

**Scoping Document for the Strategic Environmental
Assessment for the Eastern Scotian Shelf and Slope–
Middle and Sable Island Banks**

Canada-Nova Scotia Offshore Petroleum Board

May 2012

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE- MIDDLE AND SABLE ISLAND BANK

Table of Contents

1.0 INTRODUCTION	1
2.0 BACKGROUND.....	1
3.0 GEOGRAPHIC SCOPE	2
4.0 OBJECTIVES	4
5.0 PAST AND CURRENT PETROLEUM ACTIVITY	4
6.0 SCOPE OF SEA	5
6.1 SCOPE OF THE PROJECT	5
6.2 SPATIAL AND TEMPORAL BOUNDARIES	6
6.3 FACTORS TO BE CONSIDERED.....	6
6.3.1 Valued Environmental Components	6
6.3.2 Scope of the Factors to be Considered	7
6.3.3 Potential Exploration Activities - Environment Interactions	8
6.3.4 Cumulative Exploration Activities - Environment Interactions.....	9
6.3.5 Effects of the Environment on the Project.....	9

7.0 CONCLUSIONS AND RECOMMENDATIONS	9
8.0 CONSULTATIONS	10

LIST OF APPENDICES

APPENDIX A Components and Activities Outside of the Scope

LIST OF FIGURES

Figure 1	SEA Proposed Project Areas for Phase 1A and Phase 1B.....	3
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SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

1.0 Introduction

This draft document describes the scope of two strategic environmental assessments (SEAs) for offshore petroleum exploration related activities in the marine area on the Eastern Scotian Shelf and Slope – Middle and Sable Island Banks. The Phase 1A SEA will address seismic and exploratory drilling on the Eastern Scotian Shelf - Middle and Sable Island Banks up to water depths of 180 m, and the Phase 1B SEA will address seismic and exploratory drilling on the Eastern Scotian Slope off Sable Island in water depths up to 5000 m (refer to Figure 1 for the SEA Proposed Project Areas which correspond to the NS12-1 Call for Bids area). This Scoping Document outlines the factors to be considered in the SEAs, the scope of those factors, and guidelines for the preparation of the SEA reports.

The Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) has the responsibility pursuant to the *Canada-Nova Scotia Offshore Resources Accord Implementation Act* and the *Canada-Nova Scotia Offshore Resources Accord Implementation Act (Nova Scotia)* (the Accord Acts) to ensure that offshore oil and gas activities proceed in an environmentally responsible manner. The CNSOPB conducts SEAs in those areas offshore Nova Scotia that may have the potential for offshore petroleum exploration activity but that were not subject to a recent SEA nor to recent and substantial project-specific environmental assessments, such as a Comprehensive Study or Panel Review under the *Canadian Environmental Assessment Act* (CEAA). In addition, the CNSOPB endeavours to review SEAs within five years of completion to determine validity.

This draft scoping document has been prepared by the CNSOPB, and will be subject to regulatory and stakeholder review before finalization.

2.0 Background

SEA incorporates a broad-based approach to environmental assessment (EA) that proactively examines the environmental effects that may be associated with a plan, program or policy proposal and that allows for the incorporation of environmental considerations at the earliest stages of program planning. SEA typically involves a broader-scale (*i.e.*, regional, sectoral) assessment that considers the larger ecological setting, rather than a project-specific EA that focuses on site-specific issues with defined boundaries.

In this particular case, information from these SEAs will assist the CNSOPB in its determination in respect to the potential issuance of future exploration rights within the Eastern Scotian Shelf and Slope – Middle and Sable Island Banks SEA areas and may identify general restrictive or mitigative measures that should be considered for application to consequent exploration activities.

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

An exploration license confers:

- The exclusive right to explore, drill and test for petroleum;
- The exclusive right to develop those portions of the offshore area in order to produce petroleum; and
- The exclusive right, subject to compliance with the other provisions of the Accord Acts, to apply for a production license.

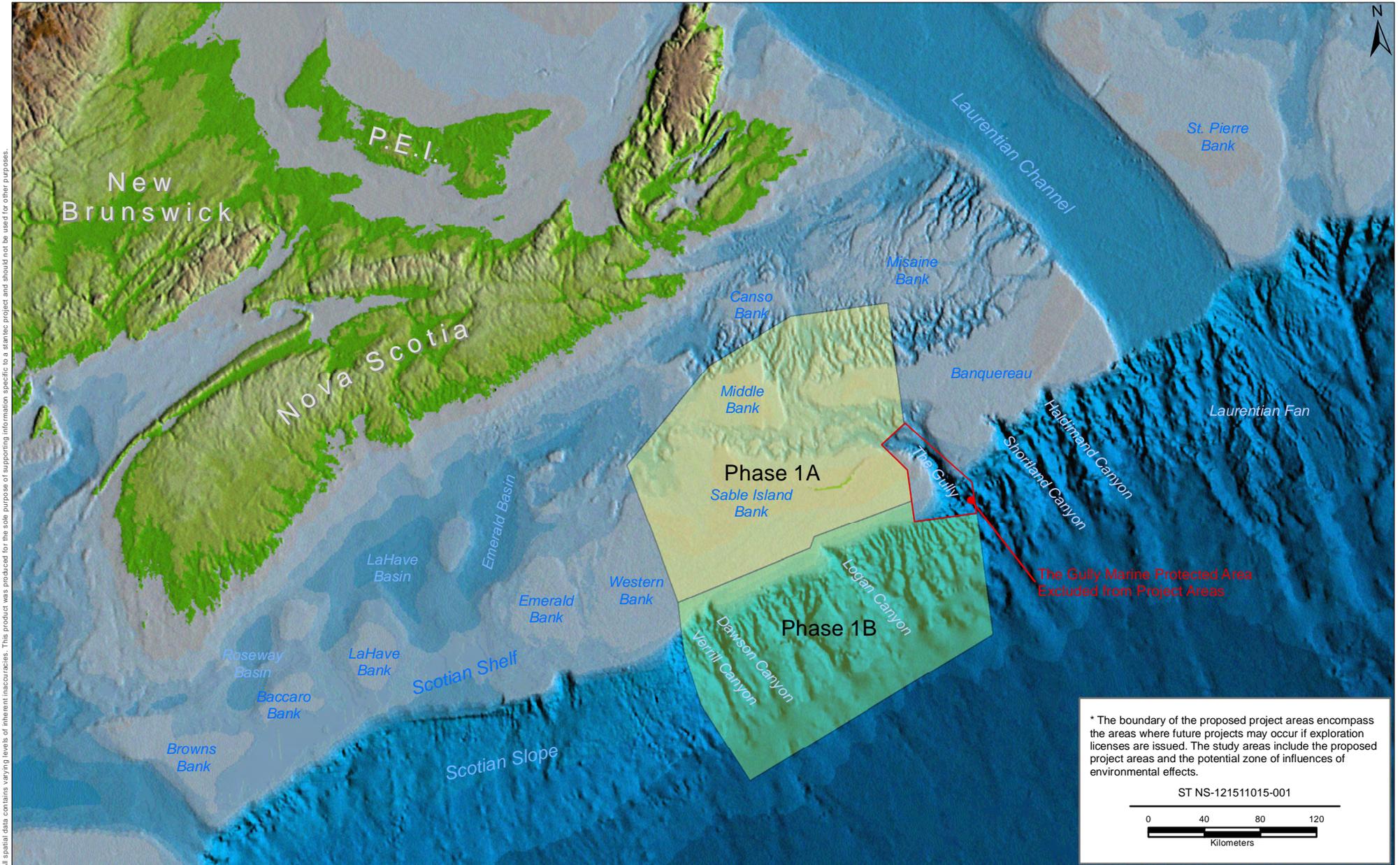
Activities associated with exploration licenses may include: conduct of seismic surveys, other geophysical surveys and geotechnical surveys; drilling of wells (either exploration or delineation); and well abandonment.

Each of these activities requires the specific approval of the CNSOPB, including a project-specific assessment of its associated environmental effects in accordance with the CEAA. The SEA does not replace this requirement for a project-specific EA. However, the SEA assists in focusing these EAs by providing an overview of the existing environment, discussing in broader terms the potential environmental effects associated with offshore oil and gas exploration activities in a large area or region, identifying knowledge and data gaps, highlighting issues of concern, and making recommendations for mitigation and planning.

3.0 Geographic Scope

The SEA proposed project areas encompass the areas shown on Figure 1. Projects areas are those areas included in the NS12-1 Call for Bids lands, and therefore could be included in any potential resulting Exploration Licence lands. As per guidance from the Canadian Environmental Assessment Agency¹, the spatial domain of the SEA study areas may extend beyond the boundaries of the project areas where relevant, to include potential project interactions with the Valued Environmental Components (*i.e.*, within zones of influence of certain project discharges/emissions). Lands within the Gully Marine Protected Area (MPA) are not included within the NS12-1 Call for Bids lands, and would not be included in any potential resulting Exploration Licence lands. Therefore assessment of potential impacts on the Gully MPA is included in the SEA study area, but the Gully MPA is excluded from the Phase1B project area (see boundary lines defined in Figure1). Within the entire Phase 1 SEA study area, water depths range from 80 m to 5000 m. The Phase 1A SEA encompasses the Middle and Sable Island Banks in water depths up to 180 m, whereas the Phase 1B SEA encompasses the Gully MPA and water depths up to 5000 m.

¹ Operational Policy Statement entitled “The Process for Defining the Spatial Boundary of a Study Area During an Environmental Assessment of Offshore Exploratory Drilling Projects” (CEA Agency 2003).



All spatial data contains varying levels of inherent inaccuracies. This product was produced for the sole purpose of supporting information specific to a stantec project and should not be used for other purposes.

* The boundary of the proposed project areas encompass the areas where future projects may occur if exploration licenses are issued. The study areas include the proposed project areas and the potential zone of influences of environmental effects.

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CLIENT: Canada - Nova Scotia Offshore Petroleum Board

Eastern Scotian Shelf and Slope - Middle and Sable Island Banks Strategic Environmental Assessment

Strategic Environmental Assessment Proposed Project Areas*

FIGURE NO.:	1
DATE:	May 11, 2012

4.0 Objectives

Each SEA will:

- Provide an overview of the existing environment;
- Generally describe typical offshore oil and gas exploration activities (production activities are excluded);
- Describe and evaluate potential adverse environmental effects associated with offshore oil and gas exploration, including cumulative effects from existing production projects within the study areas;
- Identify knowledge and data gaps;
- Identify species of special status and special areas that may interact with exploration activities;
- Make recommendations for general mitigation measures that should be employed during offshore petroleum exploration activities;
- Identify, where appropriate, activities/areas requiring enhanced levels of mitigation; identify, if feasible, the level of enhanced mitigation required;
- Identify follow-up measures (*i.e.*, environmental effects monitoring), as appropriate, that may be required to verify environmental assessment predictions related to future offshore petroleum exploration activities; and
- Assist the CNSOPB in its determination in respect to the potential issuance of future exploration rights within the SEA areas of the Eastern Scotian Shelf and Slope – Middle and Sable Island Banks.

5.0 Past and Current Petroleum Activity

The SEA proposed project areas, particularly the Phase 1A project area, have been the most extensively exploited in terms of oil and gas exploration in the Nova Scotia offshore². Several significant discovery licenses and production licenses demonstrate proven hydrocarbon

² The discussion on past exploration activity is based on the following source: Canada – Nova Scotia Offshore Petroleum Board, Call for bids 2011-12, Exploration History
http://www.cnsopb.ns.ca/call_for_bids_11_1/cnsopb/exploration_history.html

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

resources in this area, including the Sable Offshore Energy Project gas field, Deep Panuke gas field, and the Cohasset-Panuke oil field. The Sable Offshore Energy Project includes development of Thebaud, North Triumph, Venture, Alma, and South Venture gas fields. A central processing platform exists at Thebaud, with satellite platforms at Venture, North Triumph, Alma and South Venture. The Deep Panuke Offshore Gas Development, which is preparing for first gas in 2012, involves a Production Field Centre (PFC) and various subsea production wells. Both projects include subsea pipelines transporting natural gas to landfall near Goldboro, Nova Scotia. The Cohasset-Panuke project, which operated from 1992 to 1999 and has since been decommissioned, was Canada's first offshore oil project.

Hydrocarbon exploration offshore Nova Scotia began in 1959 in the Sable Island region with the first well being drilled on Sable Island in 1967. Between 1967 to 1978, 71 wells were drilled and 140,000 km of 2D seismic profiles were acquired. During this phase of offshore exploration several significant oil/gas discoveries were made, including at Onodaga (Shell, 1969-gas), West Sable (Mobil, 1971 – oil and gas), Primrose (Shell, 1972 – oil and gas), Citnalta (Mobil, 1972-gas), and Intrepid (Mobil, 1972-gas).

A second phase of explorations occurred from 1979 to 1989, resulting in a major gas discovery just east of Sable Island at Venture by Mobil and Petro Canada. By the end of this second phase of exploration, 54 wells were drilled, with 15 significant discoveries being made.

A third phase of exploration began in late 1989 with a two-level approach exploring the shallow Scotian Shelf and the deep-water Scotian Slope with the announcement to develop light oil discoveries at Cohasset and Panuke and six gas fields in the Sable Island area in 1996 by Mobil, Shell, and partners. In 1998, large tracts of the deep-water Scotian Slope were acquired by industry following the acquisition of a large volume of 2D and 3D seismic data. Six wells were drilled between 2002 and 2004. Since 2004, no wells have been drilled in the shallow and deep-water regions of the Scotian Basin.

6.0 Scope of SEA

6.1 SCOPE OF THE PROJECT

The SEAs (for Phases 1A and 1B) will describe all foreseeable offshore oil and gas exploration activities in the study area. It will examine potential environmental interactions associated with these petroleum exploration activities. Exploration activities to be considered in the SEA include exploratory and delineation drilling, seismic survey activities (2D, 3D, vertical seismic profiling, geohazard surveys), geotechnical surveys, and wellsite abandonment. The focus of the SEA will be on offshore exploration activities (and interactions with the environment of those activities) which are under the jurisdiction of the CNSOPB. The SEA will describe where data and information are lacking, or limited. Suggestions for strategies to address data gaps will be identified.

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6.2 SPATIAL AND TEMPORAL BOUNDARIES

The spatial boundary for exploration activities to be considered in the Phase 1A and Phase 1B SEAs is shown in Figure 1. The boundaries for the study areas will be chosen based on the upcoming 2012 Call for Bids and will take into consideration the Operational Policy Statement entitled “The Process for Defining the Spatial Boundary of a Study Area During an Environmental Assessment of Offshore Exploratory Drilling Projects” (CEA Agency 2003).

The SEAs will include the offshore petroleum exploration activities, as described in the preceding section, which may occur within the Call for Bids NS 12-1 area. The SEAs will be reviewed in at least five years to determine validity.

6.3 FACTORS TO BE CONSIDERED

This section outlines the Valued Environmental Components (VECs) to be assessed in the SEAs and includes rationale for the inclusion of each of these components. Appendix A describes those components that will not be considered in the SEA because experience and research has shown that they are unlikely to be adversely affected by petroleum exploration activities. Rationale for the exclusion of these components, and specific mitigation that must be implemented to allow for their exclusion in the SEAs, are also included in Appendix A. These exclusions are considered outside the scope of the SEAs and do not require assessment.

6.3.1 Valued Environmental Components

Each VEC (including components or subsets thereof) will be identified and the rationale for its selection provided. VECs could include “Species of Special Status”, “Special Areas”, “Fisheries”, and “Other Ocean Uses” of importance in the vicinity of the study area since these categories appear to cover environmental components to be potentially adversely affected by offshore hydrocarbon exploration activities.

Species of Special Status

Species of Special Status includes consideration of the following species and their critical habitat which may be present in the SEA study area and determined to be potentially affected during exploration activities: species designated as at-risk under the *Species at Risk Act* (SARA); species assessed as endangered, threatened, or of special concern by the Committee on the Status of Endangered Wildlife of Canada (COSEWIC) and/or migratory birds protected by the *Migratory Birds Convention Act, 1994*. These are expected to include, but may not be limited to, loggerhead turtle, fin whale, northern bottlenose whale, blue whale, Sowerby’s beaked whale, grey seal, sperm whale, coral/sponges, and migratory birds.

Special Areas

Designated areas of special interest due to their ecological and/or conservation sensitivities (*i.e.*, marine protected areas, existing or future coral conservation zones, fish conservation

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

areas, etc.) could be potentially affected by exploration activities in the SEA study area. At a minimum, this discussion will include consideration of the Middle Bank Area of Interest candidate, the Sable Island Bank, including Sable Island National Park Reserve, the Haddock Box, the Gully MPA, and ecologically and biologically significant areas (EBSAs) (e.g., nearby canyons, corals and sponges). The scope of the VEC also includes the inhabitants of the special area which may not be covered under the Species of Special Status VEC.

Fisheries

Commercial, recreational and aboriginal fisheries (including relevant fish species) that could be affected by exploration activities in the SEA study area will be considered. The focus of the assessment of this VEC is on potential disruptions to commercial fishing activities, including aboriginal fisheries interests as applicable, through environmental effects on fisheries resources, displacement from current or traditional fishing areas, or gear loss or damage resulting in a demonstrated financial loss to commercial fishing interests. Key fisheries to consider in the area include sea cucumber, shrimp, snow crab and other crab fisheries, large pelagics (e.g., tunas, swordfish, sharks), halibut, groundfish, offshore scallop, offshore clam (surf clam on western Sable Island Bank), whelk, and quahog (western Banqereau).

Other Ocean Uses

Other ocean uses that could be affected by exploration activities in the SEA study area (*i.e.*, marine shipping, military use, research surveys, and other petroleum development activities, etc.) will also be considered.

6.3.2 Scope of the Factors to be Considered

Each SEA will include the following:

- Historical overview of offshore petroleum exploration activities in the study area and a discussion of regional offshore oil and gas activities in the Nova Scotia offshore area;
- Overview of typical offshore petroleum exploration activities (well site surveys, vertical seismic profiling, 2D/3D seismic, geotechnical programs, exploration drilling (including onshore to offshore drilling), well abandonment) and methods to carry out these activities (including a brief description of various types of rigs and vessels);
- Overview of the physical and biological environments in the SEA study area based on existing information and data, with data gaps highlighted;
- Overview of other marine activities in the SEA study area (e.g., commercial and recreational fisheries, marine transportation);
- Identification and qualitative assessment of potential environmental interactions of the VECs with petroleum exploration activities;

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

- Identification of mitigation measures and monitoring that might be considered in project-specific EAs for offshore activities to minimize residual effects, highlighting specific or “non-typical” mitigation that may be required to address specific concerns especially those proposed for any Species of Special Status or Special Areas identified within or adjacent to the SEA study area;
- Discussion of potential planning implications/considerations (*i.e.*, need for additional data, special mitigation) which may have to be considered in project-specific EAs within the SEA study area;
- General discussion of effects and mitigation of potential accidental events and malfunctions associated with offshore oil and gas exploration activity; and
- General discussion of potential cumulative environmental effects associated with multiple offshore human use activities in the study area based on past, present and an estimate of potential future human use activity.

The SEAs will consider the environmental factors and issues outlined in Sections 6.3.3-6.3.5, as a minimum, with emphasis upon factors unique to the SEA study areas. Sufficient supporting information will be provided, or referenced and summarized if it already exists in publicly available publications. Substantive uncertainties or information gaps will be identified.

6.3.3 Potential Exploration Activities - Environment Interactions

For each of the identified VECs, a description of the interactions of petroleum exploration activity with the environment will be presented. Proposed activities include:

- Seismic surveying;
- Seabed surveying (*i.e.*, geophysical, geotechnical data collection);
- Vertical seismic profiles (VSPs);
- Exploratory/delineation drilling (*e.g.*, mobile offshore drilling unit (semi- submersible or drill ship)) and ancillary activities;
- Vessel traffic (*e.g.*, supply vessels, seismic vessels, helicopters); and
- Well abandonment operations.

Potential project interactions include, but are not limited to the following:

- Underwater noise (*e.g.*, during seismic surveying, seabed surveying, drilling) issues (*e.g.*, hearing loss, behavioural effects, *etc.*) on Species of Special Status and commercial fish species;

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

- Effects (e.g., smothering, toxicity) of operational discharges (i.e., drill wastes) on Species of Special Status and commercial fish species, particularly bottom-dwelling fish and shellfish species;
- Interference with fisheries and other ocean uses during routine operations (i.e., seismic surveying, seabed surveying, drilling) and/or accidental events (e.g., large oil spill, blow-out);
- Attraction (due to lights and/or flares) of bird Species of Special Status to platform structures or support vessels; and
- Effects of accidental events (e.g., large condensate spill) on all VECs.

6.3.4 Cumulative Exploration Activities - Environment Interactions

Cumulative environmental effects will be examined in consideration of the past, present and estimate of potential future petroleum activities in the SEA study area and mitigation measures identified. Planned and reasonably foreseeable exploration activities will be included in the cumulative environmental effects assessment and it will also consider other non-petroleum activities ongoing in the SEA study area (and adjacent Shelf and Slope areas) such as commercial fishing, marine traffic, and fisheries research surveys.

6.3.5 Effects of the Environment on the Project

For exploration activities identified, the SEA will include a discussion of the physical environmental conditions which could potentially affect exploration activities, including earthquakes, tsunamis, turbidity current, and significant storm (severe winds and waves) events within the SEA study area.

7.0 Conclusions and Recommendations

Based on the information presented in the physical and biological environment overview, the description of potential exploration activities-environment interactions and the application of mitigation measures, conclusions will be presented and planning approaches recommended for the CNSOPB to consider in the issuance of exploration licenses in the SEA study areas. Data gaps with potential to affect the validity of these conclusions will be highlighted. It is anticipated that any data gaps identified will not compromise the ability to identify the likelihood of potentially significant impacts with an adequate level of certainty for this assessment. Should project-specific EAs be conducted in areas where data gaps are identified in this, or other, studies, these data gaps will need to be addressed at the project-specific EA level.³ Sensitive

³ Refer to the Hurley Environment Ltd. 2009. Environmental Assessment Biophysical Data Gap Study – Petroleum Exploration Activities on the Offshore Scotian Shelf and Slope for more information on data gaps and recommended research.

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

issues, particularly those of public concern identified during the SEA process, will also be highlighted.

8.0 Consultations

Throughout the development of the SEAs, the CNSOPB and its contractor will consult with federal government departments, the fishing industry and other ocean users, and local non-governmental organizations. Information on the SEA process will be provided and stakeholders will be encouraged to discuss issues and concerns that are relevant to the SEA study areas and SEA objectives. SEA documents will be posted on the CNSOPB Public Registry.

It is anticipated that the final draft SEAs will be published for public/stakeholder review and comment for a 5-week period commencing in August 2012. Comments received will be considered by the CNSOPB, and the SEAs revised as appropriate, with final SEA documents published in October 2012.

**SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE
EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK**

APPENDIX A

Components and Activities Outside of the Scope

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

The following components are proposed to be excluded from the scope of the SEA process based on limited interactions and/or standard mitigation.

I) Air Quality

Emission sources from the proposed project are seismic and other survey/support vessels and drilling rigs. It is anticipated that emissions from routine exploration-related operational activities will not cause an exceedence(s) of applicable air quality standards or guidelines. Since there are limited emissions sources and few receptors (if any) in the SEA study area, and given the short duration of exploration projects, assessment of potential effects on air quality can be excluded from the SEA and EAs provided that future license holders/operators adhere to:

- MARPOL Annex VI, Regulations for the Prevention of Air Pollution from Ships; and
- Air Emissions provisions of the Offshore Waste Treatment Guidelines, including submissions of greenhouse gas emissions.

However, malfunctions and accidental events (*i.e.*, blow-out) may have an environmental effect on air quality. An environmental assessment of the potential effects of air quality as a result of a blow-out on VECs proposed in Section 6.3 (*i.e.*, Species of Special Status, Special Areas, Fisheries, and Other Ocean Uses) is the appropriate focus for this assessment rather than “Air Quality” per se. Assessment of the environmental effects of malfunctions and/or accidental events is required as is stated in Section 6.3.

II) Water Quality

Assessment of the potential environmental effects of discharges from platforms/vessels on water quality during routine exploration activities can be excluded from the SEA and EAs provided that future leaseholders/operators adhere to:

- Nova Scotia Offshore Area Petroleum Geophysical Regulations;
- Offshore Waste Treatment Guidelines; and
- Fisheries Act (Section 36).

Compliance with the above requirements involves implementation of standard mitigation and will prevent adverse environmental effects on water quality for routine operations. However, malfunctions and accidental events (*i.e.*, oil spills) may have an environmental effect on water quality. An environmental assessment of the potential effects on water quality as a result of oil spills on VECs proposed in Section 6.3 (*i.e.*, Species of Special Status, Special Areas, Fisheries, and Other Ocean Uses) is the appropriate focus for this assessment rather than Water Quality per se. Assessment of the environmental effects of malfunctions and/or accidental events is required as is stated in Section 6.3.

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

III) Fish

Fish species of special status, important feeding, nursery, and/or spawning grounds for fish (*i.e.*, Middle Bank), and commercial and Aboriginal fisheries resources are addressed under relevant VECs (Species of Special Status, Special Areas, and Fisheries VECs) and assessed as stated in Section 6.3. Fish species which are not species of special status, don't support fishery resources or other fish species of special status, and are not present in such abundance for a special area to be designated for that species, are excluded from the SEA and EAs provided that future licenses holders/operators adhere to:

- Statement of Canadian Practice with Respect to the Mitigation of Seismic Noise in the Marine Environment (SOCP).

The SOCP was developed as a result of an extensive review by federal and provincial government advisors and scientific experts of the most effective and appropriate mitigation measures used world-wide to minimize adverse environmental effects on marine life. Compliance with the SOCP, which is reviewed and updated regularly, will result in minimization and/or avoidance of adverse residual environmental effects on marine fish and other marine life.

IV) Marine Benthos

Discharges of drilling mud and rock cuttings during exploration drilling can result in burial or toxic effects on the marine benthos. Based on past environmental effects monitoring results and other research studies, these effects are understood to be limited spatially and temporally. However, in recognition of sensitive and/or commercially important benthic species that may occur within the SEA study area (*e.g.*, sponges, corals, scallop, clam, quahog, crab, shrimp, and sea cucumber), these effects will be assessed in the Special Areas and Fisheries VECs, respectively, as stated in Section 6.3. No further assessment of marine benthos is required at this time.

V) Marine Mammals and Sea Turtles

As stated in Section 6.3, the potential for environmental effects on marine mammal and/or sea turtle Species of Special Status that may occur within the SEA study area, as well as those species that may occur in nearby designated environmentally sensitive areas will be assessed under the Species of Special Status VEC and Special Areas VEC respectively. Provided that appropriate mitigation is applied for species of special status, it is not anticipated that exploration activities will have an adverse environmental effect at the population level for secure populations of marine mammals or sea turtles.

No further assessment beyond that stated in Section 6.3 will be required provided that:

- The proponent adheres to mitigation measures outlined in the Statement of Canadian Practice with Respect to the Mitigation of Seismic Noise in the Marine Environment for marine mammals and sea turtles.

SCOPING DOCUMENT FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR THE EASTERN SCOTIAN SHELF AND SLOPE– MIDDLE AND SABLE ISLAND BANK

As stated in Section 6.3, the proponent should note that additional mitigation may be required following the conduct of a project-specific EA.

VI) Seabirds

It is recognized that the attraction of any avian species to lights on platforms/vessels or to flares during drilling operations/well testing, may cause injury or death from collisions or may disrupt migrations. An environmental assessment of the potential adverse environmental effects on avian species of special status (including migratory birds) will be carried out under the Species of Special Status VEC, as outlined in Section 6.3. Population level effects on seabirds, however, are not anticipated.

As stated in Section 6.3, the proponent should note that additional mitigation may be required following the conduct of a project-specific EA.

No further assessment of environmental effects on seabirds not assessed in Section 6.3 shall be required, provided that:

- The SEA and EAs consider the potential impacts of vessel lights/flares on avian species of special status (including migratory birds) and identify any necessary mitigation measures (*i.e.*, should birds land on vessels involved with the project, then implementation of the Williams and Chardine handling protocol brochure entitled “The Leach’s Storm Petrel: General Information and Handling Instructions” should be carried out. A permit is required from the Canadian Wildlife Service of Environment Canada to implement this protocol).