

# Scotian Basin Exploration Drilling Project

Environmental Impact Statement

Volume 2: Appendices

October 2016



## **APPENDIX A**

# **Guidelines for the Preparation of an Environmental Impact Statement**



Canadian Environmental  
Assessment Agency

Agence canadienne  
d'évaluation environnementale

# **GUIDELINES FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT**

**pursuant to the**

***Canadian Environmental Assessment Act, 2012***

**Scotian Basin Exploration Drilling Project**

**BP Canada Energy Group ULC**

27 October 2015

# TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>GUIDELINES FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT.....</b>    | <b>I</b>  |
| <b>ABBREVIATIONS AND SHORT FORMS.....</b>  | <b>V</b>  |
| <b>PART 1 - BACKGROUND .....</b>   | <b>1</b>  |
| <b>1. INTRODUCTION .....</b>   | <b>1</b>  |
| <b>2. GUIDING PRINCIPLES.....</b>  | <b>1</b>  |
| 2.1. Environmental assessment as a planning tool.....                              | 1         |
| 2.2. Public participation .....  | 1         |
| 2.3. Aboriginal engagement.....  | 1         |
| 2.4. Application of the precautionary approach.....                                | 2         |
| <b>3. SCOPE OF THE ENVIRONMENTAL ASSESSMENT .....</b>                              | <b>2</b>  |
| 3.1. Designated Project.....   | 2         |
| 3.2. Factors to be considered .....  | 2         |
| 3.3. Scope of factors .....  | 3         |
| 3.3.1. Changes to the Environment.....   | 3         |
| 3.3.2. Valued components to be examined .....                                      | 3         |
| 3.3.3. Spatial and Temporal boundaries .....                                       | 4         |
| <b>4. PREPARATION AND PRESENTATION OF THE ENVIRONMENTAL IMPACT STATEMENT .....</b> | <b>5</b>  |
| 4.1. Guidance .....  | 5         |
| 4.2. Study strategy and methodology.....   | 5         |
| 4.3. Use of information.....   | 7         |
| 4.3.1. Scientific advice .....   | 7         |
| 4.3.2. Community knowledge and Aboriginal traditional knowledge.....               | 7         |
| 4.3.3. Existing information .....  | 7         |
| 4.3.4. Confidential information .....  | 7         |
| 4.4. Presentation and organization of the Environmental Impact Statement .....     | 8         |
| 4.5. Summary of the Environmental Impact Statement.....                            | 8         |
| <b>PART 2 – CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT.....</b>                 | <b>10</b> |
| <b>1. INTRODUCTION AND OVERVIEW .....</b>  | <b>10</b> |
| 1.1. The proponent .....   | 10        |
| 1.2. Project Overview.....   | 10        |
| 1.3. Project Location .....  | 10        |
| 1.4. Regulatory framework and the role of government .....                         | 11        |
| <b>2. PROJECT JUSTIFICATION AND ALTERNATIVES CONSIDERED .....</b>                  | <b>11</b> |
| 2.1. Purpose of the project .....  | 11        |
| 2.2. Alternative means of carrying out the project .....                           | 11        |
| <b>3. PROJECT DESCRIPTION .....</b>  | <b>13</b> |
| 3.1. Project components.....   | 13        |
| 3.2. Project activities.....   | 14        |
| 3.2.1. Offshore Drilling .....   | 14        |
| 3.2.2. Supply and Servicing.....   | 14        |

|  |           |
|--|-----------|
| <b>4. PUBLIC CONSULTATION AND CONCERNS .....</b>                 | <b>14</b> |
| <b>5. ABORIGINAL ENGAGEMENT AND CONCERNS .....</b>               | <b>15</b> |
| 5.1. Aboriginal Groups to Engage & Engagement Activities .....   | 16        |
| <b>6. EFFECTS ASSESSMENT .....</b>                               | <b>18</b> |
| 6.1. Project setting and baseline conditions .....               | 18        |
| 6.1.1. Atmospheric environment and climate .....                 | 18        |
| 6.1.2. Marine environment .....                                  | 18        |
| 6.1.3. Fish and fish habitat .....                               | 19        |
| 6.1.4. Migratory birds and their habitat.....                    | 19        |
| 6.1.5. Species at risk and species of conservation concern ..... | 20        |
| 6.1.6. Marine mammals .....                                      | 21        |
| 6.1.7. Marine turtles.....                                       | 21        |
| 6.1.8. Special areas.....  | 21        |
| 6.1.9. Aboriginal peoples.....                                   | 21        |
| 6.1.10. Human environment .....                                  | 22        |
| 6.2. Predicted Changes to the Physical Environment .....         | 23        |
| 6.3. Predicted Effects on Valued Components .....                | 23        |
| 6.3.1. Fish and fish habitat .....                               | 24        |
| 6.3.2. Marine plants .....                                       | 24        |
| 6.3.3. Marine mammals .....                                      | 24        |
| 6.3.4. Marine turtles.....                                       | 25        |
| 6.3.5. Migratory birds.....                                      | 25        |
| 6.3.6. Federal species at risk .....                             | 25        |
| 6.3.7. Aboriginal peoples.....                                   | 25        |
| 6.3.8. Air quality and greenhouse gas emissions .....            | 26        |
| 6.3.9. Commercial fisheries.....                                 | 26        |
| 6.3.10. Special areas.....                                       | 27        |
| 6.3.11. Human environment .....                                  | 27        |
| 6.4. Mitigation.....   | 27        |
| 6.5. Significance of residual effects .....                      | 28        |
| 6.6. Other effects to consider .....                             | 29        |
| 6.6.1. Effects of potential accidents or malfunctions.....       | 29        |
| 6.6.2. Effects of the environment on the project.....            | 30        |
| 6.6.3. Cumulative effects assessment.....                        | 30        |
| <b>7. SUMMARY OF ENVIRONMENTAL EFFECTS ASSESSMENT .....</b>      | <b>32</b> |
| <b>8. FOLLOW-UP AND MONITORING PROGRAMS .....</b>                | <b>32</b> |
| 8.1. Follow-up Program .....                                     | 32        |
| 8.2. Monitoring .....  | 33        |

**DISCLAIMER**

This document is not a legal authority, nor does it provide legal advice or direction; it provides information only, and must not be used as a substitute for the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) or its regulations. In the event of a discrepancy, CEAA 2012 and its regulations prevail. Portions of CEAA 2012 have been paraphrased in this document, but will not be relied upon for legal purposes.

## Abbreviations and Short Forms

|           |  |
|-----------|--|
| Agency    | Canadian Environmental Assessment Agency                 |
| CEAA 2012 | <i>Canadian Environmental Assessment Act, 2012</i>       |
| CNSOPB    | Canada-Nova Scotia Offshore Petroleum Board              |
| COSEWIC   | Committee on the Status of Endangered Wildlife in Canada |
| EA        | environmental assessment                                 |
| EBSA      | Ecologically and Biologically Significant Areas          |
| EIS       | environmental impact statement                           |
| SARA      | Species at Risk Act                                      |
| VC        | valued component   |

# Part 1 - Background

## 1. INTRODUCTION

The purpose of this document is to identify for the proponent the information requirements for the preparation of an Environmental Impact Statement (EIS) for a designated project<sup>1</sup> to be assessed pursuant to the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). This document specifies the nature, scope and extent of the information required. Part 1 of this document defines the scope of the environmental assessment and provides guidance and general instruction on the preparation of the EIS. Part 2 outlines the information that must be included in the EIS.

The Agency will use the proponent's EIS and other information received during the EA process to prepare an EA Report that will inform the issuance of a decision statement by the Minister of the Environment. Therefore the EIS must include a full description of the changes the project will cause to the environment that may result in adverse effects on areas of federal jurisdiction (i.e., section 5 of CEAA 2012) including changes that are directly linked or necessarily incidental to any federal decisions that would permit the project to be carried out. It is the responsibility of the proponent to provide sufficient data and analysis on potential changes to the environment to ensure a thorough evaluation of the environmental effects of the project by the Agency.

## 2. GUIDING PRINCIPLES

### 2.1. Environmental assessment as a planning tool

Environmental Assessment (EA) is a planning tool used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate possible environmental effects and to encourage decision makers to take actions that promote sustainable development.

### 2.2. Public participation

One of the purposes identified in CEAA 2012 is to ensure opportunities for meaningful public participation during an EA. CEAA 2012 requires that the Agency provide the public with an opportunity to participate in the EA and an opportunity to comment on the draft EA report. Meaningful public participation is best achieved when all parties have a clear understanding of the proposed project as early as possible in the review process. The proponent is required to provide current information about the project to the public and especially to the communities likely to be most affected by the project.

### 2.3. Aboriginal engagement

A key objective of CEAA 2012 is to promote communication and cooperation with Aboriginal peoples which includes, First Nations, Inuit and Métis. The proponent is expected to engage with Aboriginal groups that may be affected by the project, as early as possible in the project planning process. The proponent will provide Aboriginal groups with opportunities to learn about the project and its potential effects, make their concerns known about the project's potential effects and discuss measures to mitigate those effects. The proponent is strongly encouraged to work with Aboriginal groups in

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<sup>1</sup> In this document, "project" has the same meaning as "designated project" as defined in the CEAA 2012.



establishing an engagement approach. The proponent will make reasonable efforts to integrate traditional Aboriginal knowledge into the assessment of environmental impacts.

Information gathered through the EA process and associated engagement by the proponent with Aboriginal groups will be used to inform decisions under CEAA 2012. In providing information to the Agency, the proponent will respect any confidentiality commitments made to Aboriginal groups (see section 4.3.2 for further information on this subject). This information will also contribute to the Crown's understanding of any potential adverse impacts of the project on potential or established Aboriginal or Treaty rights and the effectiveness of measures proposed to avoid or minimise those impacts.

For more information on how Aboriginal traditional knowledge can aid in the preparation of the EIS, please refer to the Agency's reference guide entitled "Considering Aboriginal traditional knowledge in environmental assessments conducted under the *Canadian Environmental Assessment Act, 2012*".

#### **2.4. Application of the precautionary approach**

In documenting the analyses included in the EIS, the proponent will demonstrate that all aspects of the project have been examined and planned in a careful and precautionary manner in order to avoid significant adverse environmental effects.

### **3. SCOPE OF THE ENVIRONMENTAL ASSESSMENT**

#### **3.1. Designated Project**

On August 11, 2015, BP Canada Energy Group ULC, the proponent of the Scotian Basin Exploration Drilling project, provided a project description to the Agency. Based on this project description, the Agency has determined that an environmental assessment is required under CEAA 2012 and will include the following project components and activities:

- the mobilization, operation and demobilization of a Mobile Offshore Drilling Unit designed for year-round operations (including well drilling, testing and abandonment) in water depths under consideration and any proposed shipping exclusion zones;
- vertical seismic profile surveys; and,
- the loading, refuelling, and operation of marine support vessels (i.e. for re-supply and transfer of materials, fuel, and equipment and on-site safety during drilling activities and transport between supply base and Mobile Offshore Drilling Unit) and helicopter support (i.e. for crew transport and delivery of light supplies and equipment) including transportation to the Mobile Offshore Drilling Unit.

#### **3.2. Factors to be considered**

Scoping establishes the parameters of the EA and focuses the assessment on relevant issues and concerns. Part 2 of this document specifies the factors to be considered in this environmental assessment, including the factors listed in subsection 19(1) of CEAA 2012:

- environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other physical activities that have been or will be carried out;

- the significance of effects;
- comments from the public;
- mitigation measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;
- the requirements of the follow-up program in respect of the project;
- the purpose of the project;
- alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternatives;
- any change to the project that may be caused by the environment; and
- the results of any relevant regional study pursuant to CEAA 2012.

### **3.3. Scope of factors**

#### **3.3.1. Changes to the Environment**

Environmental effects occur as interactions between actions (the carrying out of the project or decisions made by the federal government in relation to the project) and receptors in the environment, and subsequently between components of the environment (e.g., change in water quality that may affect fish).

Under CEAA 2012, an examination of environmental effects that result from changes to the environment as a result of the project being carried out or as a result of the federal government exercising any power duty or function that would allow the project to be carried out must be considered in the EIS.

In scoping the potential changes to the environment that may occur, proponents should consider any potential changes in the physical environment such as changes to air quality, water quality, benthic environment, and physical disturbance of land that could be reasonably be expected to occur.

#### **3.3.2. Valued components to be examined**

Valued components (VCs) refer to environmental biophysical or human features that may be impacted by a project. The value of a component not only relates to its role in the ecosystem, but also to the value people place on it. For example, it may have been identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.

The EIS will identify the VCs linked to section 5 of CEAA 2012, including the ones identified in Part 2 of this document (section 6.2) that may be affected by changes in the environment, as well as species at risk and their critical habitat as per the requirement outlined in section 79 of the *Species at Risk Act*. Section 5 of CEAA 2012 defines environmental effects as:

- A change that may be caused to fish and fish habitat, marine plant and migratory birds;
- A change that may be caused to the environment on federal lands, in another province or outside Canada;
- With respect to aboriginal peoples, an effect of any change caused to the environment on:
  - ✓ health and socio-economic conditions;
  - ✓ physical and cultural heritage;

- ✓ the current use of lands and resources for traditional purposes;
  - ✓ any structure, site or thing that is of historical, archaeological, paleontological or architectural significance;
- For projects requiring a federal authority to exercise a power or function under another Act of Parliament;
- ✓ a change, other than the ones mentioned above, that may be caused to the environment and that is directly linked or necessarily incidental to the exercise of the federal power or function.
  - ✓ the effect of that change, other than the ones mentioned above, on:
    - health and socio-economic conditions;
    - physical and cultural heritage; and
    - any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.

The final list of VCs to be presented in the EIS will be completed according to the evolution and design of the project and reflect the knowledge acquired on the environment through public consultation and Aboriginal engagement. The EIS will describe what methods were used to predict and assess the adverse environmental effects of the project on these components.

The VCs will be described in sufficient detail to allow the reviewer to understand their importance and to assess the potential for environmental effects arising from the project activities. The EIS will provide a rationale for selecting specific VCs and for excluding any VCs or information specified in these guidelines. Challenges may arise regarding particular exclusions, so it is important to document the information and the criteria used to make each determination. Examples of justification include primary data collection, computer modelling, literature references, public consultation, expert input or professional judgement. The EIS will identify those VCs, processes, and interactions that either were identified to be of concern during any workshops or meetings held by the proponent or that the proponent considers likely to be affected by the project. In doing so, the EIS will indicate to whom these concerns are important and the reasons why, including environmental, Aboriginal, social, economic, recreational, and aesthetic considerations. If comments are received on a component that has not been included as a VC, these comments will be summarised.

### 3.3.3. Spatial and Temporal boundaries

The spatial and temporal boundaries used in the EA may vary depending on the VC. The proponent is encouraged to consult with the Agency, federal and provincial government departments and agencies, local government and Aboriginal groups, and take into account public comments when defining the spatial boundaries used in the EIS.

The EIS will describe the spatial boundaries to be used in assessing the potential adverse environmental effects of the project and provide a rationale for each boundary. Spatial boundaries will be defined taking into account the appropriate scale and spatial extent of potential environmental effects, community and Aboriginal traditional knowledge, current land and resource use by Aboriginal groups, ecological, technical, and social and cultural considerations.

The temporal boundaries of the EA will span all phases of the project determined to be within the scope of this environmental assessment as specified under section 3.1 above. Community and Aboriginal traditional knowledge should factor into decisions around temporal boundaries.

If the temporal boundaries do not span all phases of the project, the EIS will identify the boundaries used and provide a rationale.

#### **4. PREPARATION AND PRESENTATION OF THE ENVIRONMENTAL IMPACT STATEMENT**

##### **4.1. Guidance**

The proponent is encouraged to consult relevant Agency policy and guidance<sup>2</sup> on topics to be addressed in the EIS, and with the Agency staff during the planning and development of the EIS.

Submission of regulatory and technical information necessary for federal authorities to make their regulatory decisions during the conduct of the environmental assessment is at the discretion of the proponent. Although that information is not necessary for the EA decision, the proponent is encouraged to submit it concurrent with the EIS.

##### **4.2. Study strategy and methodology**

The proponent is expected to respect the intent of these guidelines and to consider the effects that are likely to arise from the project (including situations not explicitly identified in these guidelines), the technically and economically feasible mitigation measures that will be applied, and the significance of any residual effects. Except where specified by the Agency, the proponent has the discretion to select the most appropriate methods to compile and present data, information and analysis in the EIS as long as they are justifiable and replicable.

It is possible these guidelines may include matters which, in the judgement of the proponent, are not relevant or significant to the project. If such matters are omitted from the EIS, the proponent will clearly indicate it, and provide a justification so the Agency, federal authorities, Aboriginal groups, the public and any other interested party have an opportunity to comment on this decision. Where the Agency disagrees with the proponent's decision, it will require the proponent to provide the specified information.

The assessment will include the following general steps:

- ✓ identifying the activities and components of the project;
- ✓ predicting potential changes to the environment;
- ✓ predicting and evaluating the likely effects on identified VC;
- ✓ identifying technically and economically feasible mitigation measures for any significant adverse environmental effects;
- ✓ determining any residual environmental effects; and
- ✓ determining the potential significance of any residual environmental effect following the implementation of mitigation.

For each VC, the EIS will describe the methodology used to assess project-related effects. The EIS will document how scientific, engineering, traditional and local knowledge were used to reach conclusions. Assumptions will be clearly identified and justified. All data, models and studies will be documented such that the analyses are transparent and reproducible. All data collection methods will be specified. The uncertainty, reliability and sensitivity of models used to reach conclusions must be indicated.

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Visit the Canadian Environmental Assessment Agency website: <sup>2</sup> [www.ceaa-acee.gc.ca/default.asp?lang=En&n=F1F30EEF-1](http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=F1F30EEF-1)

The EIS will identify all significant gaps in knowledge and understanding related to key conclusions, and the steps to be taken by the proponent to address these gaps. Where the conclusions drawn from scientific, engineering and technical knowledge are inconsistent with the conclusions drawn from traditional knowledge, the EIS will contain a balanced presentation of the issues and a statement of the proponent's conclusions.

The EIS will include a description of the environment (both biophysical and human), including the components of the existing environment and environmental processes, their interrelations as well as the variability in these components, processes and interactions over time scales appropriate to the likely effects of the project. The description will be sufficiently detailed to characterize the environment before any disturbance to the environment due to the project and to identify, assess and determine the significance of the potential adverse environmental effects of the project. This data should include results from studies done prior to any physical disruption of the environment. The information describing the existing environment may be provided in a stand-alone chapter of the EIS or may be integrated into clearly defined sections within the effects assessment of each VC. This analysis will include environmental conditions resulting from historical and present activities in the local and regional study area.

In describing and assessing effects to the physical and biological environment, the proponent will take an ecosystem approach that considers both scientific and traditional knowledge and perspectives regarding ecosystem health and integrity. The proponent will consider the resilience of relevant species populations, communities and their habitats.

In describing and assessing effects related to Aboriginal peoples, the proponent will consider the use of both primary and secondary sources of information regarding baseline information, changes to the environment and the corresponding effect on health, socio-economics, physical and cultural heritage or current use of lands and resources for traditional purposes. Primary sources of information include traditional land use studies, information obtained directly from Aboriginal groups, socio-economic studies, heritage surveys or other relevant studies conducted specifically for the project and its EIS. Secondary sources of information include previously documented information on the area, not collected specifically for the purposes of the project, or desk-top or literature-based information. The proponent will provide Aboriginal groups the opportunity to review and provide comments on the information used for describing and assessing effects on Aboriginal peoples (further information on engaging with Aboriginal groups is provided in Part 2, Section 5 of this document). Where there are discrepancies in the views of the proponent and Aboriginal groups on the information to be used in the EIS, the EIS will document these discrepancies and the rationale for the proponent's selection of information.

If the baseline data have been extrapolated or otherwise manipulated to depict environmental conditions in the study areas, modelling methods and equations will be described and will include calculations of margins of error and other relevant statistical information, such as confidence intervals and possible sources of error.

The assessment of the effects of each of the project components and physical activities, in all phases, will be based on a comparison of the biophysical and human environments between the predicted future conditions with the project and the predicted future conditions without the project. In undertaking the environmental effects assessment, the proponent will use best available information and methods. All conclusions will be substantiated. Predictions will be based on clearly stated assumptions. The proponent will describe how each assumption has been tested. With respect to

quantitative models and predictions, the EIS will document the assumptions that underlie the model, the quality of the data and the degree of certainty of the predictions obtained.

### **4.3. Use of information**

#### **4.3.1. Scientific advice**

Section 20 of CEAA 2012 requires that every federal authority with specialist or expert information or knowledge with respect to a project subject to an EA make that information or knowledge available to the Agency. The Agency will advise the proponent of the availability of any pertinent information or knowledge so that it can be incorporated into the EIS, along with, as appropriate, expert and specialist knowledge provided by other levels of government.

#### **4.3.2. Community knowledge and Aboriginal traditional knowledge**

Sub-section 19(3) of CEAA 2012 states that “the environmental assessment of a designated project may take into account community knowledge and Aboriginal traditional knowledge”. For the purposes of these guidelines, community knowledge and Aboriginal traditional knowledge refers to knowledge acquired and accumulated by a community or an Aboriginal community, through generations of living in close contact with nature.

The proponent will incorporate into the EIS the community and Aboriginal traditional knowledge to which it has access or that is acquired through Aboriginal and public engagement activities, in keeping with appropriate ethical standards and obligations of confidentiality. Agreement should be obtained from Aboriginal groups regarding the use, management and protection of their existing traditional knowledge information during and after the EA.

#### **4.3.3. Existing information**

In preparing the EIS, the proponent is encouraged to make use of existing information relevant to the project. When relying on existing information to meet requirements of the EIS guidelines, the proponent will either include the information directly in the EIS or clearly direct the reader to where it may obtain the information (i.e., through cross-referencing). When relying on existing information, the proponent will also comment on how the data were applied to the project, separate factual lines of evidence from inference, and state any limitations on the inferences or conclusions that can be drawn from the existing information.

#### **4.3.4. Confidential information**

In implementing CEAA, 2012, the Agency is committed to promoting public participation in the environmental assessment of projects and providing access to the information on which environmental assessments are based. All documents prepared or submitted by the proponent or any other stakeholder in relation to the environmental assessment are included in the Canadian Environmental Assessment Registry and made available to the public on request. For this reason, the EIS will not contain information that:

- is sensitive or confidential (i.e., financial, commercial, scientific, technical, personal, cultural or other nature), that is treated consistently as confidential, and the person affected has not consented to the disclosure; or,
- may cause harm to a person or harm to the environment through its disclosure.

The proponent will consult with the Agency regarding whether specific information requested by these guidelines should be treated as confidential.

#### **4.4. Presentation and organization of the Environmental Impact Statement**

To facilitate the identification of the documents submitted and their placement in the Canadian Environmental Assessment Registry, the title page of the EIS and its related documents will contain the following information:

- project name and location
- title of the document, including the term “environmental impact statement”
- subtitle of the document
- name of the proponent
- the date

The EIS will be written in clear, precise language. A glossary defining technical words, acronyms and abbreviations will be included. It will include charts, diagrams, tables, maps and photographs, where appropriate, to clarify the text. Perspective drawings that clearly convey the various components of the project will also be provided. Wherever possible, maps will be presented in common scales and datum to allow for comparison and overlay of mapped features.

For purposes of brevity and to avoid repetition, cross-referencing is preferred. The EIS may make reference to the information that has already been presented in other sections of the document, rather than repeating it. The exception to this preference is the cumulative effects assessment, which should be provided in a stand-alone section. Detailed studies (including all relevant and supporting data and methodologies) will be provided in separate appendices and will be referenced by appendix, section and page in the text of the main document. The EIS will explain how information is organized in the document. This will include a list of all tables, figures, and photographs referenced in the text. A complete list of supporting literature and references will also be provided. A table of concordance, which cross references the information presented in the EIS with the information requirements identified in the EIS Guidelines, will be provided. The proponent will provide copies of the EIS and its summary for distribution, including paper and electronic version in an unlocked, searchable PDF format, as directed by the Agency.

#### **4.5. Summary of the Environmental Impact Statement**

The proponent will prepare a summary of the EIS in both of Canada’s official languages (French and English) to be provided to the Agency at the same time as the EIS and which will include the following:

- a concise description of all key components of the project and related activities;
- a summary of the consultation conducted with Aboriginal groups, the public, and government agencies, including a summary of the issues raised and the proponent’s responses;
- an overview of expected changes to the environment
- an overview of the key environmental effects of the project and proposed technically and economically feasible mitigation measures; and
- the proponent’s conclusions on the residual environmental effects of the project after taking mitigation measures into account and the significance of those effects.

The summary is to be provided as a separate document and should be structured as follows:

1. Introduction and environmental assessment context
2. Project overview
3. Alternative means of carrying out the project
4. Public consultation
5. Aboriginal engagement
6. Summary of environmental effects assessment for each VCs, including:
  - a. description of the baseline
  - b. anticipated changes to the environment
  - c. anticipated effects
  - d. mitigation measures
  - e. significance of residual effects
7. Follow-up and monitoring programs proposed

The summary will have sufficient details for the reader to learn and understand the project, potential environmental effects, mitigation measures, and the significance of the residual effects. The summary will include key maps illustrating the project location and key project components.



# Part 2 – Content of the Environmental Impact Statement

## 1. INTRODUCTION AND OVERVIEW

### 1.1. The proponent

In the EIS, the proponent will:

- provide contact information (e.g. name, address, phone, fax, email);
- identify itself and the name of the legal entity that would develop, manage and operate the project;
- describe corporate and management structures;
- specify the mechanism used to ensure that corporate policies will be implemented and respected for the project; and
- identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS.

### 1.2. Project Overview

The EIS will describe the project, key project components and associated activities, scheduling details, the timing of each phase of the project and other key features. If the project is a part of a larger sequence of projects, the EIS will outline the larger context.

The overview is to identify the key components of the project, rather than providing a detailed description, which will follow in Section 3 of this document.

### 1.3. Project Location

The EIS will contain a description of the geographical setting in which the project will take place. This description will focus on those aspects of the project and its setting that are important in order to understand the potential environmental effects of the project. The following information will be included:

- the UTM coordinates of the main project site;
- current land use in the area;
- distance of the project facilities and components to any federal lands;
- the environmental significance and value of the geographical setting in which the project will take place and the surrounding area;
- environmentally sensitive areas, such as national, provincial and regional parks, ecological reserves, wetlands, estuaries, and habitats of federally or provincially listed species at risk and other sensitive areas;
- local and Aboriginal communities; and,
- traditional Aboriginal territories, treaty lands, Indian reserve lands.

#### **1.4. Regulatory framework and the role of government**

The EIS will identify:

- any federal power, duty or function that may be exercised that would permit the carrying out (in whole or in part) of the project or associated activities;
- the environmental and other regulatory approvals and legislation that are applicable to the project at the federal, provincial, regional and municipal levels;
- government policies, resource management, planning or study initiatives pertinent to the project and/or EA and their implications;
- any treaty or self-government agreements with Aboriginal groups that are pertinent to the project and/or EA;
- any relevant land use plans, land zoning, or community plans; and
- regional, provincial and/or national objectives, standards or guidelines that have been used by the proponent to assist in the evaluation of any predicted environmental effects.

## **2. PROJECT JUSTIFICATION AND ALTERNATIVES CONSIDERED**

### **2.1. Purpose of the project**

The EIS will describe the purpose of the project by providing the rationale for the project, explaining the background, the problems or opportunities that the project is intended to satisfy and the stated objectives from the perspective of the proponent. If the objectives of the project are related to broader private or public sector policies, plans or programs, this information will also be included.

The EIS will also describe the predicted environmental, economic and social benefits of the project. This information will be considered in assessing the justifiability of any significant adverse residual environmental effects, if such effects are identified.

### **2.2. Alternative means of carrying out the project**

The EIS will identify and consider the effects of alternative means of carrying out the project that are technically and economically feasible. The proponent will complete the following procedural steps for addressing alternative means:

- Identify the alternative means to carry out the project.
- Identify the effects of each technically and economically feasible alternative means.
- Select the approach for the analysis of alternative means (i.e., identify a preferred means or bring forward alternative means).
- Assess the environmental effects of the alternative means.

In its alternative means analysis, the proponent will address, at a minimum, the following project components:

- choice of drilling fluid (i.e., WBM or SBM);
- management of drilling wastes (i.e., disposal on seabed or into water column, recover and ship to shore, re-inject); and
- alternative ways to light the platform at night (or flare at night when testing the well), to reduce attraction and associated mortality of birds, such as by installing flare shields.

The *Offshore Waste Treatment Guidelines*<sup>3</sup> include minimum performance targets for concentrations and volumes of waste material in discharges resulting from offshore exploration and development. Offshore operators are expected to take all reasonable measures to minimize the volumes of waste materials generated by their operations, and to minimize the quantity of substances of potential environmental concern contained within these waste materials. The EIS should include a discussion on how wastes and potential associated toxic substances would be minimized. The proponent should also discuss any alternatives that would enable it to achieve these objectives and adopt best practices in waste management and treatment.

The *Offshore Chemical Selection Guidelines*<sup>4</sup> provide a framework for the selection of chemicals in support of offshore operations. The guidelines outline minimum expectations on the selection of lower toxicity chemicals; recognizing that variations to the selection process described in the guidelines may be required in areas where increased risk to the environment has been identified. With the objective of minimizing potential environmental impacts of discharges to the marine environment, the proponent should identify the quantity and type of chemicals (or constituents) that may be used in support of the proposed project that are:

- included on the *Canadian Environmental Protection Act's* List of Toxic Substances;
- not included on the OSPAR[1] Pose Little or No Risk to the Environment (PLONOR) list of chemicals and have a PARCOM[2] Offshore Chemical Notification Scheme Hazard Rating of A, B or purple, orange, blue, or white; or
- not included on the PLONOR list of chemicals and have not been assigned a PARCOM Offshore Chemical Notification Scheme Hazard Rating.

Alternatives to the use of the above-listed chemicals (e.g., through alternative means of operating or use of less-toxic alternatives) should be discussed in the EIS.

For further information regarding the “purpose of” and “alternative means”, please consult the Agency’s Operational Policy Statement entitled “Addressing “Purpose of” and “Alternative Means” under the Canadian Environmental Assessment Act, 2012”.

The Agency recognizes that projects may be in the early planning stages when the EIS is being prepared. Where proponents have not made final decisions concerning the placement of project infrastructure, the technologies to be used, or that several options may exist for various project components, they are strongly encouraged to conduct an environmental effects analysis at the same level of detail assessment of the various options available (alternative means) within the EIS.

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<sup>3</sup> National Energy Board, Canada-Nova Scotia Offshore Petroleum Board and Canada-Newfoundland Offshore Petroleum Board. *Offshore Waste Treatment Guidelines*. December 2010. Available from: [www.cnsopb.ns.ca](http://www.cnsopb.ns.ca)

<sup>4</sup> National Energy Board, Canada-Nova Scotia Offshore Petroleum Board and Canada-Newfoundland Offshore Petroleum Board. *Offshore Chemical Selection Guidelines*. April 2009. Available from: [www.cnsopb.ns.ca](http://www.cnsopb.ns.ca)

[1] Oslo and Paris Commissions

[2] Paris Commission

### 3. PROJECT DESCRIPTION

#### 3.1. Project components

The EIS will describe the project, by presenting the project components, associated and ancillary works, and other characteristics that will assist in understanding the environmental effects. This will include:

- maps, at an appropriate scale, of the project location;
- the onshore and offshore project components;
- boundaries of the proposed site with coordinates;
- the major existing infrastructure;
- adjacent land uses; and
- any important environmental features.

If the project is part of a larger sequence of projects, the proponent will outline the larger context and present the relevant references, if available.

In its EIS, the proponent will describe:

- the Mobile Offshore Drilling Unit and its operations (drilling, testing, abandonment) in locations and water depths under consideration;
- the type of vessels that will be used and navigation activities (i.e., routes, number and frequency of trips);
- helicopters, including routes, number and frequency of trips;
- vertical seismic profile surveys or any other in water work;
- reagent requirements and uses (e.g., volumes, storage, types);
- petroleum products (e.g., source, volume, storage);
- the management and disposal of wastes (e.g., type and constituents of waste, quantity, treatment and method of disposal) including:
  - ✓ drilling muds, drill solids;
  - ✓ bilge and ballast water;
  - ✓ deck drainage;
  - ✓ cooling water;
  - ✓ fire control system test water;
  - ✓ operational discharges from subsea systems and the installation of subsea systems;
  - ✓ sewage and food wastes;
  - ✓ well treatment or testing fluids; and
  - ✓ other operational discharges.
- contributions to atmospheric emissions, including emissions profile (i.e., type, rate and source) for activities including routine or upset flaring, routine drilling, shipping etc.;
- sources and extent of light, heat and noise;
- transfers of bulk materials (e.g., mud) and fuel; and,
- number of employees and transportation of employees.

### **3.2. Project activities**

The EIS will include descriptions of the drilling, well testing, and where relevant, decommissioning, and abandonment of the sites affected by the offshore component of the project.

This will include descriptions of the activities to be carried out during each phase, the location of each activity, expected outputs and an indication of the activity's magnitude and scale. Water depths for potential drill sites will be specified,

Although a complete list of project activities should be provided, the emphasis will be on activities with the greatest potential to have environmental effects. Sufficient information will be included to predict environmental effects and address public concerns identified. Highlight activities that involve periods of increased environmental disturbance or the release of materials into the environment.

The EIS will include a summary of the changes that have been made to the project since originally proposed, including the benefits of these changes to the environment, Aboriginal peoples, and the public.

The EIS will include a detailed schedule including time of year, frequency, and duration for all project activities.

The information will include a description of offshore and onshore activities:

#### **3.2.1. Offshore Drilling**

- operation of the Mobile Offshore Drilling Unit, including:
  - ✓ drilling at various water depths and in locations under consideration
  - ✓ well flow testing
  - ✓ well abandonment
  - ✓ waste management
- vertical seismic profile surveys

#### **3.2.2. Supply and Servicing**

- vessel support, including loading and operation of marine support vessels (i.e., for transfer, re-supply and on-site safety during drilling activities)
- helicopter support (i.e., crew transport and delivery of supplies and equipment)
- petroleum products (i.e., source, volume, storage)

## **4. PUBLIC CONSULTATION AND CONCERNS**

The EIS will describe the ongoing and proposed consultations and the information sessions that the proponent will hold or that it has already held on the project. It will provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process. The EIS will indicate the methods used, where the consultation was held, the persons and organizations consulted, the concerns voiced and the extent to which this information was incorporated in the design of the project as well as in the EIS. The EIS will provide a summary of key issues raised related to the environmental assessment as well as describe any outstanding issues and ways to address them.

## 5. ABORIGINAL ENGAGEMENT AND CONCERNS

For the purposes of developing the EIS, the proponent will engage with Aboriginal groups that may be affected by the project, to obtain their views on:

- effects of changes to the environment on Aboriginal peoples (health and socio-economic issues; physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; and current use of lands and resources for traditional purposes), and
- potential adverse impacts of the project on potential or established Aboriginal or Treaty rights.

With respect to the above matters and in addition to information requirements outlined in Part 2, Sections 6.19 and 6.35 of these guidelines, the EIS will document:

- VCs suggested by Aboriginal groups for inclusion in the EIS, whether they were included, and the rationale for any exclusions;
- each group's potential or established rights (including geographical extent, nature, frequency, timing), including maps and data sets (e.g., fish catch numbers) when this information is provided by a group to the proponent or available through public records;
- based on the proponent's perspective, the potential adverse impacts of each of the project components and physical activities, in all phases, on potential or established Aboriginal or Treaty rights. This assessment is to be based on a comparison of the exercise of the identified rights between the predicted future conditions with the project and the predicted future conditions without the project. Include the perspectives of Aboriginal groups where these were provided to the proponent by the groups;
- based on the proponent's perspective, the measures identified to mitigate or accommodate potential adverse impacts of the project on the potential or established Aboriginal or Treaty rights. These measures will be written as specific commitments that clearly describe how the proponent intends to implement them;
- based on the proponent's perspective, the effects of changes to the environment on Aboriginal peoples or potential adverse impacts on potential or established Aboriginal or Treaty rights that have not been fully mitigated or accommodated as part of the environmental assessment and associated engagement with Aboriginal groups, including the potential adverse effects that may result from the residual and cumulative environmental effects. Include the perspectives of Aboriginal groups where these were provided to the proponent by the groups;
- specific suggestions raised by Aboriginal groups for mitigating the effects of changes to the environment on Aboriginal peoples or accommodating potential adverse impacts of the project on potential or established Aboriginal and Treaty rights;
- views expressed by Aboriginal groups on the effectiveness of the mitigation or accommodation measures;
- from the proponent's perspective, any potential cultural, social and/or economic impacts or benefits to Aboriginal groups that may arise as a result of the project. Include the perspectives of Aboriginal groups where these were provided to the proponent by the groups;
- comments, specific issues and concerns raised by Aboriginal groups and how the key concerns were responded to or addressed;

- changes made to the project design and implementation directly as a result of discussions with Aboriginal groups;
- where and how Aboriginal traditional knowledge was incorporated into the environmental effects assessment (including baseline conditions and effects analysis for all VCs) and the consideration of potential adverse impacts on potential or established Aboriginal or Treaty rights and related mitigation measures; and
- any additional issues and concerns raised by Aboriginal groups in relation to the environmental effects assessment and the potential adverse impacts of the project on potential or established Aboriginal and Treaty rights.

Information provided related to potential adverse impacts on potential or established Aboriginal or Treaty rights will be considered by the Crown in meeting its common law duty to consult obligations as set out in the *Updated Guidelines for Federal Officials to Fulfill the Duty to Consult* (2011)<sup>5</sup>.

### **5.1. Aboriginal Groups to Engage & Engagement Activities**

With respect to engagement activities, the EIS will document:

- the engagement activities undertaken with Aboriginal groups prior to the submission of the EIS, including the date and means of engagement (e.g., meeting, mail, telephone)
- any future planned engagement activities; and
- how engagement activities by the proponent allowed Aboriginal groups to understand the project and evaluate its effects on their communities, activities, potential or established Aboriginal or Treaty rights and other interests.

In preparing the EIS, the proponent will ensure that Aboriginal groups have access to timely and relevant information on the project and how the project may adversely impact them. The proponent will structure its Aboriginal engagement activities to provide adequate time for Aboriginal groups to review and comment on the relevant information. Engagement activities are to be appropriate to the groups' needs and should be arranged through discussions with the groups. The EIS will describe all efforts, successful or not, taken to solicit the information required from Aboriginal groups to support the preparation of the EIS.

The proponent will ensure that views of Aboriginal groups are recorded. The proponent will keep detailed tracking records of its engagement activities, recording all interactions with Aboriginal groups, the issues raised by each Aboriginal group and how the proponent addressed the concerns raised. The proponent will share these records with the Agency.

The proponent should consider translating information for Aboriginal groups into the appropriate Aboriginal language(s) in order to facilitate engagement activities during the environmental assessment.

The proponent will hold meetings with the following potentially affected Aboriginal groups and facilitate these meetings by making key EA summary documents (baseline studies, EIS, key findings, plain language summaries) accessible:

Nova Scotia:

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<sup>5</sup> Visit the Aboriginal Affairs and Northern Development Canada website at: [www.aadnc-aandc.gc.ca/eng/1100100014680/1100100014681](http://www.aadnc-aandc.gc.ca/eng/1100100014680/1100100014681)

- Acadia First Nation
- Glooscap First Nation
- Membertou First Nation
- Millbrook First Nation
- Sipekne'katik First Nation
- Waycobah First Nation
- Wagmatcook First Nation

New Brunswick:

- Fort Folly First Nation
- St. Mary's First Nation
- Woodstock First Nation

For the above groups, the proponent will ensure there are sufficient opportunities for individuals and groups to provide oral input in the language of their choice. The proponent will ensure that these Aboriginal groups' views are heard and recorded.

There are additional Aboriginal groups that are expected to be less affected by the project and its related effects. The proponent will make key EA summary documents (EIS, key findings, plain language summaries) accessible to these Aboriginal groups and ensure their views are heard and recorded. These Aboriginal groups include:

Nova Scotia:

- Paq'tnkek (Afton) First Nation
- Annapolis Valley First Nation
- Bear River First Nation
- Chapel Island First Nation
- Eskasoni First Nation
- Pictou Landing First Nation Inc.

New Brunswick:

- Kingsclear First Nation
- Oromocto First Nation
- Tobique First Nation
- Buctouche First Nation
- Esgenoopetitj First Nation
- Indian Island First Nation
- Pabineau First Nation
- Eel River Bar First Nation

The groups referenced above may change as more is understood about the environmental effects of the project and/or if the project or its components change during the EA. The Agency reserves the right to alter the list of Aboriginal groups that the proponent will engage as additional information is gathered during the assessment.

In addition, for the purposes of good governance, the proponent should also provide information to and discuss potential environmental effects from the Project, as described under section 5 of CEEA 2012, with the Nova Scotia Native Council.



Upon receipt of knowledge or information of potential effects to an Aboriginal group not listed above, the proponent shall provide that information to the Agency at the earliest opportunity.

## **6. EFFECTS ASSESSMENT**

### **6.1. Project setting and baseline conditions**

Based on the scope of project described in section 3 (Part 1), the EIS will present baseline information in sufficient detail to enable the identification of how the project could affect the VCs and an analysis of those effects. Where environmental effects are predicted, the EIS should discuss the anticipated timeframe for a return to baseline conditions, if applicable. Should other VCs be identified during the conduct of the EA, the baseline condition for these components will also be described in the EIS. To determine the appropriate spatial boundaries to describe the baseline information, refer to section 3.3.3 (Part 1). As a minimum, the EIS will include a description of:

#### **6.1.1. Atmospheric environment and climate**

The EIS will describe the atmospheric environment and climate at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:

- ambient air quality in the project area including but not limited to the following contaminants: total suspended particulates, PM2.5, PM10, SO<sub>x</sub>, VOCs and NO<sub>x</sub>;
- relevant weather parameters such as wind speed and direction, precipitation, visibility and storm events in the drilling area.

Relevant marine climate data sources should be consulted, such as the Sable Island weather station, the Environment Canada weather buoys project (the Lahave Bank, East Scotian Slope, Banquereau Bank, and Laurentian Fan buoys), the International Comprehensive Atmosphere Ocean Dataset (ICOADS), the United States of America National Oceanographic and Atmospheric Administration (NOAA) database of tropical cyclone activity in the North Atlantic and the Canadian Lightning Detection Network.

#### **6.1.2. Marine environment**

The EIS will describe the marine environment at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:

- marine water quality; (e.g. water temperature, turbidity, salinity and pH).
- marine geology and geomorphology (i.e., bottom sediments, including quality, thickness, grain size, and mobility);
- physical oceanography including surface and subsurface current patterns, current velocities, waves, storm surges, long shore drift processes, tidal patterns, and tide gauges levels for the site, in proximity to the site, and along the shipping routes;
- available bathymetric information for the site and along shipping routes if applicable;
- ice climate in the regional study area, including ice formation and thickness, ridging, breakup and movement;
- acoustic environment (ambient noise levels from natural sources, shipping, seismic surveys, and other sources), including information on geographic extent and temporal variations and how the acoustic environment may be affected by the project.

When describing the baseline marine environment, relevant data sources should be consulted. In addition to data sources discussed under *Atmospheric Environment and Climate* (some of which contain marine data), the proponent should consult MSC50 Wind and Wave Hindcast Data for the North Atlantic, long term hourly wave measurements from the Environment Canada weather buoys in the vicinity of the project area as well as Fisheries and Oceans Canada archives of hourly wave measurements from offshore platforms and co-located wave buoys operating on the Scotian Shelf and Slope.

#### 6.1.3. Fish and fish habitat

The EIS will describe fish and fish habitat within areas that could be affected by routine project operations or by accidents and malfunctions, including:

- describing the fish species present on the basis of the surveys carried out and the data available (e.g. government and historical databases, commercial fishing data). Identify the sources of the data and provide the information concerning the fishing carried out (e.g. location of sampling stations, catch methods, date of catches, species);
- characterizing fish populations on the basis of species and life stage for affected waters;
- listing any rare fish or invertebrate species that are known to be present; and
- describing the physical and biological characteristics of the fish and fish habitat likely to be directly or indirectly affected by the project.

Emphasis will be placed on the waters likely to be affected by the project and their physical characteristics, water and sediment quality. Hence, for all areas in which effects are anticipated, the EIS will describe the biophysical water and sediment characteristics, including:

- the location of potential or confirmed fish habitats and a description of these habitats as determined by water depths, type of substrate (sediments), aquatic vegetation, and potential use (i.e. spawning, rearing, growth, feeding, migration, overwintering). It is recommended that photos be attached to the description, if available;
- quality, thickness, grain size and mobility of bottom sediments;
- available bathymetry information for the drilling site and maximum and mean depths;
- a discussion of sea bottom stability at the project site; and,
- benthic flora and fauna and their associated habitat, including sensitive features such as corals and sponges (Note: a benthic habitat survey (ROV / camera), including transects of seafloor in the area of the well locations, may be required).

Any sampling survey methods used by the proponent will be described in order to allow experts to ensure that quality of the information provided. If previous studies on the habitat in the study area were conducted, they are to be submitted with the EIS.

#### 6.1.4. Migratory birds and their habitat

The EIS will describe migratory and non-migratory marine birds and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions.

Migratory birds are protected under the *Migratory Birds Convention Act* (MBCA) and associated regulations. Preliminary data from existing sources will be gathered, including information such as:

- abundance, distribution, and life stages of birds in the area, including species composition for each season;

- a characterization of year-round migratory bird use of the area (e.g. over-wintering, spring migration, breeding season, fall migration);
- areas of concentration of migratory birds, such as for breeding, feeding or resting;

In addition to information obtained from Aboriginal peoples, other relevant datasets should be consulted, such as those available from the Canadian Wildlife Service (e.g., Eastern Canadian Seabirds at Sea (ECSAS), Programme intégré de recherches sur les oiseaux pélagiques (PIROP)), the Nova Scotia Department of Natural Resources (for information on tern colonies), the Atlantic Canada Conservation Data Centre (ACCDC), previous petroleum operations in the area and university or other research programs, if available.

Existing data will be supplemented by surveys, where necessary. The results of any baseline surveys and a description of the methodology will be included. Surveys should be designed with reference to the Canadian Wildlife Service's guidance such as Technical Report No. 508, *A Framework for the Scientific Assessment of Potential Project Impacts on Birds* (Hanson *et al.* 2009). Appendix 3 of the Framework provides examples of project types and recommended techniques for assessing impacts on migratory birds.

#### 6.1.5. Species at risk and species of conservation concern

The EIS will describe federal species at risk and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:

- a list of all potential or known federally and provincially listed species at risk that may be affected by the project, using existing data and literature as well as surveys to provide current field data;
- a list of all federal species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) for listing on Schedule 1 of the *Species at Risk Act*. This will include those species in the risk categories of extirpated, endangered, threatened and special concern.<sup>6</sup>
- any published studies that describe the regional importance, abundance and distribution of species at risk;
- residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified critical habitat and/or recovery habitat (where applicable) and general life history of species at risk that may occur in the project area, or be affected by the project; and
- recovery strategies for information on any critical habitat in the project area of endangered and threatened species and management plans for information on habitat use of species of special status.

The following information sources on species at risk and species of conservation concern should be among those consulted:

- ✓ Species at Risk Act Registry ([www.sararegistry.gc.ca](http://www.sararegistry.gc.ca));
- ✓ COSEWIC;
- ✓ Relevant government agencies;

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<sup>6</sup> Proponents are encouraged to consult COSEWIC's annual report for a listing of the designated wildlife species: [http://www.cosewic.gc.ca/eng/sct0/index\\_e.cfm#sar](http://www.cosewic.gc.ca/eng/sct0/index_e.cfm#sar)

- ✓ Local naturalist and interest groups; and
- ✓ Aboriginal groups and First Nations.

#### 6.1.6. Marine mammals

The EIS will describe marine mammals and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:

- marine mammal species that may be present, the times of year they are present, the ranges of the species and their migration patterns and
- important areas in the vicinity of the drilling sites or supply routes (e.g., for mating, breeding, feeding and nursing of young) or that could be impacted by the project (e.g., acoustics, spills, etc.).

#### 6.1.7. Marine turtles

The EIS will describe marine turtles and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:

- marine turtle species that may be present, the times of year they are present, the ranges of the species and their migration patterns and
- important areas in the vicinity of the drilling sites or supply routes (e.g., for mating, breeding, feeding, nursing of young) or that could be impacted by the project (e.g., routine discharges, spills, etc.).

#### 6.1.8. Special areas

The EIS will describe special areas (e.g., species at risk critical habitat, Important Bird Areas, Migratory Bird Sanctuaries, National Parks, ecological reserves, etc.) at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:

- the Haddock Box-Haddock Spawning Area;
- Ecologically and Biologically Significant Areas (EBSA), particularly the Scotian Slope EBSA and the Emerald-Western-Sable Island Bank Complex EBSA;
- Sable Island National Park Reserve;
- the Gully Marine Protected Area;
- Northern Bottlenose Whale Critical Habitat; and
- Sambro Bank and Emerald Bank Sponge Conservation Areas.

The EIS will describe the distances between the edge of the project area (i.e. drill sites and shipping routes) and special areas. It shall state the rationale for designating specific areas as “special” (i.e. the defining environmental features of the special area).

#### 6.1.9. Aboriginal peoples

With respect to potential effects on Aboriginal peoples and the related VCs, baseline information will be provided for each Aboriginal group identified in section 5 (and any groups identified after these guidelines are finalized). Baseline information will describe and characterize the following, based on the spatial and temporal scope selected for the assessment:

- current use of lands and resources for traditional purposes on, near and offshore, including;

- ✓ commercial and traditional (e.g. communal gathering of fish for feasts) fishing activity within the project's potential zone of influence, including licenses and maps;
  - ✓ fish, wildlife, birds, plants or other natural resources of importance for traditional use;
  - ✓ places where fish, wildlife, birds, plants or other natural resources are harvested;
  - ✓ access and travel routes for conducting traditional practices;
  - ✓ frequency, duration or timing of traditional practices; and
  - ✓ reliance on country foods.
- any Project components and a description of any activities (e.g., exclusion zones) that may affect commercial fisheries or other uses;
  - human health, with respect to potential contamination of food sources;
  - location of reserves and communities;
  - location of traditional territory (including maps where available);
  - cultural values associated with the area affected by the project and the traditional uses identified; and
  - physical and cultural heritage<sup>7</sup> (including any site, structure or thing of archaeological, paleontological, historical or architectural significance).

Any other baseline information that supports the analysis of predicted effects on Aboriginal peoples will be included as necessary. The EIS will also indicate how input from Aboriginal groups was used in establishing the baseline conditions related to health and socio-economics, physical and cultural heritage and current use of lands and resources for traditional purposes.

#### 6.1.10. Human environment

With respect to potential effects on the human environment, non-Aboriginal people and the related VCs, baseline information will describe and characterize the following, based on the spatial and temporal scope selected for the assessment. At a minimum, this should include:

- any federal lands and any lands located outside the province or Canada that may be affected by routine project operations or by accidents and malfunctions;
- information on current and historical use of all waters that may be affected by routine project operations or by accidents and malfunctions, including:
  - ✓ current commercial and recreational fishing activity in the project area that may be affected, including licence holders and species fished;
  - ✓ any project components and a description of any activities (e.g., exclusion zones) that may affect commercial or recreational fisheries or other uses;
  - ✓ recreational uses of near-shore waters (i.e., swimming, canoeing, boating) that may be affected by the project; and
  - ✓ other ocean use (e.g. shipping, research, oil and gas, military activities, ocean infrastructure (e.g., sub-sea cables).
- location of and proximity of the Project to any permanent, seasonal or temporary residences;
- health<sup>8</sup> and socio-economic conditions, including information on the functioning and health of the socio-economic environment, encompassing a broad range of matters that affect

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<sup>7</sup> Heritage resources to be considered will include but not be limited to, physical objects (e.g. middens, culturally-modified trees, historic buildings), sites or places (e.g. burial sites, sacred sites, cultural landscapes) and attributes (e.g. language, beliefs).

- communities in the study area in a way that recognizes interrelationships, system functions and vulnerabilities;
- human health, with respect to potential contamination of food sources and change in air quality;
  - physical and cultural heritage, including structures, sites or things of historical, archaeological, paleontological or architectural significance (e.g. ship wrecks); and.
  - the rural and urban settings that could be affected by routine project activities or accidents and malfunctions.

The EIS should also discuss the potential to encounter unexploded ordnance (UXOs), based on consultation with the Department of National Defence.

## **6.2. Predicted Changes to the Physical Environment**

The assessment will include a consideration of the predicted changes to the environment as a result of the project being carried out or as a result of any powers duties or functions that are to be exercised by the federal government in relation to the project. These predicted changes to the environment are to be considered in relation to each phase of the project (construction, operation, decommissioning, and abandonment) and are to be described in terms of the geographic extent of the changes, the duration and frequency of change, and whether the environmental changes are reversible or irreversible.

The EIS will include a stand-alone section that summarises those changes that may be caused by the project on the components of the environment listed in paragraph 5(1)(a) of CEAA, 2012, namely fish and fish habitat, aquatic species and migratory birds.

The EIS will include a stand-alone section that summarises any change the project may cause to the environment that may occur on federal lands or lands outside the province in which the project is to be located (including outside of Canada).

In situations where the project requires one or more federal decisions identified in section 5(2), the EIS will also include a stand-alone section that describes any change that may be caused by the project on the environment that is directly linked or necessarily incidental to these decisions (e.g. changes to commercial fishing).

In addition, the EIS will identify any changes related to the terrestrial environment, including:

- landscape disturbance;
- migratory bird habitat, including losses, structural changes, fragmentation of habitat and wetlands (cover types, ecological land unit in terms of quality, quantity, diversity, distribution and functions) used by migratory birds;
- critical habitat for federally listed species at risk; and
- key habitat for species important to Aboriginal current use of resources.

## **6.3. Predicted Effects on Valued Components**

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<sup>8</sup> The proponent should refer to Health Canada's Useful Information for Environmental Assessments document in order to include the appropriate baseline information relevant to human health. This document can be obtained at [http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/envIRON\\_assess-eval/index-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/envIRON_assess-eval/index-eng.php)

The proponent is to assess the environmental effects of the project from routine operations and accidents and malfunctions, on the following VCs:

#### 6.3.1. Fish and fish habitat

- effects on fish and fish habitat, including but not limited to:
  - ✓ the identification of any potential harmful alteration, disruption or destruction of fish habitat, including the calculations of any potential habitat loss (temporary or permanent) in terms of surface areas (e.g. spawning grounds, fry-rearing areas, feeding). The assessment will include a consideration of:
    - effects on water quality;
    - the geomorphological changes and their effects on hydrodynamic conditions and fish habitats (e.g., modification of benthic habitat including corals and sensitive habitat, area affected by drilling waste, disturbance to water column);
    - underwater noise and vibration emissions from project activities (i.e., drilling, vertical seismic profiling, offshore supply vessel operation, well abandonment);;
    - any potential imbalances in the food web in relation to baseline.
  - ✓ the effects of changes to the aquatic environment on fish and their habitat, including:
    - the anticipated changes in the composition and characteristics of the populations of various fish species, including shellfish and forage fish including mortality of fish, eggs and larvae;
    - any modifications in migration or local movements during and after drilling.
  - ✓ a discussion of how underwater noise and vibration caused by project activities, including drilling, may affect fish behaviour;
  - ✓ a discussion on the length of time it would take for the benthic environment to return to baseline conditions in water depths within which the Project would occur; and
  - ✓ a description of how sediment deposition and acoustic monitoring data would be collected during and after drilling operations and how this would be used to verify effects predictions.

Disposal of drilling waste (i.e., cuttings) is expected to be a primary cause of effects to marine benthos. The EIS should indicate the areal extent of drilling waste deposition at various water depths and at various stages of drilling, including during riserless drilling and drilling with the marine riser in place, using dispersion modeling.

#### 6.3.2. Marine plants

- effects on marine plants.

#### 6.3.3. Marine mammals

- effects on marine mammals, including but not limited to:
  - ✓ mortality and other effects from vessel collisions or disturbance; and
  - ✓ direct and indirect effects caused by increased disturbance (e.g., noise, light, vibrations) including mortality, physical injury and behavioural changes (e.g., habitat avoidance, disruption to feeding behaviour, deviation in migration routes, communication masking, discomfort and behavioural disturbance).

#### 6.3.4. Marine turtles

- effects on marine turtles, including but not limited to:
  - ✓ mortality and other effects from vessel collisions or disturbance; and
  - ✓ direct and indirect effects caused by increased disturbance (e.g. noise, light, vibrations) including mortality, physical injury and behavioural changes (e.g. habitat avoidance, disruption to feeding behaviour, deviation in migration routes, communication masking, discomfort and behavioural disturbance).

#### 6.3.5. Migratory birds

- effects on migratory birds, including but not limited to:
  - ✓ noise disturbance from seismic equipment including both direct effects (physiological), or indirect effects (foraging behaviour of prey species);
  - ✓ physical displacement as a result of vessel presence (e.g., disruption of foraging activities);
  - ✓ night-time illumination levels from lights and flares during different weather conditions and seasons and during different project activities (e.g., drilling, well testing) and associated nocturnal disturbance (e.g., increased opportunities for predators, attraction to the drilling unit and vessels and subsequent collision or exposure to vessel-based threats, incineration in flares, disruption of normal activities);
  - ✓ exposure to spilled contaminants (e.g., fuel, oils) and operational discharges (e.g., deck drainage, gray water, black water);
  - ✓ attraction of, and increase in, predator species as a result of waste disposal practices (i.e., sanitary and food waste) and the presence of incapacitated/dead prey near the Mobile Offshore Drilling Unit or support vessels;
  - ✓ physical harm or mortality from flaring on the drilling unit or other vessel based threats;
  - ✓ collision risk with the drilling unit and other project infrastructure;
  - ✓ the effects of oil spills in the nearshore or that reach land on landbird species;
  - ✓ change in marine habitat quality from drill muds and cuttings and sedimentation; and
  - ✓ indirect effects caused by increased disturbance (e.g. noise, light, presence of workers), relative abundance movements and changes in migratory bird habitat.

#### 6.3.6. Federal species at risk

- effects on federally listed species at risk and those species listed by COSEWIC classified as extirpated, endangered, threatened or of special concern (flora and fauna) and their critical habitat; and,
- a discussion of migration patterns of federal species at risk and related effects (e.g., displacement, increased risk of collision).

#### 6.3.7. Aboriginal peoples

- effects of changes to the environment on the current uses of land and resources for traditional purposes, including, but not limited to:
  - ✓ effects on food, social and ceremonial fishing and Aboriginal commercial fishing;



- ✓ a discussion of how drilling activities correlates to key fisheries windows, and any potential impacts resulting from overlapping periods;
  - ✓ changes related to species important to Aboriginal current use of resources, including changes to key habitat
  - ✓ effects of alterations to access into the areas used for traditional uses and commercial fishing, including implementation of exclusion zones;
  - ✓ effects on cultural value or importance associated with traditional uses or areas affected by the project (e.g. inter-generational teaching of traditional practices);
  - ✓ how project activities correlates to the timing of traditional practices, and any potential impacts resulting from overlapping periods;
  - ✓ the regional value of traditional use of the project area and the anticipated effects to traditional practice of the Aboriginal group, including alienation of lands from Aboriginal traditional use;
  - ✓ indirect effects such as avoidance of the area by Aboriginal peoples due to increased disturbance (e.g. noise, presence of workers); and
  - ✓ an assessment of the potential to return affected areas to pre-disturbance conditions to support traditional practices.
- effects of changes to the environment on human health, considering, but not limited to potential changes in air quality, quality and availability of country foods and noise exposure.
  - effects of changes to the environment on socio-economic conditions, including but not limited to:
    - ✓ the use of navigable waters;
    - ✓ commercial fishing (e.g., catch rates, exclusion zones, gear damage or loss, well abandonment, marketability of seafood products); and
    - ✓ recreational use.
  - effects of changes to the environment on physical and cultural heritage, and structure, site or thing of historical, archaeological, paleontological or architectural significance to Aboriginal groups, including, but not limited to:
    - ✓ the loss or destruction of physical and cultural heritage;
    - ✓ changes to access to physical and cultural heritage; and
    - ✓ changes to the cultural value or importance associated with physical and cultural heritage.

Other effects of changes to the environment on Aboriginal peoples should be reflected as necessary.

#### 6.3.8. Air quality and greenhouse gas emissions

- changes to air quality;
- changes to ambient noise levels;
- changes to night-time light levels; and,
- an accounting of greenhouse gas emissions for all project phases and components.

#### 6.3.9. Commercial fisheries

- effects of changes to the environment on commercial fishing activities (e.g. effects on fished species affecting fisheries success, displacement from fishing areas (e.g. exclusion zones), gear loss or damage);
- a discussion of how drilling activities correlates to key commercial fisheries windows, and any potential impacts resulting from overlapping periods;
- effects from subsea infrastructure that could be left in place (e.g. wellheads) following abandonment; and
- changes to habitat of commercial fish species (e.g. noise, water and sediment quality).

#### 6.3.10. Special areas

- effects on special areas, including, but not limited to:
  - ✓ use of dispersants; and;
  - ✓ change to habitat quality (e.g. noise, light, water, sediment quality).

#### 6.3.11. Human environment

- effects of changes to the environment on health and socio-economic conditions, physical and cultural heritage and any structure, site or thing that is of historical, archaeological, paleontological architectural value, including, but not limited to the following, as applicable:
  - ✓ recreational fishing activity (including near-shore);
  - ✓ other recreational uses of near-shore waters (i.e., swimming, canoeing, boating);
  - ✓ other ocean uses;
  - ✓ socio-economic conditions;
  - ✓ human health;
  - ✓ physical and cultural heritage (e.g., shipwrecks);
  - ✓ rural and urban settings.

### 6.4. Mitigation

Every EA conducted under CEAA 2012 will consider measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project. Each measure will be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation. Mitigation measures may be considered for inclusion as conditions in the EA decision statement and/or in other compliance and enforcement mechanisms provided by other authorities' permitting or licensing processes.

As a first step, the proponent is encouraged to use an approach based on the avoidance and reduction of the effects at the source. Such an approach may include the modification of the design of the project or relocation of project components.

The EIS will describe the standard mitigation practices, policies and commitments that constitute technically and economically feasible mitigation measures and that will be applied as part of standard practice regardless of location (including the measures directed at promoting beneficial or mitigating adverse socio-economic effects). The EIS will then describe the project's environmental protection plan and its environmental management system, through which the proponent will deliver this plan.

The plan will provide an overall perspective on how potentially adverse effects would be minimized and managed over time. The EIS will further discuss the mechanisms the proponent would use to require its contractors and sub-contractors to comply with these commitments and policies and with auditing and enforcement programs.

The EIS will then describe mitigation measures that are specific to each environmental effect identified. Measures will be written as specific commitments that clearly describe how the proponent intends to implement them and the environmental outcome the mitigation is designed to address. Where mitigation measures have been identified in relation to species and/or critical habitat listed under the *Species at Risk Act*, the mitigation measures will be consistent with any applicable recovery strategy and action plans.

The EIS will specify the actions, works, minimal disturbance footprint techniques, best available technology, corrective measures or additions planned during the project's various phases (drilling, testing, abandonment or other undertakings related to the project) to eliminate or reduce the significance of adverse effects. The impact statement will also present an assessment of the effectiveness of the proposed technically and economically feasible mitigation measures. The reasons for determining if the mitigation measure reduces the significance of an adverse effect will be made explicit.

The EIS will indicate what other technically and economically feasible mitigation measures were considered, and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation will be justified. The EIS will identify who is responsible for the implementation of these measures and the system of accountability.

Where mitigation measures are proposed to be implemented for which there is little experience or for which there is some question as to their effectiveness, the potential risks and effects to the environment should those measures not be effective will be clearly and concisely described. In addition, the EIS will identify the extent to which technology innovations will help mitigate environmental effects. Where possible, it will provide detailed information on the nature of these measures, their implementation, management and the requirements of the follow-up program.

Adaptive management is not considered as a mitigation measure, but if the follow-up program (refer to section 9) indicates that corrective action is required, the proposed approach for managing the action should be identified.

## **6.5. Significance of residual effects**

After having established the technically and economically feasible mitigation measures, the EIS will present any residual environmental effects of the project on the VCs identified in section 6.3. The residual effects, even if very small or deemed insignificant will be described.

The EIS will then provide an analysis of the significance of the residual environmental effects that are considered adverse, using guidance described in section 4 of the Agency's reference guide *Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects*<sup>9</sup>.

The EIS will identify the criteria used to assign significance ratings to any predicted adverse effects. It will contain clear and sufficient information to enable the Agency, technical and regulatory agencies,

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<sup>9</sup> Visit the Canadian Environmental Assessment Agency's website at: [www.ceaa-acee.gc.ca/default.asp?lang=En&n=D213D286-1&offset=&toc=hide](http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=D213D286-1&offset=&toc=hide)

Aboriginal groups and the public to review the proponent's analysis of the significance of effects. The EIS will document the terms used to describe the level of significance.

The following criteria should be used in determining the significance of residual effects:

- magnitude;
- geographic extent;
- duration;
- frequency;
- reversibility;
- ecological and social context; and
- existence of environmental standards, guidelines or objectives for assessing the impact.

In assessing significance against these criteria the proponent will, where possible, use relevant existing regulatory documents, environmental standards, guidelines, or objectives such as prescribed maximum levels of emissions or discharges of specific hazardous agents into the environment. The EIS will contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each VC.

Where significant adverse effects are identified, the EIS will set out the probability (likelihood) that they will occur, and describe the degree of scientific uncertainty related to the data and methods used within the framework of its environmental analysis.

## **6.6. Other effects to consider**

### **6.6.1. Effects of potential accidents or malfunctions**

The failure of certain works caused by human error or exceptional natural events (e.g. earthquake) could cause major effects. The proponent will therefore conduct an analysis of the risks of accidents and malfunctions, determine their effects and present emergency measures.

Taking into account the lifespan of different project components, the proponent will identify the probability of potential accidents and malfunctions related to the project, in both the near-shore and offshore, including an explanation of how those events were identified, potential consequences (including the environmental effects as defined in section 5 of CEAA 2012), the plausible worst case scenarios and the effects of these scenarios.

The geographical and temporal boundaries for the assessment of accidents and malfunctions will be broader than the assessment of routine operations in relation to specific VCs. This assessment will include an identification of the magnitude of an accident and/or malfunction, including the quantity, mechanism, rate, form and characteristics of the contaminants and other materials likely to be released into the environment during the accident and malfunction events and would potentially result in an adverse environmental effect as defined in section 5 of CEAA 2012.

The EIS will describe the safeguards that have been established to protect against such occurrences and the contingency and emergency response procedures in place if such events do occur.

Of particular concern with exploration drilling in the marine environment is the potential for accidental spills. This includes both low-probability, large-scale events (e.g., blowouts, either surface, sub-sea or underground) and smaller-volume spills that may occur more frequently. These incidents may affect

the health and survival of plankton, fish eggs and larvae, juvenile and adult fish, marine mammals, marine birds, marine turtles, and marine invertebrates in the affected area, which may include special areas and areas of high ecological significance. Fishing activity, including by Aboriginal peoples, and the marketability of seafood products harvested in the Nova Scotia offshore may also be adversely affected by a spill or blowout. The effects of accidental spills and blowouts will therefore require assessment in the EIS, including trajectory modelling for worst-case large-scale spill scenarios that may occur. Results should be reported in a manner that illustrates the effects of varying weather and oceanographic conditions that may occur throughout the year, and should include a projection for spills originating at the site and followed until the slick volume is reduced to a negligible amount or until a shoreline is reached. Spill scenarios should also consider potential worst-cases, including when species at risk and high concentrations of marine birds or fish are present. A discussion on water depth and its effect on blow-out rate and spill trajectory modelling assumptions must be provided. Where well locations have not yet been identified, points of origin selected for spill trajectory models should be conservative (e.g., selecting a potential location within the proposed drilling area that is closest to a sensitive feature or that could result in greatest effects).

Based on the results of the spill modelling and analysis in the EIS, an emergency response plan for spills (small and large) and blowouts will be required. At a minimum, an outline of the emergency response plan along with key commitments is required in the EIS. Depending on the outcomes of the effects analysis, specific detail on key components of the plan will be required in the EIS. The proponent should commit to finalizing the plan in consultation with regulators. The EIS shall include a discussion on the use, availability, timing and feasibility of a capping stack to stop a blowout and resultant spills. If dispersants are to be used, the proponent shall consider associated environmental effects in the EIS (e.g. effects on marine life) and provide a plan for their use. The environmental effects of other measures outlined in the emergency response should also be considered (e.g. effects from burns). The EIS shall include the means by which design and/or operational procedures, including follow-up measures, will be implemented to mitigate significant adverse effects from malfunctions and/or accidental events.

The potential to encounter shallow gas pockets, and associated implications, should also be discussed.

The EIS should also consider effects of accidents in the near-shore environment (e.g. spills and ship groundings) and of spills reaching shore (e.g. Nova Scotia and Sable Island National Park Reserve); including effects on species at risk and their critical habitat, colonial nesters and concentrations of birds, and their habitat.

#### 6.6.2. Effects of the environment on the project

The EIS will take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events could adversely affect the project and how this in turn could result in impacts to the environment (e.g., extreme environmental conditions result in malfunctions and accidental events). These events will be considered in different probability patterns (i.e., 5-year event vs. 100-year event).

The EIS will provide details of planning, design and construction strategies intended to minimize the potential environmental effects of the environment on the project.

#### 6.6.3. Cumulative effects assessment

The proponent will identify and assess the project's cumulative effects using the approach described in the Agency's Operational Policy Statement entitled *Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012* and the guide entitled *Cumulative Effects Assessment Practitioners' Guide, 1999*<sup>10</sup>.

Cumulative effects are defined as changes to the environment due to the project combined with the existence of other past, present and reasonably foreseeable physical activities. Cumulative effects may result if:

- implementation of the project being studied may cause direct residual adverse effects on the VCs, taking into account the application of technically and economically feasible mitigation measures; and,
- the same VCs may be affected by other past, present or reasonably foreseeable physical activities.

VCs that would not be affected by the project or would be affected positively by the project can, therefore, be omitted from the cumulative effects assessment. A cumulative effect on an environmental component may, however, be important even if the assessment of the project's effects on this component reveals that the effects of the project are minor.

In its EIS, the proponent will:

- Identify and provide a rationale for the VCs that will constitute the focus of the cumulative effects assessment, emphasizing this assessment on the VCs most likely to be affected by the project and other project and activities. To this end, the proponent must consider, without limiting itself thereto, the following components likely to be affected by the project:
  - Fish and fish habitat
  - Marine mammals and sea turtles
  - Migratory birds
  - Special areas
  - Species at risk
  - Commercial Fisheries
  - Current Aboriginal Use of Lands and Resources for Traditional Purposes
- Identify and justify the spatial and temporal boundaries for the cumulative effect assessment for each VC selected. The boundaries for the cumulative effects assessments will generally be different for each VC considered. These cumulative effects boundaries will also generally be larger than the boundaries for the corresponding project effects;
- Identify the sources of potential cumulative effects. Specify other projects or activities that have been or that are likely to be carried out that could cause effects on each selected VC within the boundaries defined, and whose effects would act in combination with the residual effects of the project. This assessment may consider the results of any relevant study conducted by a committee established under section 73 or 74 of CEEA 2012.
- Describe the mitigation measures that are technically and economically feasible. The proponent shall assess the effectiveness of the measures applied to mitigate the cumulative effects. In cases where measures exist that are beyond the scope of the proponent's

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<sup>10</sup> Visit the Canadian Environmental Assessment Agency's website at: [www.ceaa-acee.gc.ca/](http://www.ceaa-acee.gc.ca/)

responsibility that could be effectively applied to mitigate these effects, the proponent will identify these effects and the parties that have the authority to act. In such cases, the EIS will summarize the discussions that took place with the other parties in order to implement the necessary measures over the long term;

- Determine the significance of the cumulative effects; and
- Develop a follow-up program to verify the accuracy of the assessment or to dispel the uncertainty concerning the effectiveness of mitigation measures for certain cumulative effects.

The proponent is encouraged to consult with key stakeholders prior to finalizing the choice of VCs and the appropriate boundaries to assess cumulative effects.

## **7. SUMMARY OF ENVIRONMENTAL EFFECTS ASSESSMENT**

The EIS will contain a table summarising the following key information:

- potential environmental effects;
- proposed mitigation measures to address the effects identified above; and
- potential residual effects and the significance of the residual environmental effects.

The summary table will be used in the EA Report prepared by the Agency. An example of a format for the key summary table is provided in Appendix 1 of this document.

In a second table, the EIS will summarize all key mitigation measures and commitments made by the proponent which will more specifically mitigate any significant adverse effects of the project on VCs (i.e., those measures that are essential to ensure that the project will not result in significant adverse environmental effects).

## **8. FOLLOW-UP AND MONITORING PROGRAMS**

A follow-up program is designed to verify the accuracy of the effects assessment and to determine the effectiveness of the measures implemented to mitigate the adverse effects of the project. The goal of a monitoring program is to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of project development, and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety.

### **8.1. Follow-up Program**

The duration of the follow-up program shall be as long as required for the environment to regain its equilibrium and to evaluate the effectiveness of the mitigation measures.

The EIS shall present a preliminary follow-up program in particular for areas where scientific uncertainty exists in the prediction of effects. This program shall include:

- objectives of the follow-up program and the VCs targeted by the program;
- list of elements requiring follow-up;
- number of follow-up studies planned as well as their main characteristics (list of the parameters to be measured, planned implementation timetable, etc.);
- intervention mechanism used in the event that an unexpected deterioration of the environment is observed;

- mechanism to disseminate follow-up results among the concerned populations;
- accessibility and sharing of data for the general population;
- opportunity for the proponent to take advantage of the participation of Aboriginal groups and stakeholders on the affected territory, during the implementation of the program; and
- involvement of local and regional organizations in the design, implementation and evaluation of the follow-up results as well as any updates, including a communication mechanism between these organizations and the proponent.

## **8.2. Monitoring**

The proponent will prepare an environmental monitoring program for all phases of the project. This program will help ensure that the project is implemented as proposed, that the mitigation or compensation measures proposed to minimize the project's environmental effects are effectively implemented, and that the conditions set at the time of the project's authorization and the requirements pertaining to the relevant laws and regulations are met. The monitoring program will also make it possible to check the proper operation of works, equipment and facilities. If necessary, the program will help reorient the work and possibly make improvements as project implementation begins and during well drilling, testing, and abandonment for each well.

Specifically, the environmental impact statement shall present an outline of the preliminary environmental monitoring program including:

- identification of the interventions that pose risks to one or more of the components and the measures and means planned to protect the environment;
- description of the characteristics of the monitoring program where foreseeable (e.g., location of interventions, planned protocols, list of measured parameters, analytical methods employed, schedule, human and financial resources required);
- description of the proponent's intervention mechanisms in the event of the observation of non-compliance with the legal and environmental requirements or with the obligations imposed on contractors by the environmental provisions of their contracts; and
- guidelines for preparing monitoring reports (number, content, frequency, format) that will be sent to the authorities concerned.



### Appendix 1 Example - Summary Table of Environmental Assessment

| Valued Component affected                                | Area of federal jurisdiction <sup>11</sup> (v) | Project Activity | Potential effects | Proposed mitigation | Residual effect | <i>Magnitude</i> | <i>Extent</i> | <i>Duration</i> | <i>Frequency</i> | <i>Reversibility</i> | <i>Other criteria used to determine significance</i> | Significance of residual adverse effect |
|--|--|------------------|-------------------|---------------------|-----------------|------------------|---------------|-----------------|------------------|----------------------|--|---|
| Fish and fish habitat                                    |  |                  |                   |                     |                 |                  |               |                 |                  |                      |  |   |
| Migratory birds  |  |                  |                   |                     |                 |                  |               |                 |                  |                      |  |   |
| Species at risk  |  |                  |                   |                     |                 |                  |               |                 |                  |                      |  |   |
| Current use of land and resource for traditional purpose | v<br>5(1)(c)(iii)                              |                  |                   |                     |                 |                  |               |                 |                  |                      |  |   |
| Any other VCs identified                                 |  |                  |                   |                     |                 |                  |               |                 |                  |                      |  |   |

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<sup>11</sup> Indicate by a check mark which valued components can be considered “environmental effects” as defined in section 5 of CEAA 2012, and specify which subsection of this Act is relevant. For example, for the VC “Use of land and resources by Aboriginal people”, the appropriate cell would indicate, section 5(1)(c)(iii).