
Project Description

SEABED SURVEY - POTENTIAL SABLE SUBSEA SATELLITES DEVELOPMENT

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Submitted by:

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In association with Stantec Consulting



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1 INTRODUCTION

ExxonMobil Canada Properties (EMCP) operates the Sable Offshore Energy Project (SOEP). This project, which underwent a Joint Panel Environmental Review under the *Canadian Environmental Assessment Act* (CEAA), was approved by the Government of Canada in December, 1997. The SOEP includes development of six natural gas fields (Thebaud, Venture, North Triumph, South Venture, Alma, and Glenelg) near Sable Island with associated interfield flowlines, a raw gas/condensate subsea gathering pipeline to shore and onshore gas and liquids processing. All these fields, with the exception of Glenelg, are currently in production.

The eastern Sable Island Bank area includes some discovered, undeveloped fields which are under various ownership arrangements (see Section 2.1.2 below). EMCP and its co-venturers are considering the feasibility of bringing in additional gas supplies to the SOEP from some undeveloped fields including Glenelg and Citnalta, and potentially from additional prospects in the same general vicinity as these fields and flowline route corridors indicated on Figure 1 below. The potential Sable Subsea Satellites development could involve one or more wells in each of the fields or prospects with a buried flowline(s) from well(s) location to selected SOEP platforms which are currently in production. In addition, a separate and smaller-diameter insulated flowline (for hydrate management) along with an umbilical (for hydraulic or electrical control) will be associated with each flowline.

As part of the evaluation, a seabed survey is required to help identify potential hazards at potential well(s) locations and flowline routes in all or a subset of the aforementioned undeveloped fields. Potential hazards include drilling hazards such as shallow gas and steep or unstable substrates, or potential construction and flowline installation and operational hazards.

This document is a project description for such a seabed survey and includes a proposed scope of an environmental assessment (EA) for the purpose of initiating the EA process required under the CEAA. A 'screening' level EA is required under the CEAA since the survey requires authorization from the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) which is a federal authority under CEAA and the seismic component of the survey is not included on the Comprehensive Study List Regulations pursuant to the CEAA. The CNSOPB will be a Responsible Authority and will lead the EA process under the CEAA for this project. This Project Description is submitted to the CNSOPB for its review and distribution to other potentially interested government agencies such as the Department of Fisheries and Oceans (DFO) and Environment Canada.

2 PROJECT DESCRIPTION

2.1 GENERAL INFORMATION

2.1.1 General

Name of Project	Seabed Survey- Potential Sable Subsea Satellites Development
Proposed Project location(s)	Figure 1 shows proposed Significant Discovery Licenses (SDLs) within which well site locations may be located, along with potential flowline route corridors to existing SOEP platforms.
Nature of Project	<p>EMCP requires site-specific information at selected locations prior to potential development of subsea facilities associated with the SOEP. Associated with development of wellsites within the SDLs will be flowline installation between selected wellsites and existing SOEP production infrastructures.</p> <p>The proposed seabed survey will collect site specific information to identify potential drilling hazards such as shallow gas and steep or unstable substrates, potential construction and flowline installation and operation hazards and benthic habitat data.</p>
Overall Project Schedule	<ul style="list-style-type: none"> • Project Description for seabed survey submitted early January 2010 • Target tender invitations for seabed surveys by early 2010 • Contract in place by March 1, 2010 • EA submitted to CNSOPB by March 1, 2010 • Work authorization required by early May. • Field program target start – June 1, 2010.

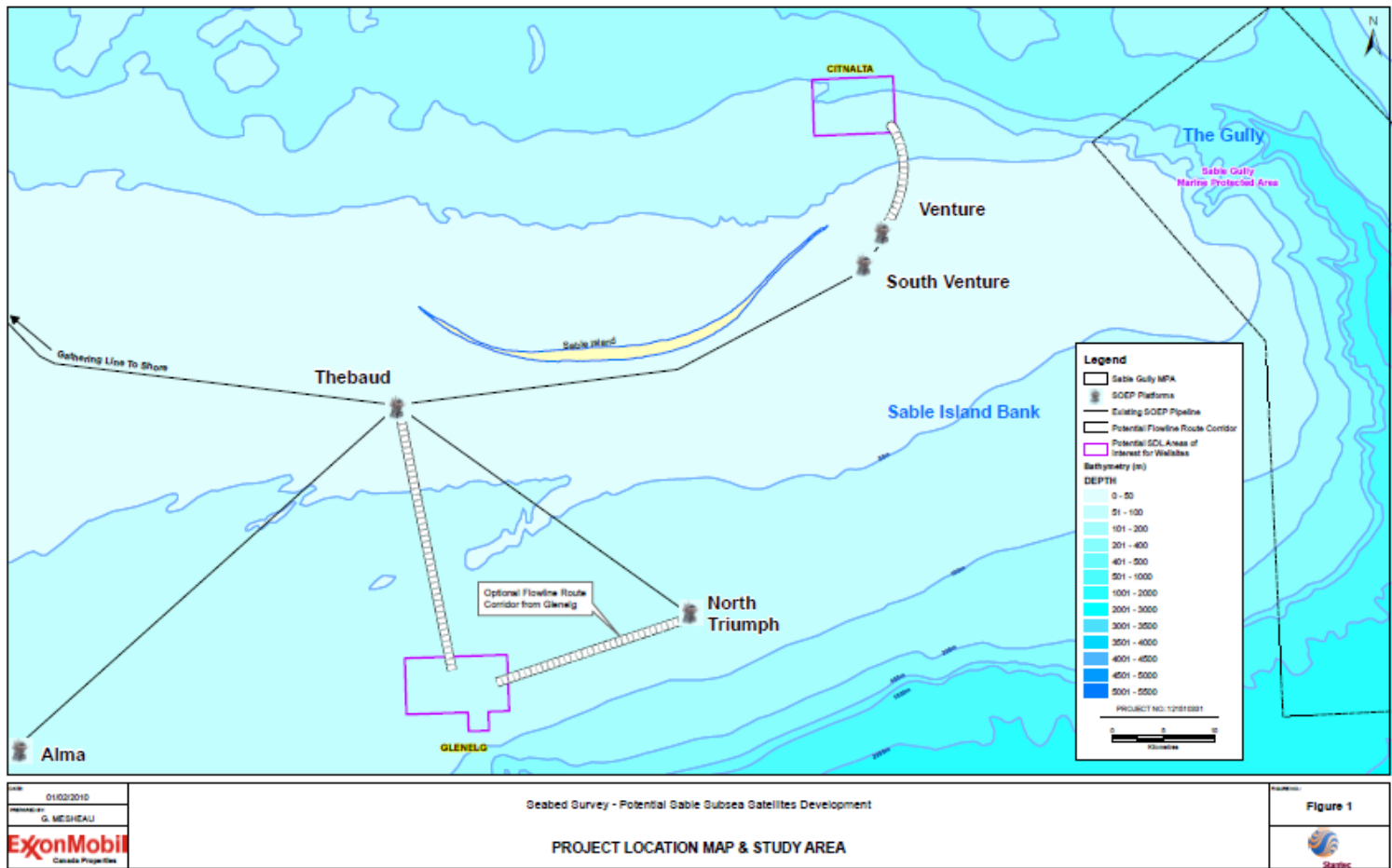
2.1.2 Contacts

Proponent	ExxonMobil Canada Properties (EMCP)
Co-venturers	Imperial Oil Resources, Shell Canada Energy, Pengrowth Corporation, Mosbacher Operating Ltd <i>Note: Percent Ownership varies for each SDL</i>
Contact person for proponent	Mr. J.G. (Greg) MacDonald Regulatory & Environment Supervisor 1701 Hollis Street. P.O. Box 517 Halifax, Nova Scotia B3J 3M8 902-496-4915 j.gregory.macdonald@exxonmobil.com

2.1.3 Required Authorizations/Permits for the Project triggering CEAA

"Project" under CEAA	Under Section 19.1 of the Inclusion List Regulations, physical activities that require an authorization referred to in Section 142(1) (b) of the <i>Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act</i> and relate to a marine or freshwater survey during which the air pressure measured at a distance of one metre from the energy source is greater than 275.79 kPa (40 psi) require completion of an EA under the CEAA.
Screening Assessment	Geophysical surveys are not included in the Comprehensive Study List Regulations pursuant to the CEAA, therefore only a screening level assessment is required.
CEAA Triggers	
CNSOPB authorization	Amendments to the Federal Authorities Regulations pursuant to the CEAA in January 2001 designated the CNSOPB as a federal authority under the CEAA; and a permit (Geophysical/ Geological Work Authorization) from the CNSOPB is required pursuant to the provision contained in Sch.I, Part 1, (1.2) of the Law List Regulations pursuant to the CEAA..
NEB authorization	The Project does not require an authorization from the NEB since the flowlines associated with the development are not export lines (but gathering lines).
Federal government department or agency providing financial support to the Project	No federal funding is associated with this seabed survey project.

Figure 1 Project Location Map and Study Area



2.2 PROJECT INFORMATION: SEABED SURVEY

2.2.1 Project Components

Platform	<ul style="list-style-type: none"> The seabed survey will be undertaken by a contracted vessel or vessels, similar to other vessels used offshore Nova Scotia for similar seabed surveys. The vessels will be identified through a competitive bidding process.
Supply and servicing	<ul style="list-style-type: none"> <u>Supply base</u>: EMCP shore base, Dartmouth, NS

2.2.2 Project Activities

Seabed Surveying	<p><u>Purpose</u>:</p> <ul style="list-style-type: none"> Identify potential hazardous shallow gas, unstable substrate, and seabed obstructions and collect benthic habitat data at the targeted drilling locations (once precise locations for wellsites are identified) and along projected flowline route corridors at selected locations (refer to Figure 1 above). <p><u>Geophysical sampling</u>:</p> <ul style="list-style-type: none"> 2D high-resolution (2DHR) digital seismic consisting of a small air gun array and a single streamer 1,200 m or less in length, towed 2 - 4 m below the surface. Data will be acquired over an area approximately 1 km x 1 km (not including line turns) at each selected well site. Sub-bottom profiler, multi-beam echo-sounder, magnetometer and side-scan sonar (deployed over a 1 km X 1 km area at each selected well site location and along projected 1 km-wide flowline route corridors). <p><u>Geotechnical sampling</u>:</p> <ul style="list-style-type: none"> Seabed core sampling at each selected well site location and at approximately 1 km intervals along proposed flowline routes potentially using a variety of technologies including geotechnical boring (well site locations only), vibrocores and mini-seabed cone penetrometer technology (CPT). <p><u>Environmental sampling</u>:</p> <ul style="list-style-type: none"> Surficial sediment grab and underwater video drop camera at each well site location and at selected sampling stations along projected flowline route corridors. <p><u>Duration</u>:</p> <ul style="list-style-type: none"> The three data acquisition methods: geophysical, geotechnical, and environmental will require approximately 1-2 months including port call for crew
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	change. Seismic acquisition will require approximately 1-2 days at each well site location.
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2.2.3 Management of Routine Discharges/Emissions/Solid Waste

	See Table 1
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Sources	Characteristics	Management Plan
Generators, engine and utilities exhaust fumes on offshore vessels	CO ₂ , SO ₂ , NO _x , TSP The composition and amounts of these emissions depend on the loading, fuel type and engine efficiency of the equipment. Because of the short time frame for operations, amounts of greenhouse gases and other atmospheric emissions will be minimal.	Air emissions will comply with the <i>Air Quality Regulations</i> (Nova Scotia <i>Environment Act</i>) and Ambient Air Quality Objectives (<i>CEPA</i>). Air emissions will be reported as per Section 2.2 of the Offshore Waste Treatment Guidelines (NEB et al. 2002).
Lights	Vessel navigation lights, deck lights and underwater lights; night time for the duration of operations.	Compliance with the requirements of the Canada Steamship Act and safe operating practices.
Noise	<ul style="list-style-type: none"> - With the exception of 2DHR seismic, noise typically generated during the seabed survey will be low pressure (below the CEEA EA threshold pressures of 275.79 kPa at a distance of one metre from the seismic source (i.e., 229 dB re 1 µPa@1m) and of high frequencies which will attenuate over a short time and distance. - A wellsite survey airgun array (4X 40 cu. inch = 160 cu. inch) is a much smaller sound source than a large-scale seismic array (~3000-6000 cu. inch) for a typical 2D or 3D exploration seismic survey. - Seismic acquisition at each wellsite location will take place over a period of approximately 24 hours over a 1 km² area versus a few weeks/months over 100's/1000's of km² for typical 2D and 3D seismic surveys. 	<p>Adherence to 'Canadian Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment' which outlines potential mitigation measures including shutting down survey operations when an endangered or threatened whale or turtle species is sighted within the safety zone.</p> <p>Adherence to Sable Island and the Gully Codes of Practice (refer to Appendix A).</p>
Bilge water	Potentially oily water	Treated to reduce oil concentration to <15 mg/L prior to ocean discharge; as per Offshore Waste Treatment Guidelines (NEB et al. 2002).
Ballast water	Potentially oily water	Treated to reduce oil concentration to <15 mg/L prior to ocean discharge; as per Offshore Waste Treatment Guidelines (NEB et al. 2002). The chartered survey vessel will comply with the <i>Ballast Water Control Land Management Regulations (2006)</i> under the <i>Canada Shipping Act</i> (including provisions to replace its ballast water before entering Canadian waters, if applicable).

Table 1 Routine Project Emissions/Discharges/Solid Waste		
Sources	Characteristics	Management Plan
Miscellaneous solid waste	Paper, cardboard, recyclable cans, bottles and plastic, wood, scrap metal, etc.	Transferred to shore for sorting, recycling and disposal according to requirements at the EMCP shore base including the Nova Scotia <i>Solid Waste-Resource Management Regulations</i> and other municipal requirements.

2.2.4 Environmental Protection Systems

<p>Emergency and Spill Response Plans</p>	<p>The ExxonMobil Canada East-Sable Facilities Emergency Response Plan addresses spill prevention and response for accidental spills of hazardous materials both on land and at sea.</p> <p>Environmental concerns related to spills in the marine environment include impact on marine wildlife (e.g., finfish, shellfish, birds, mammals, reptiles), commercial fisheries operations (e.g. tainting of fish, imposition of fishing exclusion areas), and on sensitive areas such as the Gully Marine Protected Area (MPA) and Sable Island. The plan specifically addresses chemical management, bulk transfers, sewage treatment, helicopter fuelling and maintenance, and environmental Codes of Practice.</p> <p>EMCP is committed to taking preventative steps in avoiding spills, leaks and discharges from reaching the environment. These preventative steps include: identifying and assessing potential sources and causes of leaks and spills and adjusting process equipment and operating practices accordingly. Steps to minimize effects of spills include spill containment measures and effective spill response training. Reporting procedures for spill incidents are also detailed in the Emergency Response Plan. EMCP has also developed an Environmental Effects Monitoring (EEM) Plan for Marine Oil Spills, which focuses on post-spill monitoring of valued ecosystem components in the Sable Island area.</p> <p>Practical EEM measures may include:</p> <ul style="list-style-type: none">• Estimate spill volume and oil type.• Visual assessment of slick.• Spill behaviour simulation and/or instrumental assessment.• Oil sampling for source identification.• Surveying shoreline of Sable Island to identify oil contamination and impact on wildlife; and collecting oil samples from the shoreline for source identification.• Visual surveys for local abundance of marine birds and oiled birds; and post-mortem examination of oiled birds for cause of death and oil source identification.• Sampling of seabed sediments, and/or target demersal/benthic fish species for testing.• Visual surveys for local abundance of marine
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	<p>mammals.</p> <p>In the event of a spill, EMCP will utilize equipment and trained personnel of the Eastern Canada Response Corporation (ECRC) located in Dartmouth, Nova Scotia as required. Spill response equipment, which is modularized, will be shipped in containers from the EMCP shorebase on supply vessels to the Sable Island area where equipment will be air-lifted to the spill site. Personnel and level of effort for the response on the island will be determined in consultation with the Sable Island Station Officer-In-Charge. Support services and equipment at the Sable Island Station (e.g., food, lodging, office facilities, maintenance, ATVs, etc.) will also be used if available.</p>
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2.3 PROJECT SITE INFORMATION

2.3.1 Environmental Features

Physical	
Marine physiography	A variety of bedforms have been observed in the mobile sands of Sable Island Bank. Many parts of the bank near Sable Island are in high-energy zones, which contain wave-formed ripples, shore-parallel sand bars, ridges or megaripples. 'LIDAR' imagery has shown expansion of the east bar of Sable Island toward the east. The sediment type at potential Sable Subsea Satellites development wellsites and flowline route corridors will consist predominantly of sand. More detailed information on the physical and chemical characteristics and of the seabed in the Project area will be known following analysis of samples/data collected during this survey.
Climatology ¹	<ul style="list-style-type: none"> • Daily mean air temperatures: from -1.3°C in Feb to 17.6°C in Aug • Extreme minimum air temperatures: from -19.4°C in Jan to 4.4°C in Jul/Aug • Extreme maximum air temperatures: from 12.8°C in Feb to 29.6°C in Jul • Average days of fog: from 4 in Dec to 22 in July
Wind ²	<ul style="list-style-type: none"> • Average wind speed (km/h): from 18 in Jul/Aug to 32 in Jan. • Most frequent wind direction: SW from Apr-Sep and W from Oct-Mar. • Extreme hourly speed (km/h): from 74 in Jul (E) to 130 in Nov (W). • Extreme gust speed (km/h): from 100 in Jul (E) to 174 in Nov (W).

¹ Environment Canada weather station on Sable Island, 2001.

² Environment Canada weather station on Sable Island, 2001

Waves ³	<ul style="list-style-type: none"> • Monthly mean Hsig (m): from 1.3 in Jun/Jul to 3.4 in Jan. • Monthly maximum Hsig (m): from 4 in Jun to 11.8 in Jan. • 1-year return Hmax (m): 14.7. • 100-year return Hmax (m): 24.
Ocean current ⁴	<ul style="list-style-type: none"> • Dominant current: seasonally varying SW flow along the Shelf edge, whose origins can be traced to events in the Labrador and Greenland Seas, predominant in all seasons. • Typical current speeds: 5-15 cm/s. • Peak current: near-surface flow of 30cm/s in the winter season.
Sea ice/icebergs ⁵	<ul style="list-style-type: none"> • <1% frequency of sea ice in the Project area (Sect. 3.6). • Icebergs very uncommon in the Project area.
Biological	
Ecosystem Components	See Table 2
Special Areas	<ul style="list-style-type: none"> • <u>Gully MPA</u>: The submarine canyon known as the Sable Gully is located on the edge of the Scotian Shelf, approximately 40 km east of Sable Island. This area was designated Marine Protected Area under the <i>Oceans Act</i> in 2004. The Gully provides year-round habitat for a population of endangered Northern Bottlenose Whales. Citnalta, the easternmost SDL, is approximately 20 km from the western corner of the Gully MPA. • <u>Sable Island</u>: Sable Island is a crescent shaped series of sand bars and dunes which extend approximately 40 km in length. The Island provides unique habitat to several flora and fauna species, some of which are endangered or of special concern. At present access to, and activities on, Sable Island are regulated under the legislative mandate of the Canadian Coast Guard, Department of Fisheries and Oceans (DFO), through the <i>Canada Shipping Act</i>, Sable Island Regulations. The island is also protected by the Migratory Bird Sanctuary (MBS) Regulations under the <i>Migratory Birds Convention Act</i>. The island is currently being considered for designation as a National Wildlife Area or National Park. (Appendix A). Existing SOEP production platforms are located closer to Sable Island than the Glenelg or Citnalta SDLs shown on Figure 1. The flowline from Citnalta is anticipated to be buried beyond the east bar of Sable Island. <p><i>Note: There are no other Environmental and Biological Sensitive Areas (EBSAs) within the Seabed survey study area (Fig. 1). DFO has recently nominated three EBSAs for designation as MPAs including Middle Bank which is immediately northeast of the Seabed survey study area.</i></p>

³ From wave measurements at the Cohasset field between 1993 and 2000

⁴ Hannah et al. 2001. Seasonal circulation on the Western and Central Scotian Shelf. *J. Phys. Ocean.* 31.

⁵ Environment Canada 1960-1999

Table 2 Ecosystem Components – Sable Island Bank Area	
BACKGROUND ON SPECIES AT RISK SCHEDULES	
Schedule 1	Official list of wildlife species at risk, including four categories: extirpated, endangered, threatened, or special concern. Only species that are on Schedule 1 are regulated by the SAR Act. ⁶ Includes species that had been assessed by COSEWIC after October 1999 when Parliament passed the Act in December 2002; and species assessed or re-assessed after December 2002 and added to Schedule 1 by the Governor in Council on the recommendation of the Minister.
Schedule 2	Includes species that were designated as endangered or threatened by COSEWIC prior to October 1999 and need to be reassessed using revised criteria. Once done, these reassessments are sent to the Minister who then follows the listing process and may decide to move the species to Schedule 1.
Schedule 3	Includes species that were designated as special concern by COSEWIC prior to October 1999 and need to be reassessed using revised criteria. Once done, these reassessments are sent to the Minister who then follows the listing process and may decide to move the species to Schedule 1.
FISH	
<ul style="list-style-type: none"> • Groundfish: The Scotian Shelf represents both the northern limit of some demersal fish species (e.g., pollock) and the southern limit of others (e.g., halibut). Commercial species found in the region include cod, halibut, haddock, flounder (spp.), American plaice, silver hake, and white hake. Other important non-commercial species include sand lance, winter skate, ocean pout, longhorn sculpin and the Atlantic sea-raven. Most groundfish shift from the upper areas of the banks in the summer, to deeper, warmer waters around the edges of the banks in winter. This includes cod, haddock, silver hake and American plaice. Those more tolerant of cooler water remain on the banks (e.g., flounder species and most skates). • Pelagic: The Scotian Shelf is an important area for large pelagic species, such as tuna and swordfish. Tuna move into the area in spring and summer, feeding on schools of herring and mackerel. Swordfish are in the area from late summer until fall. They may be found moving over Sable Island Bank during their inshore-offshore migrations. • Spawning: Concentrations of fish eggs and larvae of many species can be found on Sable Island Bank and the Gully during the spring and summer. Spawning aggregations of cod, haddock, silver hake, and flounder species can be found on Sable Island Bank during the spring. Cod, herring and sand lance spawn during the fall and winter on the edges of Sable Island Bank. Most demersal species found on Sable Island Bank spawn in the area. Information of the abundance and distribution of fish eggs and larvae is largely derived from the SSIP (Scotian Shelf Ichthyoplankton Program), which was carried out by DFO from 1976–1982. 	

⁶ For detailed information on SARA go to Government of Canada Species-at-risk Registry at http://www.sararegistry.gc.ca/default_e.cfm.

Table 2 Ecosystem Components – Sable Island Bank Area					
FISH SPECIES AT RISK					
Common name	Latin name	SARA Sched.	Range/Population	Risk category	Occurrence in Project Area
Atlantic whitefish	<i>Anarhichas lupus</i>	1	North Atlantic Ocean	Endangered (2000)	Unknown
Atlantic salmon	<i>Salmo salar</i>	1	Atlantic Ocean/ Inner Bay of Fundy	Endangered (2006)	Very Low (usually inner Bay of Fundy - summer/fall)
Northern wolffish	<i>Anarhichas denticulatus</i>	1	Atlantic Ocean	Threatened (2002)	Low (usually in deeper waters)
Spotted wolffish	<i>Anarhichas minor</i>	1	Atlantic Ocean	Threatened (2002); Recovery strategy (2008)	Low (usually in deeper waters)
Atlantic wolffish	<i>Anarhichas lupus</i>	1	North Atlantic Ocean	Special Concern (2000); Recovery strategy (2008)	Low (usually in deeper waters)
Atlantic cod	<i>Gadus morhua</i>	No status	Atlantic Ocean/ Maritimes population	Endangered in NFLD and Special Concern in Maritimes (COSEWIC, 2003)	Medium (peak spawning –winter deeper waters)
Winter skate	<i>Leucoraja ocelatta</i>	No status	Atlantic Ocean/Eastern Scotian Shelf	Threatened (2005)	Medium (shallow waters- summer)
Cusk	<i>Brosme brosme</i>	No status	Atlantic Ocean	Threatened (2003)	Medium (usually in deeper waters)
Porbeagle Shark	<i>Lamna nasus</i>	No status	Atlantic Ocean	Endangered (2004)	Low (usually in deeper waters)
White Shark	<i>Carcharodon carcharias</i>	No status	Atlantic Ocean	Endangered (2006)	Low (usually coastal areas)
MAMMALS					
<ul style="list-style-type: none"> • Concentration areas: Whales and seals are found throughout the Scotian Shelf, with particular concentrations around Sable Island and the Gully. • Baleen whales: move into the area as early as March along the Shelf Edge and are associated with Western and Emerald Banks. By summer, the humpback, blue, fin, sei, northern right and minke whales have spread across the Scotian Shelf and are closely associated with the deeper waters and Shelf Edge. Numbers of whales are highest during the period July to November. • Toothed whales: include the sperm, northern bottlenose, and pilot whales, which can be found on the Shelf year-round with greater numbers during the summer and early fall. Smaller toothed whales include the common, white-sided, white-beaked and striped dolphins, and the harbour porpoise. A non-migratory, breeding population of northern bottlenose whales can be found in the Gully year-round. • Seals: The dominant seals in the study area include grey and harbour seals. They are widespread over the Shelf and inshore waters. However, harp, ringed and hooded seals have become more common on the Scotian Shelf and have been reported in the Sable Island area. 					

Table 2 Ecosystem Components – Sable Island Bank Area					
MAMMAL SPECIES AT RISK					
Common name	Latin name	SARA Sched.	Range/Population	Risk category	Occurrence in Project Area⁷
Blue whale	<i>Balaenoptera musculus</i>	1	Atlantic and Pacific Oceans	Endangered (2005)	Very Low (usually in deeper waters)
Fin whale	<i>Balaenoptera physalus</i>	3	Atlantic and Pacific Oceans	Special Concern (2005)	Medium (usually in deeper waters)
Humpback whale	<i>Megaptera novaeangliae</i>	3	Western North Atlantic Ocean	Special Concern (2004)	Medium (usually coastal areas)
Northern Bottlenose whale	<i>Hyperoodon ampullatus</i>	1	Scotian Shelf	Endangered (2006)	Very Low (concentrated in Gully MPA)
North Atlantic Right whale	<i>Eubalaena glacialis</i>	1	North Atlantic	Endangered (2005); Recovery strategy (2009)	Very Low (mostly on Western Scotian Shelf & Bay of Fundy)
Sowerby's Beaked whale	<i>Mesoplodon bidens</i>	3	Atlantic Ocean	Special Concern (2006)	Very Low (rarely sighted; usually in deeper waters)
TURTLES					
Three species of sea turtle are known to occur off the Atlantic Canadian Coast, including the leatherback, Atlantic loggerhead and Kemp's Ridley. Another species, the green turtle, is a wide ranging species and may be an occasional visitor to the area.					
TURTLE SPECIES AT RISK					
Common name	Latin name	SARA Sched.	Range/Population	Risk category	Occurrence in Project Area
Leatherback turtle	<i>Dermochelys coriacea</i>	1	Atlantic and Pacific Oceans	Endangered (2002); Recovery strategy (2007)	Low (wide ranging over Scotian Shelf during summer months)
BIRDS					
<ul style="list-style-type: none"> Species: over 25 species of seabirds have been observed on the Scotian Shelf. The offshore seabird community of the Scotian Shelf consists primarily of shearwaters and storm-petrels during the summer months, and in winter, kittiwakes, fulmars and alcids (Dovekie, Common and Thick-billed Murres, Razorbill and Atlantic Puffin). The endangered Roseate Tern has been observed nesting on the Sable Island in previous years. The Ipswich Sparrow, a species of special concern, nests almost exclusively on Sable Island. Distribution: depends on availability and distribution of preferred prey and breeding status of the species. Most species in the offshore waters are truly pelagic, spending all their time at sea. However breeding gulls and terns from Sable Island may be present in the vicinity of the island. 					

⁷ Relative to other parts of the Study area and the Scotian Shelf region

Table 2 Ecosystem Components – Sable Island Bank Area					
BIRD SPECIES AT RISK					
Common name	Latin name	SARA Sched.	Range/ Population	Risk category	Occurrence in Project Area
Roseate tern	<i>Sterna dougallis</i>	1	Atlantic, Indian and Pacific Oceans	Endangered (2002); Recovery strategy (2006)	High (Sable Island)
Ipswich sparrow (Savannah sparrow)	<i>Passerculus sandwichensis princeps</i>	1	Nova Scotia - Sable Island	Special Concern (2000)	High (Sable Island)
MARINE BENTHOS					
<ul style="list-style-type: none"> • Dominant benthos: Dominant invertebrate species present on Sable Bank include sponges, sea cucumbers, and sand dollars. Biomass and animal numbers are expected to be low to moderate and diversity moderate in most areas. The epibenthic community at Sable Subsea Satellites Project based on a 2003 baseline survey was not dominated by any single species. Snow crabs, scallops, burrowing anemones, sea urchins, and whelks were observed at many sampling sites in this survey. • Commercial invertebrates: Sea scallops are present in commercial quantities on small, localized beds which are mainly located on the western part of Sable Bank. Highest densities of ocean quahogs have also been found (2003 DFO/industry research survey) to occur on Sable Island Bank in a depth range of 40-60 m. Snow crab concentrations have been found in deeper waters (>80 m) along the edge of Sable Bank. Northern propeller clams occur on Sable Island Bank but are not currently harvested. • Other invertebrate species: Jonah crab, rock crab, toad crab, striped shrimp, hermit crabs, sea stars, and Northern shortfin squid. There are no known coral concentrations on Sable Island Bank. Coral colonies have been observed in the Gully MPA and along the Scotian Slope. 					

2.3.2 Ocean Use

Commercial Fish & Fisheries	<ul style="list-style-type: none">• <u>Groundfish</u>: The groundfish fishery takes place primarily along the southern and eastern edges of Sable Island Bank including the Gully MPA. Commercial groundfish species include redfish, cod, haddock, Atlantic halibut, pollock, skate, hake white, catfish, monkfish, plaice, cusk, flounders, turbot and argentine. Ground fishing gear includes loglines and bottom trawls. Logline fishing for halibut Atlantic halibut takes place primarily in the Gully MPA and associated feeder canyons area from January to April, usually at a depth range of 600-1,000 m.• <u>Pelagic</u>: Long lining for large pelagics such as tuna, swordfish and sharks concentrate along the Scotian Shelf break and slope, almost exclusively in waters deeper than 100 m. Drift loglines can be several kilometers in length. Herring is fished during May and June primarily along the northwestern and southwestern edges of Sable Island Bank from 100-500 m.• <u>Shellfish</u>: generally takes place 50-500 m depth. Sea scallops are concentrated in small-localized beds on Sable Bank. They are fished with heavy towed rakes. A fishery for Ocean quahogs, which are abundant and widespread in shallower areas of Sable Bank including the Sable Subsea Satellites Project wellsites and flowline routes, appears likely to develop in the future. They are fished with large towed hydraulic dredges. Snow crabs are fished with traps primarily along the northern edge of Sable Bank in deeper waters than the survey sites. Shrimp are fished with small mesh trawls in deep holes north of Sable Bank.• <u>Fisheries research surveys</u>: include opportunistic surveys (e.g., 2003 quahog survey) and regular surveys, such as:<ul style="list-style-type: none">- July groundfish (RV) survey- 4VWX halibut survey- 4VsW sentinel survey from spring to fall- 4VsW skate survey in mid-April to May <p>EMCP will consult with DFO to determine more precise information on research surveys including location and timing.</p>
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<p>'Other' Ocean Uses</p>	<ul style="list-style-type: none"> • <u>Commercial Shipping</u>: Offshore NS accommodates considerable commercial shipping to and from the eastern seaboard of the US and from the Great Lakes and Europe. Some ships may occur in the general vicinity of the Project. There is no single corridor by which the vessels pass. Commercial shipping follows dedicated routes and procedures upon nearing Halifax and the Strait of Canso. Outside of these controlled areas, mariners have discretion as to the selection of their preferred routing. • <u>Military Activity</u>: The Department of National Defense (DND) conducts training and operations in various areas designated as 'Operations Areas' off the coast of NS. To date, the military has not conducted offshore training exercises in the vicinity of any of the offshore oil and gas operations. It is understood that there are several offshore sites where, in the past, munitions have been dumped. EMCP will consult with DND to determine potential interactions with training exercises and/or munitions. • <u>Petroleum Industry</u>: More than 200 wells have been drilled offshore Nova Scotia since Mobil Canada spudded the first well on the Scotian Shelf in June 1967. To date, 23 "significant" discoveries and eight commercial hydrocarbon discoveries have been made offshore Nova Scotia. These discoveries have led to three major development Projects, including Cohasset-Panuke, SOEP, and most recently Deep Panuke, which is currently under construction. Exploration activities for oil and gas (seismic and drilling) are anticipated to continue in the offshore Nova Scotia area. • <u>Seabed Cables</u>: Several subsea cables, or sections of subsea cables, have been abandoned on Sable Island Bank including a communication cable linking Sable Island to the mainland of Nova Scotia.
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3 ENVIRONMENTAL ASSESSMENT SCOPING

A 'Valued Environmental Component' (VEC) approach will be used which focuses on key species-at-risk (SAR) to assess ecosystem components. Besides 'Species-at-Risk', other VECs to be considered in the assessment are 'Special Areas' and 'Commercial Fish and Fisheries'. A definition of each VEC (including components or subsets thereof) identified for the purposes of environmental assessment, and the rationale for its selection, shall be provided.

3.1 REGULATORY CONTEXT

Section 1.1.3 provides information on regulatory context with regard to environmental assessment and work authorization requirements. Additional relevant legislation and guidelines include the following:

- *Fisheries Act* (DFO).
- *Canadian Environmental Protection Act* (Environment Canada).
- *Migratory Birds Convention Act / Regulation* (Environment Canada).
- *Species at Risk Act (SARA)* (Environment Canada).
- *Navigable Waters Protection Act* (Transport Canada).
- *Canadian Wildlife Act* (Environment Canada).
- *Sable Island Regulations; Canada Shipping Act* (Transport Canada).
- *Offshore Waste Treatment Guidelines* (CNSOPB).
- *Offshore Chemical Selection Guidelines* (CNSOPB).
- *Compensation Guidelines Respecting Damage Relating to Offshore Petroleum Activity* (CNSOPB).
- *Statement of Canadian Practice with respect to Seismic Sound in the Marine Environment* (DFO).

3.2 OTHER RELEVANT DOCUMENTS REVIEWED FOR ISSUES SCOPING

- Sable Offshore Energy Project EIS (1996)⁸.
- Deep Panuke Offshore Gas Development Project Comprehensive Study Report (2002)⁹.
- Deep Panuke Offshore Gas Development Project Environmental Assessment Report (2006)¹⁰.
- Environment assessments for exploration in the Study Area.
- Seismic Generic Assessment¹¹. Seismic activities for the Project are within the scope of the generic assessment for seismic activities offshore NS.
- Environmental Assessment Biophysical Data Gap Study – Petroleum Exploration Activities on the Offshore Scotian Shelf and Slope (2009).¹²
- Environmental Effects of Exploration Drilling Offshore Canada.¹³ Review of EEM Data at offshore drilling sites in Atlantic offshore area.
- CEAA "Cumulative Effects Assessment Practitioners Guide" (February 1999).
- CEAA operational policy statement "Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act" (March 1999).

⁸ Sable Offshore Energy Project (SOEP). 1996. Environmental Impact Statement. Volume 3. Prepared by MacLaren Plansearch Limited.

⁹ Jacques Whitford Environment Limited (JWEL). 2002. Deep Panuke Offshore Gas Development, Comprehensive Study Report. PanCanadian Energy. Halifax, NS.

3.3 PLANNED CONSULTATION/COMMUNICATIONS PROGRAM

The following agencies and stakeholder groups/interests will be informed/consulted prior to survey start-up to obtain information for the environmental assessment and project planning:

- Sable Island Stakeholder Advisory Committee re: Sable Island
- Gully Marine Advisory Committee re: Gully MPA
- CNSOPB for concurrent petroleum activities;
- DFO for fishing activity, research surveys, corals;
- DND CFB Halifax for training exercises, unexploded ordnances; and
- Key commercial fisheries interests including aboriginal groups

In addition, the proponent will likely be invited to make a presentation to the CNSOPB Fisheries Advisory Committee (FAC) on proposed project activities.

Results of consultation will be included in the assessment report.

3.4 SELECTION OF VALUED ENVIRONMENTAL COMPONENTS (VECS)

See Table 3.

There must clearly be a pathway(s) between each VEC and Project activities. Proposed VECs for the assessment are :

Species-at-Risk (SAR)

Species designated as at-risk under the SARA in the Study area are listed in Table 1. The rationale behind the selection of a SAR occurring in the study area as a VEC representative for an ecosystem group (e.g. Blue whale as a VEC representative for baleen whales) is that SAR by definition are more sensitive particularly those designated as endangered or threatened and on Schedule 1; hence, if the SAR VEC is not impacted by a Project (e.g. if Blue whale is not impacted); then other species of that group (i.e. other baleen whales) are not likely to be impacted. As per the SAR Act, the EA will consider impacts on a listed wildlife species, its critical habitat or the residences of individuals of that species. The 2004 Canadian Wildlife Service "Environmental Assessment Best Practice Guide for Wildlife Risk in Canada" will also provide guidance for developing consequence criteria related to effects on species

¹⁰ Jacques Whitford Environment Limited. 2006. Deep Panuke Offshore Gas Development, Environmental Assessment Report. EnCana Corporation, Halifax, NS.

¹¹ Davis, R.A., Thomson, D.H. and C.I. Malme. 1998. Environmental Assessment of Seismic Exploration on the Scotian Shelf. Prepared for Mobil Oil Canada Properties Ltd., Shell Canada Ltd., and Imperial Oil Ltd.

¹² Hurley, Geoffrey V. (2009). Environmental Assessment Biophysical Data Gap Study Petroleum Exploration Activities on the Offshore Scotian Shelf and Slope. Consultant report prepared by Hurley Environment Ltd., for the Canada-Nova Scotia Petroleum Board March, 31, 2009. 122 p.

¹³ Hurley, G.V. and J. Ellis. (2004) Environmental Effects of Exploratory Drilling Offshore Canada: EEM Data and Literature Review¹⁶ – Final Report Prepared for the Canadian Environmental Assessment Agency, Regulatory Advisory Committee (RAC). 61 p. + App.

and their habitats.

Special Areas

Designated areas of special interest for ecological or conservation purposes that could be potentially impacted by the Project. The scope of the assessment also includes the inhabitants of the special place which may not be covered under the SAR VEC.

Commercial Fish and Fisheries

Commercial fish and fisheries that could be impacted by the Project. The focus will be on potential disruptions to fishing activities through impacts on fisheries resources, displacement from current or traditional fishing areas or gear loss or damage resulting in a demonstrated financial loss to fisheries interests.

3.5 INTERACTION OF PROJECT ACTIVITIES WITH VECS

See Table 4

Environmental Components	Scoping Considerations	Selected VEC
Marine Fish	Cusk and Winter skate are the fish SAR that are most likely to occur in the deeper and shallower waters respectively of the Study Area during the survey period. Hence, they will be used to evaluate effects of the Project on marine fish	<ul style="list-style-type: none"> • SAR (Cusk, Winter skate)
Marine Mammals	Assessment will focus on endangered species in the Study Area. Toothed and baleen whales exhibit differences in hearing range and behaviours. Hence, assessment will use the endangered Northern Bottlenose whale (toothed) and Blue whale (baleen) as VECs to evaluate potential effects of the Project on marine mammals (Note: the Right whale is considered to be more endangered than the Blue whale but is not expected to occur in the Study area).	<ul style="list-style-type: none"> • SAR (Northern Bottlenose whale; Blue whale)
Sea Turtles	The Leatherback turtle is the only turtle SAR likely to occur in the Study Area	<ul style="list-style-type: none"> • SAR (Leatherback turtle)
Marine Birds	Focus of the assessment will be SAR species in the Study Area. Roseate tern and Ipswich sparrow are the only SAR (endangered status) bird species that are likely to occur in the Study area.	<ul style="list-style-type: none"> • SAR (Roseate tern)
Marine Benthos	The only benthic resources anticipated to be abundant in the Study area are the Snow crab and the Ocean quahog. The two species will be assessed under the VEC Commercial Fish and Fisheries. The Snow crab has been the subject of much scientific investigation with respect to seismic noise effects. The Ocean quahog is a filter-feeder and sedentary making it sensitive to environmental contaminants (i.e., from a spill release). Local surveys indicated that there are no coral concentrations in the Project area.	<ul style="list-style-type: none"> • Commercial Fish (Ocean quahog, Snow crab) and Fisheries
Special Areas	The Gully MPA and Sable Island are included in the Study Area.	<ul style="list-style-type: none"> • Special Areas
Commercial Fisheries	The Project could potentially interact with commercial fisheries directly (i.e., interaction in the field) and indirectly (i.e., effects on fish and shellfish resources). Key fisheries in the Study Area are long lining for Atlantic halibut; trap fishing for Snow crab and potential clam dredging for Ocean quahog (plus related DFO fisheries research surveys). An exploration trawl fishery for Sea cucumber is also carried out in the Study Area. Pelagic fisheries predominantly take place in deeper waters off the edge of the Scotian Shelf. The effect on the Snow crab and Ocean quahog resources will be assessed (see Marine Benthos above).	<ul style="list-style-type: none"> • Commercial Fish (Ocean quahog, Snow crab) and Fisheries

Table 4 Interaction of Project Activities with VECs													
Project Activities and Pathways	SAR					CF&F				SA		Interaction with Project Activity	Study in EA
	Cusk/Winter skate	Northern Bottlenose Whale	Blue Whale	Roseate Tern	Ipswich Sparrow	Leatherback Turtle	Ocean Quahog	Snow crab	Fisheries	Sable Island	Gully MPA		
Noise		X	X			X		X			X	Potential interactions with Blue and Northern bottlenose whales, Leatherback turtle, Snow crab and the Gully MPA. Seismic acquisition is a minor component of the 1-2 month multidisciplinary survey (less than 10 days in total). The 'footprint' of seismic acquisition proposed for this seabed survey is of a much smaller scale (see Section 2.2.3) than a typical 2D/3D exploration seismic survey. The locations of seismic acquisition (potential wellsite locations) are not in areas of Sable Island Bank which are of importance to endangered species of marine mammals or sea turtles or in important areas for commercial fish and fisheries. Seismic activity within Citnalta, the easternmost SDL (and by far the closest SDL to the Gully MPA) will be over 20 km from the nearest point along the western boundary of the Gully MPA. Shutdown and other mitigation measures will be implemented for endangered whale and turtle species as per Canadian Statement of Seismic Practice. The survey vessel will also be staffed by team of trained marine mammal observers. No detailed assessment is necessary.	No
Lights from survey vessel				X	X							Potential attraction of Roseate terns or Ipswich sparrows to vessel lights is highly unlikely. No known injuries or deaths of these species due to collisions with offshore survey vessels (or other platforms) have been recorded by independent wildlife observers over the last decade. The survey will be staffed by observers trained in Canadian Wildlife Service (CWS) offshore seabird observation/recording protocols. No detailed assessment is necessary.	No
Accidental oil spills	X	X	X	X	X	X	X	X	X	X	X	Although unlikely, accidental releases of diesel, product from a seismic streamer, or other minor spills from the vessel could potentially occur. These spills, if they did	Yes

Table 4 Interaction of Project Activities with VECs													
Project Activities and Pathways	SAR					CF&F				SA		Interaction with Project Activity	Study in EA
	Cusk/Winter skate	Northern Bottlenose Whale	Blue Whale	Roseate Tern	Ipswich Sparrow	Leatherback Turtle	Ocean Quahog	Snow crab	Fisheries	Sable Island	Gully MPA		
												occur, would likely be small in volume and should dissipate quickly but could potentially interact with SARs, commercial fish species, special areas, and damage commercial fishing gear. EMCP will ensure appropriate spill mitigation measures are in place on survey vessels and spill monitoring procedures are adopted particularly with respect to Sable Island (if required) (Section 2.2.4 above).	
Air emissions												Atmospheric emissions should be similar to other ocean-going vessels of the same size (Table 3). No detailed assessment is necessary.	No
Presence of vessels								X				Potential interaction of survey vessel and equipment with fishing activity, especially clam dredging.	Yes

3.6 ASSESSMENT BOUNDARIES

Spatial boundaries:

The Seabed Survey Study area (see Figure 1) for the EA covers the eastern portion of Sable Island Bank (including Sable Island) and associated slope areas (including such areas overlapping with the Gully MPA). It was selected to include all areas within which VECs are likely to interact with the Seabed Survey Project. The Seabed Survey Study area is included within the original study area assessed for the Sable Offshore Energy Project, to which the subsea satellites are tied.

The Project area will consist of the 1 km X 1 km areas over individual well sites (once precise wellsite locations are identified) and associated 1km-wide flowline route corridors to an existing SOEP Platform (see Figure 1).

Temporal boundaries:

Temporal boundaries consider the period during which seabed surveying activity is anticipated to occur over a 1-2 month period between May and October, 2010.

3.7 DATA GAPS AND UNCERTAINTIES

Environmental data gaps relevant to the scope and study area¹⁴ of this Project include:

- *Identification of potential sublethal effects on individual fish and benthic invertebrates in the immediate vicinity of a seismic array;*
- *Detection of (and potential effects on) marine mammals and sea turtles in low light (i.e., at night) and in foggy conditions or beneath the sea surface in the immediate vicinity of a seismic array; and*
- *Knowledge of critical periods (i.e., mating and calving) for marine mammals particularly at-risk species.*

These data gaps do not compromise the ability to identify the likelihood of potentially significant impacts with an adequate level of certainty for this assessment.

3.8 EVALUATION OF SIGNIFICANCE OF ENVIRONMENTAL EFFECTS

This EA will be prepared in accordance with Section 16 of the CEAA using an environmental risk assessment (ERA) approach to determine significance of environmental effects. The cumulative environmental effects assessment will focus on the 'other' ocean uses identified in Sect. 2.3.2 above.

¹⁴ Residual data gaps as identified in Table 20-9 of Hurley, Geoffrey V. (2009) Environmental Assessment Biophysical Data Gap Study Petroleum Exploration Activities on the Offshore Scotian Shelf and Slope. Consultant report prepared by Hurley Environment Ltd. for the Canada-Nova Scotia Petroleum Board March, 31 2009. 122 p.

3.9 SUMMARY AND CONCLUSIONS

EMCP is proposing to conduct a seabed survey on eastern Sable Island Bank to evaluate the potential for a subsea satellites development on previously undeveloped fields. This seabed survey, which will be comprised of geophysical, geotechnical, and environmental sampling, is anticipated to be conducted over a 1-2 month period between May and October, 2010. A 'screening' level EA is required under the CEAA since the survey requires authorization from the CNSOPB which is a federal authority under the CEAA and the seismic component of the survey is not included on the Comprehensive Study List Regulations pursuant to the CEAA. Seismic acquisition is a minor component of this multi-disciplinary survey and is of a much smaller scale and sound source than a typical exploration seismic survey. Proposed VECs to be considered in the environmental assessment are 'Species-at-Risk', 'Special Areas' (Gully MPA and Sable Island), and 'Commercial Fish and Fisheries'.

APPENDIX A
The Gully Code of Practice and
The Sable Island Code of Practice

**CODE OF PRACTICE –
PERSONNEL WORKING NEAR “THE GULLY”**

This Code of Practice to protect the uniqueness and integrity of **The Gully** has been developed as an integral part of the Sable Offshore Energy Project's environmental protection planning. The intent is to provide a guide for the operations of the ExxonMobil Canada Properties (EMCP) operated Sable Offshore Facilities, so that the sensitive and valued environment of **The Gully** is protected.

The core of the **Gully** is a prominent submarine erosional canyon at the edge of the Scotian Shelf, approximately 40 kilometres east of Sable Island. The **Gully** has been recognized as an area of extremely high productivity and critically important marine mammal habitat. Fifteen species of whale and dolphin have been identified in the area and eight are commonly found there. Within the **Gully**, a dozen species of coral have been identified, the highest known diversity of coral in Atlantic Canada. Most notably, the **Gully** supports a resident population of approximately 160 endangered Northern Bottlenose Whales. This species is very curious in nature, which make them more prone than other species to collisions with ships.

On May 14, 2004 the minister of Fisheries and Oceans announced the official designation of the **Gully Marine Protected Area** under the Oceans Act. The **Gully MPA** is 80 km long, 50 km wide and 2500 m deep, with a total surface area of 2 364 km². Through the Canadian Coast Guard Notice to Mariners, the core area of the **Gully** has been declared as one of three “whale sanctuaries” on the East Coast of Canada.

The intent of the Code of Practice is to provide clarity to all personnel working with EMCP concerning interactions between operational activities and the Gully. This Code of Practice addresses the following:

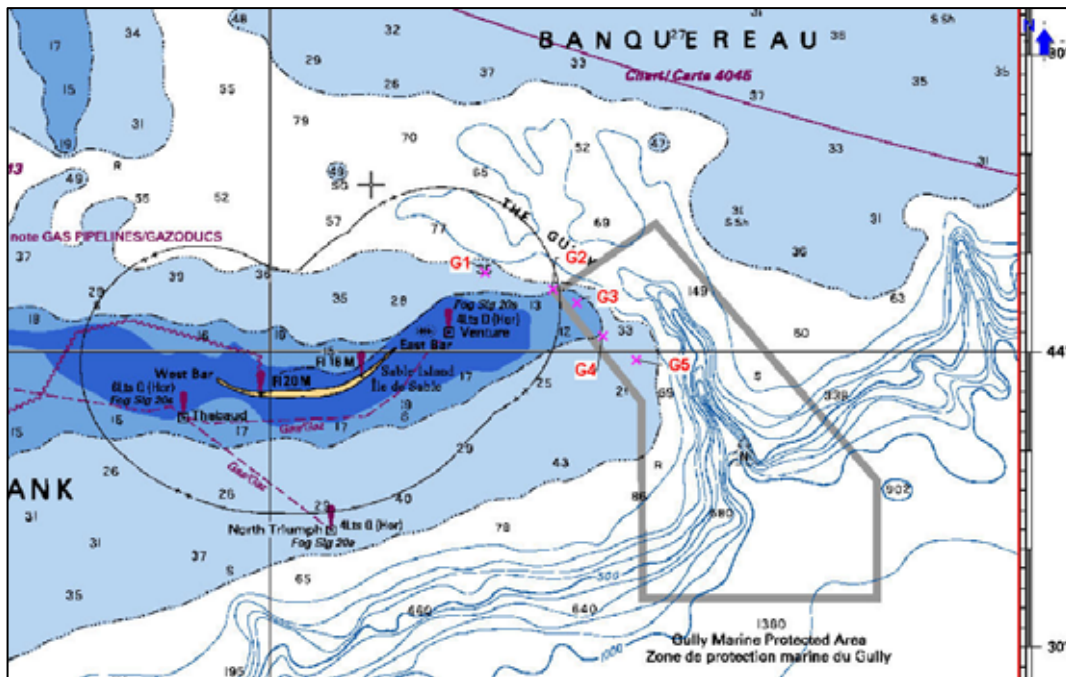
- Vessel routing near the Gully;
- Aircraft flights near the Gully; and,
- Waste management.

Unless the Master of a SOEP-related vessel deems it necessary for the safe and prudent operation of their vessel, no project-generated vessel traffic is permitted to enter the **Gully MPA**. . The boundaries of the **Gully MPA** are illustrated in the attached Figure: Gully Marine Protected Area.

SOEP-related aircraft in regular transit to and from any SOEP platforms, vessels or drilling units are restricted from flying over the Gully MPA. In a life threatening emergency or with written approval from the appropriate government agencies and written approval from SOEP, any or all of the above restrictions are waived.

SOEP-related activities will be undertaken in a manner consistent with sound environmental practices, minimizing any adverse impact on the environment and in accordance with all applicable laws. Subject to any other applicable law, all refuse produced as a result of such activities will be handled in the following manner:

- All fuel, oil, oily material or lubricants are collected in a closed system that is designed for that purpose;
- All oil or oily material that is not burned on a vessel, platform or drilling unit and all non-combustible material is transported in a suitable container to, and disposed of at, a waste disposal facility on land;
- Where combustible material is burned, when approved, on a vessel, platform or drilling unit, precautions are to be taken to ensure that the fire does not endanger any person or the safety of the vessel, platform or drilling unit.
- No plastics of any kind should be disposed of at sea, at any time.
- Floating dunnage, lining, packing materials, paper, rags, glass, metal, and bottles should not be disposed of within the Gully MPA.
- Waste such as paper, rags, glass and similar materials which have been comminuted (pulverized) or ground should not be disposed of within the Gully MPA.



Gully Marine Protected Area

The Gully MPA is bounded by a line drawn from a point 44°13'00"N, 59°06'00"W to a point 43°47'00"N, 58°35'00"W, then to a point 43°35'00"N, 58°35'00"W, then to a point 43°35'00"N, 59°08'00"W, then to a point 44°06'00"N, 59°20'00"W, and back to a point 44°13'00"N, 59°06'00"W.

CODE OF PRACTICE – PERSONNEL WORKING ON OR NEAR SABLE ISLAND

A. OVERVIEW:

A Code of Practice to protect the uniqueness and integrity of Sable Island has been developed as an integral part of SOEP's environmental protection planning. The intent is to provide a guide for the design, development and implementation of the Sable Offshore Energy Project so that the sensitive and valued environment of Sable Island is protected. Personnel are NOT to disembark on Sable Island, fly over Sable Island, or approach within 1 kilometre of Sable Island unless required to do so in a life-threatening emergency or with written approval from the appropriate government agencies and written approval from ExxonMobil Canada Properties. In all cases, personnel are to follow this Code of Practice.

Sable Island, about 41 kilometres in length, is located approximately 290 kilometres southeast of Halifax; composed of sand, the island is the only emergent portion of Sable Island Bank. The island has a diverse flora and fauna; over time its vegetation cover and oceanic currents have stabilized it. The best known component of its fauna is a population of feral horses, which were introduced sometime shortly after 1738; their numbers range between 150 and 400 individuals.

The island also supports numerous migrants, and small numbers of breeding bird species. Sable is, for example, the only breeding ground of the rare Ipswich Sparrow, and is also home from mid-May to mid-July to small breeding numbers of the threatened Roseate Tern, as well as Arctic Terns, gulls, sandpipers, plovers, black ducks and mergansers. It is a federal Migratory Bird Sanctuary administered by Environment Canada's Canadian Wildlife Service. Gray seals pup from late December to early February on Sable; with in the order of 18,000-19,000 pups produced, with births peaking in early January. Adults will swim in the surrounding waters and may feed if prey is easily available. A small breeding population of harbour seals also inhabits Sable, hauling out on the island throughout the year and pupping in late May-early June. They live in the Scotian Shelf area year-round, breeding on isolated islands along the Nova Scotian coast.

At present access to, and activities on, Sable Island are regulated under the legislative mandate of the Canadian Coast Guard, Department of Fisheries and Oceans (DFO), through the *Canada Shipping Act*, Sable Island Regulations. The island is also protected by the Migratory Bird Sanctuary (MBS) Regulations under the *Migratory Birds Convention Act*. Although these provide a relatively high degree of protection for the island, the conservation value of the MBS designation is primarily for migratory birds and their nests; the MBS regulations are effective as a conservation tool when migratory birds are nesting.

The federal *Fisheries Act* administered by the DFO extends protection and management jurisdiction to marine mammals. Of particular relevance to Sable Island is the protection this legislation provides to seal populations.

A Conservation Strategy for Sable Island has been prepared by Environment Canada and approved by DFO and the Province of Nova Scotia. The strategy was prepared for Environment Canada's Canadian Wildlife Service by the Sable Island Conservation Strategy Advisory Committee; the latter is composed of representatives of Dalhousie University, government and non-government organizations with interests in, and knowledge of, Sable Island. The strategy defines the environmental limits within which future activities should proceed and the various conservation priorities both biological and physical. It provides a basis for the establishment of long-term development principles. The strategy specifies the following "priority requirement":

"On Sable Island the priority conservation focus must be habitat, everything else devolves from this. The Island owes its very existence to the stabilizing effect of its vegetative cover and no activity can be permitted which would endanger it".

The intent of the Code of Practice is to provide clarity to all personnel working with SOEP on aspects of the project concerning interactions between project activities and Sable Island. The Code of Practice addresses the following:

- Project activities on the Island;
- Vessel routing in the vicinity of the Island;
- Aircraft flights near and over Sable Island; and,
- Waste Management.

The environment of Sable Island is particularly vulnerable to disturbance, and it is of great concern to all parties involved that any activities carried out on Sable Island cause no disturbance or damage to the habitat, flora and fauna. In order to achieve this, SOEP has prepared the following guidelines for all personnel associated with its programs on Sable Island. Avoiding disturbance of the Sable Island environment is relatively straightforward:

- Do not disturb, feed, harm or handle any wildlife on the island or in waters surrounding the island.
- Do not damage any beach or dune vegetation by vehicle traffic, or by excavation or construction.
- Do not destabilize areas of unvegetated sand by vehicle or foot traffic, or by excavation or construction.
- Do not dump or bury garbage, and do not burn it in open-air fires.

- Follow all Sable regulations and guidelines (including the 1992 Canadian Coast Guard Visitors Guidelines), and read carefully the following details of the Code of Practice.
- Receive an Orientation to the island and act in accordance with this Code of Practice; review the map provided in the orientation, indicating the locations of buildings, and designated roads and driveways. While the map also shows ponds and vegetated terrain, areas of newly developing vegetation may occur almost anywhere on the island. The map should be used only as a general reference, and personnel must be watchful for areas of vegetation not indicated on the map.
- SOEP's environmental representative will be available to "introduce" newcomers to Sable Island habitat, flora and fauna.
- If in doubt, consult with the Atmospheric Environment Branch (AEB) Officer-in-charge or with SOEP's environmental representative on the island.

B. DETAILS:

1. Travel:

1a) Vehicle Traffic

Dune and beach vegetation is very vulnerable to disturbance. While a single passage of a vehicle over vegetated terrain may not cause serious long-term damage, driving on dunes and beach vegetation is NOT permitted. In general, all vehicle traffic is restricted to the north and south beaches and to the designated inland roads. These roads are:

- From north beach into the AEB area.
- From south beach into the AEB area.
- From north beach into the West Light complex.
- Inland between AEB and West Light (running along the north side of the fresh water pond system).
- The "driveways" into the NSNR camp and into the DFO camp near East Light.

There is no road leading from the beach to the industry refueling facility and helipad located approximately 1 km east of the AEB station. This facility is located on a particularly narrow section of the vegetated dune line. Vehicle access across the vegetation to the facility is permitted only in emergency situations, but even in such situations must not cross through the terrain management site in the blowout south of the facility and must not cross over the steep north or south side dunes adjacent to the site. (The AEB Officer-in-charge is familiar with emergency vehicle access routes into the refueling facility.) While some years ago both the west and east spits were largely unvegetated and it was possible for vehicle traffic to cross anywhere along the full length of the spits, the situation has now changed. There has been extensive development of low-lying vegetated dunes over most of the inland portion of the West spit, and driving

on spit vegetation is not permitted. There are very few places where vehicle traffic can cross the west spit without driving over vegetation. These areas are not mapped, but the main crossing point on the west spit is now roughly 500 m west of the last high-vegetated dune. There has not been similar vegetation development on the East spit, but any traffic crossing the spit should avoid the small areas of vegetation and isolated clusters of plants that do exist (also, when crossing the spit drivers must be particularly careful to avoid nests and eggs during the tern-nesting season.)

Do not drive vehicles through or over any terrain management sites. Such sites can be recognized by the presence of snow fencing or tree fencing, and plots of transplanted beach grass. If personnel are unsure about the locations of such sites they can consult with the AEB Office-in-charge or with SOEP's environmental representative.

Recreational (off-duty) vehicle traffic is not only restricted to the beaches and designated roads, but should not be driven into the extensive blowout and washover areas, or on to the "bald dunes". Off-duty personnel wishing to explore inland of the beaches must walk.

1b) Foot Traffic

Recreational travel on foot through vegetated terrain is permitted:

- Walkers should avoid climbing steep slopes to reach dune tops.
- Walkers should avoid the sharp-edged seaward margins of dunes.
- When walking off the established roads (1a.), use "traditional paths" (made by people and/or horses) whenever possible as long as such paths are not in conflict with the two preceding points. By following well-used paths personnel have less chance of stepping on birds' nests or flushing ducks, and can avoid trampling plants of particular vulnerability or restricted distribution. Also any localized damage caused by foot traffic along particular well-used paths can be monitored and remedied, if necessary.

2. **Wildlife:**

2a) Horses

Do not feed, chase or attempt to handle the horses. Mares with very young foals should not be approached at all. If you encounter a "lost" foal or injured horse, it would be appreciated if you would report the observation to Ms. Zoe Lucas (an environmental scientist normally on the island, who can be contacted through AEB station personnel). The horses are protected by federal law from all interference.

Since long-term studies of the horses are underway, do not remove any horse skulls or bones from the island. Also, report finds of walrus skulls and bones to the AEB Officer-in-charge or to Ms. Zoe Lucas. The walrus were hunted to extinction early in the 18th

century. Their remains, however, are under study by researchers with the Canadian Museum of Nature, and all walrus bones must be photographed and/or measured before they are taken off the island.

2b) Birds

During spring and summer, avoid walking through the gull and tern nesting colonies found on both the beaches and the vegetated dunes. The most critical period for terns is late May to late July and persons should stay at least 100 meters from all nesting colonies. Terns and gulls make the presence of their colonies known by taking to the air and calling noisily. When inadvertently encountering a colony, pay attention to the agitated birds and retreat. Do not proceed in their direction.

In some cases, terns nest in small groups (10 to 20 birds) and their nests may not be obvious. Terns' nests are little more than scrapes-depressions in sandy areas or amongst drift debris (eg. shells, and fragments of wood, peat and litter). The small size and sandy mottled colour pattern of terns' eggs make them equally difficult to see. When driving on the beach it is possible to run over such nests and eggs before noticing the disturbed terns taking to the air. Drivers must be particularly watchful for such inconspicuous "beach" nests in the following areas:

- The outer portions of the Sandy Plain (the wide section of the south beach);
- The north and south beaches along the eastern-most and western-most highly vegetated dunes; and
- On the east and west spits.

While the map provided in the orientation indicates areas where terns' nesting on open beach are likely to occur, such nests cannot be thoroughly mapped and may occur in many areas of the island. Therefore the map should be used only as a general reference, and personnel must be watchful for terns' nests in beach areas other than those indicated on the map.

2c) Seals

Seals on the beach should not be approached or frightened into the water. Harbour seals are particularly vulnerable during their pupping season in early May to mid-June.

2d) Vegetation

Some plants found on Sable Island are very restricted in distribution and should not be disturbed. Since such plants generally occur in areas of lush and wetter vegetation, it is advisable to avoid such areas. Under no circumstances should any species of a plant or animal be deliberately introduced to Sable Island.

2e) Miscellaneous

While it is the intention of SOEP to ensure that no one associated with its Sable Island operations are in any way responsible for damage or disturbance to the island's environment, personnel should also be aware that Sable Island flora and fauna have legal protection:

- The Sable Island Regulations promulgated in 1961 under the Canadian Shipping Act control disturbance of terrain and give protection to the horses.
- Birds have been protected by federal Migratory Bird Sanctuary regulations since 1977. Sanctuary designation provides additional protection for the breeding populations of Ipswich Sparrows, and Common Arctic and Roseate terns.
- Seals are protected by regulations of the Canadian Fisheries Act.

3. Other Environmental Considerations:

3a) Camping

Camping is NOT permitted.

3b) Recreational Fishing

Recreational fishing (from boat or from beach) or in the fresh water ponds is NOT permitted.

3c) Garbage

Garbage is the responsibility of the visiting individual or group. It can be handled in two ways:

- The first option is to save all garbage and take it off the island when leaving at the end of the trip.
- The second option is to arrange for disposal at the weather station. In the latter case, the garbage must be separated into: metal (foil, aluminum and food cans) which must be washed and flattened; toxic (batteries, aerosol cans, used oil and filters); glass (washed); clean, dry and bundled cardboard box material; and burnable (plastics, papers, food scrapes, etc.). Burial or open-air burning of garbage is NOT permitted.
- Composting of food scraps (excluding meat) is permitted, however the scraps must not be accessible to the horses (i.e. the composting must be done in a composting bin or within a fenced enclosure).

3d) Fuel and Oil

Fuel and oil use or storage must have adequate containment. All fuel, oil, oily material or lubricants are collected in a closed system that is designed for that purpose. Any accidental spills of fuel and oil must be reported immediately to the AEB Office-in-charge and SOEP.

C. ADDITIONAL INFORMATION:

The preceding guidelines have been prepared in order to ensure optimum protection of the Sable Island habitat, flora and fauna. In some cases the rationale for these guidelines may not be immediately obvious to newcomers. Personnel interested in the rationale for these guidelines, and/or in a better appreciation of Sable Island can refer to a number of books and papers covering the subject. A collection of literature on various aspects of Sable Island natural and social history has been prepared for use by SOEP personnel and contractors working on the island, and is available on short-term loan from the AEB office on Sable Island. Included in this collection are:

“The Fauna of Sable Island” by Barry Wright, Nova Scotia Museum Curatorial Report Number 68, October 1989, pp.1-93.

“The Birds of Sable Island, Nova Scotia” by Ian A. McLaren, Proc. N.S. Inst. Sci.(1981) Vol.31, pp 1-8

“The Ipswich Sparrow” by W.T.Stobo and I.A. McLaren, Nova Scotia Institute of Science, 1975, pp, 1-105.

“The Horses of Sable Island” by Barbara J. Christie (with postscript by Zoe Lucas), Pottersfield Press (1995) 2nd Edition, pp.1-111.

“The Vegetation and Phytogeography of Sable Island, Nova Scotia” by P.M. Catling, B. Freedman and Z. Lucas, Proc. N.S. Inst. Sci. (1984) Vol.34, pp.181-247.

“Report on Experimental Transplanting and Terrain Management on Sable Island, Nova Scotia, 1995”, prepared for Mobil Oil Canada, Ltd. and PanCanadian Nova Scotia Limited, by Zoe Lucas March 1996.

“Sable Island, Fatal and Fertile Crescent” by Lyrall Campbell, Lancelot Press, 1974, pp.1-104.