

Scotian Basin Exploration Drilling Project – Project Description Summary Document



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August, 2015

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Abbreviations

ADW	Approval to Drill a Well
BOP	blowout preventer
BP	BP Canada Energy Group ULC
CEAA, 2012	<i>Canadian Environmental Assessment Act, 2012</i>
CEAR	Canadian Environmental Assessment Registry
CEPA	<i>Canadian Environmental Protection Act</i>
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board
CO ₂	carbon dioxide
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRA	commercial, recreational or Aboriginal
DFO	Fisheries and Oceans Canada
DGPS	differential global positioning systems
DP	dynamic positioning
EA	environmental assessment
EBSAs	Ecologically and Biologically Significant Areas
EEZ	Exclusive Economic Zone
EIS	environmental impact statement
ELs	Exploration Licences
FAC	Fisheries Advisory Committee
FSC	food, social and ceremonial
ha	hectares
HSSE	health, safety, security and environment
km	kilometres
KMKNO	Kwilmu'kw Maw-klusuaqn Negotiation Office
LFA	Lobster Fishing Area
MGO	marine gas oil
m	metres
MARLANT	Maritime Forces Atlantic
MARPOL	<i>International Convention for the Prevention of Pollution from Ships</i>
MPA	Marine Protected Area
OCTG	oil country tubular goods
NAFO	Northwest Atlantic Fisheries Organization
NCNS	Native Council of Nova Scotia
NEB	National Energy Board

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NGOs	non-governmental organizations
NOx	nitrogen oxides
OA	Operations Authorization
OSCP	Oil Spill Contingency Plan
OSVs	offshore support vessels
OWTG	Offshore Waste Treatment Guidelines
P&A	plugged and abandoned
ROV	remotely operated vehicle
SARA	<i>Species at Risk Act</i>
SBM	synthetic-based mud
SEA	strategic environmental assessment
SO ₂	sulphur dioxide
TUS	traditional use study
VSP	vertical seismic profiling
WBM	water-based mud

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1.0 INTRODUCTION

BP Canada Energy Group ULC (BP Canada Energy Group ULC and/or any of its affiliates are hereafter generally referred to as “BP”) is proposing to conduct an exploration drilling program on Exploration Licences (ELs) 2431, 2432, 2433, and 2434. The Scotian Basin Exploration Drilling Project (the “Project”) may involve drilling up to seven exploration wells over the term of the ELs. The number of wells will be contingent on drilling results of an initial well proposed to be drilled in 2017 pending regulatory approval. The initial well location is not currently known and will be based on an analysis of seismic data gathered during BP’s 3D seismic exploration program conducted in 2014. The scope of the Project for the purpose of environmental assessment is assumed to be a multi-well program subject to the results of the first well.

Offshore exploration drilling is a designated activity under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012). A Project Description (PD) was submitted to the Canadian Environmental Assessment Agency (CEA Agency) to initiate the environmental assessment (EA) process under CEAA, 2012. Under CEAA, 2012, the CEA Agency is required to consult the public on a summary of the PD that is posted on the Canadian Environmental Assessment Registry (CEAR) internet site. This PD Summary provides an overview of the information required under sections 1 to 19 of the *Prescribed Information for the Description of a Designated Project Regulations*.

1.1 PROJECT BACKGROUND AND OBJECTIVES

On January 15, 2013, BP was awarded exploration rights to EL 2431, 2432, 2433 and 2434 from the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) with a work expenditure bid of approximately \$1.05 billion. These licences cover an area of approximately 1,398,180 hectares (ha) and are located approximately 230 to 370 kilometres (km) south-east of Halifax (Figure 1.1) (the “Project Area”).

In 2014, following an environmental assessment and authorization process under the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*, BP carried out a 3D Wide Azimuth seismic survey known as the Tangier 3D Seismic Survey. The 3D seismic data acquisition was completed in September 2014 and is being analyzed to identify potential drilling targets.

Exploration drilling is required to determine the presence, nature and quantities of the potential hydrocarbon resource and to help BP fulfill its work expenditure commitments that must be met over the term of the licence period.

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1.2 PROPONENT INFORMATION

BP is one of the world's leading international oil and gas companies, operating in almost 80 countries around the world with well-established operations in Europe, North and South America, Australasia, Asia and Africa. BP holds a 40% interest in the Nova Scotia Offshore ELs and will operate the exploration program. Partners Hess Canada Oil and Gas ULC and Woodside Energy International (Canada) Limited hold a 40% and 20% interest, respectively.

BP has established an office in Halifax, Nova Scotia to oversee the Project. Technical resources will be drawn from BP's Canadian headquarters in Calgary, Alberta and BP's global operations in the United Kingdom and Houston, Texas. All communications regarding the EA for the Project should be directed to the following contacts.

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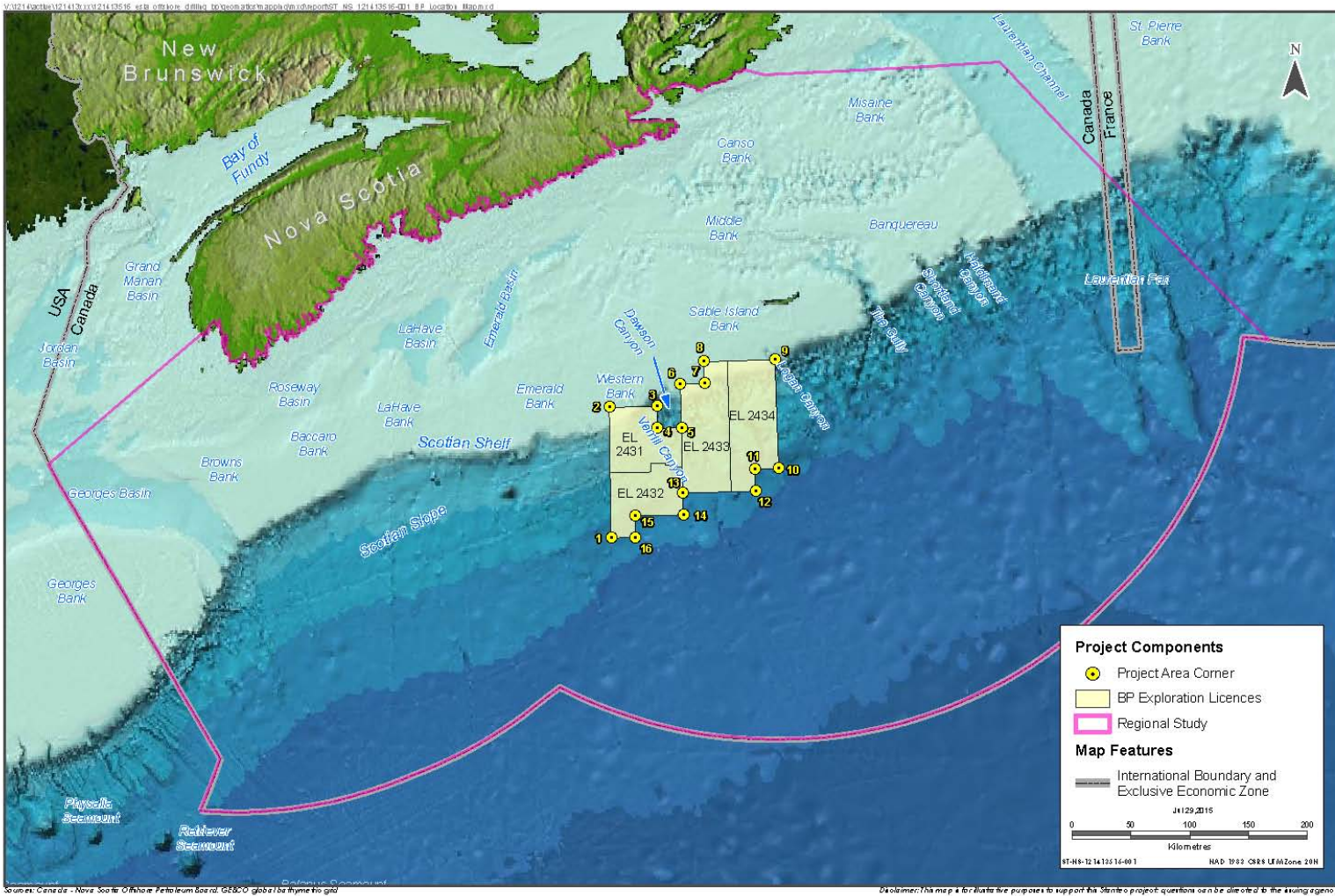


Figure 1.1 Project Location



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1.3 REGULATORY FRAMEWORK

Petroleum activities in the Nova Scotia offshore environment are regulated by the CNSOPB, a joint federal-provincial agency reporting to the federal Minister of Natural Resources Canada and the provincial Minister of Energy. In 1986, the Government of Canada and the Province of Nova Scotia signed the Canada-Nova Scotia Offshore Petroleum Resource Accord to promote social and economic benefits associated with petroleum exploitation. The federal and provincial governments established mirror legislation to implement the Accord. The *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act* are collectively referred to as the Accord Acts. Under the Accord Acts, the CNSOPB issues licences for offshore exploration and development, the management and conservation of offshore petroleum resources, and protection of the environment as well as the health and safety of offshore workers, while enhancing employment and industrial benefits for Nova Scotians and Canadians.

Offshore petroleum activities and the CNSOPB's decision-making processes are governed by a variety of legislation, regulations, guidelines and memoranda of understanding. Exploration drilling projects require an Operations Authorization (OA) under the Accord Acts.

An Approval to Drill a Well (ADW) will be required for each well in the drilling program which includes specific details about the drilling program and well design.

There are several regulations under the Accord Acts which govern specific exploration or development activities. There are also various guidelines, some that have been jointly developed with the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) and National Energy Board (NEB), which are intended to address environmental, health, safety and economic aspects of offshore petroleum exploration and development activities. Of particular relevance to the environmental assessment of this Project would be the Offshore Waste Treatment Guidelines (NEB *et al.* 2010) and the Offshore Chemical Selection Guidelines for Drilling and Production Activities on Frontier Lands (NEB *et al.* 2009).

The Canadian Environmental Assessment Agency (the "Agency") will make a determination on the requirement for an environmental assessment under CEAA, 2012, following a screening process conducted by the Agency. The Regulations Designating Physical Activities under CEAA, 2012 (amended October 24, 2013) specify the physical activities to which CEAA, 2012 applies. Based on the activities and location of the Project, it is classed as a "designated project" under section 10 of the amended regulations which states:

The drilling, testing and abandonment of offshore exploratory wells in the first drilling program in an area set out in one or more exploration licences issued in accordance with the Canada-Newfoundland Atlantic Accord Implementation Act or the Canada-Nova Scotia Petroleum Resources Accord Implementation Act.

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Project activities and components in the nearshore and offshore marine environment will take place within federal waters, which, under CEAA, 2012 constitutes “federal lands”. Given the focus of offshore activities for this Project, the term “federal waters” is used although it is acknowledged that the Act does not differentiate between federal lands and federal waters. The Project is subject to various federal legislative and regulatory requirements, including:

- Accord Acts;
- *Canada Shipping Act*;
- *Canadian Environmental Assessment Act, 2012*;
- *Canadian Environmental Protection Act (CEPA), 1999*;
- *Fisheries Act*;
- *Migratory Birds Convention Act, 1994*;
- *Species at Risk Act (SARA)*; and
- *Navigation Protection Act*.

Pending Project design and regulatory review, and an assessment of potential environmental effects, authorizations may also be required under the *Fisheries Act* and SARA. A Migratory Bird Handling Permit will likely be required from Environment Canada to permit the salvage of stranded birds on offshore vessels during the Project.

BP is currently in the process of procuring an onshore supply base to support the Project. One of the candidate supply base locations is located on federal land. Refer to Section 2.2.5 for more information on the supply base including potential federal involvement and authorizations.

A provincial environmental assessment under the Nova Scotia *Environment Act* is unlikely to be required based on the proposed Project scope. No provincial or municipal permits are currently anticipated to be required for the Project, including for the onshore supply base which will be sited at an existing marine terminal. The third party operator of the supply base will be responsible for obtaining any necessary approvals for the supply base that are not already in place.

There is no federal funding involved in this Project.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

BP proposes to drill up to seven wells on ELs 2431, 2432, 2433, and 2434 covering an area of approximately 13,982 km² and located approximately 230 to 370 km southeast of Halifax and 48 km from Sable Island National Park Reserve. Sable Island is the nearest permanent, seasonal or temporary residence to the Project Area aside from workers inhabiting offshore platforms at the Sable Offshore Energy Project and the Deep Panuke developments. The Project will not take place on lands that have been subject to a regional study as described in Sections 73-77 of CEAA, 2012, nor are there any zoning designations or management plans that apply to the Project Area.

Specific drill sites are not yet known and will be based on the 3D seismic survey conducted in 2014. Potential wells will be located within the ELs delineated on Figure 1.1. Corner coordinates for this area are provided in Table 2.1.

Table 2.1 Project Area Coordinates

Project Area "Corner"	NAD 83_CSRS_UTM Zone 20 N			
	X (metres)	Y (metres)	Latitude DMS	Longitude DMS
1	702995.10700	4790378.89572	42° 10' 0.000" N	61° 45' 0.000" W
2	702995.10700	4790378.89572	43° 10' 0.000" N	61° 45' 0.000" W
3	702995.10700	4790378.89572	43° 10' 0.000" N	61° 15' 0.000" W
4	702995.10700	4790378.89572	43° 0' 0.000" N	61° 15' 0.000" W
5	702995.10700	4790378.89572	43° 0' 0.000" N	61° 0' 0.000" W
6	702995.10700	4790378.89572	43° 20' 0.000" N	61° 0' 0.000" W
7	702995.10700	4790378.89572	43° 20' 0.000" N	60° 45' 0.000" W
8	702995.10700	4790378.89572	43° 30' 0.000" N	60° 45' 0.000" W
9	702995.10700	4790378.89572	43° 30' 0.000" N	60° 0' 0.000" W
10	702995.10700	4790378.89572	42° 40' 0.000" N	60° 0' 0.000" W
11	702995.10700	4790378.89572	42° 40' 0.000" N	60° 15' 0.000" W
12	702995.10700	4790378.89572	42° 30' 0.000" N	60° 15' 0.000" W
13	702995.10700	4790378.89572	42° 30' 0.000" N	61° 0' 0.000" W
14	702995.10700	4790378.89572	42° 20' 0.000" N	61° 0' 0.000" W
15	702995.10700	4790378.89572	42° 20' 0.000" N	61° 30' 0.000" W
16	702995.10700	4790378.89572	42° 10' 0.000" N	61° 30' 0.000" W

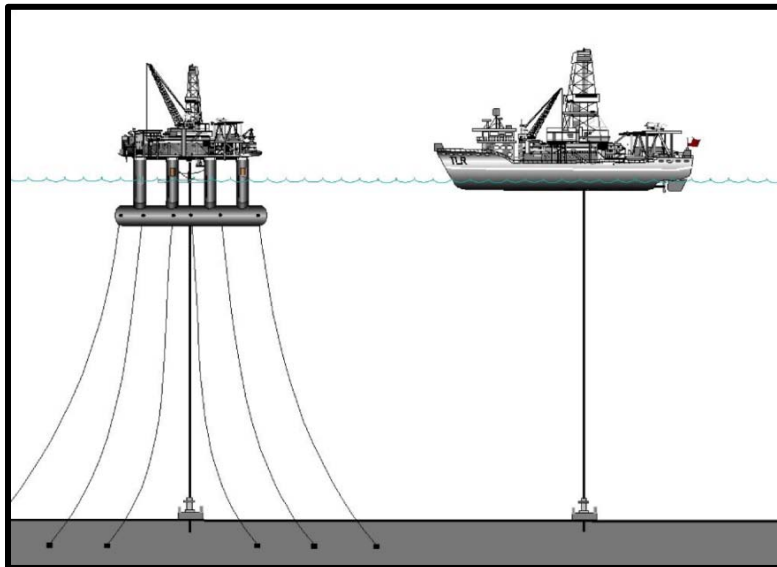
Refer to Section 2.2.5.1 for supply base location details.

2.2 PROJECT COMPONENTS AND ACTIVITIES

2.2.1 Drilling

Wells will be drilled using either a semi-submersible rig or a drillship because of water depths involved (potentially from 100 m to over 3000 m). A semi-submersible rig would be moored in position over the drilling site or maintained on station by dynamic positioning (DP).

The standard mooring technique for a semi-submersible is an eight point spread mooring arrangement using a combination of wire rope, chains, and anchors. The anchors are set in a pre-determined pattern using an anchor handling offshore vessel. In the DP mode, a semi-submersible or drillship maintains position using thrusters positioned on the hulls, which are controlled by a computerized positioning system. Figure 2.1 shows a schematic of a semi-submersible rig and a drillship for comparison purposes.



Source: Adapted from MMS 2000

Figure 2.1 Schematic of Semi-submersible and Drillship

Prior to drilling, proposed wellsite locations are surveyed, generally using a remotely operated vehicle (ROV) to inspect the seabed for potential hazards and sensitive habitat (e.g., habitat-forming corals).

In offshore drilling, the riser serves to move drilling mud from the sea floor to the mobile offshore drilling unit (MODU) on the surface. Drilling mud can be a water-based or synthetic-based suspension of clays and is used in well drilling to help equalize pressure, keep the drill bit cool, and flush out cuttings from the wellbore. The initial (*i.e.*, surface) sections are normally drilled without a riser system, which serves as a conduit to bring mud and cuttings back to the drilling vessel in a closed loop system. These “riserless” sections are drilled using a water-based mud

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(WBM), with mud and cuttings returned to the seabed as is permitted by the Offshore Waste Treatment Guidelines (OWTG) (NEB *et al.* 2010).

As yet the well design has not been completed. In general, following the drilling of the initial sections, the drill string (assembly of drill pipes) is removed and a steel casing is cemented into place to prevent the wall of the well from caving in and prevent seepage of muds and other fluids. The casing also provides adequate pressure integrity to allow a blowout preventer (BOP) and riser system to be installed. The BOP is a system of high pressure valves that prevent water or hydrocarbons from escaping into the environment in the event of an emergency or equipment failure (Stantec 2014b).

Once a riser system has been installed, the deeper (lower hole) sections of the wells may be drilled with synthetic-based mud (SBM). The riser returns mud and cuttings to the drilling vessel in a closed loop system for treatment prior to disposal to the seabed in accordance with the OWTG. More information on the management of drilling waste is provided in Section 2.3.3. An unplanned or planned side-track (*i.e.*, drilling a second wellbore away from an original wellbore) may be drilled to meet the Project objectives. Figure 2.2 presents a schematic demonstrating the initial drilling sequence of a well.

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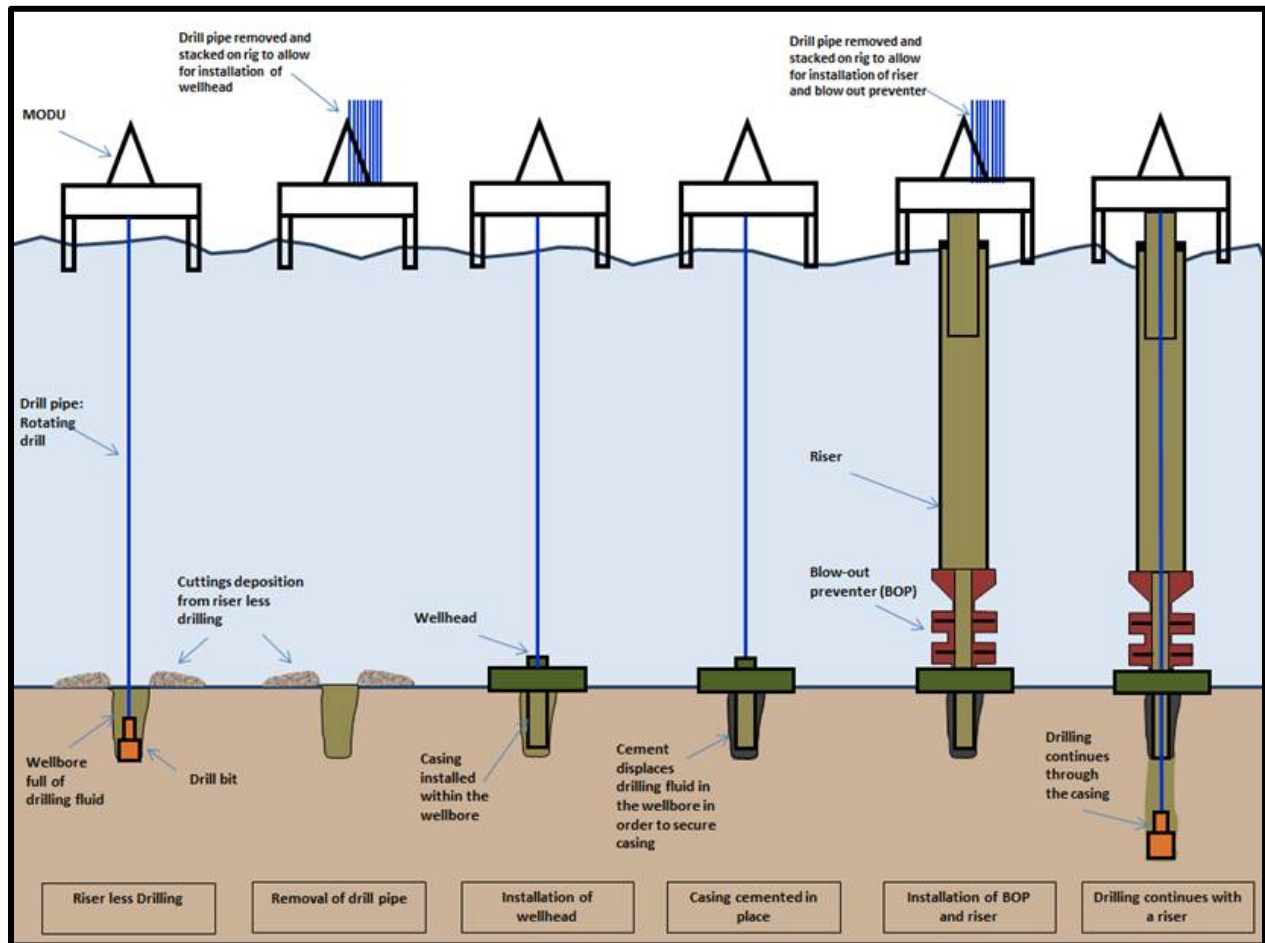


Figure 2.2 Initial Drilling Sequence

BP proposes to commence drilling in 2017. Depending on the results of the initial well, up to a total of seven wells may be drilled over the term of the ELs. It is anticipated that it will take up to 120 days to drill each well.

2.2.2 Vertical Seismic Profiling

Following the drilling of each well to its target depth (where hydrocarbon reservoirs are predicted to be located), vertical seismic profiling (VSP) is conducted to obtain accurate “time to depth ties” which allows the correlation of seismic data (which is recorded in time measurements) to well depth (recorded in metres). VSP operations involve deploying an acoustic sound source from the drilling vessel, while a number of receivers are positioned at different levels within the drilled hole to measure the travel time.

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Typically between three and six sound sources are used, with a volume of 150 – 250 cubic inches each and are generally positioned at 5-10 m water depth. VSP operations are typically of short duration, taking up to several days to complete for each well.

2.2.3 Well Flow Testing

Well flow testing may be undertaken on individual wells, depending on the results of the well evaluation. In the event that a well test is required, it will be subject to BP's well test assurance process, which is designed to promote safe and efficient well test operations.

In line with industry practice, well flow testing involves flowing the well fluids through temporary test equipment located on the drilling vessel, and requires flaring of gases or other hydrocarbons that come to surface to enable their safe disposal. Flaring activity will be carried out in accordance with industry standard and any applicable regulations. It is anticipated that testing would occur over a one to three month period after drilling is complete. As part of any well test program, there are likely to be separate periods of flaring which may comprise the following activities:

- a number of main flow test periods each involving an approximate 24 hours of flaring for any one period; and
- other flaring periods for operational purposes including flushing and/or bleeding off surface equipment. These periods are likely to last between 1 and 6 hours each and the flow rates during these periods are expected to be small.

2.2.4 Well Abandonment

All wells drilled in the drilling campaign will likely be permanently plugged and abandoned (P&A) after completion of data acquisition and evaluation programs, in accordance with BP recommended practice and any applicable regulations. P&A procedures are designed to isolate the well and prevent the release of wellbore fluids to the marine environment.

P&A operations involve setting a series of cement and mechanical plugs within the wellbore, including plugs above any hydrocarbon bearing intervals, at appropriate barrier depths in the well and at the surface. The casing is expected to be cut below the seabed and the wellhead and removed prior to completion of the drilling campaign; these details are to be confirmed as Project planning proceeds. A seabed survey is typically conducted for each well using an ROV to survey the seabed for debris.

2.2.5 Supply and Servicing

2.2.5.1 Onshore Supply Base

BP requires an onshore supply base to support the Project's offshore drilling operations. The supply base serves as a location to temporarily store, stage and load material onto offshore support vessels (OSVs) to be brought offshore. The supply base also serves as a location for

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materials to be returned onshore by OSV, as needed, throughout the Project. BP anticipates OSVs will make two to three trips per week between the drilling vessel and the supply base.

Generally, materials temporarily stored or staged within the supply base will include: wellhead, oil country tubular goods (OCTG) (e.g., drill pipe, pipe casings), tubular accessories, specialty tools, wet and dry bulk material, and water. Marine gas oil (MGO) required by the drilling rig and OSVs will not be provided via the onshore supply base, but rather will be provided by existing fuel facilities within the area.

The supply base will be owned/leased and operated by a third party integrated logistics service provider. The integrated logistics service provider will be responsible for obtaining any new approvals necessary for its management and operation in association with the Project.

BP has commenced the process to select an integrated logistics service provider and anticipates awarding a contract for these services in early Q4 2015. Additional details on Project scheduling related to the supply base are provided in Section 2.4.

Entering the supplier selection process, BP considers the options presented in Table 2.2 and Figure 2.3 as potential supply base locations to support the Project.

Table 2.2 Supply Base Locations

Potential Supply Base Location	Latitude DMS	Longitude DMS
Mulgrave Marine Terminal (Strait of Canso)	45°36'25.00"N	61°23'18.00"W
Woodside Terminal (Halifax Harbour)	44°38'49.00"N	63°32'53.00"W
Richmond Terminals (Halifax Harbour)	44°40'33.00"N	63°36'42.00"W

Each of the potential supply base locations is an existing marine terminal in a highly developed setting. These sites are also currently used for routine industrial activities that are consistent with those to be carried out in association with the Project. Lastly, an initial evaluation confirmed each site's ability to meet BP's minimum operational requirements for a supply base. BP will begin a detailed evaluation of each of these locations as part of the integrated logistics service provider selection process. During this evaluation, BP will quantify the risk and cost associated with operating from each location. Key influences that will be considered during this evaluation include: proximity to indicative drilling location; existing infrastructure; overall site footprint; surrounding infrastructure (e.g., roadways); accessibility; health, safety, and environment (HSE) standards; and total cost of operation.

Upon selecting an integrated service provider and supply base location, the following infrastructure upgrades may be required, depending on location:

- Wet/dry bulk storage tanks and liquid mud mixing plant;
- Covered storage / warehouse space;
- Pipe inspection area (covered);

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- Pipe racking (storage system);
- Temporary office space; and
- Lighting.

BP desires a supply base location that minimizes infrastructure development costs and risks. Two candidate supply base locations, Mulgrave Marine Terminal (Strait of Canso) and Woodside Terminal (Halifax Harbour), are located on private (non-crown) lands and require no site expansion, major civil works, permanent building construction, clearing, or in-water work to support the Project. No federal authorizations, permits or approvals are anticipated to be required.

The third location, Richmond Terminals (Halifax Harbour) is the only potential supply base location without existing wet/dry bulk storage tanks and liquid mud mixing plant, although the site has been used historically for industrial purpose. The installation of bulk storage tanks and mud mixing at this site would occur within existing site boundaries, on a pre-developed surface.

Work related to the installation of a liquid mud plant will require additional time to design, mobilize, and assemble the required equipment. Required civil works would be limited to installing a bunded containment area, concrete pads to ensure proper ground resistance, the placement of required tanks and piping, and the installation of pumps and transfer lines to move the bulk material to the offshore supply vessels. This civil work may require some excavation of the pre-developed surface. These activities are consistent with routine industrial construction works on land intended for and historically used for industrial purpose.

Richmond Terminals is located on federal lands administered by the Halifax Port Authority (HPA). Under Section 67 of CEAA, 2012, the HPA, as a federal authority, is required to determine there are no significant environmental effects before taking any action to allow a project to proceed on federal lands under its jurisdiction. Therefore, it is expected that any modification that may be made to these lands, if selected as the successful supply base location, will be reviewed by the HPA. No other federal authorizations, permits or approvals are anticipated to be required to permit this work.

The specific location of the supply base will likely be selected in Q4 2015. Additional details on Project scheduling related to the supply base are provided in Section 2.4.

There are no wetlands on, adjacent to, or in close proximity to any of the candidate supply base locations. There are no First Nation reserve lands located adjacent to or in close proximity to any of the candidate supply base locations. Millbrook First Nation is the nearest First Nation reserve located approximately 5 km east of the Woodside Terminal supply base option. Distances to the nearest permanent, seasonal or temporary residences are approximately 290 m for Richmond Terminal, 396 m for Woodside Terminal, and 166 m for Mulgrave Terminal. Development at any of the candidate supply base locations will be carefully controlled and is not anticipated to affect migratory birds, fish, fish habitat, aquatic species, physical and cultural heritage resources, or related Aboriginal interests.

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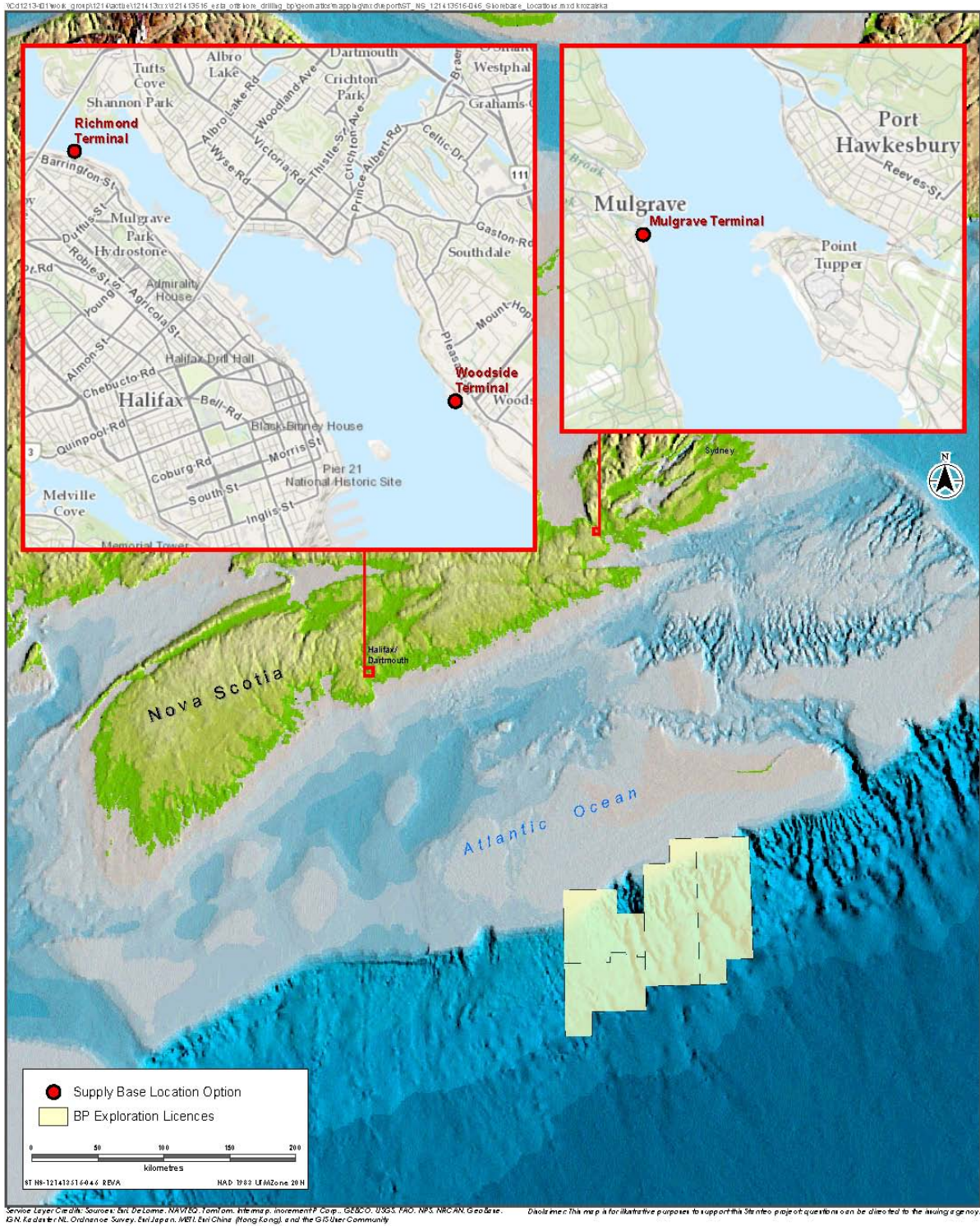


Figure 2.3 Supply Base Location Options



2.2.5.2 Vessel and Helicopter Traffic

The drilling vessel and operation is anticipated to require support from vessels and helicopters for equipment and supplies, and for crew changes. It is likely that both supply vessel and helicopter operations will be based out of the Halifax area, although this remains to be confirmed. OSVs will be used to re-supply the drilling vessel with fuel, equipment, drilling mud, and other supplies during the drilling program. It is likely two to three OSVs will be required, with one vessel on stand-by at the drilling vessel at all times.

It is estimated that the OSVs will make two to three trips per week between the drilling vessel and the supply base. Although the specific location of the supply base is not yet known, it is likely to be located in Halifax Harbour or the Strait of Canso. Travel routes will depend on the supply base location but OSVs will use existing shipping lanes to the extent practical.

It is anticipated that approximately one helicopter trip per day would be required to the drilling vessel for the transfer of crew and supplies not carried by the OSV.

2.3 EMISSIONS, DISCHARGES AND WASTE MANAGEMENT

Efforts will be made to reduce waste emissions and discharges generated during the Project, where possible. All waste generated will be managed and disposed according to regulatory requirements and applicable guidelines. Typical wastes to be generated over the course of Project activities and how these wastes will be managed are described below.

2.3.1 Atmospheric Emissions

Atmospheric emissions expected to be associated with Project activities are primarily related to the combustion of marine fuel by the drilling vessel and OSVs. Emissions are also associated with short-term flaring during well testing, if testing is performed, and includes carbon dioxide (CO₂), sulphur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter. BP will comply with the provincial Air Quality Regulations under the Nova Scotia *Environment Act*, Ambient Air Quality Objectives under CEPA, regulations under MARPOL and the intent of the Global Gas Flaring Reduction Partnership (which seeks to increase the use of associated natural gas and thus reduce flaring and venting).

2.3.2 Underwater Sound

Underwater sound is generated by a drilling vessel, OSVs and during VSP operations. The level of underwater sound generated by a drilling vessel is influenced by the type of drilling vessel (e.g., semi-submersible versus drillship) and method of positioning on station (e.g., DP versus anchoring). Underwater sound associated with a drilling vessel is continuous during a drilling program. Underwater sound generated during VSP operations is impulsive in nature, with higher

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sound level pulses occurring over of a much shorter duration (up to several days, depending on the VSP method selected).

2.3.3 Drilling Waste

The initial (*i.e.*, surface) sections are normally drilled riserless with a water-based mud (WBM), with mud and cuttings returned where they will accumulate in the vicinity of the wellhead. The discharge of WBM cuttings at the seabed, while drilling the first two hole sections is accepted as industry standard practice and is consistent with the OWTG (NEB *et al.* 2010). The deeper (lower hole) sections of the wells may be drilled with synthetic-based mud (SBM). The marine riser located between the BOP and the drilling vessel acts as a conduit for the return of drilling mud and cuttings back to the drilling vessel for treatment prior to disposal to the seabed in accordance with the OWTG.

On the drilling vessel the drilled cuttings and drilling mud are separated and cleaned using solids control equipment. The mud returns carrying the drilled cuttings initially pass through a shale shaker where the majority of mud is separated from the cuttings. Where SBM is used, cuttings from the shale shaker pass through a cuttings dryer, which removes SBM from cuttings. Residual synthetic base mud on cuttings discharged to the marine environment is treated in accordance with the OWTG (NEB *et al.* 2010). Monitoring of the residual base mud on cuttings levels is carried out during well sections involving use of SBM. After recovery and treatment of drill muds, the drill cuttings are discharged from the drilling vessel at the well site. Spent and excess WBM may be discharged from the drilling vessel without treatment as per the OWTG (NEB *et al.* 2010). No surplus SBM are discharged to the sea; spent SBM that cannot be reused during drilling are brought to shore for disposal.

The extent of drilling discharge deposition can only be predicted accurately through a drilling discharge dispersion modelling exercise, which will be carried out as part of the environmental assessment process. The zone of deposition would depend on the particle size distribution in the discharge stream, water depth and currents. After the riser has been installed, cuttings and associated drilling fluids are returned to the MODU for treatment. In accordance with applicable regulatory guidelines, following treatment, cuttings and associated residual fluids will be discharged to the marine environment through a caisson near the water surface. The depositional thickness will vary by water depth and is likely to be greater during the riserless drilling associated with the upper well section as WBM cuttings are released directly at the seafloor, which limits the likelihood of cuttings distribution through the water column.

Cement is used to set the well casing strings during drilling. Prior to installation of the riser package (*e.g.*, during drilling of the conductor and surface holes), surplus cement is discharged at the seafloor. Following installation of the riser, spent and surplus cement is brought to shore for disposal in an approved facility.

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If a well test is deemed necessary, the wellbore fluids (gas and liquid phases) will be managed in accordance with industry standard practice and any applicable regulations.

2.3.4 Liquid Discharges

The following liquid wastes are likely to be generated and managed on the drilling vessel:

- Produced water;
- Bilge and deck drainage water;
- Ballast water;
- Grey/black water (sewage);
- Cooling water;
- Well treatment fluids; and
- Fire control testing water.

The OWTG contain performance targets for each of these discharges, including in some cases, required sampling and analysis prior to ocean discharge. Liquid discharges that do not meet performance targets for ocean disposal are transported to shore for disposal at an approved disposal facility.

2.3.5 Hazardous and Non-Hazardous Solid Wastes

Hazardous and non-hazardous solid wastes will also be generated by Project activities. Food wastes will be macerated in accordance with the OWTG prior to discharge at sea. All other solid waste generated offshore will be transported to shore for appropriate treatment and disposal in accordance with applicable regulations and municipal by-laws. Non-hazardous wastes may include domestic waste, scrap metal, recyclables and other miscellaneous non-hazardous wastes. Hazardous wastes (including waste dangerous goods) could include oily waste (filters, rags, waste oil), waste chemicals and containers, batteries, biomedical waste, and spent SBM.

BP will retain a third party licensed waste management contractor to manage and dispose of wastes transported onshore. Hazardous wastes will be disposed of at approved facilities in compliance with applicable regulations and approvals.

2.4 PROJECT SCHEDULE

BP plans to commence exploration drilling with an initial well in 2017 pending regulatory approval to proceed. Up to seven exploration wells will be drilled over the term of the ELS contingent on the drilling results of the initial well. It is anticipated that each well will take approximately 120 days to drill. VSP operations will take up to several days per well and well testing, where required, would occur over a one to three month period. Well abandonment will be conducted following drilling and/or well flow testing. Wells may be designed for suspension and re-entry but this will be determined through further prospect evaluation. Aboriginal and

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stakeholder engagement for the Project commenced in 2014 and will continue through the life of the Project as required. Figure 2.4 presents the preliminary Project schedule.

An operational supply base is typically required three to four months prior to the start of offshore drilling operations. This allows for the early receipt and inspection of materials requiring long procurement lead times. The rest of the mobilization schedule will be derived from the required infrastructure development on site and the lead-time to mobilize fully-trained crews and equipment on site. BP anticipates that infrastructure development and mobilization of crews and equipment could begin as early as Q4 2016 if Mulgrave Terminal or Woodside Terminal is selected as the preferred supply base location.

If Richmond Terminals is selected as the preferred supply base location, infrastructure development could begin as early as Q3 2016. In this scenario, design work would begin in early 2016. The expected additional lead time at Richmond Terminals is tied directly to the design, procurement, and installation of wet/dry bulk storage tanks and liquid mud mixing plant.

Regardless of supply base location, BP’s integrated logistics services provider will occupy the site until all offshore drilling operations are concluded and all Project-related drilling materials are removed or sold. If required, BP would also remove or sell any Project-related plant or equipment. BP anticipates similar operations or activities will occur in the region around the same time as the Project. BP hopes to capture synergies related to these operations or activities, which would likely eliminate the need to decommission and demobilize any new plant or equipment on site. Existing liquid mud plants and bulk storage tanks at Woodside Terminal or Mulgrave Marine Terminal would not be decommissioned after the Project.

	2015				2016				2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Well Selection, Design and Planning																				
Stakeholder and Aboriginal Engagement																				
Permitting																				
Logistics Preparation																				
Supply Base Infrastructure Development and Mobilization of Crew/Equipment																				
Exploration Drilling																				
Assessment of Drilling Program Results																				
Well Testing (subject to assessment)																				
Abandonment																				
Potential Further Exploration Drilling (subject to initial well results)																				
Nb1) Abandonment if there is no well testing																				
Nb2) Abandonment if there is well testing																				

Figure 2.4 Preliminary Project Schedule



2.5 ACCIDENTAL EVENTS AND EMERGENCY RESPONSE

Before a well is drilled, it is necessary to identify the range of potential spill scenarios from the smallest spill up to and including the worst credible case discharge. These scenarios are then used to inform the Oil Spill Modelling (OSM) which is the planning basis for what is needed to respond effectively to an oil spill.

Potential accidental events that could occur during exploration drilling include blowouts (*i.e.*, uncontrolled releases of hydrocarbons during drilling), batch spills (*e.g.*, diesel, drilling muds, *etc.*), or vessel spills.

Spill prevention measures including spill prevention equipment, policies and procedures, best management practices, and inspection and maintenance activities shall be in place to reduce the probability of a spill occurring and the severity of spill in the unlikely event it should occur. Oil spill preparedness and response shall be managed by an Oil Spill Contingency Plan (OSCP) in accordance with BP's internal practices and applicable legal and regulatory requirements. The OSCP will be submitted to the CNSOPB as part of the OA application process.

The EIS will include a predictive spill modelling to help assess the risk of adverse environmental effects occurring as a result of the Project. The EIS will also provide an overview of BP's overall oil spill preparedness and response capability which will include a range of specific response capabilities such as offshore containment and recovery, shoreline protection, and oiled wildlife response.

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3.0 ENVIRONMENTAL SETTING

3.1 SUPPLY BASE AREAS

Two candidate supply bases, Richmond Terminals and Woodside Terminal, are located in Halifax Harbour; Mulgrave Marine Terminal is located in the Strait of Canso. An overview of the biophysical setting of the relevant nearshore and coastal environments is provided below.

3.1.1 Halifax Harbour

Halifax Harbour is a major inlet of the North Atlantic Ocean surrounded by the city of Halifax. The Port of Halifax, administered by the Halifax Port Authority, accommodates cargo vessels terminals as well as bulk handling facilities, a high volume roll-on/roll-off terminal, oil wharves, rail facilities, and ferry terminals. The harbour extends inland for over 22 km to the northwest with a variable width ranging from approximately 385 m in The Narrows to approximately 4,225 m in the Bedford Basin and reaches depths of up to 70 m in the Bedford Basin and between 20 to 30 m in depth in other areas (Shell and Stantec 2013).

The shore, intertidal zone and seabed of Halifax Harbour includes a wide variety of anthropogenic features based on the industrialization of the port which is pronounced in the vicinity of the two candidate supply base locations in Halifax Harbour including high levels of marine-related industrial activity (Shell and Stantec 2013). The two candidate supply base locations in Halifax Harbour have no natural intertidal zones, as the existing shorelines at each site were previously infilled to accommodate present operations and therefore no wetlands, migratory bird sanctuaries, National Wildlife Areas, or marine protected areas are found. Given this previous disturbance, the potential for previously undisturbed heritage, historic, or archaeological resources to be present in the vicinity of the candidate supply bases is also believed to be low (Shell and Stantec 2013). As shown in Figure 3.1, some coastal and onshore features are found in the Halifax Harbour and surrounding area which are recognized nationally, provincially, and/or municipally for their cultural, recreational, and/or ecological value (Shell and Stantec 2013).

There have been 43 migratory species recorded in and around Halifax Harbour including the Piping Plover (*Charadrius melodus*), which is listed as Endangered under Schedule 1 of SARA, and Canada Warbler (*Wilsonia canadensis*), which is listed as Threatened under Schedule 1 of SARA (Shell and Stantec 2013). Halifax Harbour and its approaches are also within the distribution range of Barrow's Goldeneye (*Bucephala islandica*), and Harlequin Duck (*Histrionicus histrionicus*), both of which are listed as Special Concern on Schedule 1 of SARA (Environment Canada 2015).

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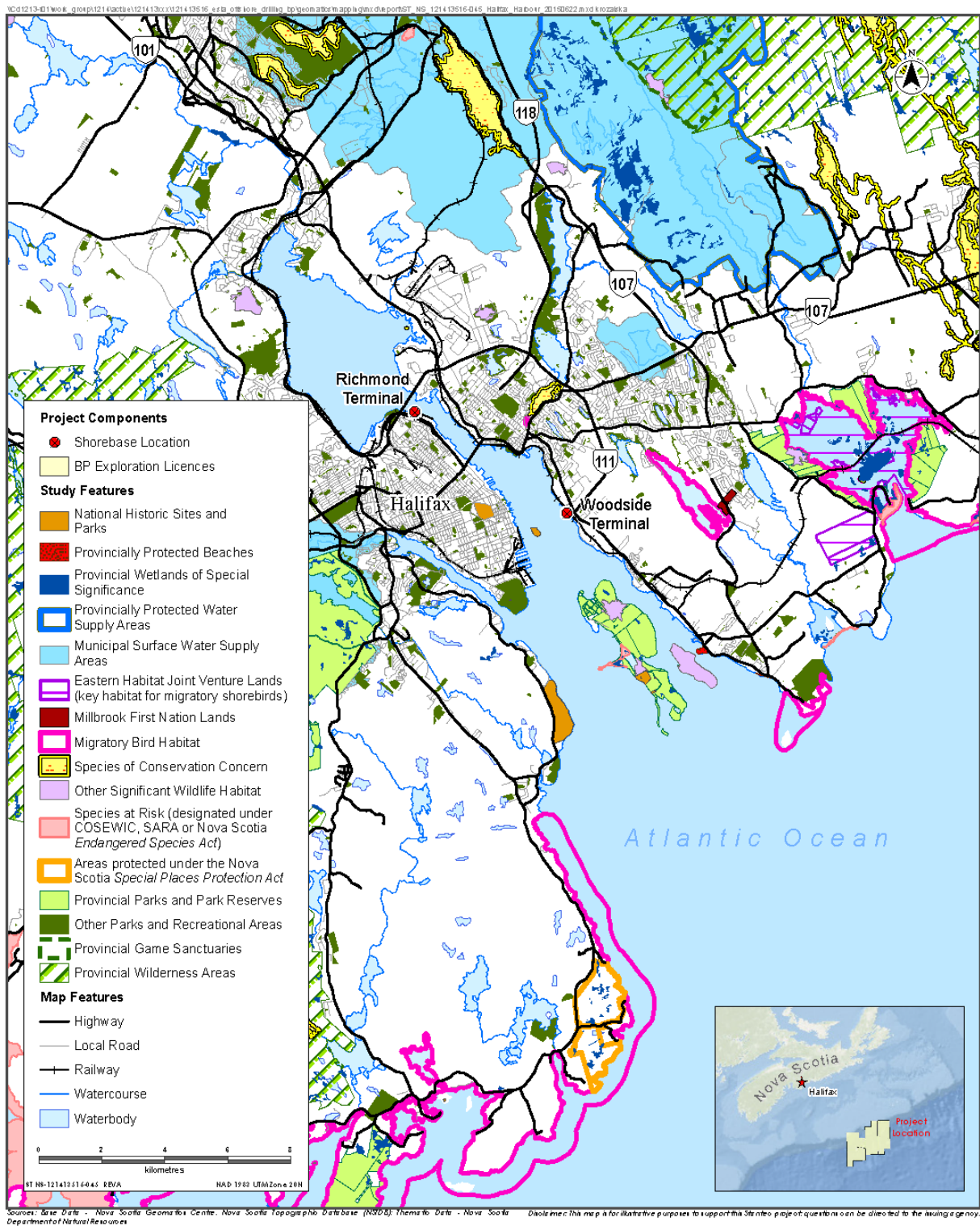


Figure 3.1 Environmentally Sensitive Areas in the Vicinity of Halifax Harbour

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Halifax Harbour is within the distribution range of the blue whale (*Balaenoptera musculus*) and North Atlantic right whale (*Eubalaena glacialis*), both listed as Endangered on Schedule 1 of SARA (Environment Canada 2015), although it would be very unlikely for these species to be present in Halifax Harbour. Harbour porpoise (*Phocoena phocoena*), listed as a species of Special Concern under Schedule 2 of SARA has however, been known to frequent Halifax Harbour (Shell and Stantec 2013). Harbour seals (*Phoca vitulina*) have been observed in large numbers in Halifax Harbour, with grey seals (*Halichoerus grypus*) also having been observed occasionally in the Harbour (Brodie 2000).

At least 69 species of fish have been recorded in the nearshore marine habitat of Nova Scotia within the 40 m depth of water (Shell and Stantec 2013), many of which would be considered species of commercial, recreational or Aboriginal (CRA) fisheries. Halifax Harbour is located within NAFO Fishery Unit Area 4Wk and commercial fisheries include a small commercial finfish fishery seaward of McNabs Island consisting of groundfish (cod, haddock, pollock and halibut) and pelagic (herring and mackerel) species. Other areas throughout the harbour, particularly the Bedford Basin, support a bait fishery (pollock, herring, mackerel and smelt) for both commercial and recreational bait (Rozee 2000). Commercial and recreational fisheries for clams and mussels are closed due to fecal coliform levels in the harbour. Some recreational groundfishing occurs just outside of the harbour, but this type of fishing is not common within the harbour itself.

Lobster is the primary commercial species harvested within Halifax Harbour with a total of 15 to 20 lobster fishers using the Harbour (Shell and Stantec 2013). The majority of fishers in the Halifax area fish with 250 traps. The harbour is included within the boundaries of Lobster Fishing Area (LFA) 33, which extends from Cole Harbour to Yarmouth; however, the area around McNabs Island supports the majority of lobster fishing activity (Shell and Stantec 2013).

In addition to commercial lobster fishing, Aboriginal communal food, social and ceremonial licences have been issued for LFA 33, although it is unknown if any fishing activity related to those licences occurs in Halifax Harbour.

3.1.2 Strait of Canso

The Strait of Canso is a long, narrow channel that separates mainland Nova Scotia from the island of Cape Breton. Following the construction of the Canso Causeway in 1955, the Strait of Canso has become a tidal inlet with limited flows to Northumberland Strait. The key oceanographic attributes of the southern reach of the Strait of Canso are its lack of freshwater input, its great length and narrow width, and its relatively deep bathymetry (Shell and Stantec 2013).

Located approximately midway along the Strait of Canso is the Town of Mulgrave, and the Town of Port Hawkesbury both of which contain active marine facilities that comprise the Strait of Canso Port (*i.e.*, the Mulgrave Marine Terminal and the Port Hawkesbury Pier, respectively) (Shell and Stantec 2013). The shore, intertidal zone, and seabed of the Strait of Canso at Mulgrave

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Marine Terminal is currently subject to high levels of marine-related industrial activity including ship loading and unloading, container handling, storage and laydown, and truck traffic. The candidate supply base location was previously infilled and has no natural intertidal zone therefore there are no wetlands, migratory bird sanctuaries, National Wildlife Areas, or marine protected areas in the area (Shell and Stantec 2013). The potential for previously undisturbed heritage, historic, or archaeological resources to be present in the vicinity of the Mulgrave Marine Terminal is also believed to be low (Shell and Stantec 2013). There are some coastal and onshore features in the Strait of Canso and surrounding area which are recognized nationally, provincially, and/or municipally for their cultural, recreational, and/or ecological value (refer to Figure 3.2) (Shell and Stantec 2013).

There have been 42 migratory bird species recorded in and around the Strait of Canso. The Leach's Storm-petrel (*Oceanodroma leucorhoa*) is the only species of pelagic seabird (*i.e.*, species that are typically found out of sight of land and return to coastal waters only to breed) known to breed in proximity to the Strait of Canso (Shell and Stantec 2013). There is known habitat for Harlequin Duck along the southern shoreline of Chedabucto Bay.

Grey seals and harbour seals occur year-round in Nova Scotian waters and are fairly common in the Strait of Canso as well as hooded seals (*Cystophora cristata*) and harp seals (*Phoca groenlandica*) which are seasonal visitors to Nova Scotian waters (Shell and Stantec 2013).

Incidental observations of fin whale (*Balaenoptera physalus*) (SARA Schedule 1, Special Concern), and a beached blue whale (SARA Schedule 1, Endangered) have been recorded in the Strait of Canso or its approaches; however, these species are considered uncommon transients given their preference for deeper waters, and would likely only enter the strait area in pursuit of prey (Jacques Whitford 2004). More commonly found in the Strait of Canso are harbour porpoises, pilot whales (*Globicephala melas*) and minke whales (*Balaenoptera acutorostrata*).

At least 69 species of fish have been recorded in the nearshore marine habitat of Nova Scotia including demersal groundfish such as flounder, codfish, skate, sand lance and redfish and typical pelagic species such as Atlantic herring and Atlantic mackerel. Anadromous fish species known to occur in the Strait of Canso include salmon, trout, gaspereau, and smelt (Shell and Stantec 2013).

The Strait of Canso is located in NAFO Fishery Unit Area 4Wd where invertebrate fisheries, particularly shrimp and snow crab fisheries, are the most productive and commercially important fisheries in the area (Shell and Stantec 2013). Lobster catches are also substantial in Area 4Wd and an exploratory rock crab season also occurs in the area beginning one week after the lobster season ends (Shell and Stantec 2013). A large proportion of the groundfish catch consists of cod, Atlantic halibut, and pollock as well as catfish, cusk, dogfish, haddock, monkfish, plaice, redfish, turbot, flounder, and hake (Shell and Stantec 2013). The main pelagic fisheries include herring and mackerel along with other commercial pelagic species including alewife, bluefin tuna, eel, blue shark, mackerel shark, and smelt (Shell and Stantec 2013).



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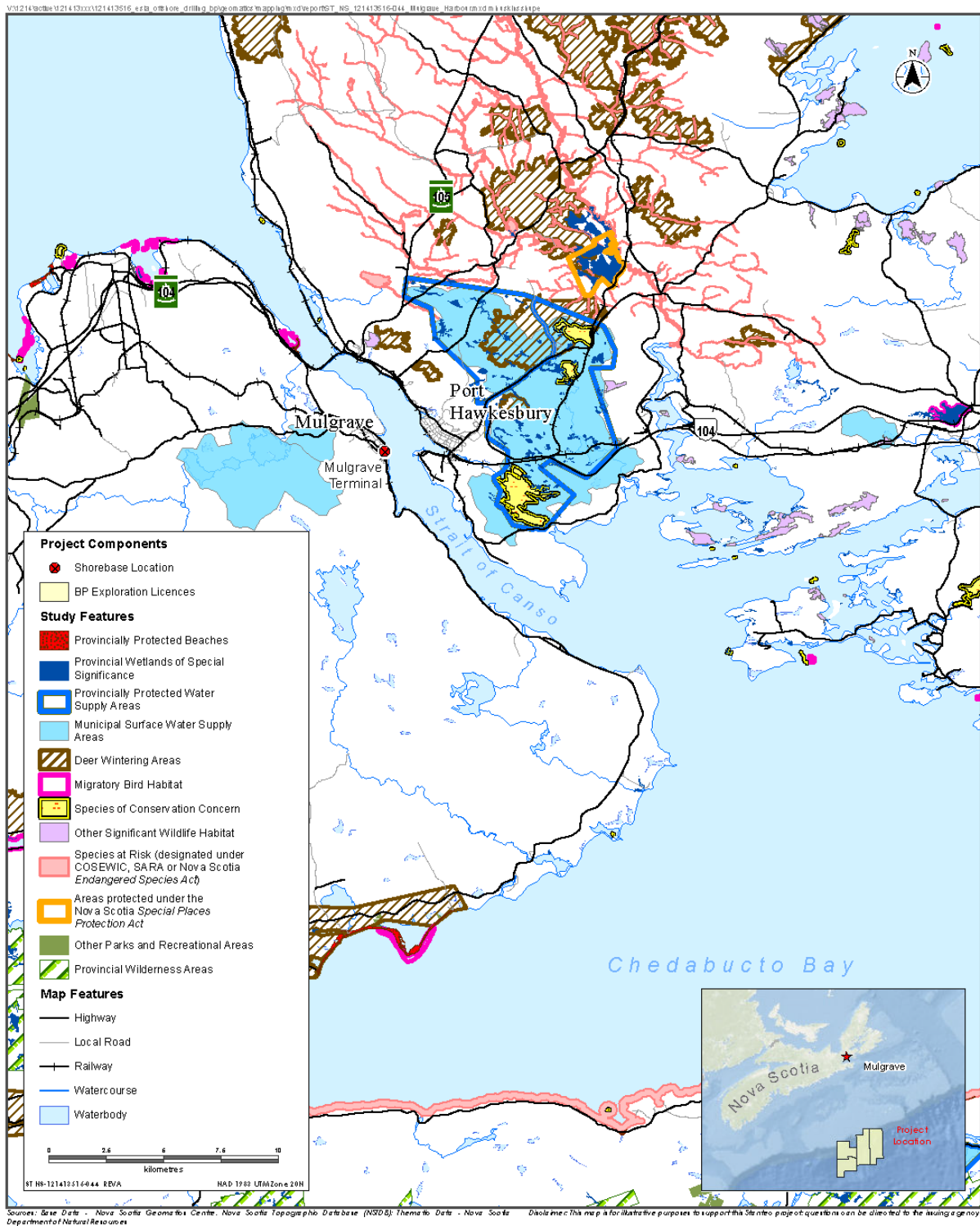


Figure 3.2 Environmentally Sensitive Areas in the Vicinity of the Strait of Canso

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The Mulgrave Marine Terminal is located within DFO Statistical District 14 encompassing the area from Mulgrave to Guysborough (Shell and Stantec 2013). A limited Aboriginal fishery operates out of the St. Peters area in District 9 and these fishers have rights to access the water of District 14 as well (AMEC 2008).

3.2 OFFSHORE PROJECT AREA

3.2.1 Previous Studies

The description of the environmental setting for the Project draws primarily on information presented in the Environmental Assessment of BP's Tangier 3D Seismic Survey (LGL 2014) and the Shelburne Basin Venture Exploration Drilling Project Environmental Impact Statement (Stantec 2014a). Observations from marine wildlife monitoring during BP's Tangier 3D WATS survey (May to September 2014) provide additional site-specific data on cetacean and bird species observed in the Project Area. Additionally, deepwater benthic survey data collected in 2001 and 2002 in the vicinity of the Project Area are used to characterize benthic habitat in the vicinity of the Project Area.

Additional studies that will be consulted to inform the preparation of the EIS include the Strategic Environmental Assessment (SEA) for Offshore Petroleum Exploration Activities Western Scotian Slope (Phase 3B) (Stantec 2014b) and the SEA for Offshore Petroleum Exploration Activities Eastern Scotian Slope (Phase 1B) (Stantec 2012).

3.2.2 Biophysical

The Project Area is located within the Scotian Basin geological formation on the Scotian Slope offshore Nova Scotia. The Scotian Basin straddles the continental slope and Scotian Shelf, with waters ranging in depth from less than 200 m to over 4,000 m (CNSOPB 2013). Water depth within the Project Area ranges from 100 m to more than 3,000 m.

The seabed of the Project Area is characterized by a variety of surficial sediments on the continental slope, with silty sediments being carried down the slope by suspension, and sand and gravel slumping over the shelf edge. Some areas of steep slope have exposed bedrock, as do the submarine canyons which exist along the slope. These canyons act as a transition from the outer Scotian Shelf to the deeper ocean and are channels for the transport of sand (WWF 2009). Several benthic surveys have been conducted along the Scotian Slope in 2001 and 2002 in the general vicinity of the Project Area. Additionally, Shell conducted a seabed survey in 2014 which characterized benthic habitat in the Shelburne Basin Venture Exploration project area. Based on this data, the benthic habitat is comprised of Holocene mud (silt) and clay. Brittle stars, burrowing anemones, polychaetes, sea cucumbers, sea urchins and large nudibranchs were observed in former ELs 2381 and 2382. Sea whips (Order Gorgonacea), soft coral (*Anthomastus* spp.) and octocorals (*Umbellula* spp.) were observed at depths less than 2,000 m (JWEL 2003).

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The climate in the Project Area is strongly influenced by the warm Gulf Stream and the cold Labrador Current. Ocean current circulation is influenced by these two major currents as well as the Nova Scotia Current which derives from the outflow of the Gulf of St. Lawrence flowing along the inner, middle and outer portions of the Shelf (Stantec 2012). Fog is relatively common, particularly in spring and summer and average daily air temperatures range from -1.4°C (February) to 17.8°C (August) (Stantec 2012).

The steep topography at the Scotian Shelf break causes enhanced vertical mixing and contributes to an area of increased primary production, drawing higher numbers of cetaceans, fish and birds along the Shelf break. The submarine canyons which line the Scotian Slope are believed to provide diverse habitat for fish and cetaceans. Deep sea corals and other filter feeders can be found on canyon walls (Stantec 2012).

There are approximately 28 marine fish, 8 mammal, 2 sea turtle and 9 bird species of conservation interest (*i.e.*, species listed by SARA and/or the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) which are known to occur on the Scotian Shelf and Slope and could be present in the Project Area or Regional Study Area.

Approximately 20 species of cetaceans are present on the Scotian Shelf and Slope. Marine wildlife monitoring during BP's Tangier 3D WATS survey (May to September 2014) identified 13 odontocete species (*i.e.*, toothed whale) and 5 mysticete (*i.e.*, baleen whale) species. Sperm whales (*Physeter microcephalus*) were overall the most commonly observed species during the monitoring program. Besides sperm whales, long-finned pilot whales (*Globicephala melas*) and short-beaked common dolphin (*Delphinus delphis*) were the most commonly observed odontocete species, and fin whales (*Balaenoptera physalus*) and blue whales the most commonly observed baleen whales (RPS 2014). Several cetacean species known to occur in the area are designated to be at risk under SARA or by COSEWIC including the blue whale, North Atlantic right whale, and northern bottlenose whale (*Hyperoodon ampullatus*), all of which are listed as endangered under SARA.

Five species of pinnipeds are known to occur on the Scotian Shelf, with Sable Island hosting breeding populations of grey seals and harbor seals. No seal populations on the Scotian Shelf are designated to be at risk under SARA or by COSEWIC. Pinnipeds are most commonly found on the Shelf (particularly around Sable Island) and nearshore waters and are less likely to be found in the Project Area.

Four species of sea turtles can be found in the Project Area, with the SARA-listed endangered leatherback sea turtle (*Dermochelys coriacea*) and loggerhead sea turtle (*Caretta caretta*) the most likely to occur.

The east coast of Canada supports large numbers of breeding birds as well as migrating birds from the southern hemisphere and northeastern Atlantic (Gjerdrum *et al.* 2008). Bird species are present year-round on the Scotian Shelf and Slope, with higher densities of sea birds occurring along the Shelf Break where there is higher productivity. The most abundant seabirds



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encountered in the offshore area include northern fulmar (*Fulmarus glacialis*), shearwaters, dovekie (*Alle alle*), storm-petrels, murre, gulls, terns, and black-legged kittiwakes (*Rissa tridactyla*). During the 2014 wildlife monitoring program around the Project Area from June to September, shearwaters and storm-petrels were the most commonly observed species (RPS 2014).

Protected and sensitive areas, collectively referred to as Special Areas, that occur within a 150 km radius of the Project Area, are shown on Figure 3.3. These include Sable Island National Park Reserve, The Gully Marine Protected Area, Northern Bottlenose Whale Critical Habitat, Haddock Box - Haddock Spawning Area, and Sambro Bank and Emerald Bank Sponge Conservation Areas. Additional Special Areas may be identified for inclusion to the scope of the EIS as Project planning advances and the extent of area potentially affected by the Project is refined.

In addition to the protected areas noted above, there are several Ecologically and Biologically Significant Areas (EBSAs) that have been designated on the Scotian Shelf and Slope that would fall within a 150 km radius of the Project Area. EBSAs have no formal designation or regulatory protection but are recognized by scientific experts as playing a key role in marine protected areas planning. Of particular relevance are two EBSAs which overlap with the Project Area including the Scotian Slope EBSA and the Emerald-Western-Sable Island Bank Complex EBSA. These EBSAs and others in the regional study area will be discussed further in the EIS.

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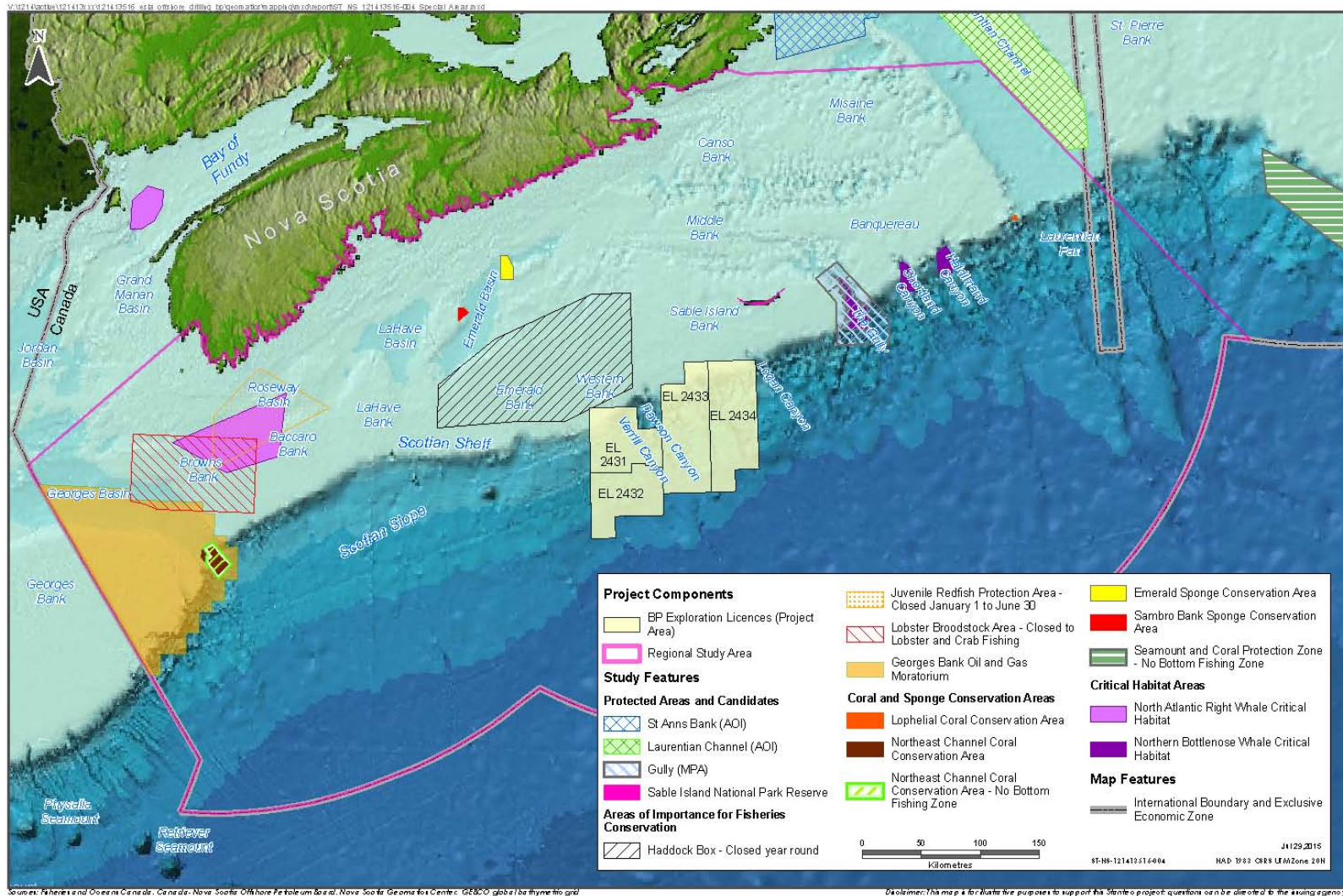


Figure 3.3 Special Areas

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3.2.3 Socio-economic Setting

Within and surrounding the Project Area, the socio-economic setting is dominated by commercial fisheries activity. Groundfish, pelagic, and invertebrate fisheries occur on the Scotian Shelf and Slope, with large pelagics (e.g., swordfish, tuna, shark) being the most commonly harvested in the Project Area. The Project Area lies within Northwest Atlantic Fisheries Organization (NAFO) Fishery Unit Areas 4Wf, 4Wm, 4Wj, and 4Wg.

Waters off Nova Scotia have traditionally been used by Aboriginal peoples for resource harvesting. Commercial and communal commercial fishing licences are held in and around the Project Area. A Traditional Use Study (TUS) will be conducted to examine Aboriginal use of the Project Area and the surrounding area, including food, social and ceremonial (FSC) and communal commercial fishing activities. The findings of the TUS will be incorporated into the EIS to help assess potential effects on Aboriginal resource use.

Other ocean uses include shipping, marine research, oil and gas exploration and military training operations. Shipping traffic in the area is generally concentrated parallel to the Shelf edge and consists primarily of tankers and cargo carriers, as well as fishing vessels, cruise ships and government vessels.

In addition to the petroleum exploration activity proposed by BP, there are other planned exploration and ongoing petroleum development projects offshore Nova Scotia. Closest to the Project Area is the prospective drilling area for the proposed Shelburne Basin Venture Exploration Drilling Project located immediately west of the BP exploration licence area, which is scheduled to begin exploration drilling pending regulatory approval, in 2015. The Sable Offshore Energy Project is located approximately 11 km northeast from the Project Area. The Deep Panuke Offshore Gas Development Project is located 35 km from the Project Area. These developments, which host workers on a rotational basis, represent the nearest temporary residences to the Project. The next closest temporary or seasonal residences to the Project Area would be on Sable Island, a National Park Reserve, which hosts researchers and a few Parks Canada employees.

Data presented in the SEA for the Eastern Scotian Slope (Phase 1B) (Stantec 2012) suggests there may be an explosive dumpsite in the Project Area, as well as abandoned telecommunication cables.

Given the Project's offshore location, a consideration of physical and cultural heritage sites is limited to potential shipwrecks in the area. There are several potential shipwrecks on the Scotian Shelf and Slope including some on the periphery of the Project Area.

Well sites will avoid known locations of shipwrecks and other debris. An ROV survey conducted prior to drilling will provide information on hazards, debris or seabed structures at proposed well sites.

4.0 CONSULTATION AND ENGAGEMENT

BP recognizes the importance of early and ongoing stakeholder engagement that continues over the life of the Project. BP believes that it is important to maintain a social licence to operate in Nova Scotia by building relationships with Aboriginal groups and key stakeholders. BP’s primary objectives around consultation and engagement are to provide transparent and timely communications to help build understanding and trust.

4.1 ABORIGINAL ENGAGEMENT

BP recognizes the potential for the Project to affect Aboriginal interests and acknowledges the importance of engaging Aboriginal organizations to provide Project information and obtain feedback on potential issues and concerns.

There are 13 First Nations in Nova Scotia (refer to Table 4.1). The General Assembly of Nova Scotia Mi’kmaq Chiefs represents the governance for the Mi’kmaq of Nova Scotia. The Kwilmu’kw Maw-klusuaqn Negotiation Office (KMKNO) represents the Assembly with respect to consultation on Mi’kmaq Aboriginal or treaty rights. Sipekne’katik First Nation is a Nova Scotia Mi’kmaq community. Sipekne’katik First Nation is a member of the Assembly of Nova Scotia Mi’kmaq Chiefs but in 2013 chose to represent itself in consultation, as opposed to being represented by the KMKNO. Sipekne’katik First Nation asserts the same rights as other Mi’kmaq communities. The Native Council of Nova Scotia (NCNS) identifies itself as the “self-governing authority for the large community of Mi’kmaq/Aboriginal peoples residing off-reserve in Nova Scotia throughout traditional Mi’kmaq territory (NCNS 2015).

Table 4.1 First Nations of Nova Scotia

Acadia RR#4, P.O. Box 5914-C Yarmouth, NS, B5A 4A8 Tel: 902-742-0257	Membertou 111 Membertou St. Sydney, NS, B1S 2M9 Tel: 902-564-6466
Annapolis Valley P.O. Box 89, Cambridge Station, Kings County, NS, B0P 1G0 Tel: 902-538-7149	Millbrook P.O. Box 634, Truro, NS B2N 5E5 Tel: 902-897-9199
Chapel Island P.O. Box 538 Chapel Island, NS B0E 3B0 Tel: 902-535-3317	Pictou Landing RR#2, Site #6, Box 55, Trenton, NS, B0K 1X0 Tel: 902-752-4912
Eskasoni P.O. Box 7040 Eskasoni, NS B1W 1A1 Tel: 902-379-2800	Paq’tnek (Afton) R.R. #1, Afton Antigonish County, NS B0H 1A0 Tel: 902-386-2781

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Table 4.1 First Nations of Nova Scotia

Sipekne'katik/Indian Brook Indian Brook Post Office, 522 Church St. Indian Brook, NS , B0N 1W0 Tel: 902-758-2049	We'koqma'q P.O. Box 149 Whycocomagh, NS B0E 3M0 Tel: 902-756-2337
Glooscap P.O. Box 449 Hantsport, NS B0P 1P0 Tel: 902-684-9788	Wagmatcook P.O. Box 30001 Wagmatcook, NS B0E 1B0 Tel: 902-295-2598
Bear River P.O. Box 210 Bear River, NS B0S 1B0 Tel: 467-3802	

There are approximately 24 Aboriginal organizations from Nova Scotia, New Brunswick and Newfoundland that have fishing licences within the Regional Study Area, the majority of which fish outside of the Project Area.

Aboriginal engagement in relation to the Project began in December 2014, including meetings with the KMKNO, Sipekne'katik and NCNS. Interests, issues and concerns raised during discussions with Aboriginal organizations thus far have comprised two broad themes: environmental and operational safety concerns; and interest around economic development opportunities. Environment topics included: the need for a general understanding of offshore deepwater exploratory well activities, potential impacts of the Project on marine wildlife and fishing activities, the impacts of a potential spill (especially to the fishery), the use of dispersants for a potential spill, and HSE measures BP has implemented based on its experience. Interest in economic development opportunities focused on: potential contract opportunities for Aboriginal businesses, potential employment opportunities from offshore drilling activities, and training opportunities for youth and adults.

BP recognizes that Aboriginal use of marine resources in the study area may extend beyond that solely used by the Mi'kmaq of Nova Scotia. Maliseet and Mi'kmaq First Nations in New Brunswick and Newfoundland and Labrador have been identified as conducting fishing activities in the vicinity of the Project and therefore may also have an interest in the Project.

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BP has commissioned a TUS which will supplement information obtained during Aboriginal engagement efforts to help to characterize Aboriginal use of marine resources in the vicinity of the Project and assist in the assessment of effects on current use of lands and resources for traditional purposes.

BP will continue to engage Aboriginal groups with whom it has built relationships, and will expand its relationships to include Aboriginal organizations that may have an interest in the Project Area and potential activities. Ongoing engagement will include listening and responding to Aboriginal concerns in a timely manner. BP plans to provide educational overviews to aid dialogue of the themes which emerged from early engagement discussions as well as any new Project-relevant topics which emerge.

4.2 STAKEHOLDER AND COMMUNITY ENGAGEMENT

BP employs a broad definition of stakeholders, to include fisheries organizations, environmental non-governmental organizations (NGOs), industry associations, government, and the interested public. A preliminary list of stakeholders that may have an interest in the Project includes:

- CNSOPB;
- Government of Nova Scotia (various departments);
- Government of Canada (various departments);
- Municipal governments and economic development authorities (as applicable);
- Fish producers and fisheries associations (including the CNSOPB Fisheries Advisory Committee);
- NGOs (e.g., Ecology Action Centre, Friends of Sable Island Society);
- Petroleum industry associations (e.g., Maritime Energy Association, Canadian Association of Petroleum Producers) and peer companies;
- Halifax Chamber of Commerce; and
- Post-secondary institutions.

BP's stakeholder and community outreach objectives include providing transparent and factual information about its plans and activities and encouraging input from stakeholders. BP has undertaken stakeholder engagement efforts on the Project since November 2014 including meetings with the various stakeholders. In addition to meetings, BP maintains a website with updates on BP's activity in Nova Scotia (<http://www.bp.com/en/global/corporate/about-bp/bp-worldwide/bp-in-canada/bp-in-nova-scotia.html>).

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BP engaged fisher communities first through the Fisheries Advisory Committee (FAC) of the CNSOPB and then by individual fisher organizations (including aboriginal fisheries.) In discussions both at the FAC and with individual fisher organizations, the common themes of safety and environment were consistent in all discussions. Dialogue about a proposed offshore project with other stakeholders including the Nova Scotia Government and Federal Government Departments (including Fisheries and Oceans) revealed similar concerns.

Environmental topics included: the need for a general understanding of offshore deepwater exploratory well activities; how activities may impact fishing activities; the impacts from a potential spill (especially to the fisheries); the use of dispersants for a potential spill; and HSE measures BP has implemented based on its experience.

Interest in economic development and social opportunities focused on: potential contract opportunities for Nova Scotia businesses; potential employment opportunities from offshore drilling activities; community social investment in Nova Scotia; and long term investments in the region including training opportunities for youth and adults.

On-going engagement will include listening and responding to stakeholder concerns in a timely manner. BP will provide educational overviews to aid dialogue of the themes which emerged from early engagement discussions as well as any new Project relevant topics which emerge.

5.0 POTENTIAL PROJECT-RELATED CHANGES TO THE ENVIRONMENT AND SCOPING CONSIDERATIONS

5.1 POTENTIAL PROJECT-RELATED CHANGES TO THE ENVIRONMENT

5.1.1 Planned Activities Offshore

Project activities that have the potential to result in changes to the environment include:

- Presence and operation of the drilling vessel (including lights and flare, underwater sound and safety zone);
- VSP surveys (underwater sound);
- Discharges and emissions (e.g., drill muds and cuttings, liquid discharges, atmospheric emissions);
- OSV (underwater sound) and helicopter operations; and
- Well abandonment.

Under CEEA, 2012, the PD must provide a description of any potential changes to fish and fish habitat, aquatic species, and migratory birds that may be caused as a result of carrying out the Project and the effects of any potential environmental changes to federal or transboundary lands and to Aboriginal peoples.

Table 5.1 provides an overview of the potential environmental interactions with routine Project activities, including offshore logistical support operations (e.g., OSV and helicopter use) that have the potential to result in changes to the environmental components identified in CEEA, 2012. These potential interactions will be assessed in more detail in the EIS.

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Potential Project-Related Changes to the Environment and Scoping Considerations
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Table 5.1 Potential Environmental Interactions with Routine Project Activities

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Fish, Fish Habitat, and Aquatic Species	5(1)(a)(i) 5(1)(a)(ii)	Routine Project activities have the potential to result in changes affecting fish, fish habitat, aquatic species as defined under SARA, marine mammals, and other aquatic species if the following interactions with the environment were to occur: <ul style="list-style-type: none"> ▪ disturbance to aquatic species from underwater sound emissions associated with OSV transit, drilling and VSP activities; ▪ localized degradation and disturbance to the benthic environment (including benthic species) due to seabed disposal at drill site(s) (i.e., drill mud/cuttings, cement) including potential mortality of benthic organisms; ▪ localized effects on marine water quality due to routine ocean discharges (e.g., waste water) from the drilling vessel and OSVs; and ▪ potential injury or mortality to marine mammal(s) from vessel collisions.
Migratory Birds	5(1)(a)(iii)	Routine Project activities have the potential to result in changes affecting migratory birds, as defined under the <i>Migratory Birds Convention Act, 1994</i> , if the following interactions with the environment were to occur: <ul style="list-style-type: none"> ▪ attraction of migratory birds to OSV and drilling vessel lighting (including flares) and discharges (e.g. food wastes); and ▪ mortality or stranding of migratory birds (particularly storm petrels) on the drilling vessel or OSVs.
Project Activities Occurring on Federal Lands	5(1)(b)(i)	Routine Project activities have the potential to result in changes to the environment that would occur on federal waters as a result of the Project Area being located within Canada’s Exclusive Economic Zone (EEZ) and thus entirely within federal waters under the jurisdiction of the Government of Canada. Given the broad definition of “environment” under CEAA, 2012, potential Project interactions with land, water, air, organic and inorganic matter and living organisms, and interacting natural systems must be considered. In particular, in addition to components of the environment previously addressed above (e.g., effects on water quality, fish, fish habitat, aquatic species and migratory birds) there could also be effects on the atmospheric environment (e.g., air and noise emissions).
Transboundary Issues	5(1)(b)(ii)	Environmental interactions from routine Project activities are not anticipated to result in changes to the environment that would occur outside of the Nova Scotian or Canadian offshore area.

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Table 5.1 Potential Environmental Interactions with Routine Project Activities

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Health and Socio-Economic Conditions for Aboriginal People	5(1)(c)(i)	<p>Routine Project activities have the potential to result in the following changes to the environment that may have an effect on Aboriginal commercial fishing activities, including those carried out under communal commercial licences in and around the Project Area:</p> <ul style="list-style-type: none"> ▪ establishment of a safety zone (fisheries exclusion zone) around the drilling vessel during drilling activities, as required by the CNSOPB, and associated spatial and temporal restrictions on commercial fish harvesting activity; and ▪ disturbance from underwater sound emissions, and associated changes in behavior and distribution of commercial fish species. <p>The Project is also expected to have economic benefits, including economic and contracting opportunities.</p> <p>Routine OSV operations outside of the safety zone will be consistent with existing offshore and nearshore shipping traffic in the region and are not anticipated to result in any changes to the environment that would have an effect on Aboriginal commercial fishing activities.</p> <p>Routine Project activities are not expected to result in any changes to the environment that would have an effect on the health conditions of Aboriginal peoples.</p>
Health and Socio-Economic Conditions	5(2)(b)(i)	<p>Routine Project activities have the potential to result in the following changes to the environment that may have an effect on commercial fishing activities, including those carried out under commercial licences in and around the Project Area:</p> <ul style="list-style-type: none"> ▪ establishment of a safety zone (fisheries exclusion zone) around the drilling vessel during drilling activities, as required by the CNSOPB, and associated spatial and temporal restrictions on commercial fish harvesting activity; and ▪ disturbance from underwater sound emissions, and associated changes in behavior and distribution of commercial fish species. <p>The Project is also expected to have economic benefits, including economic and contracting opportunities.</p> <p>Routine OSV operations outside of the safety zone will be consistent with existing offshore and nearshore shipping traffic in the region and are not anticipated to result in any changes to the environment that would have an effect on commercial fishing activities.</p> <p>Routine Project activities are not expected to result in any changes to the environment that would have an effect on health conditions.</p>

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Potential Project-Related Changes to the Environment and Scoping Considerations
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Table 5.1 Potential Environmental Interactions with Routine Project Activities

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Physical and Cultural Heritage, or Resources of Historical, Archaeological, Paleontological, or Architectural Significance	5(1)(c)(ii) 5(1)(c)(iv) 5(2)(b)(ii) 5(2)(b)(iii)	Routine Project activities are not anticipated to result in any changes to the environment that would have an effect on physical and cultural heritage areas or resources including shipwrecks that have been recorded in the Project Area. Information gathered during 3D seismic surveys and pre-drill ROV site surveys in the Project Area will document the presence/absence of marine heritage resources on the seabed before any seabed disturbance takes place. If any concerns related to this matter are identified during Aboriginal engagement for this Project, they will be considered in the EIS.
Current Use of Lands and Resources for Traditional Purposes by Aboriginal People	5(1)(c)(iii)	Routine Project activities are not anticipated to result in any changes to the environment that would have an effect on the current use of land and resources for traditional purposes by the Aboriginal peoples, other than communal commercial fisheries (discussed above), given the Project Area’s water depth and distance from shore. Routine OSV activities will be consistent with existing shipping traffic in the region and are not anticipated to result in any changes to the environment that would have an effect on traditional Aboriginal fisheries and resource use. Additional information regarding traditional Aboriginal fisheries and traditional resource use will be gathered through Aboriginal engagement and the conduct of a TUS. If any concerns related to this matter are identified during these processes, they will be considered in the EIS.
Other Changes to the Environment Directly Related or Necessarily Incidental to a Federal Authority’s Exercise of a Power or Performance of a Duty or Function in Support of the Project	5(2)(a)	Routine Project activities authorized by the CNSOPB have the potential to result in directly related or necessarily incidental changes to the atmospheric and marine environment. All of these changes have been discussed above.

Modified from Shell and Stantec (2013)

5.1.2 Planned Activities Onshore

Routine logistical activities at the onshore supply base are either not anticipated to result in any adverse environmental effects, or have the potential to cause only minor environmental effects that can be adequately managed. This conclusion is based on the following considerations:

- The onshore supply base will be located at an existing marine terminal in a highly developed setting. The candidate supply base locations are currently used for routine industrial activities that are consistent with those to be carried out in association with the Project and have been shown to meet BP's minimum operational requirements.
- The candidate supply base sites already have most of the primary infrastructure, equipment and facilities onsite to support past or existing operations. Two candidate supply base locations, Mulgrave Marine Terminal (Strait of Canso) and Woodside Terminal (Halifax Harbour), require no site expansion, major civil works, permanent building construction, clearing, or in-water work to support the Project. The third candidate location, Richmond Terminals (Halifax Harbour), would require civil works to support the installation of bulk storage tanks and a liquid mud plant; no in water work is required.
- Where civil works are required (e.g., Richmond Terminals), standard industry practices to manage runoff, erosion and sediment control will be applied, including the use of tarping, berming, silt fencing and/or other methods as appropriate. There will be no discharge to the marine environment and no interaction with migratory birds except potentially incremental lighting consistent with port development.
- The selected supply base will have approvals and management systems in place for the existing operations and infrastructure on the site, and will already be in compliance with applicable legislation, regulations, rules and requirements, including any applicable environmental assessment processes.

Potential environmental interactions with the supply base in support of the Project (considering all three candidate sites) are summarized in Table 5.2.

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Table 5.2 Potential Environmental Interactions with Supply Base Activities in Support of the Project

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Fish, Fish Habitat, and Aquatic Species	5(1)(a)(i) 5(1)(a)(ii)	Routine activities at the onshore supply base are not anticipated to interact with the environment in such a way that results in changes affecting fish, fish habitat, aquatic species as defined under SARA, marine mammals, or other aquatic species for the following reasons: <ul style="list-style-type: none"> • all supply base activities are carried out entirely onshore; • no in-water works (e.g., dredging, wharf extension) are required to prepare the selected supply base location for Project activities; and • if excavation is required for mud batch installation (e.g., at Richmond Terminals), standard industry practices for the management of erosion, runoff and sediment control will be applied, including the use of tarping, berming, silt fencing and/or other methods as appropriate to prevent discharges to the marine environment.
Migratory Birds	5(1)(a)(iii)	Routine activities at the onshore supply base are not anticipated to interact with the environment in such a way that results in changes affecting migratory birds, as defined under the <i>Migratory Birds Convention Act, 1994</i> , for the following reasons: <ul style="list-style-type: none"> • effluent is managed in accordance with environmental regulations which are designed to mitigate potential impacts from discharges; • all of the candidate supply base locations under consideration are active marine terminal facilities that currently use artificial lighting; and • installation of additional lighting (if required) would result in only a small incremental increase in light emissions beyond those already associated with the supply base and/or surrounding industrial area and the use of directional lighting would be considered.
Project Activities Occurring on Federal Lands	5(1)(b)(i)	Routine Project activities at the onshore supply base have the potential to result in changes to the environment on lands owned by the Halifax Port Authority for the Richmond Terminals location. However, these changes would be temporary and would not result in transboundary effects, or environmental effects on aquatic species, migratory birds or Aboriginal people as demonstrated within this Table.
Transboundary Issues	5(1)(b)(ii)	Routine Project activities at the onshore supply base are not anticipated to result in any change to the environment that would occur outside of the existing site boundaries of the selected supply base location.

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Table 5.2 Potential Environmental Interactions with Supply Base Activities in Support of the Project

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Health and Socio-Economic Conditions for Aboriginal People	5(1)(c)(i)	<p>Routine Project activities at the onshore supply base are not anticipated to result in any change to the environment that may have an effect on health and socio-economic conditions for Aboriginal people for the following reasons:</p> <ul style="list-style-type: none"> • there will be no interaction with Aboriginal commercial fishing or other traditional nearshore activities because effluent is managed in accordance with environmental regulations which are designed to mitigate potential impacts from discharges and all supply base activities will be carried out entirely onshore; • there will be no interaction with Aboriginal commercial harvesting of terrestrial resources because all supply base activities are carried out entirely within existing site boundaries (i.e., within a previously disturbed/developed area in an industrial setting that excludes access for traditional use and that precludes the presence or availability of terrestrial resources used for traditional purposes; and • routine supply base activities (including site modification if required) are not expected to result in offsite effects (e.g., air emissions, noise) that would interact with the nearest First Nation lands (Millbrook First Nation reserve lands located 5 km from Woodside Terminal). <p>Routine Project activities at the supply base are not expected to result in any changes to the environment that would have an effect on the health conditions of Aboriginal peoples.</p>
Health and Socio-Economic Conditions	5(2)(b)(i)	<p>Routine Project activities at the onshore supply base are not anticipated to result in any change to the environment that may have an effect on health and socio-economic conditions because there will be no interaction with nearshore commercial or recreational fishing activities; effluent is managed in accordance with environmental regulations which are designed to mitigate potential impacts from discharges and all supply base activities are carried out entirely onshore. Air and noise emissions from supply base activities would be consistent with existing emissions generated at the site and are not expected to result in any changes to health or socio-economic conditions.</p> <p>Routine Project activities at the supply base are not expected to result in any changes to the environment that would have an effect on health and socio-economic conditions.</p>
Physical and Cultural Heritage, or Resources of Historical, Archaeological, Paleontological, or	5(1)(c)(ii)	<p>Routine Project activities at the onshore supply base are not anticipated to result in changes to the environment that would have an effect on physical and cultural heritage areas or resources due to the industrial, previously disturbed/developed nature of all of the candidate supply base locations under consideration. Archaeological potential would be</p>

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Table 5.2 Potential Environmental Interactions with Supply Base Activities in Support of the Project

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Architectural Significance		considered low for all supply base site options. However, if any potential heritage resources are identified during work onsite, appropriate mitigation will be implemented by a qualified archaeologist in consultation with the Nova Scotia Museum. KMKNO’s archaeologist will also be consulted in the event of a suspected Mi’kmaq resource.
Current Use of Lands and Resources for Traditional Purposes by Aboriginal People	5(1)(c)(iii)	<p>Routine Project activities at the onshore supply base are not anticipated to result in any changes to the environment that would have an effect on the current use of land and resources for traditional purposes for the following reasons:</p> <ul style="list-style-type: none"> • there will be no interaction with Aboriginal commercial fishing or other traditional nearshore activities because effluent is managed in accordance with environmental regulations which are designed to mitigate potential impacts from discharges and all supply base activities will be carried out entirely onshore and therefore will not interact with marine fishing; and • there will be no interaction with traditional harvesting of terrestrial resources because all supply base activities are carried out entirely within the existing site boundaries of a previously disturbed/developed area in an industrial setting that excludes access for traditional use and that precludes the presence or availability of terrestrial resources used for traditional purposes.
Other Changes to the Environment Directly Related or Necessarily Incidental to a Federal Authority’s Exercise of a Power or Performance of a Duty or Function in Support of the Project	5(2)(a)	<p>If the Richmond Terminal is ultimately selected as the preferred supply base location, routine activities authorized by the HPA at the onshore supply base have the potential to result in only minor directly related or necessarily incidental changes to the atmospheric and acoustic environment due to the following interactions with the environment:</p> <ul style="list-style-type: none"> • low-level and intermittent release of air emissions (e.g., exhaust) associated with operation of vehicles and equipment; and • low-level and intermittent generation of noise associated with operation of vehicles and equipment. <p>However, the onshore supply base will be located at an existing industrial site in a developed area that is routinely subject to air and noise emissions. Project activities will be conducted in accordance with relevant federal and provincial standards for air emissions and municipal noise by-laws (where applicable).</p>

Modified from Shell and Stantec (2013)



5.1.3 Unplanned Events Offshore

Environmental interactions can also occur from unplanned accidental events and malfunctions (refer to Table 5.3). Potential accidental events that could occur during exploration drilling include blowouts (uncontrolled release of hydrocarbons during drilling) and platform and vessel spills and releases (e.g., hydraulic fluid, drilling mud, diesel). Collectively, these accidental releases are referred to as “spills”. A spill could occur in the offshore (e.g., during drilling) or nearshore (e.g., during OSV transit) environment. Spill trajectory modelling, to be conducted as part of the environmental assessment, will predict areas that could potentially be affected by a spill, including the potential for shoreline interaction with coastal Nova Scotia or Sable Island. Potential environmental interactions can occur within the spill trajectory or as a result of transitory species or their prey travelling through an affected area.

Spill prevention and response measures will be implemented to prevent and/or reduce risk of adverse environmental effects. The EIS will provide additional details regarding these preventative measures designed to prevent accidental events, and contingency, and emergency response measures designed to minimize adverse environmental effects in the unlikely event that they should occur.

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Potential Project-Related Changes to the Environment and Scoping Considerations
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Table 5.3 Potential Environmental Interactions with Accidents and Malfunctions during Project Activities

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Fish, Fish Habitat, and Aquatic Species	5(1)(a)(i) 5(1)(a)(ii)	An accidental spill or release during Project activities could potentially result in changes to fish, fish habitat, aquatic species as defined in SARA, marine mammals, and other aquatic species, including: <ul style="list-style-type: none"> ▪ reduced availability and quality of habitat; ▪ degradation and reduction in marine water quality; and ▪ injury, mortality and/or reduced health for fish and other aquatic species.
Migratory Birds	5(1)(a)(iii)	An accidental spill or release during Project activities could potentially result in changes to migratory birds, as defined under the <i>Migratory Birds Convention Act, 1994</i> , including injury, mortality and/or reduced health for migratory bird species. An accidental spill could also potentially reach the coastline of Sable Island National Park Reserve, thereby potentially affecting migratory birds, including species at risk.
Project Activities Occurring on Federal Lands	5(1)(b)(i)	An accidental spill or release during Project activities could potentially result in changes to the environment that would occur in federal waters as a result of the Project Area being located within Canada’s EEZ and thus entirely within federal waters under the jurisdiction of the Government of Canada. An accidental spill could also potentially affect coastal federal lands and/or the Sable Island National Park Reserve through shoreline oiling and interactions with wildlife. Given the broad definition of “environment” under CEAA, 2012, potential Project interactions with land, water, air, organic and inorganic matter and living organisms, and interacting natural systems must be considered. In particular, components of the environment not previously addressed above include potential effects on the atmospheric environment (e.g., air and noise emissions).
Transboundary Issues	5(1)(b)(ii)	An accidental spill could potentially result in transboundary effects outside of Nova Scotian or Canadian offshore areas. The distance from the Project Area to the United States/Canada boundary is 382 km, to the EEZ is 134 km, and to the Canada/France boundary (Saint-Pierre et Miquelon) is 292 km. Spill probability analysis and trajectory modeling will be conducted to determine the potential for and scope of any transboundary environmental effects. According to the CANUSLANT Joint Marine Pollution Contingency Plan, the Canadian Coast Guard Maritimes Region is the agency responsible for assisting with transboundary spills and the associated response.

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Table 5.3 Potential Environmental Interactions with Accidents and Malfunctions during Project Activities

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Health and Socio-Economic Conditions for Aboriginal People	5(1)(c)(i)	<p>An accidental spill or release during Project activities could potentially result in the following changes to the environment that may have an effect on fisheries, including Aboriginal fisheries:</p> <ul style="list-style-type: none"> • contamination-related closure of commercial fishing areas, and associated restrictions on commercial fish harvesting activity; • reduced catchability associated with damage to fishing gear (e.g., fouling) and changes in population health, behavior, and distribution of commercial fish species as a result of marine pollution; and • changes in population size and health of individuals among commercial fish species, and associated loss of income through reduced catch value. <p>A vessel collision with fishing gear could also potentially result in changes to the environment that may have an effect on human health and safety for Aboriginal peoples.</p>
Health and Socio-Economic Conditions	5(2)(b)(i)	<p>An accidental spill or release during Project activities could potentially result in the following changes to the environment that may have an effect on fisheries:</p> <ul style="list-style-type: none"> • contamination-related closure of commercial fishing areas, and associated restrictions on commercial fish harvesting activity; • reduced catchability associated with damage to fishing gear (e.g., fouling) and changes in population health, behavior, and distribution of commercial fish species as a result of marine pollution; and • changes in population size and health of individuals among commercial fish species, and associated loss of income through reduced catch value. <p>A vessel collision with fishing gear could also potentially result in changes to the environment that may have an effect on human health and safety.</p>
Physical and Cultural Heritage, or Resources of Historical, Archaeological, Paleontological, or Architectural Significance	5(1)(c)(ii) 5(1)(c)(iv) 5(2)(b)(ii) 5(2)(b)(iii)	<p>An accidental spill or release during Project activities could potentially cause a change to the environment that may result in effects to a physical and cultural heritage area (including shipwrecks). Given the location of the Project offshore, and the pre-drill ROV survey prior to drilling, non-routine Project activities are not expected to result in changes to resources of historical, archeological, paleontological, or architectural significance.</p>

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Potential Project-Related Changes to the Environment and Scoping Considerations
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Table 5.3 Potential Environmental Interactions with Accidents and Malfunctions during Project Activities

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Current Use of Lands and Resources for Traditional Purposes by Aboriginal People	5(1)(c)(iii)	<p>An accidental spill or release during Project activities could potentially result in the following changes to the environment that may have an effect on traditional Aboriginal fisheries in the area:</p> <ul style="list-style-type: none"> • contamination-related closure of traditional fishing areas, and associated restrictions on traditional fish harvesting activity; • reduced catchability associated with damage to fishing gear (e.g., fouling) and changes in population size, behavior, and distribution of commercial fish species as a result of marine pollution; and • changes in population size and health of individuals among commercial fish species, and associated reduction in value of fishery resource for traditional use. <p>These changes could potentially occur within the spill trajectory or as a result of migratory fish species transiting through the affected area.</p>
Other Changes to the Environment Directly Related or Necessarily Incidental to a Federal Authority's Exercise of a Power or Performance of a Duty or Function in Support of the Project	5(2)(a)	<p>An accidental event occurring as a result of Project activities authorized by the CNSOPB could potentially result in temporary and localized changes to marine and atmospheric environment. All of these potential changes have been discussed above.</p>

Modified from Shell and Stantec (2013)

5.1.4 Unplanned Events Onshore

Table 5.4 considers potential environmental interactions that may result from accidents and malfunctions during supply base activities in support of the Project. As indicated in Table 5.4, potential accidents and malfunction at the onshore supply base relate primarily to accidental spills or releases. Accidents and malfunctions are not expected to result in adverse environmental effects to fish, aquatic species, migratory birds, and/or Aboriginal peoples. Any effects are expected to be localized and temporary in nature, and are not expected to extend beyond the existing boundaries of the site or into the marine environment. In the unlikely event that effects extend beyond the boundaries of the site and into the marine environment, they have the potential to cause only minor environmental effects due to the following reasons:

- The onshore supply base will be located at an existing marine terminal in a highly developed setting. The candidate supply base locations are currently used for routine industrial activities that are consistent with those to be carried out in association with the Project.
- The selected supply base would have approvals and management systems already in place for the existing operations and infrastructure on the site, including systems to address accidents and malfunctions. The operators will already be complying with applicable legislation, regulations, rules and requirements, including any applicable environmental requirements.
- Should any new approvals be needed for new infrastructure or operations associated with the Project, the third party operator will undertake the regulatory processes necessary to obtain those approvals. Environmental effects, if any, would be adequately managed through these other existing legislative or regulatory processes.

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Table 5.4 Potential Environmental Interactions with Accidents and Malfunctions during Supply Base Activities in Support of the Project

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Fish, Fish Habitat, and Aquatic Species	5(1)(a)(i) 5(1)(a)(ii)	<p>An accidental spill or release at the onshore supply base is not expected to result in changes to fish, fish habitat, aquatic species as defined in SARA, marine mammals, and other aquatic species for the following reasons:</p> <ul style="list-style-type: none"> • the presence of a secondary containment system (to reduce spill risk) for the mud batch plant; • all potentially hazardous materials are stored in designated areas and are handled by trained personnel; and • spill containment/clean-up equipment is kept on-site for use by trained personnel in accordance with Project-specific emergency response plans.
Migratory Birds	5(1)(a)(iii)	<p>An accidental spill, release or other malfunction at the onshore supply base is not expected to result in changes affecting migratory birds, as defined under the <i>Migratory Birds Convention Act, 1994</i>, including injury, mortality and/or reduced health for migratory bird species because these are existing industrial areas, and an accidental spill or release is expected to be contained to the site and not affect the marine environment. Aside from the marine environment, migratory bird habitat at any of the candidate sites would be very limited, if at all.</p>
Project Activities Occurring on Federal Lands	5(1)(b)(i)	<p>An accidental spill or release at the onshore supply base could potentially result in changes to the environment that would occur on lands owned by the Halifax Port Authority for the Richmond Terminal location. Given the existing industrial operations at this location, any potential environmental effects are expected to be minor and adequately managed through other existing legislative or regulatory processes or requirements applicable to this site.</p>
Transboundary Effects	5(1)(b)(ii)	<p>An accidental spill or release at the onshore supply base is not expected to result in any change to the environment outside of Canada.</p>
Health and Socio-Economic Conditions for Aboriginal People	5(1)(c)(i)	<p>An accidental spill or release at the onshore supply base is not expected to result in a change to the environment that would have an effect on Aboriginal fisheries as any spill/release is expected to be contained onsite.</p>
Health and Socio-Economic Conditions	5(2)(b)(i)	<p>An accidental spill or release at the onshore supply base is not expected to result in a change to the environment that would have an effect on commercial or recreational fisheries, adjacent landowners, or the general public, given existing safeguards in</p>

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Table 5.4 Potential Environmental Interactions with Accidents and Malfunctions during Supply Base Activities in Support of the Project

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
		relation to industrial operation of the site and the nearshore area and the fact that any spill/release is expected to be contained onsite.
Physical and Cultural Heritage, or Resources of Historical, Archaeological, Paleontological, or Architectural Significance	5(1)(c)(ii) 5(1)(c)(iv) 5(2)(b)(ii) 5(2)(b)(iii)	Accidents and malfunctions at the onshore supply base are not expected to cause a change to the environment that would result in the disturbance and/or destruction of a physical and cultural heritage area or resource given the industrial nature of the sites and their current levels of disturbance/development.
Current Use of Lands and Resources for Traditional Purposes by Aboriginal People	5(1)(c)(iii)	An accidental spill, release or other malfunction at the onshore supply base is not expected to result in a change to the environment that would have an effect on current use of lands or resources for traditional purposes, including traditional Aboriginal fisheries given: <ul style="list-style-type: none"> • the supply base options are located on existing industrial lands used as active port facilities and not for traditional purposes; and • any spills/releases are expected to be contained onsite.
Other Changes to the Environment Directly Related or Necessarily Incidental to a Federal Authority's Exercise of a Power or Performance of a Duty or Function in Support of the Project	5(2)(a)	If the Richmond Terminal is ultimately selected as the preferred supply base location, an accidental fire occurring as a result of Project activities authorized by the Halifax Port Authority at the onshore supply base has the potential to result in directly related or necessarily incidental changes to the atmospheric environment, including air emissions. However, these changes are not likely to result in effects on migratory birds, aquatic species or Aboriginal peoples.

Modified from Shell and Stantec (2013)

5.2 SCOPING CONSIDERATIONS

Based on a consideration of the potential changes to the environment identified in Section 5.1 and guidance from previous scoping documents and environmental assessments (e.g., Shelburne Basin Venture Exploration Drilling Project, CNSOPB SEAs), BP proposes to focus the EIS on the following environmental components:

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

It is recognized that Project-specific EIS Guidelines will be issued by the Agency following a public review of the PD and input received from Stakeholder and Aboriginal engagement and that the final components to be assessed may change.

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