Scotian Basin Exploration Drilling Project

Environmental Impact Statement

Volume 1: Environmental Impact Statement

October 2016

Executive Summary

BP Canada Energy Group ULC (BP Canada Energy Group ULC and/or any of its affiliates are hereafter generally referred to as "BP") is proposing to conduct an exploration drilling program on Exploration Licences (ELs) 2431, 2432, 2433, and 2434 known as the Scotian Basin Exploration Drilling Project (the Project). BP holds a 40% interest in the Nova Scotia Offshore ELs and will operate the exploration program. Partners, Hess Canada Oil and Gas ULC and Woodside Energy International (Canada) Limited, hold a 40% and 20% interest, respectively.

BP will drill up to seven exploration wells in phases over the term of the licences, from 2018 to 2022. A Mobile Offshore Drilling Unit (MODU) will be contracted to drill wells within the ELs. Logistics support will be provided through a fleet of platform supply vessels (PSVs) and helicopters. A supply base in Halifax will be used to store materials and equipment. It is expected that drilling activity for the first well in the program will commence in 2018. It is anticipated results from initial wells will inform the execution strategy for subsequent wells.

Offshore exploration drilling is a designated activity under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012). This document is intended to fulfill requirements for an environmental assessment (EA) pursuant to CEAA, 2012 as well as EA requirements of the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) pursuant to the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act* (hereafter referred to as the "Accord Acts"). This Environmental Impact Statement (EIS) has been prepared to satisfy Project-specific *Guidelines for the Preparation of an Environmental Impact Statement Pursuant to CEAA, 2012* (CEA Agency 2015a) which were developed by the Canadian Environmental Assessment Agency (CEA Agency) with input from other government departments and agencies, and the public.

The EA method is focused on the identification and assessment of potential adverse environmental effects of the Project on valued components (VCs). VCs are environmental attributes associated with the Project that are of particular value or interest because they have been identified to be of concern to Aboriginal peoples, regulatory agencies, BP, resource managers, scientists, key stakeholders, and/or the general public. The following six VCs were selected to facilitate a focused and effective EA process that complies with government requirements and supports public review:

- Fish and Fish Habitat;
- Marine Mammals and Sea Turtles;
- Migratory Birds;
- Special Areas;
- Commercial Fisheries; and
- Current Aboriginal Use of Lands and Resources for Traditional Purposes.

The assessment methods used in the preparation of this EIS included an evaluation of the potential environmental effects for each VC that may arise during the Project as well as from accidental events. The evaluation of potential cumulative effects considers whether there is potential for the residual environmental effects of the Project to interact cumulatively with the residual environmental effects of other past, present, or future (*i.e.*, certain or reasonably foreseeable) physical activities in the vicinity of the Project. In support of the EA process, additional studies were undertaken including acoustic modelling, drill waste dispersion modelling, oil spill fate and trajectory modelling, and a traditional use study. These additional studies are appended to the EIS.

Routine operations represent physical activities that would occur throughout the life of the Project and include the presence and operation of the MODU (including light and underwater sound emissions and establishment of a safety [exclusion] zone), waste management (including discharge of drill muds and cuttings and other discharges and emissions), vertical seismic profiling, supply and servicing operations (including helicopter transportation and supply/support vessel operations) and well abandonment. These activities reflect the scope of the Project as outlined in the EIS Guidelines and represent physical activities that would occur throughout the life of the Project forming the basis of the effects assessment.

Mitigation is proposed to reduce or eliminate adverse environmental effects. Most potential Project and cumulative effects will be addressed by standard mitigation measures and best management practices. With the implementation of these proposed mitigation measures, adverse residual environmental effects of routine Project activities and components are predicted to be not significant for all VCs.

Environmental effects associated with potential accidental events are assessed with the focus of the assessment on credible worst-case accidental event scenarios that could result in significant environmental effects. Accidental events that could potentially occur during exploration drilling and could potentially result in adverse environmental effects include small spills which could occur during MODU or PSV operations, and a subsea blowout event. Interactions with VCs are identified for these scenarios, and potential environmental effects are assessed. A description of the planned mitigation and contingency measures is provided, and a conclusion regarding the significance of potential residual environmental effects and their likelihood of occurrence is given.

In the unlikely event of a Project-related accidental event resulting in the large-scale release of oil (*e.g.*, a blowout incident), effects to Marine Mammals and Sea Turtles, Migratory Birds, Special Areas, Commercial Fisheries, and Current Aboriginal Land and Resource Use for Traditional Purposes have potential to be significant if the spill trajectory overlaps spatially and temporally with sensitive receptors. However, with the implementation of proposed well control, spill response, contingency, and emergency response plans (refer to Section 8.3), significant residual adverse environmental effects are unlikely to occur.

In summary, the Project is not likely to result in significant adverse residual environmental effects, including cumulative environmental effects, provided that the proposed mitigations are implemented.

BP recognizes the challenge of managing and meeting growing worldwide demand for energy while addressing climate change and other environmental and social issues. The proposed Project will contribute to energy diversification and is expected to generate industrial, employment, and social benefits. The Project is also expected to contribute to technological and scientific knowledge sharing in Canada and Nova Scotia, advancing the understanding of deepwater drilling operations offshore Nova Scotia.

A concordance table is provided below (Table E.1.1) to demonstrate compliance with the final EIS Guidelines and indicate where requirements have been addressed in this EIS document.

Table E.1.1 Concordance Table

Final EIS Guidelines		EIS Reference	
PART I - BACKGROUND			
1	**INTRODUCTION**		
2	**GUIDING PRINCIPLES**		
2.1	Environmental Assessment as a Planning Tool	EIS submission	
2.2	Public Participation	3	Stakeholder Engagement
2.3	Aboriginal Engagement	4 B	Aboriginal Engagement Traditional Use Study (Appendix B)
2.4	Application of the Precautionary Approach	6.1 7 8	Scope of Assessment Environmental Effects Assessment Accidental Events
3	**SCOPE OF THE ENVIRONMENTAL ASSESSMENT**		
3.1	Designated Project	2 6.1	Project Description Scope of the Assessment
3.2	Factors to be Considered	6.1.2	Factors to be Considered
3.3	Scope of Factors	6.1	Scope of the Project
3.3.1	Changes to the Environment	7.2 7.3 7.4 7.5 7.6 7.7 11.1	Fish and Fish Habitat Marine Mammals and Sea Turtles Migratory Birds Special Areas Commercial Fisheries Aboriginal Use of Lands and Resources for Traditional Purposes Changes to the Physical

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	Environment 11.2 Effects of Changes to the Environment
3.3.2 Valued Components to be Examined	6.2.2 Selection of Valued Components
3.3.3 Spatial and Temporal Boundaries	6.2.3.4 Environmental Assessment Boundaries 7.2.4.1 Environmental Assessment Boundaries (Fish and Fish Habitat) 7.3.4.1 Environmental Assessment Boundaries (Marine Mammals and Sea Turtles) 7.4.4.1 Environmental Assessment Boundaries (Migratory Birds) 7.5.4.1 Environmental Assessment Boundaries (Special Areas) 7.6.4.1 Environmental Assessment Boundaries (Commercial Fisheries) 7.7.4.1 Environmental Assessment Boundaries (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
4 PREPARATION AND PRESENTATION OF THE ENVIRONMENTAL IMPACT STATEMENT	
4.1 Guidance	1.3 Regulatory Framework and the Role of the Government 1.4 Applicable Guidelines and Resources
4.2 Study Strategy and Methodology	6 Environmental Effects Assessment Scope and Methods
4.3 Use of Information	
4.3.1 Scientific Advice	5 Existing Environment
4.3.2 Community Knowledge and Aboriginal Traditional Knowledge	3 Stakeholder Consultations and Engagement 4 Aboriginal Engagement 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes B Traditional Use Study (Appendix B)
4.3.3 Existing Information	5 Existing Environment
4.3.4 Confidential Information	N/A

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
4.4 Presentation and Organization of the Environmental Impact Statement	Title Page Table of Contents List of Tables and Figures Concordance Table Acronyms 14 References
4.5 Summary of the Environmental Impact Statement	EIS Summary Document
PART 2 – CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT	
1 INTRODUCITON AND OVERVIEW	
1.1 The Proponent	
In the EIS, the proponent will: • provide contact information (*e.g.* name, address, phone, fax, email);	1.3.2 Proponent Contact Information
• identify itself and the name of the legal entity that would develop, manage and operate the project;	1.3 Proponent Information
• describe corporate and management structures;	1.3.1 How BP Operates
• specify the mechanism used to ensure that corporate policies will be implemented and respected for the project; and	1.3.1 How BP Operates
• identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS.	1.3.3 Project Team
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.	2.3 Project Components 2.3.1 Drilling Vessel 2.3.2 Offshore Exploration Wells 2.3.3 Supply and Servicing Components 2.4 Project Activities 2.4.1 MODU Mobilization 2.4.2 Drilling 2.4.3 Well Evaluation 2.4.4 Well Abandonment 2.4.5 Supply and Servicing 2.7 Project Schedule
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;	2.2 Project Location (Table 2.2.1 Project Area Coordinates)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• current land use in the area;	2.2 Project Location 2.4.5 Supply and Servicing 5.3 Socio-Economic Environment 5.3.1 Land and Nearshore Ocean Use B Traditional Use Study (Appendix B)
• distance of the project facilities and components to any federal lands;	1.5.3 Other Applicable Regulatory Requirements
• the environmental significance and value of the geographical setting in which the project will take place and the surrounding area;	5 Existing Environment
• 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;	5.2.5.4 Species at Risk and Species of Conservation Concern (Marine Fish) 5.2.6.4 Species at Risk and Species of Conservation Concern (Marine Mammals) 5.2.7 Sea Turtles 5.2.8.3 Areas of Significance to Migratory Birds (Table 5.2.1.8 Important Bird Areas in and Adjacent to the RAA) 5.2.10 Special Areas (Table 5.2.20 Special Areas in the RAA) 11.1.1 Changes to Components of the Environment within Federal Jurisdiction
• local and Aboriginal communities; and,	2.2 Project Location 4.2 Aboriginal Organizations B Traditional Use Study (Appendix B)
• traditional Aboriginal territories, treaty lands, Indian reserve lands.	4.2 Aboriginal Organizations 4.3 Potential or Established Rights and Related Interests B Traditional Use Study (Appendix B)
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;	1.5 Regulatory Framework and the Role of Government 1.5.1 Offshore Regulatory Framework

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• the environmental and other regulatory approvals and legislation that are applicable to the project at the federal, provincial, regional and municipal levels;	1.5.2 Environmental Assessment Requirements 1.5.3 Other Applicable Regulatory Requirements
• government policies, resource management, planning or study initiatives pertinent to the project and/or EA and their implications;	1.6 Applicable Guidelines and Resources 1.6.1 Government Guidelines and Resources
• any treaty or self-government agreements with Aboriginal groups that are pertinent to the project and/or EA;	1.6.2 Aboriginal Policies and Guidelines 4.3 Potential or Established Rights and Related Interests B Traditional Use Study (Appendix B)
• any relevant land use plans, land zoning, or community plans; and	2.3.3 Supply and Servicing Components 4.2 Aboriginal Organizations
• 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.	1.5 Regulatory Framework and the Role of Government 6.2.3.3 Potential Environmental Effects, Pathways and Measureable Parameters 6.2.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance 7.2.1 Regulatory and Policy Setting (Fish and Fish Habitat) 7.3.1 Regulatory and Policy Setting (Marine Mammals and Sea Turtles) 7.4.1 Regulatory and Policy Setting (Migratory Birds) 7.5.1 Regulatory and Policy Setting (Special Areas) 7.6.1 Regulatory and Policy Setting (Commercial Fisheries) 7.7.1 Regulatory and Policy Setting (Aboriginal Use of Lands and Resources for Traditional Purposes)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	2.1 Rationale and Need for the Project
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.	1.4 Benefits of the Project
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.	2.9 Alternative Means of Carrying Out the Project 2.9.1 Options Analysis Framework 2.9.2 Identification and Evaluation of Alternatives
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.	2.9.2 Identification and Evaluation of Alternatives 2.9.2.1 Drilling Fluids Selection 2.9.2.2 Drilling Waste Management 2.9.2.3 Offshore Vessel Lighting 2.9.2.4 Well Test Flaring
The *Offshore Waste Treatment Guidelines*[1] 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	2.8 Emissions, Discharges and Waste Management 2.8.2 Drilling Waste Discharges 2.8.3 Liquid Discharges 2.8.4 Hazardous and Non-Hazardous Wastes

[1] 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

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
would enable it to achieve these objectives and adopt best practices in waste management and treatment.	
The *Offshore Chemical Selection Guidelines*[2] 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.	2.4.2 Drilling 2.8.2 Drilling Waste Discharges 2.9.3 Chemical Management 12 Environmental Management and Monitoring
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;	2 Project Description (Figure 2.2.1 Project Area and Regional Assessment Area) 2.3 Project Components 2.4 Project Activities
• the onshore and offshore project components;	2.3 Project Components
• boundaries of the proposed site with coordinates;	2.2 Project Location (Table 2.2.1 Project Coordinates)
• the major existing infrastructure;	N/A
• adjacent land uses; and	5.3 Socio-Economic Environment
• any important environmental features.	5.1 Marine Physical Environment 5.2 Marine Biological Environment

2 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

[1] Oslo and Paris Commissions

[2] Paris Commission

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	N/A
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;	2.3.1 Drilling Vessel 2.3.2 Offshore Exploration Wells 2.4.1 MODU Mobilization 2.4.2 Drilling 2.4.3 Well Evaluation 2.4.4 Well Abandonment
• the type of vessels that will be used and navigation activities (*i.e.*, routes, number and frequency of trips);	2.3.3 Supply and Servicing Components 2.4.5 Supply and Servicing
• helicopters, including routes, number and frequency of trips;	2.3.3.2 Support Vessels and Helicopters 2.4.5.2 Helicopter Traffic and Operations
• vertical seismic profile surveys or any other in water work;	2.4.3.2 Vertical Seismic Profiling
• reagent requirements and uses (*e.g.*, volumes, storage, types);	2.8 Emissions, Discharges and Waste Management
• petroleum products (*e.g.*, source, volume, storage);	2.8.4 Hazardous and Non-Hazardous Wastes
• the management and disposal of wastes (*e.g.*, type and constituents of waste, quantity, treatment and method of disposal) including: o drilling muds, drill solids; o bilge and ballast water; o deck drainage; o cooling water; o fire control system test water; o operational discharges from subsea systems and the installation of subsea systems; o sewage and food wastes; o well treatment or testing fluids; and o other operational discharges.	2.4.2.1 Well Execution Strategy and Drilling Sequence 2.8 Emissions, Discharges and Waste Management 2.8.2 Drilling Waste Discharges 2.8.3 Liquid Discharges 2.8.4 Hazardous and Non-Hazardous Wastes 2.9.3 Chemical Management
• contributions to atmospheric emissions, including emissions profile (*i.e.*, type, rate and source) for activities including routine or upset flaring, routine drilling, shipping etc.;	2.8.1 Atmospheric Emissions
• sources and extent of light, heat and noise;	2.8.5 Sound and Light Emissions
• transfers of bulk materials (*e.g.*, mud) and fuel; and,	2.4.5.1 Supply and Servicing 2.8.4 Hazardous and Non-Hazardous Wastes 8.2.2 Bulk Spill

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• number of employees and transportation of employees.	2.4.5.2 Helicopter Traffic and Operations 2.6 Project Personnel
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.	2.4 Project Activities 2.4.1 MODU Mobilization 2.4.2 Drilling 2.4.3 Well Evaluation 2.4.4 Well Abandonment
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.	2.4 Project Activities 2.4.1 MODU Mobilization 2.4.2 Drilling 2.4.3 Well Evaluation 2.4.4 Well Abandonment
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.	2.4.3.2 Vertical Seismic Profiling 2.4.3.3 Well Flow Testing 2.5 Well Control and Blowout Prevention 2.8 Emissions, Discharges and Waste Management
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.	11.3 Summary of Changes Made to the Project Since Originally Proposed
The EIS will include a detailed schedule including time of year, frequency, and duration for all project activities.	2.7 Project Schedule
The information will include a description of offshore and onshore activities:	2.4 Project Activities
3.2.1 Offshore Drilling	
• operation of the Mobile Offshore Drilling Unit, including: o drilling at various water depths and in locations under consideration; o well flow testing; o well abandonment; and o waste management.	2.3.1 Drilling Vessel 2.4.1 MODU Mobilization 2.4.3 Well Evaluation 2.4.4 Well Abandonment 2.8 Emissions, Discharges and Waste Management
• vertical seismic profile surveys	2.4.3.2 Vertical Seismic Profiling
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)	2.3.3 Supply and Servicing Components 2.4.5 Supply and Servicing

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• helicopter support (*i.e.*, crew transport and delivery of supplies and equipment)	2.3.3 Supply and Servicing Components 2.4.5.2 Helicopter Traffic and Operations
• petroleum products (*i.e.*, source, volume, storage)	2.4.5 Supply and Servicing
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.	3 Stakeholder Consultation and Engagement (Table 3.3.1 Summary of Stakeholder Engagement Conducted for the Project and Table 3.4.1 Summary of Key Issues Raised During Public Stakeholder Engagement)
5 ABORIGINAL ENGAGEMENT 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.	4 Aboriginal Engagement 4.4 Aboriginal Engagement Activities 4.5 Questions and Comments Raised During Aboriginal Engagement
• potential adverse impacts of the project on potential or established Aboriginal or Treaty rights.	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes
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;	6.2.2 Selection of Valued Components 4 Aboriginal Engagement B Traditional Use Study (Appendix B)
• 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;	4.2 Aboriginal Organizations 4.3 Potential or Established Rights and Related Interests 5.3.6 Aboriginal Fisheries B Traditional Use Study (Appendix B)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• 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;	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 11.2.1 Effects of Changes to the Environment on Aboriginal People B Traditional Use Study (Appendix B)
• 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;	7.7.8.2 Mitigation of Project-Related Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
• 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;	N/A
• 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;	7.2.2 The Influence of Engagement on the Assessment (Fish and Fish Habitat) 7.3.2 The Influence of Engagement on the Assessment (Marine Mammals and Sea Turtles) 7.4.2 The Influence of Engagement on the Assessment (Migratory Birds) 7.5.2 The Influence of Engagement on the Assessment (Special Areas) 7.6.2 The Influence of Engagement on the Assessment (Commercial Areas) 7.7.2 The Influence of Engagement on the Assessment (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
• views expressed by Aboriginal groups on the effectiveness of the mitigation or accommodation measures;	4.5 Questions and Comments Raised During Aboriginal Engagement

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• 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;	11.2.1 Effects of Changes to the Environment on Aboriginal People
• comments, specific issues and concerns raised by Aboriginal groups and how the key concerns were responded to or addressed;	4 Aboriginal Engagement 4.4 Aboriginal Engagement Activities (Table 4.4.1 Summary of Aboriginal Engagement Conducted for the Project) 4.5 Questions and Comments Raised During Aboriginal Engagement (Table 4.5.1 Summary of Key Issues Raised During Aboriginal Engagement)
• changes made to the project design and implementation directly as a result of discussions with Aboriginal groups;	4.5 Questions and Comments Raised During Aboriginal Engagement 11.3 Summary of Changes Made to the Project Since Originally Proposed
• 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	5.3.6 Aboriginal Fisheries 7.2.2 The Influence of Engagement on the Assessment (Fish and Fish Habitat) 7.3.2 The Influence of Engagement on the Assessment (Marine Mammals and Sea Turtles) 7.4.2 The Influence of Engagement on the Assessment (Migratory Birds) 7.5.2 The Influence of Engagement on the Assessment (Special Areas) 7.6.2 The Influence of Engagement on the Assessment (Commercial Areas) 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 7.7.2 The Influence of Engagement on the Assessment (Current Aboriginal Use of Lands and Resources for Traditional Purposes) B Traditional Use Study (Appendix B)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• 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.	4.5 Questions and Comments Raised During Aboriginal Engagement (Table 4.5.1 Summary of Key Issues Raised During Aboriginal Engagement)
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.	4 Aboriginal Engagement 4.4 Aboriginal Engagement Activities (Table 4.4.1 Summary of Aboriginal Engagement Conducted for the Project) 4.5 Questions and Comments Raised During Aboriginal Engagement (Table 4.5.1 Summary of Key Issues Raised During Aboriginal Engagement)
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:	5 Existing Environment
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, $PM_{2.5}$, PM_{10}, SOx, VOCs and NOx; • relevant weather parameters such as wind speed and direction, precipitation, visibility and storm events in the drilling area.	5.1.2 Atmospheric Environment 5.1.2.2 Air Quality (Table 5.1.2 Summary of Measured Air Contaminant Concentrations on Sable Island, Nova Scotia) 5.1.2.3 Wind Climate 5.1.2.4 Extreme Weather 5.1.2.5 Visibility and Fog
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	5.1.2 Atmospheric Environment 5.1.2.1 General Climate (Table 5.1.1 Temperature and Precipitation Climate Data, 1981-2010, Sable Island, Nova Scotia)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
Administration (NOAA) database of tropical cyclone activity in the North Atlantic and the Canadian Lightning Detection Network.	5.1.2.3 Wind Climate (Table 5.1.3 Buoy Data Used in Metocean Analysis)
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).	5.1.3 Marine Physical Oceanography 5.1.3.4 Water Mass Characteristics
• marine geology and geomorphology (*i.e.*, bottom sediments, including quality, thickness, grain size, and mobility);	5.1.1 Marine Geophysical Environment
• 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;	5.1.3.2 Ocean Currents 5.1.3.3 Wave Climate
• available bathymetric information for the site and along shipping routes if applicable;	5.1.3.1 Bathymetry
• ice climate in the regional study area, including ice formation and thickness, ridging, breakup and movement;	5.1.3.5 Sea Ice and Icebergs
• 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.	5.1.3.6 Ocean Sound 7.1.1.2 Underwater Sound
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.	5.1.3.3 Wave Climate
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);	5.2.5 Marine Fish 8.5.1 Fish and Fish Habitat (Accidental Events)
• characterizing fish populations on the basis of species and life stage for affected waters;	5.2.5 Marine Fish

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• listing any rare fish or invertebrate species that are known to be present; and	5.2.5.4 Species at Risk and Species of Conservation Concern
• describing the physical and biological characteristics of the fish and fish habitat likely to be directly or indirectly affected by the project.	5.2.5 Marine Fish
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;	5.2.4 Marine Plants 5.2.5 Marine Fish
• quality, thickness, grain size and mobility of bottom sediments;	5.1.1 Marine Geophysical Environment 5.2.2 Benthic Habitat
• available bathymetry information for the drilling site and maximum and mean depths;	5.1.3.1 Bathymetry
• a discussion of sea bottom stability at the project site; and	5.1.1 Marine Geophysical Environment 9.1.6 Sediment and Seafloor Instability and Other Geohazards
• 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).	5.2.2 Benthic Habitat 5.2.3 Corals and Sponges
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.	5.2.8 Migratory Birds 5.2.8.1 Overview
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;	5.2.8.2 Seasonal Distribution of Migratory Birds in Association with the Scotian Shelf and Slope 5.2.8.4 Species at Risk and Species of Conservation Concern (Migratory Birds)
• a characterization of year-round migratory bird use of the area (*e.g.* over-wintering, spring migration, breeding season, fall migration);	5.2.8.2 Seasonal Distribution of Migratory Birds in Association with the Scotian Shelf and Slope

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• areas of concentration of migratory birds, such as for breeding, feeding or resting;	5.2.8.2 Seasonal Distribution of Migratory Birds in Association with the Scotian Shelf and Slope 5.2.8.3 Areas of Significant to 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.[3] • 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.	5.2.5.4 Species at Risk and Species of Conservation Concern (Fish and Fish Habitat) 5.2.6.4 Species at Risk and Species of Conservation Status (Marine Mammals) 5.2.7 Sea Turtles 5.2.8.4 Species at Risk and Species of Conservation Concern (Migratory Birds) 5.2.9 Species at Risk
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*.).	5.2.6 Marine Mammals 5.2.6.1 Overview 5.2.6.2 Mysticetes 5.2.6.3 Odontocetes 5.2.6.4 Species at Risk and Species of Conservation Status 5.2.6.5 Phocids

[3] 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.

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.).	5.2.7 Sea Turtles
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.	5.2.10 Special Areas (Table 5.2.20 Special Areas in the RAA)
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).	5.2.10 Special Areas (Table 5.2.20 Special Areas in the RAA)
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; o 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; o fish, wildlife, birds, plants or other natural resources of importance for traditional use; o places where fish, wildlife, birds, plants or other natural resources are harvested;	4.2 Aboriginal Organizations 5.3.6 Aboriginal Fisheries 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 11.2.1 Effects of Changes to the Environment on Aboriginal People B Traditional Use Study (Appendix B)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
○ 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;	5.3.6 Aboriginal Fisheries 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 11.2.1 Effects of Changes to the Environment on Aboriginal People
• location of reserves and communities;	4.2 Aboriginal Organizations B Traditional Use Study (Appendix B)
• location of traditional territory (including maps where available);	4.2 Aboriginal Organizations B Traditional Use Study (Appendix B)
• cultural values associated with the area affected by the project and the traditional uses identified; and	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 11.1.2.3 Current Aboriginal Use of Lands and Resources for Traditional Purpose 11.2.1 Effects of Changes to the Environment on Aboriginal People B Traditional Use Study (Appendix B)
• physical and cultural heritage[4] (including any site, structure or thing of archaeological, paleontological, historical or architectural significance).	5.3.7 Physical and Cultural Heritage 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes B Traditional Use Study (Appendix B)
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.	B Traditional Use Study (Appendix B)

[4] 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).

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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;	5.3 Socio-Economic Environment
• information on current and historical use of all waters that may be affected by routine project operations or by accidents and malfunctions, including: o current commercial and recreational fishing activity in the project area that may be affected, including licence holders and species fished; o any project components and a description of any activities (*e.g.*, exclusion zones) that may affect commercial or recreational fisheries or other uses; o recreational uses of near-shore waters (*i.e.*, swimming, canoeing, boating) that may be affected by the project; and o other ocean use (*e.g.* shipping, research, oil and gas, military activities, ocean infrastructure (*e.g.*, sub-sea cables).	5.3.1 Land and Nearshore Ocean Use 5.3.4 Ocean Use and Infrastructure 5.3.4.4 Tourism and Recreational Activities 5.3.5 Offshore Commercial Fisheries 10.1.1.3 Other Physical Activities
• location of and proximity of the Project to any permanent, seasonal or temporary residences;	5.3.1.1 Communities in Nova Scotia
• health[5] and socio-economic conditions, including information on the functioning and health of the socio-economic environment, encompassing a broad range of matters that affect communities in the study area in a way that recognizes interrelationships, system functions and vulnerabilities;	5.3.2 Labour and Economy 5.3.3 Human Health
• human health, with respect to potential contamination of food sources and change in air quality;	5.3.3 Human Health 5.1.2.2 Air Quality
• physical and cultural heritage, including structures, sites or things of historical, archaeological, paleontological or architectural significance (*e.g.*, ship wrecks); and	5.3.7 Physical and Cultural Heritage
• the rural and urban settings that could be affected by routine project activities or accidents and malfunctions.	5.3.1.1 Communities in Nova Scotia
• The EIS should also discuss the potential to encounter unexploded ordnance (UXOs), based on consultation with the Department of National Defence.	5.2.2.2 Geohazard Baseline Review 5.3.4.6 Seabed Hazards Associated with Human Activities

[5] 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.

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	7.2 Fish and Fish Habitat 7.3 Marine Mammals and Sea Turtles 7.4 Migratory Birds 7.5 Special Areas 7.6 Commercial Fisheries 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes
The EIS will include a stand-alone section that summarizes 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.	11.1.1 Changes to Components of the Environment within Federal Jurisdiction
The EIS will include a stand-alone section that summarizes 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).	11.1.1 Changes to Components of the Environment within Federal Jurisdiction 11.1.2 Changes to the Environment that Would Occur on Federal or Transboundary Lands
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).	11.1.3 Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions
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.	11.1.3.2 Terrestrial Environment
6.3 Predicted Effects on Valued Components	
6.3.1 Fish and Fish Habitats	
• effects on fish and fish habitat, including but not limited to: o 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;	7.2.7 Potential Project-VC Interactions (Fish and Fish Habitat) 7.2.8 Assessment of Project-Related Environmental Effects (Fish and Fish Habitat) 7.2.9 Determination of Significance (Fish and Fish Habitat)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
– 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); and – any potential imbalances in the food web in relation to baseline. o 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; and – any modifications in migration or local movements during and after drilling. o a discussion of how underwater noise and vibration caused by project activities, including drilling, may affect fish behaviour; o 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 o 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.	7.2.10 Follow-up and Monitoring 8.5.1 Fish and Fish Habitat (Accidental Events)
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.	C Sediment Dispersion Modelling (Appendix C)
6.3.2 Marine Plants	
• effects on marine plants.	6.2.2 Selection of Valued Components 7.2 Fish and Fish Habitat 8.5.1 Fish and Fish Habitat (Accidental Events)
6.3.3 Marine Mammals	
• effects on marine mammals, including but not limited to: o mortality and other effects from vessel collisions or disturbance; and	7.3.7 Potential Project-VC Interactions (Marine Mammals and Sea Turtles)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
○ 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).	7.3.8 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.3.9 Determination of Significance (Marine Mammals and Sea Turtles) 8.5.2 Marine Mammals and Sea Turtles (Accidental Events)
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).	7.3.7 Potential Project-VC Interactions (Marine Mammals and Sea Turtles) 7.3.8 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.3.9 Determination of Significance (Marine Mammals and Sea Turtles) 8.5.2 Marine Mammals and Sea Turtles (Accidental Events)
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	7.4.7 Potential Project-VC Interactions (Migratory Birds) 7.4.8 Assessment of Project-Related Environmental Effects (Migratory Birds) 7.4.9 Determination of Significance (Migratory Birds) 8.5.3 Migratory Birds (Accidental Events)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
landbird species; o change in marine habitat quality from drill muds and cuttings and sedimentation; and o 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).	7.2.7 Potential Project-VC Interactions (Fish and Fish Habitat) 7.3.7 Potential Project-VC Interactions (Marine Mammals and Sea Turtles) 7.4.7 Potential Project-VC Interactions (Migratory Birds) 7.2.8 Assessment of Project-Related Environmental Effects (Fish and Fish Habitat) 7.3.8 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8 Assessment of Project-Related Environmental Effects (Migratory Birds) 7.2.9 Determination of Significance (Fish and Fish Habitat) 7.3.9 Determination of Significance (Marine Mammals and Sea Turtles) 7.4.9 Determination of Significance (Migratory Birds) 8.5.1 Fish and Fish Habitat (Accidental Events) 8.5.2 Marine Mammals and Sea Turtles (Accidental Events) 8.5.3 Migratory Birds (Accidental Events)
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: o effects on food, social and ceremonial fishing and Aboriginal commercial fishing; o a discussion of how drilling activities correlates to key fisheries windows, and any potential impacts resulting from overlapping periods; o changes related to species important to Aboriginal current	7.7.7 Potential Project-VC Interactions (Aboriginal Use of Lands and Resources for Traditional Purposes) 7.7.8 Assessment of Project Related Environmental Effects (Aboriginal Use of Lands and Resources for Traditional Purposes)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
use of resources, including changes to key habitat o effects of alterations to access into the areas used for traditional uses and commercial fishing, including implementation of exclusion zones; o effects on cultural value or importance associated with traditional uses or areas affected by the project (*e.g.* inter-generational teaching of traditional practices); o how project activities correlates to the timing of traditional practices, and any potential impacts resulting from overlapping periods; o 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; o indirect effects such as avoidance of the area by Aboriginal peoples due to increased disturbance (*e.g.* noise, presence of workers); and o an assessment of the potential to return affected areas to pre-disturbance conditions to support traditional practices.	7.7.9 Determination of Significance (Aboriginal Use of Lands and Resources for Traditional Purposes) 11.2.1 Effects of Changes to the Environment on Aboriginal People 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes (Accidental Events)
• 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.	6.2.2 Selection of Valued Components 11.2.1 Effects of Changes to the Environment on Aboriginal People
• effects of changes to the environment on socio-economic conditions, including but not limited to: o the use of navigable waters; o commercial fishing (*e.g.*, catch rates, exclusion zones, gear damage or loss, well abandonment, marketability of seafood products); and o recreational use.	6.2.2 Selection of Valued Components 7.6.7 Potential Project-VC Interactions (Commercial Fisheries) 7.6.8 Assessment of Project Related Environmental Effects (Commercial Fisheries) 7.6.9 Determination of Significance (Commercial Fisheries) 7.7.7 Potential Project-VC Interactions (Aboriginal Use of Lands and Resources for Traditional Purposes) 7.7.8 Assessment of Project Related Environmental Effects (Aboriginal Use of Lands and Resources for Traditional Purposes) 7.7.9 Determination of Significance (Aboriginal Use of Lands and Resources for Traditional Purposes) 8.5.5 Commercial Fisheries

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	(Accidental Events) 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes (Accidental Events) 11.2.1 Effects of Changes to the Environment on Aboriginal People
• 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: o the loss or destruction of physical and cultural heritage; o changes to access to physical and cultural heritage; and o changes to the cultural value or importance associated with physical and cultural heritage.	6.2.2 Selection of Valued Components 7.7.7 Potential Project-VC Interactions (Aboriginal Use of Lands and Resources for Traditional Purposes) 7.7.8 Assessment of Project Related Environmental Effects (Aboriginal Use of Lands and Resources for Traditional Purposes) 7.7.9 Determination of Significance (Aboriginal Use of Lands and Resources for Traditional Purposes) 11.2.1 Effects of Changes to the Environment on Aboriginal People
6.3.8 Air quality and Greenhouse Gas Emissions	
• changes to air quality;	2.8.1 Atmospheric Emissions 6.2.2 Selection of Valued Components 11.1.3.1 Atmospheric Environment
• changes to ambient noise levels;	2.8.5 Sound and Light Emissions 6.2.2 Selection of Valued Components 7.1.1.2 Underwater Sound D Acoustic Modelling Report (Appendix D)
• changes to night-time light levels; and	7.4 Migratory Birds (Changes in lighting levels and effects on migratory birds)
• an accounting of greenhouse gas emissions for all project phases and components.	2.8.1 Atmospheric Emissions
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),	7.6 Commercial Fisheries 8.5.5 Commercial Fisheries

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
gear loss or damage);	(Accidental Events)
• a discussion of how drilling activities correlates to key commercial fisheries windows, and any potential impacts resulting from overlapping periods;	7.6 Commercial Fisheries 8.5.5 Commercial Fisheries (Accidental Events)
• effects from subsea infrastructure that could be left in place (*e.g.* wellheads) following abandonment; and	7.6 Commercial Fisheries 8.5.5 Commercial Fisheries (Accidental Events)
• changes to habitat of commercial fish species (*e.g.* noise, water and sediment quality).	7.6 Commercial Fisheries 8.5.5 Commercial Fisheries (Accidental Events)
6.3.10 Special Areas	
• effects on special areas, including, but not limited to: o use of dispersants; – change to habitat quality (e.g. noise, light, water, sediment quality).	7.5 Special Areas 8.5.4 Special Areas (Accidental Events)
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: o recreational fishing activity (including near-shore); o other recreational uses of near-shore waters (*i.e.*, swimming, canoeing, boating); o other ocean uses; o socio-economic conditions; o human health; o physical and cultural heritage (*e.g.*, shipwrecks); o rural and urban settings.	5.3 Socio-economic Environment 6.2.2 Selection of Valued Components 8.5.4 Special Areas (Accidental Events) 10 Cumulative Effects 11.2.1 Effects of Changes to the Environment on Aboriginal People 11.2.2 Effects of Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions
6.4 Mitigation	
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	12.1 Environmental Management Plans 13.2 Summary of Mitigation, Monitoring and Follow-Up Commitments

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	7.2.8.2 Mitigation of Project-Related Environmental Effects (Fish and Fish Habitat) 7.3.8.2 Mitigation of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8.2 Mitigation of Project-Related Environmental Effects (Migratory Birds) 7.5.8.2 Mitigation of Project-Related Environmental Effects (Special Areas) 7.6.8.2 Mitigation of Project-Related Environmental Effects (Commercial Fisheries)
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.	12.2 Follow-Up and Monitoring 13.2 Summary of Mitigation, Monitoring and Follow-up Commitments
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.	2.9 Alternative Means of Carrying 12.2 Follow-Up and Monitoring 13.2 Summary of Mitigation, Monitoring and Follow-up Commitments
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.	N/A

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	7.2.8.3 Characterization of Residual Project-Related Environmental Effects (Fish and Fish Habitat) 7.3.8.3 Characterization of Residual Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8.3 Characterization of Residual Project-Related Environmental Effects (Migratory Birds) 7.5.8.3 Characterization of Residual Project-Related Environmental Effects (Special Areas) 7.6.8.3 Characterization of Residual Project-Related Environmental Effects (Commercial Fisheries) 7.7.8.3 Characterization of Residual Project-Related Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
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*[6].	7.2.8.3 Characterization of Residual Project-Related Environmental Effects (Fish and Fish Habitat) 7.3.8.3 Characterization of Residual Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8.3 Characterization of Residual Project-Related Environmental Effects (Migratory Birds) 7.5.8.3 Characterization of Residual Project-Related Environmental Effects (Special Areas) 7.6.8.3 Characterization of Residual Project-Related Environmental Effects (Commercial Fisheries) 7.7.8.3 Characterization of Residual Project-Related Environmental Effects ((Aboriginal Use of Lands and Resources for Traditional Purposes)

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

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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, 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.	6.2.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance 6.2.3.7 Assessment of Project-Related Environmental Effects 7.2.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Fish and Fish Habitat) 7.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Marine Mammals and Sea Turtles) 7.4.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Migratory Birds) 7.5.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Special Areas) 7.6.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Commercial Fisheries) 7.7.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Aboriginal Use of Lands and Resources for Traditional Purposes)
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.	6.2.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance 6.2.3.7 Assessment of Project-Related Environmental Effects 7.2.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Fish and Fish Habitat) 7.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Marine Mammals and Sea Turtles) 7.4.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	(Migratory Birds) 7.5.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Special Areas) 7.6.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Commercial Fisheries) 7.7.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Aboriginal Use of Lands and Resources for Traditional Purposes)
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.	6.2.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance 6.2.3.7 Assessment of Project-Related Environmental Effects 7.2.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Fish and Fish Habitat) 7.3.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Marine Mammals and Sea Turtles) 7.4.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Migratory Birds) 7.5.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Special Areas) 7.6.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Commercial Fisheries) 7.7.5 Criteria for Characterizing Residual Environmental Effects and Determining Significance (Aboriginal Use of Lands and Resources for Traditional Purposes)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	7 Environmental Effects Assessment
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.	8 Accidental Events
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.	8.1 Potential Accidental Events
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*.	8 Accidental Events
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.	8.1 Potential Accidental Events 8.2 Potential Spill Scenarios 8.3 Emergency Response and Spill Management
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 incident. The effects of accidental spills and blowout incidents 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	8.2 Potential Spill Scenarios 8.4 Spill Fate and Behaviour 8.5 Environmental Effects Assessment (Accidental Events) H Spill Modelling (Appendix H)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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 blowout incidents 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 event 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.	8.3 Emergency Response and Spill Management 8.5 Environmental Effects Assessment (Accidental Events)
The potential to encounter shallow gas pockets, and associated implications, should also be discussed.	9.1.6 Sediment and Seafloor Instability and Other Geohazards
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.	8.1 Potential Accidental Events 8.2 Potential Spill Scenarios 8.5 Environmental Effects Assessment (Accidental Events) H Spill Modelling (Appendix H)
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	9 Effects of the Environment on the Project

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
of the environment on the project.	
6.6.3 Cumulative effects assessment	
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: o Fish and fish habitat; o Marine Mammals and Sea Turtles; o Migratory Birds; o Special Areas; o Species at Risk; o Commercial Fisheries; and o Current Aboriginal Use of Lands and Resources for Traditional Purposes	10 Cumulative Effects 10.2 Cumulative Environmental Effects Assessment (Table 10.2.2 Potential Residual Effects Associated with the Shelburne Basin Venture Exploration Drilling Project) 10.2.3 Assessment of Cumulative Environmental Effects on Fish and Fish Habitat 10.2.4 Assessment of Cumulative Environmental Effects on Marine Mammals and Sea Turtles 10.2.5 Assessment of Cumulative Environmental Effects on Migratory Birds 10.2.6 Assessment of Cumulative Effects on Special Areas 10.2.7 Assessment of Cumulative Effects on Commercial Fisheries 10.2.8 Assessment of Cumulative Environmental Effects on 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.	10.1 Cumulative Environmental Effects Assessment Scope and Methods
• 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 *CEAA, 2012*.	10.2.2 Potential Cumulative Interactions between the Project and Past/Present/ sFuture Activities

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• 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 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.	10.2.3 Assessment of Cumulative Environmental Effects on Fish and Fish Habitat 10.2.4 Assessment of Cumulative Environmental Effects on Marine Mammals and Sea Turtles 10.2.5 Assessment of Cumulative Environmental Effects on Migratory Birds 10.2.6 Assessment of Cumulative Effects on Special Areas 10.2.7 Assessment of Cumulative Effects on Commercial Fisheries 10.2.8 Assessment of Cumulative Environmental Effects on Current Aboriginal Use of Lands and Resources for Traditional Purposes 10.3 Follow-Up and Monitoring
• Determine the significance of the cumulative effects.	10.2 Cumulative Environmental Effects Assessment
• 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.	10.3 Follow-Up and Monitoring
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.	13.1 Summary of Potential Effects Table 13.1.1 Potential Project-VC Interactions and Effects Table 13.2.1 Summary of Commitments Table 13.3.1 Summary of Residual Effects for Routine Operations Table 13.3.2 Summary of Residual Effects for Accidental Events
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).	Table 12.2.1 Summary of Follow-Up and Monitoring Programs for the Scotian Basin Exploration Drilling Project Table 13.2.1 Summary of Commitments
8 FOLLOW-UP AND MONITORING PROGRAMS	
8.1 Follow-up Program	
The EIS shall present a preliminary follow-up program in particular	12 Environmental Management

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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.	and Monitoring
8.2 Monitoring	
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.	12 Environmental Management and Monitoring 13.2 Summary of Mitigation, Monitoring and Follow-Up Commitments (Table 13.2.1 Summary of Commitments)

Acronyms

ADW	Approval to Drill a Well
AFS	Aboriginal Fisheries Strategy
AHP	Atlantic Health Partnership
AICFI	Atlantic Integrated Commercial Fisheries Initiative
AMF	Automatic Mode Function
API	American Petroleum Institute
ATBA	Area to be Avoided
AZMP	Atlantic Zone Monitoring Program
AZOMP	Atlantic Zone Off-Shelf Monitoring Program
BAOAC	Bonn Agreement Oil Appearance Code
bbl	Barrels
BLM	Bureau of Land Management
Boi	Oil Formation Volume Factor at Initial Reservoir Pressure
BOP	Blowout Preventer
BP	BP Canada Energy Group ULC and/or any of its affiliates
bpd	Barrels per day
BSR	Blind Shear Ram
BST	Business Support Team
CCG	Canadian Coast Guard
CEA Agency	Canadian Environmental Assessment Agency
CEAA, 2012	*Canadian Environmental Assessment Act, 2012*
CEPA, 1999	*Canadian Environmental Act, 1999*
CETAP	Cetacean and Turtle Assessment Program
CFA	Crab Fishing Area
CHARM	Chemical Hazard and Risk Management
CHP	Conservation Harvesting Plans
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COSEWIC	Committee on the Status of Endangered Wildlife of Canada
cp	Centipoise
CRA	Commercial, Recreational and Aboriginal
CSAS	Canadian Science Advisory Secretariat
CSR	Comprehensive Study Report
CST	Country Support Team
CWS	Canadian Wildlife Services
CWS-EC	Canadian Wildlife Services – Environment Canada
dB	Decibel
DCC	Defence Construction Canada
DDT	Dichlorodiphenyltrichloroethane
DFO	Fisheries and Oceans Canada
DND	Department of National Defence
DOM	Dissolved Organic Matter
DP	Dynamic Positioning
DPZ	Distinct Permeable Zones

DSL	Domestic Substances List
DST	Drill Stem Test
DWH	Deepwater Horizon
EA	Environmental Assessment
EBSA	Ecologically and Biologically Significant Areas
ECA	Emission Control Areas
ECCC	Environment and Climate Change Canada
ECSAS	Eastern Canadian Seabirds at Sea
EEM	Environmental Effects Monitoring
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EL	Exploration Licence
EMO	Emergency Management Office
EPP	Environmental Protection Plan
ESSA	*Energy Safety and Security Act*
FNIHB	First Nations Inuit Health Branch
FSC	Food, Social and Ceremonial
GBR	Geohazard Baseline Review
GDP	Gross Domestic Product
GHG	Greenhouse Gas Emissions
GPS	Global Positioning System
GWO	Global Wells Organization
HAZOPS	Hydrocardon Vents in all Hazardous Operations
HPI	Hydrocarbon Processing Industry
HQ	Hazard Quotient
HRM	Halifax Regional Municipality
H_s	Significant Wave Height
HSE	Health, Safety and Environment
HSSE	Health, Safety, Security and Environment
HVAC	Heating, Venting and Air Conditioning
HWC	Health Working Committee
Hz	Hertz
IADC	International Association of Drilling Contractors
IBA	Important Bird Area
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICS	Incident Command System
IFMP	Integrated Fisheries Management
IMO	International Maritime Organization
IMP	Incident Management Plan
IMT	Incident Management Team
IOGP	International Association of Oil and Gas Producers
IPIECA	International Petroleum Industry Environmental Conservation Association
IST	Integrated Supply Trading
IUCN	International Union for Conservation of Nature
IWCF	International Well Control Forum
JIP	Joint Industry Project
JRCC	Joint Rescue Coordination Centre
km	Kilometres
KPIs	Key Performance Indicators

LAA	Local Assessment Area
LC50	The lethal concentration required to kill 50% of the population in a given period of time.
LCA	Lophelia Conservation Area
LFA	Lobster Fishing Area
LJFL	Lower Jaw Fork Length
LMRP	Lower Marine Riser Package
LWD	Logging While Drilling
m	Metres
M&NP	Maritimes & Northeast Pipeline
MAH	Major Accident Hazards
MARLANT	Maritime Forces Atlantic
MARPOL	*International Convention for the Prevention of Pollution from Ships*
MBCA	*Migratory Birds Convention Act*
MBS	Migratory Bird Sanctuary
metocean	Meteorological and Oceanographic
MGO	Marine Gas Oil
MGS	Membertou Geomatics Solutions
ML	Local Magnitude (Associated with Richter Scale)
MMO	Marine Mammal Observer
MN	Nuttli Magnitude (Developed to Measure Seisms of Eastern Canada)
MoC	Management of Change
MODU	Mobile Offshore Drilling Unit
MPA	Marine Protected Area
MPFR	Maritime Province Fishery Regulations
MRI	Marshall Response Initiative
MSC	Meteorological Service of Canada
MSC50	Meteorological Service of Canada 50-year Hindcast
MSDS	Material Safety and Data Sheet
MTI	Mi'gmawe'l Tplu'taqnn Incorporated
MWD	Measurement While Drilling
NADW	North Atlantic Deep Water
NAFO	Northwest Atlantic Fisheries Organization
NAO	North Atlantic Oscillation
NAPS	National Air Pollutant Survey
NB	New Brunswick
NCNS	Native Council of Nova Scotia
NCPEI	Native Council of Prince Edward Island
NEB	National Energy Board
NEBA	Net Environmental Benefit Analysis
NEFSC	Northeast Fisheries Science Center
N-ENS	North-Eastern Nova Scotia
NO_2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NO_x	Nitrogen Oxides
NPA	*Navigation Protection Act*
NRCan	Natural Resources Canada
NS	Nova Scotia

NS ESA	Nova Scotia *Endangered Species Act*
NSDNR	Nova Scotia Department of Natural Resources
NSDOE	Nova Scotia Department of Energy
NSE	Nova Scotia Environment
NSEMO	Nova Scotia Emergency Management Office
NSHRF	Nova Scotia Health Research Foundation
NWPA	*Navigable Waters Protection Act*
O_3	Ozone
OA	Operations Authorization
OBIS	Ocean Biogeographic Information System
OCNS	Offshore Chemical Notification Scheme
OCSG	Offshore Chemical Selection Guidelines
OIM	Offshore Installation Manager
OLF	Norwegian Oil Industry Association
OMS	Operating Management System
OSCAR	Oil Spill Contingency and Response
OSPAR	Oslo and Paris Commission
OSRL	Oil Spill Response Limited
OWTG	Offshore Waste Treatment Guidelines
P&A	Plugged and Abandoned
PAH	Polycyclic Aromatic Hydrocarbons
PAM	Passive Acoustic Monitoring
PCPA	*Pest Control Products Act*
PEI	Prince Edward Island
PIROP	Programme Intégré de Recherches sur les Oiseaux Pélagiques
PLONOR	Pose Little or No Risk
$PM_{2.5}$	Particulate matter with aerodynamic diameters less than or equal to 2.5 microns
PM	Particulate Matter
Psat	Saturation Pressure
psi	Pounds per Square Inch
psu	Practical Salinity Unit
PSV	Platform Supply Vessel
PTS	Permanent Threshold Shift
RAA	Regional Assessment Area
RMS	Root Mean Square
ROV	Remotely Operated Vehicle
rpm	Revolutions per Minute
Rsi	Initial Gas Solubility
rvb	Reservoir barrel
s	Seconds
S&OR	Safety and Operational Risk
SAR	Species at Risk
SARA	*Species at Risk Act*
SBM	Synthetic-based Mud
SCAT	Shoreline Clean-up Assessment Technique
scf	Square cubic feet (surface volume)
SCP	Sustained Casing Pressure
SDL	Significant Discovery Licence

SEA	Strategic Environmental Assessment
SEL	Sound Exposure Level
S-ENS	South-Eastern Nova Scotia
SFA	Scallop Fishing Area
SO_2	Sulphur Dioxide
SOCC	Species of Conservation Concern
SOCP	Statement of Canadian Practice
SOEP	Sable Island Offshore Energy Project
SO_x	Sulphur Dioxides
SPL	Sound Pressure Level
SPM	Suspended Particulate Matter
SRP	Spill Response Plan
SSDI	Subsea Dispersant Injection
SSIP	Scotian Shelf Ichthyoplankton Program
stb	Stock Tank Barrel
SWIS	Subsea Well Intervention Services
t	Tonnes
TAC	Total Allowable Catch
TC	Transport Canada
TD	Total Depth
THC	Total Hydrocarbons
T_p	Peak Spectral Period
TPH	Total Petroleum Hydrocarbon
T_s	Significant Wave Period
TSS	Total Suspended Solids
TTS	Temporary Threshold Shifts
TUS	Traditional Use Study
UINR	Unama'ki Institute of Natural Resources
UK	United Kingdom
ULSD	Ultra-low Sulphur Diesel
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
UXO	Unexploded Ordnances
VC	Valued Component
VOC	Volatile Organic Compounds
VSP	Vertical Seismic Profiling
WATS	Wide Azimuth Towed Streamer
WBM	Water-based Mud
WCCD	Worst-Case Credible Discharges
WG	Working Group
WSL	Wellsite Leader

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