Shelburne Basin Venture Exploration Drilling Project

Environmental Impact Statement

Volume I Environmental Impact Statement

June 2014

Stantec

Executive Summary

Shell Canada Limited (Shell) is proposing to conduct an exploratory drilling program within the area of its offshore Exploration Licences (EL) 2423, 2424, 2425, 2426, 2429 and 2430 (the Licences). These activities will be conducted pursuant to the six-year exploration periods that commenced on March 1, 2012 for ELs 2423, 2424, 2425 and 2426 and January 15, 2013 for ELs 2429 and 2430.

The Shelburne Basin Venture Exploration Drilling Project (the Project) will consist of up to seven exploration wells drilled over a four-year period from 2015 to 2019 in association with the exploration periods of the Licences. The Project will be divided into two separate drilling campaigns. Each phase of drilling, including specific drilling locations, will be contingent upon the results from Shell's Shelburne Basin 3D Seismic Survey conducted in the summer of 2013, as well as the results of the previous phases of drilling conducted in association with the Project. A mobile offshore drilling unit (MODU) designed for year-round operations in deep water will be used to support the Project.

This document is intended to fulfill requirements for an environmental assessment (EA) pursuant to the *Canadian Environmental Assessment Act, 2012* (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* (the Accord Acts). This Environmental Impact Statement (EIS) has been prepared to respond to Project-specific *Guidelines for the Preparation of an Environmental Impact Statement* pursuant to CEAA, 2012 (EIS Guidelines) developed by the Canadian Environmental Assessment Agency (CEA Agency) with input from other government departments and agencies and the public. The final EIS Guidelines were issued to Shell on February 28, 2014.

The EA process is intended to support and better define the Project through early consideration of potential environmental effects as well as mitigation measures. The EA process considers issues and concerns identified through engagement with Aboriginal groups, stakeholders, the public and regulatory agencies. Project-related engagement activities have been ongoing since 2012, with consultation focused on the EA commencing in August 2013.

The EA methods focus 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, Shell, resource managers, scientists, key stakeholders, and/or the general public. VCs specified in the EIS Guidelines for assessment and evaluated in this EIS include:

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

The assessment methods include an evaluation of the potential environmental effects for each VC that may arise from Project components and activities 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 and reasonably foreseeable) physical activities in the vicinity of the Project. Additional studies conducted to assess the potential environmental effects include three-dimensional oil spill fate and trajectory modelling, spill risk and probability analysis, sediment dispersion modelling, and a traditional use study. These additional studies are appended to the EIS.

Project activities and components assessed include potential effects from the presence and operation of the MODU (including lights and underwater noise), discharge of drill muds and cuttings, other discharges and emissions (including drilling and testing emissions), vertical seismic profiling, helicopter transportation, offshore support vessel (OSV) operations and well abandonment. These activities reflect the scope of the Project as outlined in the EIS Guidelines and represent physical activities that may 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 the proposed mitigation measures, adverse residual environmental effects of routine Project activities and components are predicted to be not significant for all VCs.

Accidental events that could occur during exploration drilling and result in adverse environmental effects include MODU batch spill, SBM whole mud spill, subsea blowout, and vessel spill incidents. Three-dimensional oil spill fate and trajectory modelling and analyses were performed to support the evaluation of the potential effects from accidental spills and prepare for oil spill response planning. All modelled scenarios were conservatively run without any mitigation to reflect a worst-case scenario whereby no measures are put in place to minimize or reduce effects. In the unlikely event of an actual spill, response measures inclusive of oil spill containment, recovery and shoreline protection operations would serve to reduce adverse effects to marine and coastal resources thereby mitigating the full impact of a spill. A 30-day

scenario was selected for the modelling as a conservative estimate to simulate a conservative amount of time required to cap and contain the spill. Shell expects that in the unlikely event of a real blowout, the well could be capped and contained in less time (12 to 21 days) than the timeline modelled.

The probability of a large oil spill occurring during an exploration drilling project is highly unlikely. Shell has incorporated numerous design measures, operational procedures and dedicated resources to prevent and/or respond to spills of any size entering the marine environment.

In the unlikely event of a large-scale release, effects to Marine Birds, Special Areas, Commercial Fisheries, and Current Aboriginal Land and Resource Use for Traditional Purposes have potential to be significant if the spill trajectory was to overlap spatially and temporally with sensitive receptors; however, given the low probability for an incident of this scale to occur, combined with the low probability for temporal and spatial overlap, significant effects are not likely to occur during the life of the Project.

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

The Project will result in community and social benefits through direct and indirect economic effects, including: government revenues from royalties; capital expenditures; wages, salaries, and benefits; non-wage spending on companies providing goods and services in support of the Project; and spinoff economic activity associated with increased employment and income in the region. In addition to community and social benefits, the Project will contribute to energy diversity and security in Nova Scotia, and support technological innovations and increases in scientific knowledge.

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	Consultation and Engagement
2.3	Aboriginal Consultation	4 B	Aboriginal Engagement Traditional Use Study (Appendix B)
3	**PREPARATION AND PRESENTATION OF THE EIS**		
3.1	Agency Guidance	1.3	Regulatory Framework and the Role of Government
3.2	Study Strategy and Methodology	6	Environmental Effects Assessment Scope and Methodology
3.3	Integration of EA, Aboriginal and Public Consultation Information	3 4 7.7 B	Consultation and Engagement Aboriginal Engagement Current Aboriginal Use of Lands and Resources for Traditional Purposes Traditional Use Study (Appendix B)
3.4	Use of Information		
3.4.1	Scientific Advice	5	Existing Environment
3.4.2	Community Knowledge and Aboriginal Traditional Knowledge	4 B	Aboriginal Engagement Traditional Use Study (Appendix B)
3.4.3	Existing Information	5	Existing Environment
3.4.4	Confidential Information	N/A	
3.5	Presentation and Organization of the EIS	Title Page Table of Contents List of Tables and Figures Concordance Table Acronyms 15	 References
PART 2 – CONTENT AND STRUCTURE OF THE EIS			
4	**SUMMARY OF ENVIRONMENTAL IMPACT STATEMENT**	EIS Summary Document	
5	**INTRODUCTION AND PROJECT OVERVIEW**		
5.1	Geographical Setting	2.2	Project Location
	The EIS will contain a concise description of the geographical setting in which the Project will take place. The description will address the natural and human elements of the environment as well as explain the interrelationships between the biophysical environment and people and communities. The following information will be included:	2.2 5.1 5.2 5.3 B	Project Location Marine Physical Environment Marine Biological Environment Socio-Economic Environment Traditional Use Study (Appendix B)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• the coordinates of the main Project site (latitude and longitude)	2.2 Project Location (Table 2.2.1 Project Area Corner Coordinates)
• current land use in the area and the relationship of the Project facilities and components with any federal lands	2.2 Project Location 2.4.5 Supply and Servicing 5.3 Socio-Economic Environment 12.1.2 Changes to the Environment that Would Occur on Federal or Transboundary Lands
• 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, estuaries, Important Bird Areas, Migratory Bird Sanctuaries and habitats of federally or provincially listed species at risk and other sensitive areas that are within the Project's potential zone of influence including accidents and malfunctions	5.2.7 Summary of Species of Conservation Interest 5.2.8 Special Areas
• local and Aboriginal communities	2.2 Project Location 3.2 Identification of Organizations for Consultation and Engagement 4.2 Aboriginal Organizations B Traditional Use Study (Appendix B)
• traditional Aboriginal territories, treaty lands, Indian reserve lands	4.2 Aboriginal Organizations (Figure 4.2.1 Location of First Nation Communities) B Traditional Use Study (Appendix B)
The EIS will provide expanded description and mapping of the project location, including each of the project components as outlined in section 5.6 of the EIS Guidelines.	2 Project Description
Maps of the project's location at an appropriate scale will accompany the text. The location map should include the boundaries of the proposed site including coordinates, the major existing infrastructure, adjacent land uses and any important environmental features. In addition, site plans/sketches and photographs showing project location, site features and the intended location of project components will be included.	2.2 Project Location 2.4.5 Supply and Servicing 5 Existing Environment 7.2.5.1 Spatial Boundaries (Fish and Fish Habitat) 7.3.5.1 Spatial Boundaries (Marine Mammals and Sea Turtles) 7.4.5.1 Spatial Boundaries (Marine Birds) 7.5.5.1 Spatial Boundaries (Special Areas) 7.6.5.1 Spatial Boundaries (Commercial Fisheries) 7.7.5.1 Spatial Boundaries (Current Aboriginal Use of Lands and Resources for Traditional Purposes)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
5.2 Regulatory Framework and the Role of Government	1.3 Regulatory Framework and the Role of Government
To understand the context of the EA, this section will identify, for each jurisdiction, the government bodies involved in the EA as well as the EA processes. More specifically identify:	1.3 Regulatory Framework and the Role of Government
• any federal power duty or function to be exercised that may permit the carrying out (in whole or in part) of the Project or associated activities	1.3.1 Offshore Petroleum Regulatory Regime 1.3.3.1 Federal Legislation, Guidelines and Government Studies
• the environmental and other specific regulatory approvals and legislation that are applicable to the Project at the federal, provincial, regional and municipal levels	1.3 Regulatory Framework and the Role of Government
• government policies, resource management, planning or study initiatives pertinent to the Project and/or EA and discuss their implications	1.3.3.1 Federal Legislation, Guidelines and Government Studies
• any treaty or self-government agreements with Aboriginal groups that are pertinent to the Project and/or EA	1.3.3.2 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	2.4.5 Supply and Servicing 4.2 Aboriginal Organizations
• a summary of the 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	1.3 Regulatory Framework and the Role of Government 6.2.3 Identification of Environmental Effects and Measurable Parameters 6.2.5 Establishing Standards or Thresholds for Characterizing and Determining Significance of Environmental Effects 7.2.2 Regulatory Setting (Fish and Fish Habitat) 7.2.4 Identification of Environmental Effects and Measurable Parameters (Fish and Fish Habitat) 7.3.2 Regulatory Setting (Marine Mammals and Sea Turtles) 7.3.4 Identification of Environmental Effects and Measurable Parameters (Marine Mammals and Sea Turtles) 7.4.2 Regulatory Setting (Marine Birds) 7.4.4 Identification of Environmental Effects and Measurable Parameters (Marine Birds) 7.5.2 Regulatory Setting (Special Areas)

Table E.1.1 Concordance Table

Final EIS Guidelines		EIS Reference	
		7.5.4	Identification of Environmental Effects and Measurable Parameters (Special Areas)
		7.6.2	Regulatory Setting (Commercial Fisheries)
		7.6.4	Identification of Environmental Effects and Measurable Parameters (Commercial Fisheries)
		7.7.2	Regulatory Setting (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
		7.7.4	Identification of Environmental Effects and Measurable Parameters (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
5.3	Participants in the Environmental Assessment		
	Clearly identify the main participants in the EA, including jurisdictions other than the federal government, Aboriginal groups, community groups, and environmental organizations.	3.2 4.2	Identification of Organizations for Consultation and Engagement Aboriginal Organizations
5.4	The Proponent	1.2	Proponent Information
	The proponent will:		
	• provide contact information (*e.g.*, name, address, phone, fax, email)	1.2.3	Proponent Contacts
	• identify itself and the name of the legal entity that would develop, manage and operate the Project	1.2	Proponent Information
	• explain corporate and management structures, as well as insurance and liability management related to the Project	2.5	Project Personnel
	• specify the mechanism used to ensure that corporate policies will be implemented and respected for the Project	2.5	Project Personnel
	• summarize key elements of its environment, health and safety management system and discuss how the system will be integrated into the Project	1.2.2	Commitment to Health, Safety and the Environment
	• identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS	1.2.4	Environmental Assessment Study Team
5.5	Purpose of the Project	2.1	Project Need and Justification
5.6	Project Components	2.3	Project Components
	The proponent will describe the Project, by presenting the Project components, associated and ancillary works, activities, scheduling details, the timing of each phase of the Project and other characteristics that will assist in understanding the environmental effects. This will include:	2.3 2.4 2.6	Project Components Project Activities Project Schedule

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• maps, at an appropriate scale, of the Project location	2.2 Project Location (Figure 2.2.1 Project Area and Regional Assessment Area)
• the Project components	2.3 Project Components
• boundaries of the proposed site with coordinates	2.2 Project Location (Table 2.2.1 Project Area Corner Coordinates)
• the major existing infrastructure	N/A
• adjacent land uses	5.3 Socio-Economic Environment
• any important environmental features	5.1 Marine Physical Environment 5.2 Marine Biological Environment
In the EIS, the proponent will describe:	
• the Mobile Offshore Drilling Unit and its operations (drilling, testing, abandonment)	2.8.2 Mobile Offshore Drilling Unit
• the type of vessels that will be used and navigation activities (*i.e.*, routes, number and frequency of trips)	2.4.5 Supply and Servicing
• helicopters, including routes, number and frequency of trips	2.4.5 Supply and Servicing
• vertical seismic profile (VSP) surveys or any other in-water work	2.4.2 Vertical Seismic Profiling
• reagent requirements and uses (*e.g.*, volumes, storage, types)	2.7 Waste Discharges and Emissions 2.8.6 Chemical Management
• petroleum products (*e.g.*, source, volume, storage)	2.8.2 Mobile Offshore Drilling Unit 2.4.5 Supply and Servicing
• the management or 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 o other operational discharges	2.7 Waste Discharges and Emissions
• contributions to atmospheric emissions, including emissions profile (*i.e.*, type, rate and source) for activities including routine or upset flaring, routine drilling, shipping, *etc*.	2.7.2.1 Air Emissions

Table E.1.1 Concordance Table

Final EIS Guidelines		EIS Reference
•	sources and extent of light, heat and noise	2.7.2.2 Noise Emissions 2.7.3 Liquid Wastes 2.8.5 MODU Lighting 7.1 Overview of Project Interactions and Potential Effects
•	transfers of bulk materials (*e.g.*, mud) and fuel	2.4.5 Supply and Servicing
•	number of employees and transportation of employees	2.5 Project Personnel
5.7	Project Activities	2.4 Project Activities
	The EIS will include expanded descriptions of all phases of the proposed Project, including well drilling, testing and abandonment. This would include detailed 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.	2.4 Project Activities 2.7 Waste Discharges and Emissions
	Highlight activities that involve periods of increased environmental disturbance or the release of materials into the environment.	2.4.2 Vertical Seismic Profiling 2.4.3 Well Testing 2.7 Waste Discharges and Emissions
	The EIS will include a detailed schedule including time of year, frequency, and duration for all Project activities.	2.6 Project Schedule
6	**SCOPE OF PROJECT**	6.1.1 Scope of the Project to be Assessed
7	**SCOPE OF ASSESSMENT**	6.1 Scope of Assessment
7.1	Factors to be Considered	6.1.2 Factors to be Considered 6.1.3 Scope of the Factors to be Considered
7.1.1	Valued Components	6.2.2 Selection of Valued Components
	The proponent will identify the VCs deemed appropriate to ensure the full consideration of the factors listed in subsection 19(1) of CEAA, 2012, as well section 79 of the *Species at Risk Act*. As a minimum, the proponent must consider the list of environmental components provided in section 9.1 of the EIS Guidelines (*i.e.*, atmospheric environment and climate, marine mammals, marine turtles, special areas, fish and fish habitat, marine birds, species at risk and species of conservation concern, current use of land and resources for traditional purposes by Aboriginal peoples, commercial and recreational fisheries, human health, other ocean use, and physical and cultural heritage).	6.2.2 Selection of Valued Components (Table 6.2.1 Selected Valued Components)
	The proponent will describe how the VCs were selected and what methods were used to predict and	6.2 EA Methods

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
assess the adverse environmental effects of the Project on these components.	
The VCs will be described in sufficient detail to allow the reviewer to understand their importance and assess the potential for environmental effects arising from the Project activities. The rationale for selecting these components as VCs and for excluding others will be stated.	6.2.2 Selection of Valued Components (Table 6.2.1 Selected Valued Components) 7.2.1 Rationale for VC Selection (Fish and Fish Habitat) 7.3.1 Rationale for VC Selection (Marine Mammals and Sea Turtles) 7.4.1 Rationale for VC Selection (Marine Birds) 7.5.1 Rationale for VC Selection (Special Areas) 7.6.1 Rationale for VC Selection (Commercial Fisheries) 7.7.1 Rationale for VC Selection (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
For consultations associated with the identification of VCs, the proponent will identify those VCs, processes, and interactions that either were identified to be of concern during any workshops or meetings held by the proponent or that the proponent considers likely to be affected by the Project. In doing so, the proponent will indicate to whom these concerns are important and the reasons why, including Aboriginal, social, economic, recreational, and aesthetic considerations. The proponent will describe any issues raised or comments noted regarding the nature and sensitivity of the area within and surrounding the Project and any planned or existing land and water use in the area. The proponent will also indicate the specific geographical areas or ecosystems that are of particular concern to interested parties, and their relation to the broader regional environment and economy.	3.4 Questions and Comments Raised During Consultation and Engagement 4.5 Questions and Comments Raised Ruing Aboriginal Engagement 7.2.3 Consideration of Issues Raised During Consultation and Engagement (Fish and Fish Habitat) 7.3.3 Consideration of Issues Raised During Consultation and Engagement (Marine Mammals and Sea Turtles) 7.4.3 Consideration of Issues Raised During Consultation and Engagement (Marine Birds) 7.5.3 Consideration of Issues Raised During Consultation and Engagement (Special Areas) 7.6.3 Consideration of Issues Raised During Consultation and Engagement (Commercial Fisheries) 7.7.3 Consideration of Issues Raised During Consultation and Engagement (Current Aboriginal Use of Lands and Resources for Traditional Purposes) B Traditional Use Study (Appendix B)
7.1.2 Effects of Potential Accidents or Malfunctions	8 Accidental Events

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
The proponent will identify the probability of potential accidents and malfunctions related to the Project, in both the nearshore and offshore, including an explanation of how those events were identified, potential consequences (including the environmental effects), the plausible worst case scenarios and the effects of these scenarios.	6.2.9 Assessment of Potential Accidental Events 8.2 Identification of Accidental Event Scenarios 8.3 Spill Risk and Probabilities 8.4 Spill Fate and Behaviour 8.5 Accidental Events Effects Assessment F Spill Probability Analysis (Appendix F) G Spill Fate and Behaviour Modelling (Appendix G)
The geographical and temporal boundaries for the assessment of malfunctions and accidents will be broader than the assessment of routine operations in relation to specific VCs.	8.5 Accidental Events Effects Assessment
The analysis 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.	8.4 Spill Fate and Behaviour 8.5 Accidental Events Effects Assessment G Spill Fate and Behaviour Modelling (Appendix G)
The EIS will also describe the safeguards that have been or will be established to protect against such occurrences and the contingency/emergency response procedures in place if accidents and/or malfunctions do occur.	8.1 Spill Prevention and Response
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.	8.2 Identification of Accidental Event Scenarios
The effects of accidental spills and blowouts will require assessment in the EIS, including trajectory modelling for worst-case large-scale spill scenarios that may occur. Results should be reported in a manner that illustrates the effects of varying weather and oceanographic conditions that may occur throughout the year, and should include a Projection for spills originating at the site and followed until the slick volume is reduced to a negligible amount, until a shoreline is reached, or until the slick moves out of the model domain. Spill scenarios should also consider potential worst-cases, including when species at risk and high concentrations of marine birds or fish are present. Where well locations have not yet been identified, points of origin selected for spill trajectory models should be conservative, for example	8.4.1 Overall Modelling Approach 8.4.2 Model Input Data 8.5 Accidental Events Effects Assessment G Spill Fate and Behaviour Modelling (Appendix G)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
by selecting a potential location within the proposed drilling area that is closest to a sensitive feature.	
Based on the results of the spill modelling and analysis in the EIS, an emergency response plan for spills (small and large) and blowouts will be required. At a minimum, an outline of the emergency response plan along with key commitments is required in the EIS. The proponent should commit to finalizing the plan in consultation with regulators.	8.1.2.3 Emergency Response Plan
The EIS shall include a discussion of whether dispersants would provide any environmental benefit if used. If dispersants are to be used, the proponent shall consider associated environmental effects in the EIS and provide a plan for their use.	8.1.2.4 Oil Spill Response Plan
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.	8.5.1.2 Mitigation of Environmental Effects (Fish and Fish Habitat) 8.5.3.2 Mitigation of Environmental Effects (Marine Mammals and Sea Turtles) 8.5.3.2 Mitigation of Environmental Effects (Marine Birds) 8.5.4.2 Mitigation of Environmental Effects (Special Areas) 8.5.5.2 Mitigation of Environmental Effects (Commercial Fisheries) 8.5.6.2 Mitigation of Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes) 8.5.1.3 Characterization of Residual Environmental Effects (Fish and Fish Habitat) 8.5.2.3 Characterization of Residual Environmental Effects (Marine Mammals and Sea Turtles) 8.5.3.3 Characterization of Residual Environmental Effects (Marine Birds) 8.5.4.3 Characterization of Residual Environmental Effects (Special Areas) 8.5.5.3 Characterization of Residual Environmental Effects (Commercial Fisheries) 8.5.6.3 Characterization of Residual Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
The potential to encounter shallow gas pockets, and associated implications, should also be discussed.	2.7.2 Air and Noise Emissions 5.1.1.2 Surface Features and Bedforms

Table E.1.1 Concordance Table

Final EIS Guidelines		EIS Reference
		8.2 Identification of Accidental Event Scenarios
	The EIS should also consider effects of accidents in the nearshore environment (*e.g.*, spills, ship groundings) and of spills reaching shore; including effects on species at risk and their critical habitat, colonial nesters and concentrations of birds, and their habitat.	8.2.5 Vessel Diesel Spill 8.2.4 Subsea Blowout 8.5 Accidental Events Effects Assessment
7.1.3	Effects of the Environment on the Project	6.2.10 Assessment of Effects of the Environment on the Project 9 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 (*e.g.*, waves, wind, currents, fire, seismic events) could adversely affect the Project and how this in turn could result in impacts to the environment (*e.g.*, extreme environmental conditions resulting in malfunctions and accidental events). These events will be considered in different probability patterns (*i.e.*, 5-year vs. 100-year recurrence interval). This discussion will include a description of climate data used.	5.1.1 Marine Geology and Geomorphology 5.1.2 Atmospheric Environment 5.1.3 Physical Oceanography 9 Effects of the Environment on the Project
	This discussion will include a description of climate data used.	5.1.2.3 Wind Climate 9.2 Environmental Considerations
	The EIS will provide details of planning, design and construction strategies intended to minimize the potential environmental effects of the environment on the Project.	9.3 Mitigation
7.2	Scope of the Factors	6.1.3 Scope of the Factors to be Considered
7.2.1	Spatial Boundaries	6.2.4 Identification of EA Boundaries
	The EIS will clearly indicate the spatial boundaries to be used in assessing the potential adverse environmental effects of the proposed Project and provide a rationale for each boundary. It is recognized that the spatial boundaries for each VC may not be the same.	7.2.5.1 Spatial Boundaries (Fish and Fish Habitat) 7.3.5.1 Spatial Boundaries (Marine Mammals and Sea Turtles) 7.4.5.1 Spatial Boundaries (Marine Birds) 7.5.5.1 Spatial Boundaries (Special Areas) 7.6.5.1 Spatial Boundaries (Commercial Fisheries) 7.7.5.1 Spatial Boundaries (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
7.2.2	Temporal boundaries	6.2.4 Identification of EA Boundaries
	The temporal boundaries of the EA will span all phases of the Project: drilling, well testing, and where relevant, decommissioning, abandonment or restoration of the	7.2.5.2 Temporal Boundaries (Fish and Fish Habitat) 7.3.5.2 Temporal Boundaries (Marine

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
sites affected by the Project. Temporal boundaries will also consider variations related to VCs for all phases of the Project, where appropriate.	Mammals and Sea Turtles) 7.4.5.2 Temporal Boundaries (Marine Birds 7.5.5.2 Temporal Boundaries (Special Areas) 7.6.5.2 Temporal Boundaries (Commercial Fisheries) 7.7.5.2 Temporal Boundaries (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
8 ALTERNATIVE MEANS OF CARRYING OUT THE PROJECT	2.8 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. o Develop criteria to determine the technical and economic feasibility of the alternative means. o Identify those alternative means that are technically and economically feasible, describing each alternative means in sufficient detail. • Identify the effects of each alternative means. o Identify those elements of each alternative means that could produce effects in sufficient detail to allow a comparison with the effects of the Project. o The effects referred to above include both environmental effects and potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests. • Identify the preferred means. o Identify the preferred means based on the relative consideration of effects; and of technical and economic feasibility. o Determine criteria to examine the effects of each remaining alternative means to identify the preferred means.	2.8 Alternative Means of Carrying out the Project 2.8.7 Summary of Alternative Means
In its alternative means analysis, the proponent will address, as a minimum, the following Project components:	
• choice of drilling fluid (*i.e.*, WBM or SBM)	2.8.3 Drilling Fluids
• management of drilling wastes (*i.e.*, disposal on seabed or into water column, recover and ship to	2.8.4 Drill Waste Management

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
shore, re-inject)	
• 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	2.8.5 MODU Lighting
The *Offshore Waste Treatment Guidelines* 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 proponent should discuss any alternatives that would enable it to achieve these objectives and adopt best practices in waste management and treatment.	2.8.3 Drilling Fluids 2.8.4 Drill Waste Management 2.8.6.3 Chemical Selection and Management
The *Offshore Chemical Selection Guidelines* 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 Pose Little or No Risk to the Environment (PLONOR) list of chemicals and have a PARCOM Offshore Chemical Notification Scheme Hazard Rating of A, B or purple, orange, blue, or white • 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.	2.8.6 Chemical Management
9 BASELINE CONDITIONS	
9.1 Existing Environment	
9.1.1 Methodology	
The proponent will include a description of the environment, including components of the existing	5 Existing Environment 6.2.6 Existing Conditions

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
environment and environmental processes, their interrelations and interactions as well as the variability in these components, processes and interactions over time scales appropriate to the project.	
The proponent will identify and justify the indicators and measures of ecosystem health and integrity used for analysis and relate these to the identified VCs and proposed monitoring and follow-up measures.	6.2.3 Identification of Environmental Effects and Measurable 7.2.4 Identification of Environmental Effects and Measurable Parameters (Fish and Fish Habitat) 7.3.4 Identification of Environmental Effects and Measurable Parameters (Marine Mammals and Sea Turtles) 7.4.4 Identification of Environmental Effects and Measurable Parameters (Marine Birds) 7.5.4 Identification of Environmental Effects and Measurable Parameters (Special Areas) 7.6.4 Identification of Environmental Effects and Measurable Parameters (Commercial Fisheries) 7.7.4 Identification of Environmental Effects and Measurable Parameters (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
In describing the physical and biological environment, the proponent will take an ecosystem approach that considers both scientific and traditional knowledge and perspectives regarding ecosystem health and integrity.	5 Existing Environment B Traditional Use Study (Appendix B)
The proponent will consider the resilience of relevant species populations, communities and their habitats. The proponent will summarize pertinent historical information on the size and geographic extent of relevant species populations as well as density, based on best available information.	5.2.1 Plankton 5.2.2 Benthic Habitat 5.2.3 Marine Fish 5.2.4 Marine Mammals 5.2.5 Sea Turtles 5.2.6 Marine Birds 5.2.7 Summary of Species of Conservation Interest 5.2.8 Special Areas
Habitat at regional and local scales should be defined in ecological mapping of aquatic vegetation types and species.	5.2.2.1 Previous Benthic Habitat Characterizations
Habitat use will be characterized by type of use (*e.g.*, spawning, breeding, migration, feeding, nursery, rearing), frequency and duration. Emphasis will be on those species, communities and processes identified as	5.2.1 Plankton 5.2.2 Benthic Habitat 5.2.3 Marine Fish 5.2.4 Marine Mammals

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
VCs. However, the interrelations of these components and their relation to the entire ecosystem and communities of which they are a part will be indicated. The proponent will address issues such as habitat, nutrient and chemical cycles, food chains, productivity, to the extent that they are appropriate to understanding the effect of the Project on ecosystem health and integrity. Range and probability of natural variation over time will also be considered.	5.2.5 Sea Turtles 5.2.6 Marine Birds 5.2.8 Special Areas
The proponent will also examine changes in the distribution, populations, behaviour, and availability of species in the context of implications to current use of lands and resources by Aboriginal peoples.	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes
9.1.2 Biophysical Environment	5.1 Marine Physical Environment 5.2 Marine Biological Environment
Atmospheric Environment and Climate	
The EIS will describe ambient air quality in the Project area including but not limited to the following contaminants: total suspended particulates, PM2.5, PM10, SOx, VOCs and NOx.	5.1.2.2 Air Quality
The EIS will describe relevant weather parameters such as wind speed and direction, precipitation, visibility and storm events in the drilling area.	5.1.2 Atmospheric Environment 5.1.3 Physical Oceanography
Relevant marine climate data sources should be consulted, such as the Sable Island weather station, the Environment Canada weather buoys Project (the Lahave Bank Buoy, World Meteorological Organization), the International Comprehensive Atmosphere Ocean Dataset (ICOADS), the United States of America National Oceanographic and Atmospheric Administration (NOAA) database of tropical cyclone activity in the North Atlantic and the Canadian Lightning Detection Network.	5.1.2 Atmospheric Environment
Marine Mammals	
The EIS will identify marine mammal species that may be present, the times of year they are present, the ranges of the species and their migration patterns and how these may be affected by the Project, including underwater noise.	5.2.4 Marine Mammals 7.1 Overview of Project Interactions and Potential Effects 7.3 Marine Mammals and Sea Turtles 8.5.2 Marine Mammals and Sea Turtles
The EIS will identify 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*.)	5.2.4 Marine Mammals 5.2.8 Special Areas 7.3 Marine Mammals and Sea Turtles 7.5 Special Areas 8.5.2 Marine Mammals and Sea Turtles 8.5.4 Special Areas

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
Marine Turtles	
The EIS will identify marine turtle species that may be present, the times of year they are present, the ranges of the species and their migration patterns and how these may be affected by the Project.	5.2.5 Sea Turtles 7.1 Overview of Project Interactions and Potential Effects 7.3 Marine Mammals and Sea Turtles 8.5.2 Marine Mammals and Sea Turtles
The EIS will identify 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*.).	5.2.5 Sea Turtles 5.2.8 Special Areas 7.3 Marine Mammals and Sea Turtles 7.5 Special Areas 8.5.2 Marine Mammals and Sea Turtles 8.5.4 Special Areas
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*.) that may be affected by the Project, either as a result of routine operations (*e.g.*, at the Mobile Offshore Drilling Unit or supply vessels) or accidents and malfunctions including, but not limited to: • the Georges Bank Moratorium Area • the Roseway Basin North Atlantic Right Whale Critical Habitat • the Northeast Channel Coral Conservation Area • the Haddock Nursery Closure Area (*i.e.*, the Haddock Box) • Ecologically and Biologically Significant Areas (EBSA), particularly the Scotian Shelf and Slope Break EBSA, in which the drilling will occur • Sable Island • the Lobster Closure Area (LFA 40) • the Redfish Nursery Closure Area • the Gully Marine Protected Area	5.2.6.4 Important Bird Areas 5.2.8 Special Areas 7.5 Special Areas 8.5.4 Special Areas
The EIS will indicate the distances between the edge of the Project area (*i.e.*, drill sites and shipping routes) and Special Areas.	5.28 Special Areas (Table 5.2.17 Proximity of Special Areas to the Project Area) 7.5 Special Areas (Table 7.5.3 Proximity of Special Areas to the Project Area and LAA)
Fish and Fish Habitat	
To support analysis of the Project's effects the EIS will: • characterize fish populations on the basis of species and life stage for affected waters • list any rare fish or invertebrate species that are known to be present	5.2.3 Marine Fish 5.2.3.4 Species of Conservation Interest 7.2 Fish and Fish Habitat 8.5.1 Fish and Fish Habitat

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• describe the physical and biological characteristics of the fish and fish habitat likely to be directly or indirectly affected by the Project	
Emphasis will be placed on the waters likely to be affected by the Project and their physical characteristics, water and sediment quality. Hence, for all areas in which effects are anticipated, the EIS will describe the biophysical water and sediment characteristics, including: • a description of fish habitat as determined by water depths, type of substrate (sediments) and aquatic vegetation. It is recommended that photos be attached to the description, if available. • quality, thickness, grain size and mobility of bottom sediments • available bathymetry information for the drilling site and maximum and mean depths • a discussion of sea bottom stability at the Project site • benthic flora and fauna and their associated habitat, including sensitive features such as corals and sponges • surface and subsurface current patterns, current velocities, waves, storm surges, long shore drift processes, tidal patterns, and existing tide gauge levels for the site, in proximity to the drilling site, and along the supply routes • 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 • water quality parameters (*e.g.*, water temperature, turbidity, salinity and pH)	5.1.1 Marine Geology and Geomorphology 5.1.3 Physical Oceanography 5.2.1 Plankton 5.2.2 Benthic Habitat 5.2.3 Marine Fish 7.1 Overview of Project Interactions and Potential Effects
The proponent should consult MSC50 Wind and Wave Hindcast Data for the North Atlantic, long-term hourly wave measurements from the Environment Canada weather buoy in the Project area, as well as the US National Data Buoy Center's Georges Bank buoy formerly deployed to the west of the area and DFO archives of hourly wave measurements from offshore platforms and co-located wave buoys operating on the Scotian Shelf and Slope.	5.1.2.3 Wind Climate
The EIS should indicate the areal extent of drilling waste deposition at various stages of drilling, including during riserless drilling and drilling with the marine riser in place, using dispersion modelling.	7.2 Fish and Fish Habitat C Sediment Dispersion Modelling (Appendix C)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
For all waters which the Project is likely to affect, the EIS will:	
• describe the fish species present on the basis of the surveys carried out and the data available (*e.g.*, electric and experimental fishing, 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).	5.2.3 Marine Fish 5.2.2 Benthic Habitat 5.3.3 Offshore Commercial Fisheries 5.3.4 Aboriginal Fisheries E Fisheries Landings Data (Appendix E)
• specify the location of potential or confirmed fish habitats and describe how they are used by fish (spawning, rearing, growth, feeding, migration, overwintering)	5.2.3 Marine Fish 5.2.2 Benthic Habitat
• locate and describe suitable habitats for species at risk that appear on federal and provincial lists and that are found or are likely to be found in the study area	5.2.3.4 Species of Conservation Interest 5.2.8 Special Areas
• document any vertical seismic survey or other noise that may affect fish behaviour, such as spawning or migration	7.1 Overview of Project Interactions and Potential Effects 7.2 Fish and Fish Habitat 10 Cumulative Environmental Effects
Marine Birds	
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, such as: • 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 MODU 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	5.2.6 Marine Birds 7.1 Overview of Project Interactions and Potential Effects 7.4 Marine Birds 8.5.3 Marine Birds

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
Offshore Drilling Unit or support vessels	
Preliminary data from existing sources will be gathered, including information such as: • abundance, distribution, and life stages of birds in the area, including species composition for each season • a characterization of year-round migratory bird use of the area (*e.g.*, over-wintering, spring migration, breeding season, fall migration) • areas of concentration of migratory birds, such as for breeding, feeding or resting	5.2.6 Marine Birds 5.2.8 Special Areas
In addition to information obtained from Aboriginal peoples, other relevant datasets should be consulted, such as those available from the Canadian Wildlife Service (*e.g.*, Eastern Canadian Seabirds at Sea (ECSAS), Programme intégré de recherches sur les oiseaux pélagiques (PIROP)), the Nova Scotia Department of Natural Resources (for information on tern colonies), the Atlantic Canada Conservation Data Centre, previous petroleum operations in the area and university or other research programs, if available.	4 Aboriginal Engagement 5.2.6.2 Seasonal Distribution of Marine Birds in Association with the Scotian Shelf and Slope 5.2.6.5 Species of Conservation Interest
Species at Risk and Species of Conservation Concern	
As background for the analysis of the Project's effects on species at risk, the EIS will: • identify all species at risk that may be affected by the Project, using existing data and literature as well as surveys to provide current field data, as appropriate • incorporate any published studies that describe the regional importance, abundance and distribution of species at risk • identify 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 • consult recovery strategies for information on any critical habitat in the Project area of endangered and threatened species, and consult management plans for information on habitat use of species of special status	5.2.3.4 Species of Conservation Interest (Fish) 5.2.4.4 Species of Conservation Interest (Marine Mammals) 5.2.5 Sea Turtles 5.2.6.5 Species of Conservation Interest (Marine Birds) 5.2.7 Summary of Species of Conservation Interest 5.2.8 Special Areas 7.2 Fish and Fish Habitat 7.3 Marine Mammals and Sea Turtles 7.4 Marine Birds 7.5 Special Areas
The following information sources on species at risk and species of conservation concern should be among those consulted: • Species at Risk Act Registry (www.sararegistry.gc.ca); • Committee on the Status of Endangered Wildlife in	3 Consultation and Engagement 4 Aboriginal Engagement 5.2.3.4 Species of Conservation Interest (Fish) 5.2.4.4 Species of Conservation Interest (Marine Mammals)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
Canada (COSEWIC) • relevant government agencies • local naturalist and interest groups • Aboriginal groups and First Nations	5.2.5 Sea Turtles 5.2.6.5 Species of Conservation Interest (Marine Birds) 5.2.7 Summary of Species of Conservation Interest 5.2.8 Special Areas
9.1.3 Human Environment	
The following VCs will be identified and described in the relevant sections of the EIS:	
• current use of land and resources for traditional purposes by Aboriginal peoples	5.3.4 Aboriginal Fisheries 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes B Traditional Use Study (Appendix B)
• commercial and recreational fisheries	5.3.1 Land and Nearshore Ocean Use 5.3.2.4 Tourism and Recreational Activities 5.3.3 Offshore Commercial Fisheries
• human health, with respect to potential contamination of food sources	6.2.2 Selection of Valued Components 12.2.1 Effects of Changes to the Environment on Aboriginal People
• other ocean use (*e.g.*, shipping, research, oil and gas, military activities, ocean infrastructure (*e.g.*, sub-sea cables))	5.3.2 Offshore Ocean Uses and Infrastructure 6.2.2 Selection of Valued Components 10 Cumulative Environmental Effects
• physical and cultural heritage, including structures, sites or things of historical, archaeological, paleontological or architectural significance	5.3.5 Physical and Cultural Heritage 6.2.2 Selection of Valued Components 12.2.1 Effects of Changes to the Environment on Aboriginal People
In describing how the Project may impede other uses as listed above, the EIS will:	
• identify any Project components and a description of any activities (*e.g.*, exclusion zones) that may affect other uses	7.6 Commercial Fisheries 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 10 Cumulative Environmental Effects
• describe current commercial or recreational fishing activity in the Project area that may be affected, including licence holders and species fished	5.3.1 Land and Nearshore Ocean Use 5.3.2.4 Tourism and Recreational Activities 5.3.3 Offshore Commercial Fisheries E Fisheries Landings Data (Appendix E)
• describe any recreational uses of nearshore waters (*i.e.*, swimming, canoeing, boating) that may be affected by the Project	5.3.2.4 Tourism and Recreational Activities
• provide information on current and historical use of all waters that may be affected by the Project, including current Aboriginal uses	5.3 Socio-Economic Environment B Traditional Use Study (Appendix B)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
The proponent will provide information on the functioning and health of the socio-economic environment, encompassing a broad range of matters that affect communities and aboriginal peoples in the study area in a way that recognizes interrelationships, system functions and vulnerabilities.	5.3 Socio-Economic Environment B Traditional Use Study (Appendix B)
The proponent will provide information on heritage resources, including structures, sites or things of historical, archeological, paleontological or architectural significance.	5.3.5 Physical and Cultural Heritage 12.2.1 Effects of Changes to the Environment on Aboriginal People B Traditional Use Study (Appendix B)
In describing current uses of land and resources by Aboriginal groups for traditional purposes, the proponent will describe fishing activity, either for commercial or traditional purposes (*e.g.* the communal gathering of fish for feasts) within the projects potential zone of influence. Potential effects on current uses include access to areas that are of importance or concern to Aboriginal groups.	5.3.4 Aboriginal Fisheries B Traditional Use Study (Appendix B) 7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 12.2.1 Effects of Changes to the Environment on Aboriginal People
The EIS should also discuss the potential to encounter unexploded ordnance (UXOs), based on consultation with the Department of National Defence.	5.3.2 Offshore Ocean Uses and Infrastructure
9.2 Potential or Established Aboriginal and Treaty Rights and Related Interests	
At a minimum, the EIS will summarize available information on the potential or established Aboriginal and Treaty rights and related interests of the named Aboriginal groups that have the potential to be adversely impacted by the Project. As part of this summary, the EIS will include for each Aboriginal group:	4.3 Potential or Established Rights and Related Interests B Traditional Use Study (Appendix B)
• background information and a map of the group's traditional territory	4.2 Aboriginal Organizations
• a summary of engagement activities conducted prior to the submission of the EIS, including the date and means of engagement (*e.g.*, meeting, mail, telephone)	4.4 Aboriginal Engagement Activities
• information on 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	B Traditional Use Study (Appendix B)
• an overview of key comments and concerns provided by each group to the proponent	4.5 Questions and Comments Raised During Aboriginal Engagement B Traditional Use Study (Appendix B)
• responses provided by government and/or the proponent, as appropriate	4.5 Questions and Comments Raised During Aboriginal Engagement

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• future planned engagement activities efforts undertaken to engage with Aboriginal groups as part of developing the information identified above	4.4 Aboriginal Engagement Activities 14.4 Summary of Aboriginal Engagement (Table 14.4.1 Outstanding Aboriginal Issues)
The proponent will describe all efforts, successful or not, taken to solicit the information required to prepare the EIS.	3 Consultation and Engagement 4 Aboriginal Engagement D Stakeholder Log
10 EFFECTS ASSESSMENT	
10.1 Environmental Effects	
10.1.1 Methodology	6 Environmental Effects Assessment Scope and Methodology
The proponent will indicate the Project's effects during all Project phases, including drilling, testing and abandonment and describe these effects using appropriate criteria. To the maximum extent possible, this documentation will include, for each potential Project-related environmental effect, an indication of the nature of the effect, mechanism, magnitude, duration, frequency, geographic extent, and the degree to which it may be reversible.	6.2.5 Establishing Standards or Thresholds for Characterizing and Determining Significance of Environmental Effects 6.2.8 Assessment of Project-Related Environmental Effects 7.2.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Fish and Fish Habitat) 7.3.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Marine Mammals and Sea Turtles) 7.4.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Marine Birds) 7.5.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Special Areas) 7.6.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Commercial Fisheries) 7.7.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
Risk Assessment Framework	
The proponent is expected to employ, where appropriate, standard ecological risk assessment	6 Environmental Effects Assessment Scope and Methodology

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
frameworks that categorize the levels of detail and quality of the data required for the assessment. These tiers are as follows: Tier 1: Qualitative (expert opinion, including traditional and local knowledge, literature review, and existing site information) Tier 2: Semi-quantitative (measured site-specific data and existing site information) Tier 3: Quantitative (recent field surveys and detailed quantitative methods)	7 Environmental Effects Assessment
When risks to human health due to changes in one or more of these components are predicted, a complete Human Health Risk Assessment (HHRA) examining all exposure pathways for pollutants of concern may be necessary to adequately characterize potential risks the human health.	N/A
Impact Matrix	6 Environmental Effects Assessment Scope and Methodology 7 Environmental Effects Assessment
An impact matrix methodology in combination with identification of VCs should be used to evaluate environmental effects of the proposed Project, including those related to Aboriginal peoples. The assessment will include the following general steps:	
• identification of the activities and components of the Project	2.3 Project Components 2.4 Project Activities
• predicting/evaluating the likely effects on identified valued components	7.1 Overview of Project Interactions and Potential Effects 7.2.8 Potential Project-VC Interactions (Fish and Fish Habitat) 7.3.8 Potential Project-VC Interactions (Marine Mammals and Sea Turtles) 7.3.9 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8 Potential Project-VC Interactions (Marine Birds) 7.4.9 Assessment of Project-Related Environmental Effects (Marine Birds) 7.5.8 Potential Project-VC Interactions (Special Areas) 7.6.8 Potential Project-VC Interactions (Commercial Fisheries) 7.7.8 Potential Project-VC Interactions (Current Aboriginal Use of Lands

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	and Resources for Traditional Purposes)
• identification of technically and economically feasible mitigation measures for any significant adverse environmental effects	7.2.8 Potential Project-VC Interactions (Fish and Fish Habitat) 7.3.8 Potential Project-VC Interactions (Marine Mammals and Sea Turtles) 7.3.9 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8 Potential Project-VC Interactions (Marine Birds) 7.4.9 Assessment of Project-Related Environmental Effects (Marine Birds) 7.5.8 Potential Project-VC Interactions (Special Areas) 7.6.8 Potential Project-VC Interactions (Commercial Fisheries) 7.7.8 Potential Project-VC Interactions (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
• determination of any residual environmental effects	7.2.8 Potential Project-VC Interactions (Fish and Fish Habitat) 7.3.8 Potential Project-VC Interactions (Marine Mammals and Sea Turtles) 7.3.9 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8 Potential Project-VC Interactions (Marine Birds) 7.4.9 Assessment of Project-Related Environmental Effects (Marine Birds) 7.5.8 Potential Project-VC Interactions (Special Areas) 7.6.8 Potential Project-VC Interactions (Commercial Fisheries) 7.7.8 Potential Project-VC Interactions (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
• ranking of each residual adverse environmental effect based on various criteria	7.3.9.3 Characterization of Residual Project- Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.9.3 Characterization of Residual Project- Related Environmental Effects (Marine Birds)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
• determination of the potential significance of any residual environmental effect following the implementation of mitigation	7.2.9 Summary of Residual Project-Related Environmental Effects (Fish and Fish Habitat) 7.3.10 Determination of Significance (Marine Mammals and Sea Turtles) 7.4.10 Determination of Significance (Marine Birds) 7.5.9 Summary of Residual Project-Related Environmental Effects (Special Areas) 7.6.9 Summary of Residual Project-Related Environmental Effects (Commercial Fisheries) 7.7.9 Summary of Residual Project-Related Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
Application of Precautionary Approach	7 Environmental Effects Assessment 8 Accidental Events
In documenting the analyses included in the EIS, the proponent will:	
• demonstrate that all aspects of the Project have been examined and planned in a careful and precautionary manner in order to ensure that they would not cause serious or irreversible damage to the environment, especially with respect to environmental functions and integrity, system tolerance and resilience, and/or the human health of current or future generations	2.8 Alternative Means of Carrying Out the Project 7 Environmental Effects Assessment 8 Accidental Events
• outline and justify the assumptions made about the effects of all aspects of the Project and the approaches to minimize these effects	7 Environmental Effects Assessment 8 Accidental Events
• ensure that in designing and operating the Project, priority has been and would be given to strategies that avoid the creation of adverse effects	2 Project Description
• develop contingency plans that explicitly address accidents and malfunctions	8.1 Spill Prevention and Response
• identify any proposed follow-up and monitoring activities, particularly in areas where scientific uncertainty exists in the prediction of effects	13.2 Follow-Up and Monitoring
10.1.2 Changes to the Environment	N/A
The EIS will describe any change that may be caused by the Project on the environment, which is defined as the components of the Earth, including: • land, water and air, including all layers of the	7 Environmental Effects Assessment

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
atmosphere • all organic and inorganic matter and living organisms • the interacting natural systems that include the components described above These descriptions will be integrated into the effects assessment sections of each VC included in the EIS.	
Changes to Components of the Environment within Federal Jurisdiction 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.	6.1.3 Scope of the Factors to be Considered 12.1.1 Changes to Components of the Environment within Federal Jurisdiction
Changes to the Environment that would Occur on Federal or Transboundary Lands 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).	6.1.3 Scope of the Factors to be Considered 12.1.2 Changes to the Environment that Would Occur on Federal or Transboundary Lands
Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions 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.	6.1.3 Scope of the Factors to be Considered 12.1.3 Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions
10.1.3 Effects of Changes to the Environment	N/A
Effects of Changes to the Environment on Aboriginal Peoples The EIS will describe the effects of any changes the Project may cause to the environment, with respect to Aboriginal peoples, on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance.	12.2.1 Effects of Changes to the Environment on Aboriginal People
Effects of Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions In situations where the EIS has identified changes to the environment that are directly linked or necessarily incidental to federal decisions identified in section 5.2, the EIS will also include a stand-alone section that describes the effects of these changes on health and socio-economic conditions, physical and cultural	12.2.2 Effects of Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
heritage, or any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, other than as they pertain to Aboriginal peoples (who are considered in the previous section).	
10.2 Adverse Impacts on Aboriginal and Treaty Rights and Related Interests	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes (Accidental Events Effects Assessment)
The EIS will describe, from the perspective of the proponent, the potential adverse impacts of the Project on the ability of Aboriginal peoples to exercise the potential or established Aboriginal and Treaty rights and related interests identified in section 9.2 of the EIS Guidelines. As part of this description, this section will summarize:	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes (Accidental Events Effects Assessment)
• potential adverse impacts (on potential or established Aboriginal and Treaty rights and related interests) that were identified through the environmental effects described in sections 10.1.2 and 10.1.3 of the EIS Guidelines	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes (Accidental Events Effects Assessment)
• specific issues and concerns raised by Aboriginal groups in relation to the potential adverse impacts of the Project on potential or established Aboriginal and Treaty rights and related interests	4.3 Potential or Established Rights and Related Interests 4.5 Questions and Comments Raised During Aboriginal Engagement 7.7.3 Consideration of Issues Raised During Consultation and Engagement B Traditional Use Study (Appendix B)
• VCs suggested for inclusion in the EIS, whether or not those factors were included, and the rationale for any exclusions	6.2.2 Selection of Valued Components
• where and how Aboriginal traditional knowledge or other Aboriginal views were incorporated into the consideration of environmental effects and potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests	7.7.3 Consideration of Issues Raised During Consultation and Engagement B Traditional Use Study (Appendix B)
• efforts undertaken to engage with Aboriginal groups as part of collecting the information identified above	4 Aboriginal Engagement D Stakeholder Log
10.3 Public Concerns	3.4 Questions and Comments Raised During Consultation and Engagement

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
11 MITIGATION	
11.1 Environmental Mitigation	
11.1.1 Methodology	
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.	14.2 Summary of Mitigation, Monitoring and Follow-Up Commitments
The proponent will then describe its environmental protection plan and its environmental management system, through which it will deliver this plan. The plan will provide an overall perspective on how potentially adverse effects would be minimized and managed over time.	13.1 Environmental Management Plans
The EIS will then describe mitigation measures that are specific to each environmental effect identified in section 10.1 of the EIS Guidelines. Measures will be written as specific commitments that clearly describe how the proponent intends to implement them. 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 Potential Project-VC Interactions (Fish and Fish Habitat) 7.3.8 Potential Project-VC Interactions (Marine Mammals and Sea Turtles) 7.3.9 Assessment of Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.8 Potential Project-VC Interactions (Marine Birds) 7.4.9 Assessment of Project-Related Environmental Effects (Marine Birds) 7.5.8 Potential Project-VC Interactions (Special Areas) 7.6.8 Potential Project-VC Interactions (Commercial Fisheries) 7.7.8 Potential Project-VC Interactions (Current Aboriginal Use of Lands and Resources for Traditional Purposes) 8.5.1.2 Mitigation of Environmental Effects (Fish and Fish Habitat – Accidental Events Effects Assessment) 8.5.2.2 Mitigation of Environmental Effects (Marine Mammals and Sea Turtles – Accidental Events Effects Assessment) 8.5.3.2 Mitigation of Environmental Effects (Marine Birds – Accidental Events Effects Assessment) 8.5.4.2 Mitigation of Environmental Effects (Special Areas – Accidental Events Effects Assessment)

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	8.5.5.2 Mitigation of Environmental Effects (Commercial Fisheries – Accidental Events Effects Assessment) 8.5.6.2 Mitigation of Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes – Accidental Events Effects Assessment)
The EIS will describe proponent commitments, policies and arrangements directed at promoting beneficial or mitigating adverse socio-economic effects. 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.	1.2.2 Commitment to Health, Safety and the Environment 2.5 Project Personnel
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 undertaking 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.	13.2 Follow-Up and Monitoring 14.2 Summary of Mitigation, Monitoring and Follow-Up Commitments
The EIS will indicate what other technically and economically feasible mitigation measures were considered, including the various components of mitigation, and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation will be justified. The EIS will identify who is responsible for the implementation of these measures and the system of accountability.	2.8 Alternative Means of Carrying Out the Project 2.5 Project Personnel
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.	N/A
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 development of the Follow-up Program as described in section 11.4 of the EIS Guidelines.	11.2 Benefits of the Project
11.1.2 Summary of Environmental Mitigation	14.2 Summary of Mitigation, Monitoring

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	and Follow-Up Commitments
11.2 Measures to Address Impacts on Aboriginal Rights	
This section will describe, from the perspective of the proponent, the measures identified to mitigate the potential adverse impacts of the Project described in section 10.2 of the EIS Guidelines on the potential or established Aboriginal and Treaty rights and related interests identified in section 9.2 of the EIS Guidelines. These measures will be written as specific commitments that clearly describe how the proponent intends to implement them. This description will include a summary of:	7.7.8 Potential Project-VC Interactions (Current Aboriginal Use of Lands and Resources for Traditional Purposes) 8.5.6.2 Mitigation of Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes – Accidental Events Effects Assessment) 14.2 Summary of Mitigation, Monitoring and Follow-Up Commitments
• specific suggestions raised by Aboriginal groups for mitigating the potential adverse impacts of the Project on potential or established Aboriginal and Treaty rights and related interests in relation to environmental effects specified in sections 10.1.2 and 10.1.3 of the EIS Guidelines	4.5 Questions and Comments Raised Ruing Aboriginal Engagement B Traditional Use Study (Appendix B)
• environmental mitigation measures identified in section 11.1 of the EIS Guidelines that also serve to address potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests	7.7.8 Potential Project-VC Interactions (Current Aboriginal Use of Lands and Resources for Traditional Purposes) 8.5.6.2 Mitigation of Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes – Accidental Events Effects Assessment)
• any potential cultural, social and/or economic impacts or benefits to Aboriginal groups that may arise as a result of the Project	7.7 Current Aboriginal Use of Lands and Resources for Traditional Purposes 8.5.6 Current Aboriginal Use of Lands and Resources for Traditional Purposes 12.2.1 Effects of Changes to the Environment on Aboriginal People B Traditional Use Study (Appendix B)
• where and how Aboriginal traditional knowledge or other Aboriginal views were incorporated into the mitigation of environmental effects of potential adverse impacts on potential or established Aboriginal and Treaty rights and related interests	7.7.3 Consideration of Issues Raised During Consultation and Engagement B Traditional Use Study (Appendix B)
• efforts undertaken to engage with Aboriginal groups as part of developing the information identified above.	4 Aboriginal Engagement B Traditional Use Study (Appendix B)
The proponent will describe all efforts, successful or not, taken to solicit the information required to prepare the EIS.	D Stakeholder Log
11.3 Measures to Address Public Concerns	

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
This section will describe measures identified for addressing public concerns in relation to the Project identified in section10.3 of the EIS Guidelines.	3.4 Questions and Comments Raised During Consultation and Engagement 14.2 Summary of Mitigation, Monitoring and Follow-Up Commitments
For any consultations undertaken with the general public, the EIS will describe the ongoing and proposed consultations and information sessions with respect to the Project at the local, regional and provincial levels, where applicable. The EIS will provide a summary of discussions, indicate the methods used and their relevance, locations, the persons and organizations consulted, the concerns raised, the extent to which this information was incorporated in the design of the Project as well as in the EIS, and the resultant changes. The proponent will also 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.	3 Consultation and Engagement D Stakeholder Log
11.4 Follow-up Program	13.2 Follow-up and Monitoring
11.5 Proponent Commitments	14.2 Summary of Mitigation, Monitoring and Follow-Up Commitments
12 RESIDUAL EFFECTS	
12.1 Residual and Cumulative Environmental Effects	
12.1.1 Residual Environmental Effects	• Section 7 Environmental Effects Assessment • Section 15.1 Summary of Potential Effects, Adverse Residual Effects and their Significance
After having established the technically and economically feasible mitigation measures, the EIS will present any residual environmental effects of the Project on the biophysical and human environments after these mitigation measures have been taken into account. The residual effects, even if very small or deemed insignificant will be described.	7.2.9 Summary of Residual Project-Related Environmental Effects (Fish and Fish Habitat) 7.3.12 Summary of Residual Project-Related Environmental Effects (Marine Mammals and Sea Turtles) 7.4.12 Summary of Residual Project-Related Environmental Effects (Marine Birds) 7.5.9 Summary of Residual Project-Related Environmental Effects (Special Areas) 7.6.9 Summary of Residual Project-Related Environmental Effects (Commercial Fisheries) 7.7.9 Summary of Residual Project-Related Environmental Effects (Current Aboriginal Use of Lands

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	and Resources for Traditional Purposes) 8.5.1.3 Characterization of Residual Environmental Effects (Fish and Fish Habitat – Accidental Events Effects Assessment) 8.5.2.3 Characterization of Residual Environmental Effects (Marine Mammals and Sea Turtles – Accidental Events Effects Assessment) 8.5.3.3 Characterization of Residual Environmental Effects (Marine Birds – Accidental Events Effects Assessment) 8.5.4.3 Characterization of Residual Environmental Effects (Special Areas – Accidental Events Effects Assessment) 8.5.5.3 Characterization of Residual Environmental Effects (Commercial Fisheries – Accidental Events Effects Assessment) 8.5.6.3 Characterization of Residual Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes – Accidental Events Effects Assessment)
12.1.2 Cumulative Environmental Effects	10 Cumulative Environmental Effects Assessment
• identify and justify the environmental components that will constitute the focus of the cumulative effects assessment	10.1.1.1 Valued Components
• 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 different VC considered. These cumulative effects boundaries will also generally be larger than the boundaries for the corresponding Project effects	10.1.1.2 Spatial and Temporal Boundaries
• 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 selected VCs, and whose effects would act in combination with the residual effects of the Project.	10.1.1.3 Other Physical Activities 10.2.2 Potential Cumulative Interactions
• describe the mitigation measures that are	10.2 Cumulative Environmental Effects

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
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	Assessment
• 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, if appropriate	10.3 Follow-Up and Monitoring
12.1.3 Summary of Residual Environmental Effects	14.1 Summary of Potential Effects, Adverse Residual Effects and their Significance
12.2 Outstanding Aboriginal Issues	14.4 Summary of Aboriginal Engagement (Table 14.4.1 Outstanding Aboriginal Issues)
12.3 Outstanding Public Concerns	14.3 Summary of Comments from the Public (Table 14.3.1 Outstanding Public Concerns)
13 SIGNIFICANCE DETERMINATION	
13.1 Significance of Adverse Environmental Effects	
13.1.1 Methodology	
The EIS will identify the criteria used to assign significance ratings to any predicted adverse effects. The proponent will define the terms used to describe the level of significance. The following elements should be used in determining the significance of residual effects: • magnitude • geographic extent • duration and frequency • reversibility • ecological and social context • existence of environmental standards, guidelines or objectives for assessing the impact	6.2.5 Establishing Standards or Thresholds for Characterizing and Determining Significance of Environmental Effects 6.2.8 Assessment of Project-Related Environmental Effects 7.2.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Fish and Fish Habitat) 7.3.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Marine Mammals and Sea Turtles) 7.4.6 Criteria for Characterizing Residual

Table E.1.1 Concordance Table

Final EIS Guidelines	EIS Reference
	Environmental Effects and Thresholds for Determining Significance (Marine Birds) 7.5.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Special Areas) 7.6.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Commercial Fisheries) 7.7.6 Criteria for Characterizing Residual Environmental Effects and Thresholds for Determining Significance (Current Aboriginal Use of Lands and Resources for Traditional Purposes)
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.	8.5.3.3 Characterization of Residual Environmental Effects (Marine Birds – Accidental Events Effects Assessment) 8.5.4.3 Characterization of Residual Environmental Effects (Special Areas – Accidental Events Effects Assessment) 8.5.5.3 Characterization of Residual Environmental Effects (Commercial Fisheries – Accidental Events Effects Assessment) 8.5.6.3 Characterization of Residual Environmental Effects (Current Aboriginal Use of Lands and Resources for Traditional Purposes – Accidental Events Effects Assessment)
13.1.2 Summary of Significant Adverse Environmental Effects	14.1 Summary of Potential Effects, Adverse Residual Effects and their Significance
14 SUMMARY TABLES	
The EIS will contain tables summarizing the following key information:	
• potential environmental effects (section 10.1 of the EIS Guidelines), adverse impacts on potential or established Aboriginal and Treaty rights and related interests (section 10.2 of the EIS Guidelines) and public concerns (section 10.3 of the EIS Guidelines)	12 Summary of Environmental Effects 14.1 Summary of Potential Effects, Adverse Residual Effects and their Significance 14.4 Summary of Aboriginal Engagement 14.3 Summary of Comments from the

Table E.1.1 Concordance Table

Final EIS Guidelines		EIS Reference	
			Public
• proposed mitigation measures and commitments (section 11.5 of the EIS Guidelines) by proponent to address potential impacts on environment, (section 11.1 of the EIS Guidelines), Aboriginal rights (section 11.2 of the EIS Guidelines) and public concerns (section 11.3 of the EIS Guidelines), and Follow-up Program (section 11.4 of the EIS Guidelines)		14.2	Summary of Mitigation, Monitoring and Follow-Up Commitments
• potential residual and cumulative environmental effects (section 12.1 of the EIS Guidelines) and the significance of the residual environmental effects (section 13.1 of the EIS Guidelines) ; outstanding Aboriginal issues (section 12.2) and outstanding public concerns (section 12.3 of the EIS Guidelines)		14.1 14.4 14.3	Summary of Potential Effects, Adverse Residual Effects and their Significance Summary of Aboriginal Engagement Summary of Comments from the Public
• comments from the public and responses		3.4	Questions and Comments Raised During Consultation and Engagement
• comments from Aboriginal groups and individuals and responses		4.5	Questions and Comments Raised During Aboriginal Engagement
• relationship of the identified Valued Components (section 7.1.1 of the EIS Guidelines) to Aboriginal groups' potential or established Aboriginal and Treaty rights and related interests (section 9.2 of the EIS Guidelines)		14.4	Summary of Aboriginal Engagement
15	**BENEFITS TO CANADIANS**		
15.1	Changes to the Project Since Initially Proposed	11.1	Changes to the Project Since Initially Proposed
15.2	Benefits of the Project	11.2	Benefits of the Project
16	**MONITORING PROGRAM AND ENVIRONMENTAL MANAGEMENT PLANS**	13	Environmental Management

Acronyms

ACCDC ..... Atlantic Canada Conservation Data Center
ADW ..... Approval to Drill a Well
AFS ..... Aboriginal Fishing Strategy
ALARP ..... as low as reasonably practicable
ASA ..... Applied Science Associates
ATBA ..... Area to be Avoided
AZMP ..... Atlantic Zone Monitoring Program
AZOMP ..... Atlantic Zone Off-Shelf Monitoring Program
bbl ..... barrels
BOP ..... blowout preventer
BP ..... British Petroleum Exploration Operating Company
Bpd ..... barrels per day
BSF ..... below sea floor
CCG ..... Canadian Coast Guard
CEA Agency ..... Canadian Environmental Assessment Agency
CEAA, 2012 ..... *Canadian Environmental Assessment Act, 2012*
CEPA, 1999 ..... *Canadian Environmental Protection Act, 1999*
CFA ..... Crab Fishing Area
CHC ..... Canadian Hurricane Centre
C-NLOPB ..... Canada-Newfoundland and Labrador Offshore Petroleum Board
CNSOPB ..... Canada-Nova Scotia Offshore Petroleum Board
CO ..... carbon monoxide
CO_2 ..... carbon dioxide
COGOA ..... *Canadian Oil and Gas Operations Act*
COSEWIC ..... Committee on the Status of Endangered Wildlife in Canada
CRA ..... commercial, recreational and Aboriginal
CSAS ..... Canadian Science Advisory Secretariat
CWS ..... Canadian Wildlife Service

dB ..... decibel
DCC ..... Defence Construction Canada
DFO ..... Fisheries and Oceans Canada
DHSG ..... Deepwater Horizon Study Group
DND ..... Department of National Defence
DOM ..... dissolved organic matter
DP ..... dynamic positioning
DREA ..... Defence Research Establishment Atlantic
DSL ..... Domestic Substances List
EA ..... environmental assessment
EBSA ..... Ecologically and Biologically Significant Area
EC ..... Environment Canada
ECA ..... Emission Control Area
ECRC ..... Eastern Canada Response Corporation
ECSAS ..... Eastern Canadian Seabirds at Sea
EEM ..... environmental effects monitoring
EEP ..... Environmental Emergencies Program
EEST ..... Environmental Emergencies Science Table
EEZ ..... Exclusive Economic Zone
EIS ..... environmental impact statement
EL ..... Exploration Licence
EMO ..... Emergency Management Office
EMP ..... Environmental Management Plan
ENGO ..... environmental non-governmental organization
EPP ..... Environmental Protection Plan
ERP ..... Emergency Response Plan
ERT ..... Emergency Response Team
ESS ..... Eastern Scotian Shelf
FAC ..... Fisheries Advisory Committee
FSC ..... food, social and ceremonial
ft ..... feet

GPS ..... global positioning system
GSC ..... Geological Survey of Canada
HGT ..... horizontal gene transfer
H_s ..... significant wave height
HSE ..... Health, Safety and Environment
HSSE & SP ..... Health, Safety, Security, Environment and Social Performance
IBA ..... Important Bird Area
ICCAT ..... International Commission for the Conservation of Atlantic Tunas
ICS ..... Incident Command System
ID ..... inside diameter
IMO ..... International Maritime Organization
JMPCP ..... Joint Marine Pollution Contingency Plan
JRCC ..... Join Rescue Coordination Centre
km ..... kilometres
KMKNO ..... Kwilmu'kw Maw-klusuaqn Negotiation Office
LAA ..... Local Assessment Area
LCA ..... *Lophelia* Conservation Area
LFA ..... Lobster Fishing Area
LJFL ..... lower jaw fork length
LMRP ..... lower marine riser package
m ..... metres
M&NP ..... Maritimes & Northeast Pipeline
MAPC ..... Maritime Aboriginal Peoples Council
MARLANT ..... Maritime Forces Atlantic
MARPOL ..... *International Convention for the Prevention of Pollution from Ships*
MARS ..... Marine Animal Response Society
MAWP ..... maximum anticipated wellhead pressure
MBBA ..... Maritimes Breeding Bird Atlas
MBCA ..... *Migratory Birds Convention Act*
MBS ..... Migratory Bird Sanctuary
MGS ..... Membertou Geomatics Solutions

MMO ..... marine mammal observer
MODU ..... mobile offshore drilling unit
MPA ..... Marine Protected Area
MRI ..... Marshall Response Initiative
MSRC ..... Marine Spill Response Corporation
Mt ..... metric tonne
NADW ..... North Atlantic Deep Water
NAFO ..... Northwest Atlantic Fisheries Organization
NAO ..... North Atlantic Oscillation
NAPS ..... National Air Pollutant Survey
NCNS ..... Native Council of Nova Scotia
NEB ..... National Energy Board
NEBA ..... Net Environmental Benefit Analysis
NEEC ..... National Environmental Emergencies Centre
NEFSC ..... Northeast Fisheries Science Centre
NOAA ..... National Oceanic and Atmospheric Administration
NO_X ..... nitrogen oxides
NPA ..... *Navigation Protection Act*
NRCan ..... Natural Resources Canada
NS ESA ..... Nova Scotia *Endangered Species Act*
NSDFA ..... Nova Scotia Department of Fisheries and Aquaculture
NSDOE ..... Nova Scotia Department of Energy
NSDNR ..... Nova Scotia Department of Natural Resources
NSE ..... Nova Scotia Environment
NWPA ..... *Navigable Waters Protection Act*
O_3 ..... ozone
OA ..... Operations Authorization
OCNS ..... Offshore Chemical Notification Scheme
OCS ..... Outer Continental Shelf
OCSG ..... *Offshore Chemical Selection Guidelines*
OD ..... outside diameter

OIM ..... Offshore Installation Manager
OPS ..... Operational Policy Statement
OSPAR ..... Oslo and Paris Commissions
OSRL-SWIS ..... Oil Spill Response Limited-Subsea Well Intervention Service
OSRP ..... Oil Spill Response Plan
OSV ..... offshore support vessel
OWTG ..... *Offshore Waste Treatment Guidelines*
PAM ..... passive acoustic monitoring
PCPA ..... *Pest Control Products Act*
PD ..... Project Description
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
POB ..... persons on board
Project ..... Shelburne Basin Venture Exploration Drilling Project
PTS ..... permanent threshold shift
RAA ..... Regional Assessment Area
RAM ..... Risk Assessment Matrix
RAPID ..... RAPID Climate Change Program
RDS ..... Royal Dutch Shell
RMS ..... root-mean-square
ROV ..... remotely operated underwater vehicle
RWCP ..... Relief Well Contingency Plan
SARA ..... *Species at Risk Act*
SBM ..... synthetic-based mud
SDL ..... significant discovery licence
SEA ..... strategic environmental assessment
SEFSC ..... Southeast Fisheries Science Center
SEP ..... Shell Exploration and Production
SFA ..... Scallop Fishing Area
SIMOPS ..... Simultaneous Operations

SMS ..... Spill Management System
SO_2 ..... sulphur dioxide
SOCI ..... species of conservation interest
SOCP ..... *Statement of Canadian Practice*
SOEP ..... Sable Offshore Energy Project
SO_X ..... sulphur oxides
SPL ..... sound pressure level
SSIP ..... Scotian Shelf Ichthyoplankton Program
STP ..... Senior Tool Pusher
SWRP ..... Subsea Well Response Project
t ..... tonne
TAC ..... Total Allowable Catch
TC ..... Transport Canada
TL ..... transmission loss
TLP ..... tension leg platform
T_P ..... peak spectral period
TPH ..... total petroleum hydrocarbon
TSS ..... total suspended solids
TTS ..... temporary threshold shift
TUS ..... Traditional Use Study
TVD ..... true vertical depth
UA ..... Upstream Americas
UINR ..... Unama'ki Institute of Natural Resources
US ..... United States
US EPA ..... United States Environmental Protection Agency
UXO ..... unexploded ordnances
VC ..... valued component
VLT ..... Venture Leadership Team
VSP ..... vertical seismic profile
WAZ ..... wide azimuth
WBM ..... water-based mud

WCP ..... Well Containment Plan

WMP ..... Waste Management Plan

WSS ..... Western Scotian Shelf

WOVI ..... Winter Oil Vulnerability Indices

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