER BOARD**

#### **1.0 Introduction**

This document contains the Environmental Impact Statement (EIS) Guidelines for the preparation of an EIS by the Kitikmeot Corporation and Nuna Logistics Limited (the Proponent) who will form a joint venture corporation to build and operate the Project. The purpose of the EIS Guidelines is to provide specific guidance to the Proponent on the content of the EIS. The EIS developed in accordance with these guidelines will serve as the basis for the NIRB's and the NWB's review of the proposed Bathurst Inlet Road and Port project (the Project) and will enable the Boards and any interested party to understand and assess the potential adverse and beneficial environmental effects of the Project. The Project consists of a port on Bathurst Inlet connected to the Izok mineral deposit by a 211-kilometre all-weather road to Contwoyo Lake, the existing winter ice road and a summer barge system to Lupin Mine, and a 79-kilometre all-weather road from Lupin to Izok.

The document contains a Main Text and five (5) Annexes as follows:

- *The Main Text* outlines for the Proponent and interested parties, the Boards' overall approach to the review, the principles which should guide the Proponent's environmental assessment, and the general methodology for the preparation and presentation of the EIS by the Proponent;
- *Annex 1 - Definition of Terms*: outlines the definitions which apply throughout these guidelines;
- *Annex 2 - Scope of Project*: outlines the Project components included in the Terms of Reference issued by the Minister of Indian and Northern Affairs Canada on XXXX, 2002;
- *Annex 3 - Area Map of the Project*;
- *Annex 4 - Approach to the Environmental Impact Statement*: provides detailed information on the suggested approach the Proponent should use in developing the Environmental Impact Statement (EIS);
- *Annex 5 - Scope of the Environmental Impact Statement*: outlines the detailed issues the Boards will review in order to adequately consider the factors outlined in the Boards' Terms of Reference.

The draft version of these EIS Guidelines was initially prepared [ When preparing the Draft EIS Guidelines, the Boards reviewed the March 2002 "Bathurst Inlet Road and Port Project" Project Description prepared by the Proponent and submitted simultaneously on April 2, 2002 to the Kitikmeot Inuit Association, the Nunavut Water Board and the Department of Indian and Northern Affairs Canada] and issued by the Boards on XXXX, 2002, for a 45-day public comment period. During this period, the Boards sought oral and written comments from the public on the issues to be included in the environmental review. During this exercise, the Boards received oral and written comments from government, individual members of the public or representatives of groups.

#### **1.1 Background**

The environmental assessment process was initially triggered for the Project in April 2002, when the Proponent filed applications for water license with the Nunavut Water Board, applications for the lease of Crown Land, Land use and quarry permits with the Department of Indian and Northern Affairs Canada, and applications for land use and quarries on Inuit Owned Land with the Kitikmeot Inuit Association. In its applications, the Proponent stated that it expected that the Project would be examined by the NIRB pursuant to the Nunavut Land Claims Agreement. NIRB recommended to the Minister of DIAND to subject the Project to a Part 5 review on the basis that it may have significant adverse environmental effects in Nunavut.

#### **2.0 Focus of Review**

The Project to be reviewed by the Boards includes the construction and operation of the proposed Project. The roadway components of the Project include a 290-kilometre all-weather road that passes over 148 kilometres of Inuit Owned Lands and

140 kilometres of Crown Land. Road construction material will be obtained from quarries adjacent to the roadway. Fifty-one quarries are proposed: 29 on Inuit Owned Lands and 22 on Crown Land. Road construction will occur in three phases; at the port it will begin in October 2004 and work toward Contwoyo Lake; at Contwoyo Lake, it will begin in February 2005 and work toward the port. Lupin to Izok road construction will begin in February 2006 from Lupin and work toward the Izok Project. Road construction will be complete in October 2006. The Project also includes two barge terminals to be constructed on Contwoyo Lake. The terminal at kilometer 211 on the southeast shore of the lake will include a 20-person camp, a small maintenance shop and a truck parking area. The other terminal will be located at Lupin Mine on the northwest shore of the lake. The Bathurst Inlet port components of the Project include a wharf to serve 50,000 tonne ice-class vessels delivering fuel and bulk cargo and shipping out base metal concentrates from Izok; a dock to handle barges serving the Kitikmeot communities of Kugluktuk, Bathurst Inlet, Cambridge Bay, Umingmaktok, Gjoa Haven and Taloyoak; a 200-person camp and services; a 220 million-litre diesel fuel tank farm; a truck and trailer maintenance shop; and a 1,200-metre airstrip. Port construction would begin in September 2004 and be completed in September 2005. Detailed information on the scope of the Project is outlined in Annex 2.

In light of the information already existing respecting the Project's impacts and in keeping with their mandate, the Boards's ultimate task will be to evaluate the significance of the adverse environmental effects resulting from the Project and to make recommendations as to whether any adverse environmental effects determined by the Boards to be significant after mitigation are justifiable in the circumstances. In order to do so, it is the Boards' belief that, as several persons indicated during the scoping meetings, a holistic approach to the review must be taken and not one that looks at issues in isolation. Accordingly, the Boards has decided that:

- An ecosystem based approach must be adopted for the review. In order to gain an adequate understanding of the effects the Project may have on various ecosystem components, the Boards believes that ecosystem components cannot be evaluated in isolation of one another. Rather, an ecosystem-based approach must be adopted to ensure that the review addresses both the direct impacts that the Project will have on the various ecosystem components, as well as the interactions that will occur between ecosystem components as a result of the Project being carried out.
- Socio-economic issues, such as the Project's transportation potential to negatively or positively affect economic development within the Region, must be included in the review. In addition, members of the community constitute part of the environment to be assessed by the Boards. As such, adverse and beneficial effects of the Project on members of the community with respect to health, recreation and other aspects of social well-being, need to be examined by the Boards to ensure a holistic understanding of the Project's effects.
- An understanding of past and future environmental, economic and social trends in the West Kitikmeot Region of Nunavut and how the Project will influence these trends is required. The inclusion of a time perspective, from the early planning of the Project to its operation over the next few decades (to 2020), is important in order to provide the Boards with a full understanding of the cumulative environmental effects of the Project in combination with other past, present and reasonably foreseeable projects.

The Boards will consider the need for, alternatives to, and alternative means of carrying out the Project in assessing the justifiability of any significant residual environmental effects identified, and in formulating its recommendations to the federal government. Finally, the Boards will generally consider the extent to which the Project meets the sustainable development and planning objectives outlined in the latest available version of the Nunavut Planning Commission's Draft West Kitikmeot Regional Land Use Plan.

The Boards' review will be guided by their respective operational Procedures for hearings and reviews. The Boards will meet their process requirements in an efficient and timely manner, and will focus on ensuring a fair and balanced consideration of all issues related to the Project.

The Boards recognizes that a substantial amount of useful and relevant information currently exists related to the Project. In addition, the Boards understands that the Proponent has recently or will soon finalize new study documentation on the streams and rivers crossed by the proposed road alignment as a follow-up to the March 2002 Report. In addition, the Boards are aware that the West Kitikmeot/Slave Study Group has accumulated a lot of information on the environmental, cultural and socio-economic conditions of the region. In order to minimize duplication, the Boards encourage the Proponent to make maximum use of these documents in preparing the EIS. When relying on this information, the Proponent should comment on the relevance and accuracy of the existing information with respect to current conditions. Finally, the Proponent should also outline any limitations related to the conclusions that can be drawn from this existing information.

The Boards have had the opportunity to read many of the documents related to this Project and has also reviewed and considered all comments received from the public on the Draft EIS Guidelines. Through this scoping exercise, the Boards have gathered a substantial amount of valuable and useful information to assist it in its review. However, the Boards have identified some areas where it would need additional information in order to adequately consider the factors outlined in its Terms of Reference. These include:

- up-to-date traffic studies of current and forecasted inter- and intra-territorial traffic patterns;
- the effects of atmospheric emissions related to the Project on health, particularly among the young and elderly, during periods of high traffic volume and/or adverse weather conditions for dispersal of emissions;
- effects of the environment on the Project (i.e. such as air inversions, fog, flooding, etc.);

- the Proponent's current views of how the Project relates to the Region's sustainable development strategies;
- the detailing of all economic costs and benefits associated with the planning, construction, operation and modification of the Project;
- an outline of the general economic costs, major benefits, and environmental impacts of feasible alternatives identified for the Project;
- adequacy of mitigation measures to reduce the anticipated adverse environmental effects of the Project;
- uncertainties related to the effects of the Project on migration of contaminants from local landfills; and
- evidence as to how industrial, commercial and tourism growth and contraction trends in the Region would be affected by the Project and their consequential impact on the environment.

In light of the limited information available to the Boards in the above areas, the Boards requests that the Proponent place particular focus on these areas in the information to be provided in the EIS. Specific information requested by the Boards related to the above issues is included in Annex 5.

## 2.1 Preparation of the EIS

Annex 5 outlines the detailed issues that the Proponent is required to address in the EIS. It also includes detailed information on how to describe and assess these issues. For clarity and ease of reference, the Boards suggest that the EIS follow the same order as that presented in Annex 5.

While Annex 5 provides a framework for preparing a complete and accessible document, it is the responsibility of the Proponent to provide sufficient data and analysis to allow the identification of any potential adverse and beneficial environmental effects of the Project, the determination of potential significant adverse environmental effects, and the evaluation of the justifiability of any significant adverse environmental effects by the Boards, the public, technical and regulatory agencies and other interested parties.

It is possible that Annex 5 includes matters that, in the judgement of the Proponent, are not relevant or significant to the Project. Conversely, it is also possible that Annex 5 may have omitted issues deemed relevant or significant for the purposes of the review by the Proponent. If such matters are omitted from or added to the EIS, they should be clearly indicated so that the public and other interested parties have an opportunity to comment. Where the Boards disagrees with the Proponent regarding the omission or addition of information, it may choose to disregard the additional information provided or may require the Proponent to provide any missing information.

## 2.2 Review of EIS

Following submission of the EIS by the Proponent, the Boards will make the EIS available to the public and other interested parties and will receive comments, during a 60-day review period, on the adequacy of the EIS as a response to the EIS Guidelines. The Boards will consider oral comments as fully as written comments. Within 30 days of the close of this review period, the Boards will determine if the EIS contains adequate information to hold public hearings. If the information provided in the EIS is determined not to be sufficient, the Boards will request additional information. The Boards will only proceed to public hearings when it has determined that the EIS contains adequate information to allow effective public review of the Project.

During the 30-day public hearings phase, the Boards will seek public input to assist it in reaching its conclusions and making its recommendations with regard to the Project.

## 2.3 Boards Report

Within 90 days following the public hearings, the Boards will prepare and submit a report to the responsible Minister. The report will include, but will not be limited to, a description of the public review process, a summary of any comments received from the public and the rationale, conclusions and recommendations of the Boards.

## **3.0 Respect for the Principle of Sustainable Development and Consideration of Community Knowledge**

### 3.1 Respect for the Principle of Sustainable Development

Promotion of sustainable development (development that meets the needs of the present, without compromising the ability of future generations to meet their own needs) is a fundamental purpose of environmental assessment. The Boards' Terms of Reference outline three factors that it must consider which are directly associated with sustainable development. These factors are:

- 1) the extent to which biological diversity is affected by the Project;
- 2) the capacity of renewable and non-renewable resources that are likely to be significantly affected by the Project to meet the needs of the present and those of the future; and
- 3) the extent of application of the precautionary principle to the Project [ The Rio Declaration of 1992, to which Canada is a signatory, states that the precautionary approach requires that: "Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation."].

The Boards interprets progress towards sustainable development as meeting the following goals:

- 1) the preservation of ecosystem integrity, including the capability of natural systems, local and regional, to maintain their structure and functions and to support biological diversity;
- 2) respect for the right of future generations to the sustainable use of renewable and non-renewable resources; and
- 3) the attainment of durable social and economic benefits.

The Boards requires the Proponent to demonstrate how the Project meets the three goals directly noted above. It is the Boards's belief that the application of the precautionary principle can play an important role in meeting the goals of sustainable development. Ways in which the Proponent may demonstrate that the Project conforms to the precautionary principle and in turn meets the three goals of sustainable development noted above are included in Annex 4.

### 3.2 Consideration of Community Knowledge

Community knowledge, including traditional knowledge which is rooted in the traditional life of Aboriginal people, is acquired as a result of a sustained relationship between a population and an environment. Community knowledge has an important contribution to make to a full assessment of the effects of the Project. This knowledge is based on personal observation, collective experience and oral transmission over generations. The Proponent should be aware of any specific concerns based on local community knowledge and expertise when preparing the EIS.

## Annex 1

### Definition of Terms

**"Boards"** means the Nunavut Water Board and the Nunavut Impact Review Board;

**"Contingency Plan"** means a program intended to address malfunctions, accidents or unplanned events that may occur in connection with the project;

**"CEAA"** means the Canadian Environmental Assessment Act;

**"Community Knowledge"** means knowledge acquired as a result of a sustained relationship between a population and an environment (including but not limited to traditional ecological knowledge).

**"Cumulative Environmental Effects"** means cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;

**"EIS Guidelines"** means the direction provided to the Proponent by the Boards on matters that must be addressed in the Proponent's Environmental Impact Statement;

**"Environment"** has the same meaning as in s. 2 of the CEAA;

**"Environmental Assessment"** means an assessment of the environment effects of the project that is conducted in accordance with the Terms of Reference and the NLCA;

**"Environmental Effect"** has the same meaning as in s. 2 of the CEAA;

**"Environmental Impact Statement"** means the report that presents the results of the environmental assessment conducted by the Proponent;

**"Follow-up Program"** has the same meaning as in s. 2 of the CEAA;

**"Interested Party"** means, in respect of an environmental assessment, any person or body (e.g. members of the general public, representatives of organizations, government agencies) having an interest in the outcome of the environmental assessment for a purpose that is neither frivolous nor vexatious;

**"Mitigation"** has the same meaning as in s. 2 of the CEAA;

**"Nunavut Impact Review Board"**, or NIRB means the institution referred to in Section 12.2.1 of the Nunavut Land Claims Agreement;

**"Nunavut Water Board"**, or NWB means the institution referred to in Section 13.2.1 of the Nunavut Land Claims Agreement;

**"Precautionary Principle"** means the application of prudent foresight, the recognition of uncertainty, and, when decisions must be taken, to err on the side of caution;

**"Project"** means the construction, operation and decommissioning of the Bathurst Inlet Road and Port and ancillary works proposed by the Kitikmeot Corporation and Nuna Logistics Limited;

**"Proponent"** means the Kitikmeot Corporation and Nuna Logistics Limited;

**"Public Registry"** means a registry established by the NIRB or NWB;

## **Annex 2**

### **Scope of Project**

The Bathurst Inlet Road and Port Project is described in the Proponent's Project Description dated March 2002. The Project includes the construction and operation and decommissioning of the road and port and any required ancillary works.

The Proponent shall indicate if the predicted environmental effects of the individual Project components listed below relate specifically to the Project, to mitigation for the Project, or to other projects or activities included in the cumulative effects assessment.

(Expand here on the full project description in #2.0 of the Report)

## **Annex 3**

### **Area Map of the Proposed Project**

(MAP)

## **Annex 4**

### **Approach to the Environmental Impact Statement**

The following annex provides information on the suggested approach the Proponent should use in developing the Environmental Impact Statement (EIS).

#### **1.0 Respect for the Principle of Sustainable Development**

As indicated in section 3.0 of the Main Text, promotion of sustainable development is one of the main purposes of environmental assessment. The Boards recognizes that application of the precautionary principle can play a significant role in meeting the objectives of sustainable development. The Boards understands the application of the precautionary principle to generally require:

- 1) that the onus of proof should lie with the Proponent to show that a proposed action will not lead to serious or irreversible environmental damage, especially with respect to overall environmental function and integrity, considering system tolerance and resilience;

- 2) analysis based on scientific research and high-quality information; and
- 3) access to information, public participation, and open and transparent decision-making.

As part of the review, the Boards will examine the extent to which the Proponent has considered sustainable development objectives in Project planning. In this regard, the Proponent should include, at a minimum, a discussion of:

- 1) the extent to which the Project conforms to the precautionary principle;
- 2) the extent to which the Project may make a positive overall contribution towards the attainment of ecological and community sustainability, both at the local and regional levels;
- 3) how monitoring, management and reporting systems will attempt to ensure continuous progress towards sustainability; and
- 4) the Proponent's intended use of appropriate indicators (including, but not limited to, Sustainable Community Indicators adopted by the Proponent in 1996) to determine whether continuous progress towards sustainability is being maintained.

## **2.0 Detailed Approach for the Preparation and Presentation of the EIS**

### **2.1 Comprehensive Public Involvement**

Public involvement is a central objective of the overall review process and a means to ensure that the Proponent addresses public concerns. The Boards recognize that the Proponent has carried out substantial consultations in relation to this Project in the past. However, in preparing the EIS, the Proponent should evaluate the need for additional consultations with residents and organizations that are likely to be affected by the Project, and other parties who may be interested in the Project.

In addition to public consultation, meaningful public involvement in the environmental assessment review requires that the Proponent:

- a) continue to provide up-to-date information describing the Project to the public and especially to the communities likely to be most affected by the Project; and
- b) explain the results of the EIS in a clear direct manner to make the issues comprehensible to as wide an audience as possible (see section 2.3).

### **2.2 Study Strategy and Methodology**

The Proponent is expected to observe the intent of the EIS Guidelines and to identify adverse and beneficial environmental effects of the Project and to describe in detail any significant adverse environmental effects caused by the Project.

The Proponent should explain and justify methods used to predict potential adverse and beneficial environmental effects of the Project on valued ecosystem components (VECs), on the interactions among these components and on the relations of these components within the environment. The information presented must be substantiated. In particular, the Proponent should describe how VECs were identified and what methods were used to predict and assess the adverse and beneficial environmental effects of the Project on these components. The value of a component not only relates to its role in the ecosystem, but also to the value placed on it by humans. The culture and way of life of the people using the area affected by the Project may themselves be considered valued components. In this regard, the Boards suggest that the Proponent seeks public input respecting the identification of the VECs to be discussed in the EIS.

In describing methodology, the Proponent should explain how it used scientific, engineering, traditional and other knowledge to reach its conclusions. Any assumptions made should be clearly identified and justified. All data, models and studies must be documented so that the analyses are transparent and reproducible. All data collection methods should be specified. The uncertainty, reliability and sensitivity of models used to reach conclusions should be indicated. The sections on the existing environment and on potential adverse and beneficial environmental effects predictions and assessment should be prepared to the highest standards in the relevant subject area. All conclusions should be substantiated.

Although the Proponent has a fair level of flexibility in selecting and substantiating methodologies and parameters to be used in reaching its conclusions, the Boards in certain instances, has offered suggestions as to the methodology or parameters to be used by the Proponent. In such instances, the Proponent may follow the suggestions of the Boards or alternatively, may use other methodologies or parameters that it considers more appropriate to reach its conclusions. In such cases, the Proponent should substantiate the reasons for employing methodologies and/or parameters other than those suggested by the Boards.

The EIS should identify all significant gaps of knowledge and understanding where they are relevant to key conclusions presented in the EIS. The steps to be taken by the Proponent to address these gaps should also be identified. Where the conclusions drawn from scientific and technical knowledge are inconsistent with the conclusions drawn from community knowledge, the EIS should contain a balanced presentation of the issues and a statement of the Proponent's conclusions.

### 2.3 Presentation of the EIS

For clarity and ease of reference, it is suggested that the EIS be presented in the same order as Annex 5. However, in certain sections of the EIS, the Proponent may decide that the information is better presented following a different sequence. The EIS should include a guide that cross-references the EIS Guidelines with the EIS so that points raised in the EIS Guidelines are easily located in the EIS.

In the interest of brevity, the EIS should make reference to, rather than repeat, information that has already been presented in other sections of the document. A key subject index would also be useful and should reference locations in the text by volume, section and sub-section. As well, the names of the Proponent's key personnel and/or contractors/sub-contractors responsible for preparing the EIS should be listed. Supporting documentation should be provided in separate volumes, and should be referenced by volume, section and page in the text of the main EIS. The Proponent is encouraged to make the EIS text available on an Internet website.

The Proponent should present the EIS in the clearest language possible. However, where the complexity of the issues addressed requires the use of technical language, a glossary defining technical words and acronyms should be included. The Proponent should provide charts, diagrams and maps wherever useful to clarify the text, including perspective drawings that clearly convey what the developed Project site would look like.

### 2.4 EIS Summary

It is essential to the public hearings stage of the environmental assessment that residents of those communities likely to be affected by the Project have an adequate understanding of the proposed Project and its potential adverse and beneficial environmental effects. The Proponent should therefore prepare a detailed summary of the EIS that will provide the reader with a concise but complete overview of the EIS, including all the information listed in Annex 5. This summary should be made available in English and Inuktitut. The Proponent shall also make use of electronic distribution formats as much as possible in addition to paper copies of the EIS as required by the Boards and reviewers.

### 2.5 Submission of EIS

Upon finalization of the EIS, the Proponent shall submit 1 reproducible copy of the EIS Guidelines (e.g. electronic format) and 20 hard-copies of the EIS to the Boards for placement on the Public Registry, distribution to interested parties having received participant funding for the hearings phase of the review (if participant funding is made available), and for copying and distribution to other interested parties as requested.

### 2.6 Physical Model

As is done for other major infrastructure proposals, the Proponent should also prepare an updated physical model of the Project for use by the Boards and reference at the public hearings.

## Annex 5

### Scope of the Environmental Impact Statement

The following outlines the detailed issues the Boards will review in order to adequately consider the factors outlined in its Terms of Reference. As indicated in the Main Text, the Boards suggest that the Environmental Impact Statement (EIS) follow the same order (i.e. headings and discussion of issues) as outlined below.

The Boards encourages the Proponent to make maximum use of existing information in meeting the information requirements outlined below. When making use of existing information, the Boards encourages the Proponent to either include the information directly in the EIS or, more simply, to clearly direct (e.g. through cross-referencing) the Boards to where it may obtain the information (i.e. indicate documents or sections of documents and where they may be obtained if information is not included in the EIS).

### 0.0 Table of Contents

The Proponent should provide an annotated table of contents for all volumes and background reports, and any other information that will help the reader find his or her way around the EIS. A detailed table of concordance between the EIS guidelines and the EIS shall be provided at the beginning of the EIS.

## **1.0 Introduction**

This section should orient the reviewer to the EIS by briefly introducing the geographic setting, the Project, the underlying rationale for the Project, the Proponent, the environmental assessment review process in the context of the Terms of Reference, the role of the EIS in the overall environmental assessment process, and the content and format of the EIS.

### **1.1 The Setting**

The Proponent should provide a concise description of the geographic setting in which the Project is proposed to take place. This description should integrate the natural and human elements of the environment in order to explain the interrelationships between the physical and biological aspects and the people and their communities.

### **1.2 The Project**

The Proponent should briefly summarize the Project, its history, purpose, location, scale, components, activities, scheduling and costs. The Proponent should include the components outlined in Annex 2.

### **1.3 The Proponent**

This section should introduce reviewers to the Proponent with summary information on the nature of organizational accountability for:

- a) the design, construction, operation and decommissioning of the Project;
- b) the implementation of environmental mitigation measures and environmental monitoring;

### **1.4 The Planning Context**

The Proponent should identify the planning context for the environmental assessment of the Project. The need for the environmental assessment under the *Nunavut Land Claims Agreement* should be identified. Policy and planning considerations, such as government policies, regulations, and land use plans that have a bearing on the Project should be discussed.

## **2.0 Public Involvement**

The Proponent should indicate how it has ensured meaningful public involvement relating to the Project in the recent past and/or as part of this review. In particular, the Proponent should discuss how it has consulted with residents and organizations that are likely to be affected by the Project, and other parties who may be interested in the Project. The Proponent should describe the objectives of these consultations, the methodology used, the results, and the ways in which the Proponent intends to address the concerns identified.

## **3.0 Boundaries for the Environmental Assessment**

By defining the spatial and temporal boundaries, the Proponent will establish a frame of reference for identifying and assessing the environmental effects associated with the Project. Different boundaries may be appropriate for each valued ecosystem component being considered.

### **3.1 Spatial Boundaries and Scale**

In determining the spatial boundaries to be used in assessing the potential adverse and beneficial environmental effects, the Proponent should consider, but be not limited to, the following criteria:

- a) the physical extent of the proposed Project;
- b) the extent of aquatic and terrestrial ecosystems potentially affected by the proposed Project;
- c) the extent of potential effects arising from noise and atmospheric emissions, and
- d) land use for commercial, cultural, recreational and aesthetic purposes by communities whose areas encompass.
- e) the size, nature and location of past, present and reasonably foreseeable projects and activities which could interact with items b) and c).

These boundaries must also indicate the range of appropriate scales at which particular baseline descriptions and the assessment of environmental effects should be presented. The Proponent is not required to provide a comprehensive baseline description of the environment at each of the above scales, but should provide sufficient detail to address the relevant environmental effects of the Project and the alternatives included in the Proponent's review. The EIS should contain a justification and rationale for all boundaries and scales chosen.

### 3.2 Temporal Boundaries

In describing and predicting the environmental effects of the Project, the Proponent shall cover the period from the start of any pre-construction activity associated with the Project through construction, operation, including maintenance and repairs, and any modifications of the Project up to the year 2020.

In characterizing the environmental effects of the Project, the Proponent shall consider the current baseline environment and environmental trends within the study area. The description of the existing baseline and environmental trends shall include a consideration of past projects and activities carried out by the Proponent and/or others within the study area.

In assessing cumulative environmental effects within the study area, the Proponent shall consider the effects of the Project in combination with other past, present and reasonably foreseeable projects.

As is the case for the determination of spatial boundaries, the temporal boundaries must indicate the range of appropriate scales at which particular baseline descriptions and the assessment of environmental effects will be presented.

## 4.0 Detailed Project Description

The Proponent should provide a detailed description of the Project. The detailed description should include a discussion of the following factors:

- a) location of the Project and the timing for the Project and related works;
- b) relevant information on the Project's history and current status;
- c) major components of the Project described in Annex 2 and their location, including using maps and models indicating: boundaries of the Project in relation to existing infrastructure, land uses, waste disposal areas, temporary and permanent existing and proposed transportation systems and routes, important environmental features and local land uses;
- d) design features of the Project including, but not restricted to, traffic operating speed, traffic volume, safety features, efficiency, network aspects (provision of roadway continuity and links to existing road infrastructure). Assumptions underlying these design features should be explicitly stated;
- e) a description of those aspects of the Project, including accidents and malfunctions (e.g. analysis of traffic safety and the potential for hazardous/toxic spills), that could reasonably be expected to affect the environment;
- f) an explanation of how the environment has influenced the design of the Project. This should include, but is not limited to, geographical (the grade of the slopes within the valley), geological (the stability of surficial deposits) and meteorological (frequency and severity of fog, air inversions, precipitation and flooding) considerations;
- g) analysis of forecasted traffic pattern shifts following construction of the Project. It is suggested that a representative sample of potential users be questioned directly on their anticipated transportation route choices following construction of the Project;
- h) a discussion of how design, engineering and management plans are consistent with the maintenance of ecosystem function and integrity;
- i) any relationship to a series of separate projects or to a larger project should be stated, as it could have implications for the consideration of alternatives, cumulative environmental effects and mitigation options;
- j) identification and application of criteria used to determine the technical and economic feasibility of the alternatives to the Project (e.g. transportation, natural, social, economic and cultural environment);
- k) the detailing of all environmental, social and economic costs and benefits associated with the planning, construction, operation and decommissioning of the Project;
- l) an analysis of alternatives to the Project including, but not limited to: alternative routes, the "do nothing" scenario, management of transportation demand using available infrastructure, to a level of detail which is sufficient to allow the Boards and the public to compare the Project with the alternatives in terms of the economic costs and the environmental, social and economic benefits;
- m) an analysis of alternative means of carrying out the expressway including, but not limited to, alternative routings, configurations, and terminal points;
- n) identification of the potential adverse and beneficial environmental effects of each feasible alternative means to a level of detail which is sufficient to allow the Boards and the public to compare the Project with the alternatives in terms of the environmental, social and economic costs and benefits;
- o) reasons for selection of the Project as the preferred alternative, including the reasons for rejection of other alternatives;
- p) the extent to which the Project conforms to publicly adopted regional, provincial and federal policies and plans;
- q) a demonstration of how the Proponent has applied the precautionary principle in its Project design and management; and
- r) a risk assessment of those conditions that might impair the fulfillment of the Proponent's plans and commitments regarding the avoidance or mitigation of adverse effects.

### 4.1 Regulatory Environment

The Proponent should identify all federal and territorial environmental and other related laws, regulations and associated standards that require compliance in respect to the Project and explain how such requirements will be met. Each regulatory approval required should be listed with the following details:

- a) activity requiring approval and when it is required;
- b) regulatory agency;
- c) name of approval or permit; and
- d) associated legislation.

#### 4.2 Project Components and Activities

The description should address all phases of the Project in sufficient detail to allow the Proponent to predict potential adverse and beneficial environmental effects and address public concerns about the Project. The Proponent should describe Project phases such as pre-construction, construction, operation, and decommissioning.

##### 4.2.1 Construction Phase

This section should include information regarding all construction activities, schedules, methods to transport materials, infrastructure and personnel requirements.

###### 4.2.1.1 Activities

Activities described should include but not be limited to:

- a) all site preparation;
- b) all site clearing including vegetation, alteration of landforms, soil and rock removal, infilling of creek channels, alterations to wetlands and their functions, and associated disposal or storage methods;
- c) all water diversions and creek channel realignments;
- d) all construction-related earth works including borrow pits, quarries, highway earth works, trenching, stream crossings, and removal, transport and disposal of contaminated materials from existing landfill sites or other areas along the proposed corridor;
- e) handling and storage of explosives;
- f) timing and location of blasting activities;
- g) the use, transportation, handling and storage of all hazardous materials, and other bulk materials required to complete the project;
- h) plans for protecting natural features, wildlife and aquatic resources during construction;
- i) site rehabilitation including, but not limited to, removal of temporary services and the re-vegetation of affected areas;
- j) construction management procedures to ensure regulatory compliance with specific attention to protecting existing natural features;
- k) description of location and other details of access roads and increased use of existing roads and other transportation facilities; and,
- l) any effluent and emissions in terms of quantity and characteristic caused or attributable to construction activities.

###### 4.2.1.2 Components of the Project

Activities outlined in section 4.2.1.1 should be described in relation to the construction of each of the major components of the Project as indicated in Annex 2.

#### 4.2.2 Operation and Maintenance Phase

This section should include, but not be restricted to, information regarding all activities, schedules, duration, infrastructure and personnel requirements during the operation and maintenance phase:

- a) types of maintenance required under normal conditions and maintenance/emergency repairs anticipated under extreme weather conditions;
- b) monitoring and contingency plans to identify and correct problems along the route;
- c) description and characterization of all effluents and emissions expected to be released from the Project and the traffic using it;
- d) all water diversion, withdrawal and drainage operations and structures;
- e) estimates of traffic type, frequency and volume; and,
- f) other projects or activities relevant to the assessment of the Project's effects.

#### 4.2.3 Modification Phase

This section should describe the Proponent's approach to, and conceptual plans for potential modifications. The Proponent should also specify the life expectancy of the Project as currently proposed, and the conditions that would necessitate modifications to the Project. Expansion or other modification activities should be generally described and should include, to the extent possible, an overview of planned activities such as those outlined in section 4.2.1.1.

### 4.3 Environmental Protection Plan

The Proponent should describe its Environmental Protection Plan and its environmental management system through which it will deliver this plan. The plan should provide an overall perspective on how potentially adverse environmental effects will be managed over time and should include:

- a) a plan to control, minimize, and mitigate any contaminants, such as heavy metals, salt, suspended solids, oxygen demanding materials or organic contaminants that may be released or generated by the Project;
- b) a fish habitat impact, mitigation, compensation and monitoring management plan which addresses the requirements of Fisheries and Oceans Canada;
- c) a plan to control the effects of air emissions from the Project, such as sulfur and nitrogen oxides, dioxins and particulates;
- d) plans to manage human/wildlife interactions at the site and adjacent areas and address hazards to wildlife presented by the Project;
- e) emergency response and contingency plans, including plans for addressing spills and other accidents and malfunctions both on land and in water; and,
- f) plans for ongoing site rehabilitation during all phases of the Project, particularly relating to stream rehabilitation and maintenance.

## 5.0 Existing Environment

The purpose of this section is to describe the existing environment prior to Project development and what is valued by the members of the public who use the area, at a level and scale of detail that enable readers to understand the material presented.

This section of the EIS should provide a baseline description of the environment (as defined in the Terms of Reference, including the components of the existing environment and environmental processes, their interrelations and interactions, and the variability in these components, processes, and interactions over time scales appropriate to this EIS (see section 3.2). The Proponent's description of the existing environment should be in sufficient detail to permit the identification, assessment and determination of the significance of potentially adverse environmental effects that may be caused by the Project and to adequately identify and characterize the beneficial effects of the Project.

This description should include, but not necessarily be limited to those valued ecosystem components (VECs), processes, and interactions that either were identified to be of public concern during scoping sessions or that the Proponent considers likely to be

affected by the proposed Project. The location of these VECs should be indicated on maps or charts. In doing so, the Proponent should indicate to whom these concerns are important and the reasons why, including social, economic, recreational, and aesthetic considerations. The Proponent should also indicate the specific geographical areas or ecosystems that are of particular concern, and their relation to the broader regional environment and economy, e.g., the contribution of the region where the project is located to critical habitat and migration routes, bird and fish population stocks, the presence of particular species in the Region.

In describing the physical and biological environment, the Proponent should take an ecosystem approach that takes into account both scientific and community knowledge and perspectives regarding ecosystem health and integrity. The Proponent should identify and justify the indicators and measures of ecosystem and social health and integrity it uses, and these should be related to Project monitoring and follow-up measures.

In describing the socio-economic environment, the Proponent should provide information on the functioning and health of the socio-economic environment, encompassing the impacts that affect the people and communities in the study area.

For the biological environment, baseline data in the form of inventories alone is not sufficient for the Boards to assess impacts. The Proponent should consider the resilience of species, communities, and habitat. The Proponent is not required to generate new stock assessments for species other than fish in affected aquatic environments, but it should include all available historical data on population stocks and status. Emphasis should be on those species, communities and processes identified as valued ecosystem components during the scoping sessions. However, the interrelations of these phenomena and their relation to the entire ecosystem and communities of which they are a part must be indicated. The Proponent should address such issues as habitat, nutrient and chemical cycles, food chains, productivity, as these may be appropriate to understanding the impact of the Project on ecosystem health and integrity. Range and probability of natural variation over time should also be discussed.

In providing baseline information on the environment, the Proponent should present a sufficient time-depth of data and information to establish norms, trends, and extremes, to the extent that such information is available. The Proponent should comment on the quality and reliability of these data and their applicability for the purpose used, and clearly identify gaps, insufficiencies, and uncertainties, especially those that should be remedied for monitoring purposes.

The baseline, while necessarily relying on recent and current data, should not be a static or equilibrium description of the environment. Therefore, to assist in identifying and accounting for trends in and alterations of the environment that are not directly related to the Project, the Proponent should:

a) generally identify:

- i) the activities of the Proponent and others, natural or anthropogenic, that have already affected the environment;
- ii) how these have affected the environment; and
- iii) whether these effects are ongoing;

b) provide a description of the likely condition of the environment within the expected lifespan of the Project and if the Project were not implemented. Considerations should include, but not be limited to, possible local and regional impacts on air quality and climate, variation in wildlife abundance and distribution, existing condition of riparian vegetation along the road corridor, contaminant distribution, and demographic and socio-economic trends, including indicators of economic and social well-being.

A key objective of the above is to maximize the possibility of distinguishing between the Project's potential adverse and beneficial environmental effects on the environment, and the effects of other factors, particularly those identified above, and the analysis should be relevant to this objective. It is not intended that the Proponent undertake new research for this purpose. However, in making use of existing information, its analysis must be supported by sound evidence and account for all relevant information including local perspectives, appropriate scientific literature and community knowledge. Boundaries and scale should be appropriate to those elements of the environment discussed, (e.g., biological, physical, socio-economic, cultural).

## 5.1 Physical Environment: Baseline Description

The Proponent should describe the components, processes, and interrelations of the existing physical environment.

- a) bedrock geology and hydrogeology;
- b) surface geology and soils;
- c) sensitive slopes, and stream-banks;
- d) areas of ground instability and flood zones;

- e) local microclimate and regional climate and meteorology;
- f) landforms, special, sensitive, or unique geological or landform features (e.g. wetlands and stream and riparian zones);
- g) location and condition of existing contaminated sites, including all known landfills and points of sewage contamination within the study area;
- h) important physical and chemical parameters of ground and surface waters, at the sub-watershed and watershed level;
- i) as required information on all waterbodies intersected by the road corridor such as, but not limited to, temperature, flow rate, water table height, physical and chemical stratification, stream and water levels, normal seasonal variations, quality, supply and present use of surface and groundwater, drainage and discharge patterns, sediment loading capacity, and historical channel movement of surface waters.
- j) pertinent physical and chemical properties of sediment in waterbodies intersected by the road corridors, including sediment profiles;
- k) local and regional ambient air quality, including air inversion conditions, and noise levels. This should include levels in locations directly adjacent to the Project. The levels should also be characterized to include both daily averages and high and low peaks. The levels should also reflect hourly, daily and seasonal fluctuations;
- l) current levels of and trends in any environmental contaminants such as, but not limited to, heavy metals, particulate matter (including a range of particle sizes), organochlorines, sulphur and nitrogen oxides, carbon monoxide and dioxide, hydrocarbons or other chemicals, in air, water, soil or sediments.

## 5.2 Biological Environment: Baseline Description

Without limiting the range of considerations, the Proponent should consider the following components, the interactions between these components, and their interactions with the physical and biological environment:

- a) local and regional species occurrence and distribution, range, abundance, and population status, including seasonal variation and variability over multiple years;
- b) habitat and life cycle requirements;
- c) migratory patterns and routes and the corresponding sensitive periods where these routes cross habitat affected by the Project with particular reference to areas of the region that have a role as a migratory route;
- d) status and productivity of habitat;
- e) current condition and health of the species;
- f) existence of any rare species or populations or those with federal, territorial, regional or local designated status (i.e., vulnerable, threatened, endangered or extirpated), and their habitats; and,
- g) other issues identified through public consultations.

The Proponent should consider the status of lower trophic levels as these relate to ecosystem health and productivity, to biodiversity and to valued species. The Proponent should indicate how its biodiversity studies were carried out.

The Proponent should also consider plant and vegetation communities of ecological, economic or other human importance, including wetlands such as marshes and shallow waters, and their productivity, health and ecological functions.

## 5.3 Socio-economic Environment: Baseline Description

Without limiting the range of considerations, the Proponent should consider the following components, the interactions between these components, and their interactions with the socio-economic environment:

- a) the social, economic and cultural setting of the Project area;

- b) population and community distribution. This should include contraction and growth patterns and information on demographics including population, age and employment statistics. Emphasis should also be placed on those communities in close proximity to road corridor and port facilities;
- c) current attitudes of the local and regional population, potential road users and recreational facility users and others towards the Project;
- d) current status and role of public transportation;
- e) any Official Plans within the Project area pertaining to land or water use;
- f) present and potential conflicts or restriction in terms of existing land use patterns(e.g. contaminated sites, protected areas);
- g where appropriate, current land ownership should be addressed;
- h) historical, archaeological, cultural and paleontological sites of the area including aboriginal treaties in force or under negotiation;
- i) protected areas such as parks, sanctuaries or wetlands, whether established or proposed;
- j) level and value of recreational, educational, scenic and other social uses of the Project area;
- k) a review of the various costings of the Project and the involvement of private, community, territorial, and federal government organizations and institutions, including their powers, responsibility, and financing for the Project;

## **6.0 Impact Assessment, Mitigation Measures, Residual Effects, and Cumulative**

### **Environmental Effects**

The purpose of this section is to indicate what will happen as a result of the Project, in what ways the environment may be changed, where, and for how long, and whether residents and the environment will be better or worse off because of the construction, operation and modification of the Project.

This section should:

- a) identify what physical, biological and socio-economic changes may be expected to occur as a result of the Project including accidents, malfunctions and unplanned events. The effects of worst case scenarios should be addressed as appropriate;
- b) assess these effects and their significance;
- c) describe and justify the Proponent's plans to mitigate the adverse effects of the Project and enhance its beneficial effects and assess the likely effectiveness of those plans;
- d) identify any residual effects (including the permanent loss of habitat) of the Project, and the Proponent's plans to compensate for these; and,
- e) assess potential adverse and beneficial cumulative environmental effects of the Project.

#### **6.0.1 Environmental Effects**

In predicting and evaluating the potential adverse and beneficial environmental effects of the Project, the Proponent should provide substantial detail and state clearly what elements and functions of the environment may be lost or enhanced, where, how much, for how long, and with what overall effect. In predicting and evaluating the potential adverse and beneficial environmental effects of Project alternatives, the Proponent should provide sufficient detail to allow the Boards and the public to compare adequately the potential adverse and beneficial environmental effects of the alternatives in relation to the Project.

The Proponent should indicate the degree of uncertainty in predicting the potential adverse and beneficial environmental effects identified. The EIS should provide a comprehensive analysis of the short and long-term effects of the Project on the environment and on interactions, and indicate the sensitivity of the function, integrity, and health of the environment to these predicted effects. With respect to the biological environment, while consideration of species-specific effect is essential, due consideration should also be given to impacts on biological processes and ecosystem health and integrity.

The prediction of potential adverse and beneficial environmental effects should be based on clearly stated hypotheses of causal relations. The Proponent should specify the indicators used and how these indicators would measure and verify these effects in subsequent monitoring, especially to distinguish the effects of the Project from those of other activities or processes.

#### 6.0.2 Significance

The EIS should contain a detailed analysis of the significance of the potential adverse environmental effects it predicts. It should contain sufficient information to enable the Boards and other reviewers to understand and review the Proponent's judgment of the significance of effects. The Proponent should define the terms used to describe the level of significance. The Proponent should assess the significance of predicted effects according to the following categories:

- a) magnitude;
- b) geographic extent;
- c) timing, duration and frequency;
- d) degree to which effects are reversible or mitigable;
- e) ecological and social/cultural context;
- f) probability of occurrence;
- g) the capacity of renewable and non-renewable resources to meet the needs of the present and those of the future; and,
- h) standards, guidelines or objectives.

The analysis should also clarify the effects of the Project on matters of public concern as identified in the Proponent's consultation process and as raised in the public scoping sessions.

#### 6.0.3 Geographic Scale

The EIS should pay particular attention to the geographical scale of anticipated impacts, by characterizing them as appropriate in or at the:

- a) local regional and territorial levels;
- b) traditional use areas;
- c) ecosystem level (e.g., watershed, streams, wetlands, with particular emphasis on critical habitat); and,
- d) local land use areas, and indicating the relation of each to (a) and (b) above, (e.g., proportion of habitat or population in specified area in relation to these larger areas, with particular attention to what is critical to ecosystem health).

#### 6.0.4 Mitigation

The Proponent should describe general and specific measures intended to mitigate the potentially adverse environmental effects of the Project. Mitigation is defined as the elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means. The Boards expects that these different components of mitigation (including restitution - refer to section 6.4) may be described in different parts of the EIS. Mitigation measures introduced here for the first time should be discussed in greater detail. Mitigation (including restitution) described elsewhere in the EIS should be listed and referenced. The Proponent should indicate which measures respond to statutory or regulatory requirements, and which go beyond these.

All proposed components of mitigation should be described by phase, timing and duration. Information must be provided on methods, equipment, procedures, and policies associated with the proposed mitigation or restitution. The Proponent should discuss and evaluate the effectiveness of the proposed measures and assess the risk of mitigation failure and the potential severity of the consequences. Information should be provided on similar mitigation methods used with similar projects and the degree of success achieved.

The Proponent should indicate what other mitigation measures were considered (including the various components of mitigation) and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation should

be justified. The Proponent should identify who is responsible for the implementation of these measures and the system of accountability.

The EIS should to the extent possible avoid repetition by identifying the potential adverse environmental effects and the proposed mitigation measures in the same discussion, and do this by specific effect, first with respect to adverse environmental effects of the Project on the physical and biological environment and, secondly with respect to the socio-economic, including cultural, environment.

#### 6.1 Physical and Biological Impacts and Mitigation

The impacts of the Project on the existing physical and biological environment, as characterized by sections 5.1 and 5.2 should be identified and assessed, and the proposed mitigation measures described. Particular attention should be paid to effects related to the following:

- a) contaminant or pollution releases during all phases of the Project;
- b) water quality and quantity, including groundwater, runoff, and surface water;
- c) hydrological cycle including flooding potential and frequency of occurrence;
- d) fish and fish habitat, especially in the affected watersheds;
- e) terrestrial or aquatic habitat loss, impairment of ecosystem function, or changes in productivity;
- f) loss of biodiversity;
- g) resident and migratory wildlife and birds and their habitat;
- h) local and regional air quality, microclimates and climate within the study area as affected by the Project during peak traffic and other periods;
- i) drainage patterns, erosion, and stream flows;
- j) geology, slope stability and flood zones;
- k) functional changes in wetlands;
- l) vegetation with particular reference to the temporary and long-term effects of replacement vegetation as it relates to climatic (e.g. air temperature and quality) and aquatic functions (e.g. stream temperature and productivity);
- m) regionally, territorially and nationally rare/endangered species within the study area;
- n) wildlife and migration corridors;
- o) noise levels;
- p) sediment quality and re-suspension and release of contaminated sediments; and,
- q) contaminated sites, former and active landfills, and existing sewage outflows.

To the extent that is possible, the discussion of these effects and their proposed mitigation should give full consideration to community knowledge of the environment and of appropriate and effective mitigation measures.

#### 6.2 Socio-economic Impacts and Mitigation

The Proponent should describe and assess the beneficial and adverse effects of the Project on the socio-economic and cultural environment. In considering the local social and economic effects of the Project, the Proponent should pay special attention to the attitudes and perceptions of local residents.

The Proponent should identify and describe the feasible measures that would mitigate adverse effects. Particular attention should be paid to the effects related to the following:

- a) location and construction of the Project both in the immediate area and the region;
- b) economic activity and opportunities;
- c) changes in quality of life caused by the construction, operation and modification of the Project including, but not limited to, human health and well-being;
- d) population size, composition and distribution both locally and regionally and the implication of changes;
- e) present and future land and water use, including, changes in aesthetics and/or economic, education and recreational opportunities caused by the construction, operation and modification of the Project in terms of increased noise levels, lowered air and water quality, alteration of visual and topographic characteristics of the area;
- f) archeological, historical, cultural, and scenic sites;
- g) temporary and permanent restrictions on land use during construction, operation and modification;
- h) local and regional transportation pattern shifts including, but not limited to shifts in traffic flows, average speeds, timing of traffic, sources and destinations, accident rates, induced traffic and vehicle mix; and
- i) current use of lands and resources for traditional purposes by Aboriginal people.

#### 6.3 Residual Effects

The Proponent should describe and assess residual environmental effects using the categories for significance set out in section 6.0.2. Residual effects include those beneficial or adverse effects that may remain at each stage of the Project after proposed mitigation or enhancement measures are implemented, including emergency response and contingency plans.

#### 6.4 Restitution

As part of the proposed measures to mitigate potentially adverse environmental effects, the Proponent should outline its restitution (e.g. compensation) plans and policies for addressing adverse residual environmental effects, including compensation for:

- a) loss of fish habitat in accordance with Fisheries and Oceans Canada's policy for the Management of Fish Habitat; and
- b) damage caused by the Proponent's activities to the environment, to property, or to the land and resource use of others.

The Proponent should also include a discussion of past restitution measures taken for other infrastructure projects, and the successes of such measures.

#### 6.5 Sustainable Use of Renewable and Non-Renewable Resources Effects

The Proponent should include a consideration of the potential adverse environmental effects on the capacity of renewable and non-renewable resources that are likely to be significantly affected by the Project to meet the needs of the present and those of the future. The Proponent should clearly identify the renewable and non-renewable resources that may be affected by the Project and the criteria used in determining whether their sustainable use will be affected. Sustainable use may be based on ecological consideration such as, integrity, productivity, and carrying capacity.

#### 6.6 Possible Malfunctions or Accidents

The Proponent should identify and describe the probability of possible malfunctions or accidents associated with the Project, and the potential adverse environmental effects of these events. The description should include the safeguards that have been established by the Proponent to protect against such occurrences and the contingency procedures in place.

#### 6.7 Cumulative Environmental Effects

The Proponent should identify and assess the cumulative adverse and beneficial environmental effects of the Project in combination with other past, present or reasonably foreseeable projects and/or activities within the study area. The approach and methodologies used to identify and assess cumulative effects should be explained.

In assessing the impacts of cumulative environmental effects of the Project in combination with other projects and/or activities, the Proponent should identify any changes in the original environmental effects and significance predictions for the individual Project. The Proponent should also discuss the effectiveness of the proposed mitigation and/or other restitution measures and the response to such changes, as well as the implications for monitoring and follow-up programs as described in section 7.

## **7.0 Monitoring and Follow Up Programs**

This section of the EIS should provide information on proposed monitoring programs and actions to be taken to respond to monitoring results, including plans for a formal follow-up program to verify the predictions contained in the EIS.

### **7.1 Monitoring**

The Proponent should describe the environmental and socio-economic monitoring programs to be incorporated into all phases of the Project in order to ensure that regulatory requirements are met, sustainable development objectives are advanced and that adverse impacts are avoided or minimized and beneficial impacts maximized as predicted in the EIS. The Proponent should describe how the results of monitoring programs will be used to refine or modify the design and implementation of management plans, enforcement and penalties for non-compliance, and mitigation measures and Project operations.

The proposed approach for monitoring should be described. The Proponent should explain the reasons for any cases where it is not possible to specify the details of a monitoring program in the complete EIS that is submitted to the Boards. The Proponent should explain when and how the program will be defined, and when it will be reviewed by public and regulatory agencies. This description should include:

- a) the objectives of the monitoring program and a schedule for collection of the monitoring data required to meet these objectives;
- b) the relationship of the various components of the monitoring program to specific regulatory requirements;
- c) the selection of the subjects and indicators to be monitored, and the criteria used in their selection including the role played by ecological risk monitoring in determining subjects and indicators;
- d) the frequency, duration and geographic extent of monitoring, and the justification for these decisions;
- e) approaches and methods used to analyse monitoring data;
- f) reporting and response mechanisms, including criteria for initiating a response, and the procedures to be followed. The reasons for selecting these criteria should be explained;
- g) the approaches and methods for monitoring the potential cumulative adverse environmental effects of the Project in combination with other projects and activities in the Project study area;
- h) integration of monitoring results with other aspects of the Project including adjustments to operating procedures and refinement of mitigation measures;
- i) procedures to assess the effectiveness of monitoring programs, mitigation measures, and recovery programs for areas disturbed by the Project;
- j) sources of funding for all monitoring programs; and
- k) quality assurance and quality control measures to be applied to monitoring programs.

The Proponent should provide a table showing all environmental components and indicating where monitoring is proposed.

### **7.2 Follow-Up Program**

The Terms of Reference require the Boards to consider the need for and requirements of a follow-up program. A follow-up program is a formal, ongoing process to verify the accuracy of the environmental assessment of the Project and determine the effectiveness of mitigation measures. If either of these two steps identifies unforeseen adverse impacts, then the existing mitigation measures should be adjusted or, if necessary, new mitigation or compensation measures should be developed.

The Proponent should identify from their perspective:

- a) the need for such a follow-up program and its objectives;
- b) how it will be structured including enforcement and penalties for non-compliance;
- c) which elements of the monitoring program described in section 7.1 it would incorporate;
- d) the roles to be played by the Proponent, regulatory agencies, and others in such a program;
- e) possible involvement of independent researchers;
- f) the sources of funding for the program; and
- g) reporting.