Project Description
Statoil Canada Ltd.
Flemish Pass Exploration Drilling Program

August 8, 2016

Table of Contents

List of Abbreviations and Units of Measure ..... **iv**
Table of Concordance with CEAA 2012 Regulation SOR/2012-148 and Project Description Guidance Document ..... **v**
1 Introduction **1**
1.1 History of Newfoundland and Labrador Offshore Oil and Gas Activity 1
1.2 Regulatory Context 2
1.2.1 Canadian Environmental Assessment Act 2
1.2.2 The Accord Acts 2
1.2.3 Land Ownership 3
1.2.4 Federal Funding 4
1.2.5 Other Regulatory Requirements 6
1.2.6 Collaboration with Other Operators in Environmental Assessment Process 6
2 Project Proponent **7**
2.1 Statoil's Offshore Experience 7
2.2 Statoil's Management System 8
2.3 Statoil Contacts 9
3 Project Description **10**
3.1 Overview 10
3.2 Project Boundaries 10
3.2.1 Project Area 10
3.2.2 Study Area Spatial Boundaries 12
3.2.3 Temporal Boundaries 12
3.3 Project Components 13
3.3.1 Facilities 13
3.3.2 Logistical Support 15
3.4 Project Activities 17
3.4.1 Drilling activities 17
3.4.2 Well Flow Testing 18
3.4.3 Decommissioning and Well Abandonment 18
3.4.4 Geophysical, Geological, Geotechnical and Environmental Surveys 19
4 Waste Discharges and Emissions **21**
4.1 Atmospheric Emissions 22
4.2 Sound 23
4.3 Drilling Waste 23
4.4 Cement 24
4.5 Liquid Wastes 24

4.6 Hazardous and Non-Hazardous Solid Waste 24
5 Regulatory, Aboriginal and Stakeholder Engagement 25
5.1 Regulatory Agencies 25
5.2 Aboriginal Engagement 25
5.3 Public and Stakeholder Engagement 26
5.4 Results of Engagement to Date and Future Engagement 27
6 Environmental Setting 30
6.1 Previous Studies and Available Information 30
6.2 Biophysical Setting 32
6.2.1 Physical Environment 32
6.2.2 Biological Environment 36
6.3 Commercial Fisheries and Other Ocean Users 40
6.3.1 Commercial Fisheries 40
6.3.2 Aboriginal Fisheries 41
6.3.3 Other Ocean Users 44
7 Potential Project-Related Environmental Interactions 47
7.1 Routine Project Activities 47
7.2 Non-Routine Project Activities 49
7.3 Environmental Assessment Scoping Considerations 51
8 References 52
App A List of Species Likely to Occur in the Project Area 57
App B Environmental Baseline Information – Available Literature 59

List of Figures

Figure 1 Licences in the Flemish Pass Region 5
Figure 2 Project Area 11
Figure 3 Schematic of a Drillship and a Semi-submersible 14
Figure 4 Vessel Routes 16
Figure 5 Eastern Newfoundland Strategic Environmental Assessment Study Area 31
Figure 6 Bathymetric Features 34
Figure 7 Special Areas and Northwest Atlantic Fisheries Organization Fishing Footprint 39
Figure 8 Northwest Atlantic Fisheries Organization Unit Areas 42
Figure 9 Commercial Fisheries Locations in Offshore Newfoundland, 2014 (Canadian fish landings only) 43
Figure 10 Undersea Cable Locations and Department of National Defence Legacy Sites 45

List of Tables

Table 1 Licences Where Drilling Activity May Occur 4
Table 2 Project Area Coordinates....12
Table 3 Anticipated Timing of Project Phases....13
Table 4 Typical Emissions and Discharges Associated with Offshore Drilling Activities and Associated Activities....21
Table 5 Regulatory, Aboriginal and Stakeholder Engagement Meetings....27
Table 6 Species of Conservation Interest with Potential to Occur in and Around the Project Area....37
Table 7 Designated Ecologically and Biologically Significant Areas Within 150 km Radius of the Project Area....40
Table 8 Potential Environmental Interactions with Routine Project Activities....48
Table 9 Potential Environmental Interactions with Non-Routine Activities....50

List of Abbreviations and Units of Measure

°C	degrees Celsius
AUV	autonomous underwater vehicle
BOP	blow-out preventer
CEAA 2012	*Canadian Environmental Assessment Act, 2012*
CEA Agency	Canadian Environmental Assessment Agency
CEPA	*Canadian Environmental Protection Act*
cm	centimetre
cm/s	centimetre per second
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPAWS	Canadian Parks and Wilderness Society
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EBSA	Ecologically and Biologically Significant Area
EEM	Environmental Effects Monitoring
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EL	Exploration License
FPSO	Floating Production Storage and Offloading
km	kilometre
km^2	square kilometre
m	metre
m/s	metre per second
m^3	cubic metres
MODU	mobile offshore drilling unit
NAFO	Northwest Atlantic Fisheries Organization
NEB	National Energy Board
MFN	The Conne River Mi'kmaw (Miawpukek First Nation)
nm	nautical mile
NRA	NAFO Regulatory Area
NRCan	Natural Resources Canada
OWTG	Offshore Waste Treatment Guidelines
PL	Production License
psu	Practical Salinity Unit
QMFNB	Qalipu Mi'kmaq First Nation Band
ROV	remotely operated vehicle
SARA	*Species at Risk Act*
SBM	synthetic-based drilling mud
SDL	Significant Discovery License
SEA	Strategic Environmental Assessment
SFA	Seal Fishing Area
VME	Vulnerable Marine Ecosystem
VSP	vertical seismic profile
WBM	water-based drilling mud

Table of Concordance with CEAA 2012 Regulation SOR/2012-148 and Project Description Guidance Document

Regulation Clause	Guideline Section	Regulation SOR/2012-148 Requirement	Guidance to Support Regulation Requirement	PD Section(s)
General Information				
1	1.2 (a)	Name of the Project	Name of the designated project.	1
1	1.1	Nature of the Project	Nature of designated project.	1
1	1.1	Proposed location of the Project	Proposed location of project.	3.2
2	1.2	Name of the Proponent and contact information, and the name and contact information of their primary representative for the purpose to the project description	Provide proponent contact information: b) name of the proponent c) Address of the proponent d) Chief Executive Officer or equivalent (include name, official title, email address and telephone number) e) principal contact person for the purposes of the project description (include name, official title, email address and telephone number).	2.3
3	1.3	A description of and the results of any consultations undertaken with any jurisdiction and other parties including Aboriginal peoples and the public	Provide a list of any jurisdictions and other parties including Aboriginal groups and the public that were consulted during the preparation of the project description. (A description of the result of any consultations is to be provided in Sections 6 and 7).	5.1, 5.2, 5.3
4	1.4	The environmental assessment and regulatory requirements of other jurisdictions	Provide other relevant information: a) Provide information on whether the designated project is subject to the environmental assessment and/or regulatory requirements of another jurisdiction(s).	1.2
4.1	1.5	A description of any environmental study that is being or has been conducted of the region where the project is to be carried out	Provide information on whether the designated project will be taking place in a region that has been the subject of a regional environmental study.	6.1
Project Information				
5	2.1	A description of the project's context and objectives	Provide the following information to the extent that it is available or applicable: 1. Provide a general description of the project, including the context and objectives of the project.	3.1
6	2.2	The provisions in the schedule to the *Regulations Designating Physical Activities* describing the project in whole or in part.	2. Indicate the provisions in the *Regulations Designating Physical Activities* setting out the designated activities that describe the project in whole or in part.	1.2

Regulation Clause	Guideline Section	Regulation SOR/2012-148 Requirement	Guidance to Support Regulation Requirement	PD Section(s)
7	2.3(a)	A description of the physical works that are related to the project including their purpose, size and capacity	Provide a description of the components associated with the proposed project, including: a) Physical works with the designated project (e.g., large buildings, other structures, such as bridges, culverts, dams, marine transport facilities, mines, pipelines, power plants, railways, roads, and transmission lines) including their purpose, approximate dimensions, and capacity. Include existing structures or related activities that will form part of or are required to accommodate or support the designated project.	3.3
8	2.3(b)	The anticipated production capacity of the project and a description of the production processes to be used, the associated infrastructure and any permanent or temporary structures	Anticipated size or production capacity of the designated project, with reference to thresholds set out in the *Regulations Designating Physical Activities*, including a description of the production processes to be used, the associated infrastructure and any permanent or temporary structures.	N/A
	2.3(c)		If the designated project, or one of its components, is an expansion, describe the size and nature of the expansion.	N/A
9	2.3(d)	A description of all activities to be performed in relation to the project	A description of physical activities that are incidental to the designated project.	3.4
10	2.4	A description of any waste that is likely to be generated during any phase of the project and of a plan to manage that waste	Provide a description of any solid, liquid, gaseous, or hazardous wastes likely to be generated during any phase of the designated project and of plans to manage those wastes, including the following: a) Sources of atmospheric contaminant emissions during the designated project phases (focusing on criteria air contaminants and greenhouse gases, or other non-criterial contaminants that are of potential concern) and location of emissions b) Sources and location of liquid discharges c) Types of wastes and plans for their disposal (e.g., landfill, licensed waste management facility, marine waters, or tailing containment facility).	4
11	2.5	A description of the anticipated phases of and the schedule for the project's construction, operation, decommissioning and abandonment	Provide a description of the timeframe in which the development is to occur and the key project phases, including the following: a). Anticipated scheduling, duration and staging of key project phases, including preparation of the site construction, operation and decommissioning and abandonment, b) Main activities in each phase of the designated projected that are expected to be required to carry out the proposed development (e.g., activities during site preparation or construction might include, but are not limited to, land clearing, excavating, grading, de-watering, directional drilling, dredging and disposal of dredge sediments, infilling and installing structures).	3.3, 3.4

Regulation Clause	Guideline Section	Regulation SOR/2012-148 Requirement	Guidance to Support Regulation Requirement	PD Section(s)
Project Location Information				
12	3.0	A description of the Project's location, including	Provide a description of the designated project's location, including:	
(a)	3.1	Its geographic coordinates	1. Coordinates (i.e., longitude/latitude using international standard representation in degrees, minutes, seconds) for the centre of the facility, or for a linear project, provide the beginning and end points.	3.2
(b)	3.1	Site maps produced at an appropriate scale in order to determine the project's overall location and the spatial relationship of project components	2. Site map/plan(s) depicting location of the designated project components and activities. The map/plan(s) should be at an appropriate scale to help determine the relative size of the proposed components and activities. 3. Map(s) at an appropriate scale showing the location of the designated project components and activities relative to existing features, including but not limited to: a) watercourses and waterbodies with names where they are known b) linear and other transportation components (e.g., airports, ports, railways, roads, electrical power transmission lines and pipelines) c) other features of existing or past land use (e.g., archaeological sites, commercial development, houses, industrial facilities, residential areas and any waterborne structures); d) location of Aboriginal groups, settlement land (under a land claim agreement) and, if available, traditional territory e) federal lands (as defined in CEAA 2012) including, but not limited to national Parks, national Historic sites, and reserve lands f) nearby communities g) permanent seasonal or temporary residences h) fisheries and fishing areas (i.e., Aboriginal, commercial and recreational) i) environmentally sensitive areas (e.g., wetlands and protected areas, including migratory bird sanctuary reserves, marine protected areas, National Wildlife areas) j) provincial and international boundaries.	3.1, 3.2
(c)	3.2	The legal description of land to be used for the project, including the title, deed or document and any authorization relating to a water lot	Legal Description of land to be used for the designated project, including the title, deed or document and any authorization relating to a water lot.	1.2
(d)	3.1	The project's proximity to any permanent, seasonal or temporary residences	5. Proximity of the designated project to: a) any permanent, seasonal or temporary residences.	1.1

Regulation Clause	Guideline Section	Regulation SOR/2012-148 Requirement	Guidance to Support Regulation Requirement	PD Section(s)
(e)	3.1	The project's proximity to reserves, traditional territories as well as lands and resources currently used for traditional purposes by Aboriginal peoples	b) traditional territories, settlement land (under a land claim agreement) as well as lands and resources currently used for traditional purposes by Aboriginal peoples.	5.2, 6.3.2
(f)	3.1	The project's proximity to federal lands	c) any federal lands.	1.2, 3.2
	3.2		Land and Water Use To the extent that is known at this time, describe the ownership and zoning of land and water that may be affected by the project, including the following: a) Zoning designations b) current land ownership, including sub-surface rights c) Any applicable land use, water use (including ground water), resource management or conservation plans within and near the project site.	1.2, 6.3
	3.2		d) Describe whether the designated project is going to require access to, use or occupation of, or the exploration, development or production of lands and resources currently used for traditional purposes by Aboriginal peoples.	N/A
Federal Involvement				
13	4.0	A description of any financial support that federal authorities are, or may be, providing to the project	1. Describe if there is any proposed or anticipated federal financial support that federal authorities are, or may be, providing to the designated project.	1.2.4
14		A description of any federal land that may be used for the purpose of carrying out the project	2. Describe any federal lands (as defined per CEAA 2012) that may be used for the purpose of carrying out the designated project. This is to include any information on any granting of interest in federal land (i.e., easement, right of way or transfer of ownership).	1.2, 3.2
15		A list of permits, licences or other authorizations that may be required under any Act of Parliament to carry out the project	Detail any federal legislative or regulatory requirements that may be applicable, including a list of permits, licences or other authorizations that may be required to carry out the designated project.	1.2
Environmental Effects				
16	5.1	A description of the physical setting	Using existing knowledge and available information provide an overview of the following: 1. A description of the physical setting, including the physical components in the area that may be adversely affected by the project (e.g., air, terrain, water).	6.2.1
16	5.1	A description of the biological setting	2 A description of the biological setting, including the biological components in the area that may be adversely affected by the project (e.g., fish, vegetation, wildlife, including migratory birds, and known habitat use).	6.2.2

Regulation Clause	Guideline Section	Regulation SOR/2012-148 Requirement	Guidance to Support Regulation Requirement	PD Section(s)
17	5.2	A description of any changes that may be caused, as a result of carrying out the project, to	A description of any changes that may be caused as a result of carrying out the designated project to:	
(a)	(a)	Fish and fish habitat as defined in subsection 2(1) of the Fisheries Act	Fish and fish habitat, as defined in the *Fisheries Act*.	7.1, 7.2
(b)	(b)	Aquatic species, as defined in subsection 2(1) of the Species at Risk Act	Marine plants as defined in the *Fisheries Act*.	7.1, 7.2
(c)	(c)	Migratory birds, as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994	Migratory Birds as defined in the MBCA, 1994.	7.1, 7.2
18	5.3	A description of any changes to the environment that may occur, as a result of carrying out the project, on federal lands, in a province other than the province in which the project is proposed to be carried out or outside of Canada	A description of any changes to the environment that may occur, as a result of carrying out the project, on federal lands, in a province other than the province in which the project is proposed to be carried out or outside of Canada.	7.1, 7.2
19	5.4	Information on the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance	A description of the effects on Aboriginal peoples of any changes to the environment that may be caused as a result of carrying out the designated project, including effects on health and socio-economic conditions, physical and cultural heritage, the current use of lands and resources for traditional purposes, or any structure, site or thing that is historical, archaeological, paleontological or architectural significance.	7.1, 7.2
Proponent Engagement and Consultation with Aboriginal Groups				
	6.0		Provide the following information to the extent that it is available or applicable.	
	6.1		A list of Aboriginal groups that may be interested in, or potentially affected by, the designated project.	5.2

Regulation Clause	Guideline Section	Regulation SOR/2012-148 Requirement	Guidance to Support Regulation Requirement	PD Section(s)
	6.2		A description of the engagement or consultation activities carried out to date with Aboriginal groups including: a) names of Aboriginal groups engaged or consulted to date with regard to the project b) date(s) each Aboriginal group was engaged or consulted c) means of engagement or consultation (e.g., community meetings, mail or telephone).	5.2
	6.3		An overview of key comments and concerns expressed by Aboriginal groups identified or engaged to date, including any responses provided to these groups.	5.4
	6.4		A consultation and information gathering plan that outlines the ongoing and proposed Aboriginal engagement or consultation activities, the general schedule for these activities and the type of information to be collected (or, alternatively, an indication of why such engagement or consultation is not required).	5.4
	6		The proponent is encouraged to provide background information on Aboriginal groups potential or established Aboriginal or treaty rights. The proponent is also encouraged to provide information on the impact area of the designated project and how it overlaps with uses by Aboriginal groups that have potential or established Aboriginal or treaty rights.	5.2, 6.3.2
Consultation with the Public and Other Parties (other than Aboriginal consultation included above)				
	7.0		Provide the following information to the extent that it is available or applicable.	
	2		An overview of key comments and concerns expressed to date by stakeholders and any responses that have been provided.	5.4
	3		An overview of any ongoing or proposed stakeholder consultation activities.	5.4
	4		A description of any consultations that have occurred with other jurisdictions that have environmental assessment or regulatory decisions to make with respect to the project.	5.4
Summary				
20	8.0	A summary of the information required under Sections 1 to 19	…include an executive summary that summarizes the information identified in Sections 1 to 7 of this Guide. The executive summary is to be prepared and submitted to the Agency in both English and French.	Project Description Summary Document
N/A – Not Applicable				

1 Introduction

Statoil Canada Ltd. (herein referred to as Statoil), on behalf of its partners BP Canada Energy Group ULC, BG International Limited, Chevron Canada Limited and ExxonMobil Canada Ltd., is proposing to undertake an exploration drilling program on current and potential licences operated by Statoil in the Flemish Pass area (herein referred to as the Project).

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 (ELs) issued in accordance with the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* is a designated project under the *Canadian Environmental Assessment Act* (CEAA 2012). This Project Description has been prepared to address the information requirements pursuant to the CEAA 2012 and its regulations, as well as requirements under the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act* (the Accord Acts). This document is provided to the Canadian Environmental Assessment Agency (CEA Agency) so that it may determine whether an environmental assessment (EA) is required. It is also intended to assist other regulatory agencies, Aboriginal groups and the public to determine their interest and participation in the potential EA process.

1.1 History of Newfoundland and Labrador Offshore Oil and Gas Activity

Oil and gas exploration and development has a long history in offshore Newfoundland and Labrador, beginning with the first exploration wells in the 1960s and discovery of the Hibernia oil field in 1979. Since first oil at Hibernia in 1997, two additional fields (Terra Nova and White Rose) have been developed, and construction on a fourth (Hebron) is ongoing, with first oil anticipated in 2017.

Since exploration on the Grand Banks began, more than 420 wells have been drilled, including over 165 exploration wells, over 55 delineation wells and 200 development wells. This has led to more than 50 Significant Discovery Licences (SDLs) being issued for the Grand Banks / Jeanne d'Arc Basin region, and 11 Production Licences (PLs).

The Hibernia oil field was the first oil producing field on the Grand Banks. It is located approximately 315 km east-southeast of St. John's. It is approximately 50 km west-northwest of White Rose and approximately 35 km northwest from Terra Nova. The Hibernia Platform has been in production since November 1997 and includes a gravity-base structure with storage capacity for 1.3 million barrels of oil. The Hibernia Southern Extension project is located approximately 6 km from Hibernia and is tied back to the existing Hibernia Platform via flowlines.

The Terra Nova oil field is located approximately 350 km east-southeast of St. John's, 50 km southwest of White Rose and 35 km southeast of the Hibernia Platform. Terra Nova was the second oil producing field on the Grand Banks and has been in production since January 2002. The Terra Nova operation uses a floating production, storage and offloading (FPSO) facility that can store up to 960,000 barrels of

oil. The Terra Nova Development includes four drill centres. The Terra Nova Field Safety Zone extends 9.26 km from the FPSO and is recognized by International Maritime Organization and Transport Canada. Two to four support vessels and two shuttle tankers provide support services to the Terra Nova Development.

The White Rose field is located approximately 360 km east-southeast of St. John's (50 km east-northeast of the Hibernia Platform, 50 km northeast of the Terra Nova FPSO) and involves an FPSO, with five drill centres (Central, Southern, Northern, North Amethyst and South White Rose Extension), and subsea flowlines tied-back to the Sea Rose FPSO. The White Rose Safety Zone is approximately 105 km^2. Husky is currently investigating the development of the White Rose Extension Project, which would be situated west of the Central Drill Centre. Two options for development are under consideration, either a wellhead platform or a drill centre similar to existing drill centres in the White Rose field. Four to six supply vessels and three shuttle tankers provide support services to the White Rose Field.

The Hebron Project (currently under construction), is located approximately 340 km east-southeast of St. John's. At approximately 9 km northeast of Terra Nova, it is within Terra Nova's 10 nautical mile Precautionary Zone); it is 46 km southwest of White Rose and 32 km southeast of Hibernia. The project is being developed using a gravity-base structure (smaller than the Hibernia Platform) with a storage capacity of 190,000 m^3 (1.2 million barrels) of crude oil and an estimated production rate of 23,900 m^3/day oil. The oil will be offloaded to shuttle tankers via an offshore loading system similar to that used at Hibernia.

Exploration drilling programs prior to 2012 were subject to a CEAA screening-level EA administered by the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB). Eleven exploration drilling EAs (CEAA Screenings) were conducted by the C-NLOPB between 2004 and 2008.

1.2 Regulatory Context

1.2.1 Canadian Environmental Assessment Act

The Project is a designated project pursuant to the CEAA 2012. Schedule I of the *Regulations Designating Physical Activities* (SOR/2012-147) designates "*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 and Labrador Atlantic Accord Implementation Act or the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*" as a designated project under the CEAA 2012.

1.2.2 The Accord Acts

Oil and gas activities offshore Newfoundland and Labrador are regulated by the C-NLOPB. The C-NLOPB derives its regulatory authority from the Accord Acts. As stated on the C-NLOPB website, their role, under the Accord Acts, is to facilitate oil and gas exploration and development in the

Newfoundland and Labrador Offshore Area while overseeing compliance with regulatory requirements for worker safety, environmental protection and safety, conservation of the resource, land tenure, and Canada/Newfoundland and Labrador benefits. These decision-making processes are governed by various legislation, regulations, guidelines, and memoranda of understanding.

Pursuant to Section 138(1) of the Accord Acts, the C-NLOPB issues an Operations Authorization for offshore exploratory drilling activities. In accordance with the Accord Acts and Section 6 of the *Newfoundland Offshore Petroleum Drilling and Production Regulations* (SOR/2009-316), prior to the issuance of an Operations Authorization, the following information must be submitted by the Operator and approved by C-NLOPB:

- EA Report
- Canada-Newfoundland and Labrador Benefits Plan
- Safety Plan
- Environmental Protection Plan
- Emergency Response and Spill Contingency Plans
- Appropriate Financial Security
- Certificate of Fitness for the proposed equipment / facilities used to carry out drilling activities

The Environmental Impact Statement (EIS) will address the EA requirements of the C-NLOPB Operations Authorization process.

Additional oversight for environmental protection and safety of operations is provided by regulations and guidelines issued by the C-NLOPB, and jointly with the Canada-Nova Scotia Offshore Petroleum Board and/or National Energy Board (NEB). For exploration drilling programs, the *Newfoundland Offshore Drilling and Production Regulations* (SOR/2009-316) govern drilling activities and establish the framework for safety and environmental protection. Environmental guidelines to support drilling programs include Offshore Waste Treatment Guidelines (OWTG) (NEB et al. 2012), the Environmental Protection Plan Guidelines (NEB et al., 2011) and the Offshore Chemical Selection Guidelines for Drilling and Production Activities on Frontier Lands (NEB et al. 2009).

1.2.3 Land Ownership

The Project is located primarily outside Canada's 200 nm Exclusive Economic Zone (EEZ) on the outer continental shelf. The Newfoundland and Labrador offshore area, as defined in the Accord Acts includes those lands within the Canada's 200 nm EEZ or to the edge of the continental margin, whichever is greater. The CEAA 2012 defines "federal lands" as those lands that include the continental shelf of Canada. Therefore, the Project will be carried out on federal lands under the jurisdiction of the C-NLOPB.

Offshore subsurface rights are managed by the C-NLOPB on behalf of the governments of Canada and Newfoundland and Labrador. The C-NLOPB issues licences for land tenure that afford the holder of the

licence exclusive rights to explore for or produce petroleum resources: exploration licences, significant discovery licences, commercial discovery licences, and production licences. Exploration licences are issued in accordance with the C-NLOPB land tenure process, pursuant to the Accord Acts and are valid for up to nine years consisting of Period I and Period II. Note that the land tenure process is under review and changes are anticipated. The issuance of exploration licences is based on work commitments, whereby a well must be drilled or diligently pursue by the end of Period I.

Statoil holds interest rights (ELs, SDLs and PLs), in the Newfoundland and Labrador Offshore Area. As of May 2016, Statoil is the operator of ten ELs and five SDLs, and is an interest holder on 1 EL, 31 SDLs, and 6 PLs. Table 1 lists the ELs either operated by Statoil or in which Statoil is a partner on which the first exploration well could be drilled, therefore triggering CEAA 2012. These ELs are illustrated in Figure 1.

Table 1 Licences Where Drilling Activity May Occur

Licence Number	Interest Holders (% ownership)	Expiry: Period 1 Period 2	Drilling Activity
1125	Statoil (40%)* Chevron (40%) BP (10%) BG (10%)	Jan. 15, 2018 Jan 15, 2021	No drilling has occurred
1138	Chevron (operator) (35%) Statoil (35%) BG (30%)	Jan. 15, 2018 Jan 15, 2021	No drilling has occurred
1139	Statoil (40%)* ExxonMobil (35%) BG (25%)	Jan. 15, 2022 Jan. 15, 2025	No drilling has occurred
1140	Statoil (34%)* ExxonMobil (33%) BP (33%)	Jan. 15, 2022 Jan. 15, 2025	No drilling has occurred
1141	Statoil (34%)* ExxonMobil (33%) BP (33%)	Jan. 15, 2022 Jan. 15, 2025	No drilling has occurred
1142	Statoil (50%)* BP (50%)	Jan. 15, 2022 Jan. 15, 2025	No drilling has occurred

1.2.4 Federal Funding

No federal funding will be requested, nor provided, to the proponent from any federal authority to support the Project.

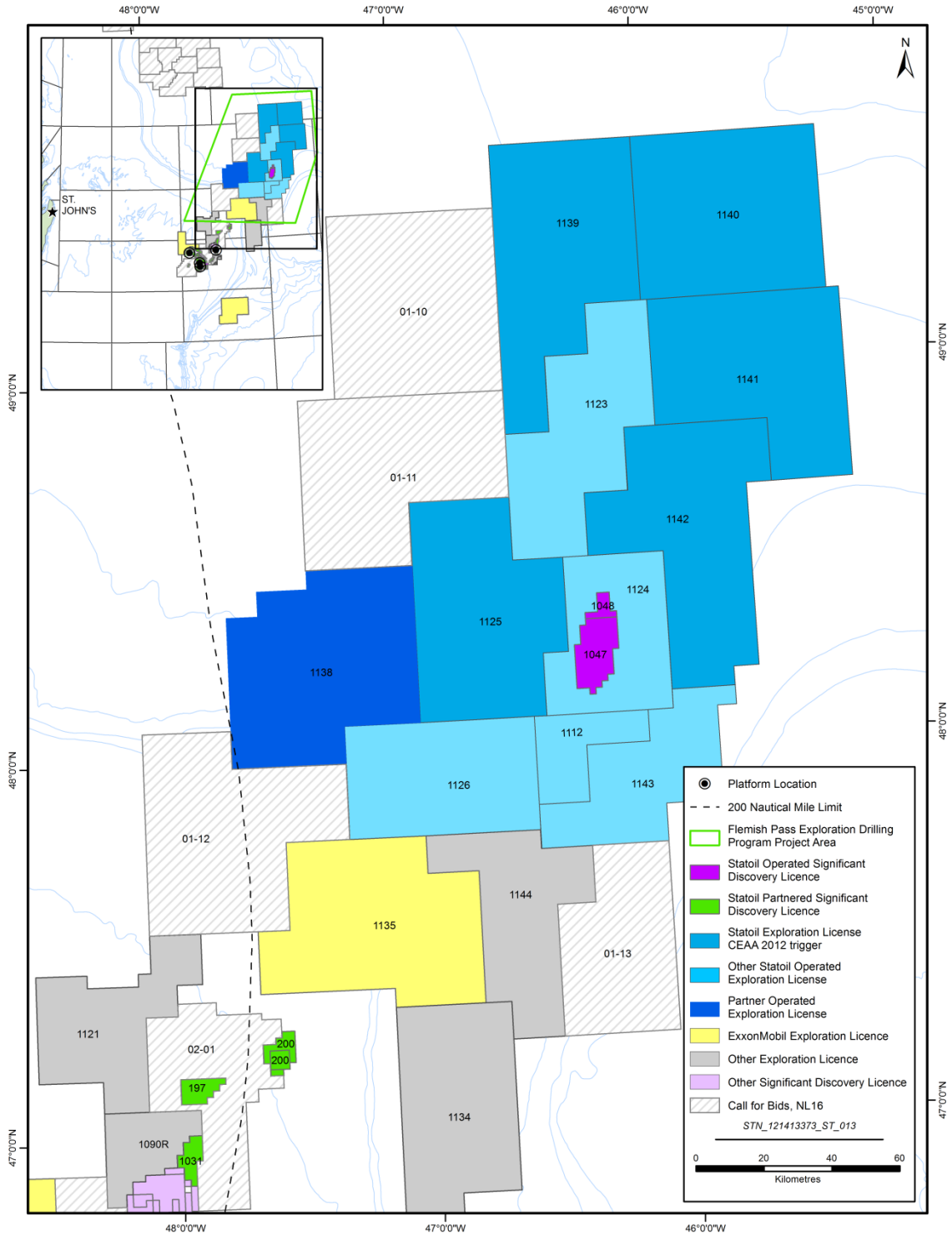


Figure 1 Licences in the Flemish Pass Region

1.2.5 Other Regulatory Requirements

Depending on the nature of the activities offshore, federal departments may require permits, authorizations or approvals for the activities or works associated with the Project. The following is a provisional list of Acts under which permits / approvals / authorizations may be required for the Project:

- *Fisheries Act* (R.S.C., 1985, c. F-14)
- Canadian Environmental Protection Act (CEPA) (S.C. 1999 c. 33)
- Navigation Protection Act (R.S.C., 1985, c. N-22)
- *Species at Risk Act* (SARA) (S.C.2002, c. 29)
- Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22)
- *Canada Shipping Act* (S.C. 2001, c. 26)

Given the scope of the Project, it is not anticipated that the Newfoundland and Labrador *Environmental Protection Act* (2002) and *Environmental Assessment Regulations* 54/03 will apply to the Project. Statoil will not be constructing on-land facilities as part of the Project. Statoil will use a third-party operated shore base to support logistical requirements of the Project.

1.2.6 Collaboration with Other Operators in Environmental Assessment Process

The EA process for exploration drilling activities is an in-depth process requiring both regulatory, proponent and stakeholder input. In the Newfoundland and Labrador offshore area, Statoil is aware that other operators, for instance ExxonMobil Canada Ltd. will be undertaking CEAA 2012 EAs for drilling programs. ExxonMobil Canada Ltd. is also a partner with Statoil on a number of its licences offshore.

Through Statoil's ongoing engagements with stakeholders, feedback indicates that stakeholders want a streamlined review process to reduce the number EAs they have to review each year. To address these concerns, and in consideration of partnership on certain licences, Statoil and ExxonMobil Canada Ltd. will likely collaborate during the EA process. The Project Area (Section 3.2.1) has been designed in consideration of the potential collaboration between these two operators.

For instance, where possible, meetings with stakeholders and Aboriginal groups may be held jointly, to reduce duplication. In the preparation of the EIS, there may be opportunities for collaboration. Operators may be able to share information to allow for a more comprehensive cumulative effects assessment. If possible, Statoil and ExxonMobil Canada Ltd. may look for opportunities to file one EIS thereby reducing the need to review multiple reports. However, in order to commence the EA process, each operator will be filing a separate project description.

2 Project Proponent

Statoil ASA is a technology oriented oil and gas producer, focused on upstream exploration and production activities. It is a Norwegian-based company with business operations in 33 countries and territories. Headquartered in Stavanger, Norway, Statoil ASA has more than 20,000 employees worldwide. Statoil ASA is a globally active company involved in exploration and development of crude oil and natural gas, and is committed to maximizing returns to stakeholders in an ethical, socially responsible, and environmentally responsible way.

Statoil Canada Ltd. (Statoil) runs operations in Canada and is headquartered in Calgary, Alberta, with a local office in St. John's, Newfoundland and Labrador. In the Grand Banks area, Statoil is a partner in the Hibernia, Hibernia South Extension, and Terra Nova producing oilfields, is a partner in the Hebron project. In the offshore Statoil is operator of five SDLs and 10 ELs, and has interests in 31 SDLs and one EL. Statoil's offshore Newfoundland operations are managed from its office in St. John's, Newfoundland and Labrador.

Statoil is committed to conducting its operations in a manner that respects regional conditions. Statoil's Sustainability Strategy is focused on:

- balancing reliable energy supply and climate impact
- aiming for outstanding resource efficiency
- preventing harm to local environments
- creating local opportunities
- respecting human and labour rights
- being open and transparent

Statoil will comply with applicable laws and regulations, and adhere to the requirements of guidelines, codes of practice and Project commitments made during the EA process for which this Project Description is submitted.

2.1 Statoil's Offshore Experience

Statoil's operating experience offshore Newfoundland commenced in 1996 when Norsk Hydro acquired assets offshore Newfoundland. Norsk Hydro's Oil & Gas Division merged with Statoil in 2007. Statoil undertook its first drilling and seismic program activities offshore Newfoundland in 2008 and had its first offshore oil discovery in 2009 with Mizzen in the Flemish Pass area. Following the success of the Mizzen, Statoil continued its seismic and exploration drilling activities. Additional seismic surveys were undertaken offshore Newfoundland in 2011, 2012, and 2014. Further exploration drilling in the Flemish Pass area in 2013 resulted in the Harpoon and Bay du Nord discoveries. Statoil continued its

exploration and appraisal drilling program in the Flemish Pass area through a 19-month drilling program which began in the fall of 2015. A total of 10 exploration and/or appraisals well were drilled.

Worldwide, Statoil has considerable experience in drilling and production activities. It operates over 30 producing fields and has drilled in excess of 5,500 offshore wells in the Norwegian Continental Shelf and the Barents Sea areas. Statoil has drilled more than 150 wells in water depths greater than 500 m. Offshore Newfoundland, Statoil has drilled over 10 deep water wells in the Flemish Pass area; the shallowest was in approximately 700 m water depth, and the deepest was approximately 2,800 m.

2.2 Statoil's Management System

Statoil Offshore Newfoundland operations conform to Statoil's corporate management system. Statoil's management system is the set of principles, policies, processes, and requirements that support our organization in fulfilling the tasks required to achieve our objectives. Our management system has three main objectives:

1. Contribute to safe, reliable, and efficient operations and enable us to comply with external and internal requirements
2. Help us to incorporate our values, our people, and our leadership principles in everything we do
3. Support our business performance through high-quality decision making, fast and precise execution, and continuous learning

The management system is detailed in governing documentation, which includes the Statoil Book, common function requirements as well as requirements specific to the business areas. Statoil's management plan encompasses specific components, which for drilling programs would include but not be limited to pollution prevention policies and procedures, and plans for emergency response, spill response, waste management, and environmental monitoring.

Compliance means to follow external and internal requirements and to achieve the required performance. The management system is used systematically in day-to-day work. Training in the use of the work processes is part of this systematic approach. When performing a specific activity, it is necessary to consider risks. A risk assessment may lead to a need for improvement or to evaluate an application for dispensation and/or regulatory equivalency from governing documentation. Leadership is also required in order to achieve compliance. This includes communicating the management system, acting as a role model, and coaching the organization in the use of the management system. The management system is continuously evaluated to ensure it is up-to-date, improved, and capable of handling existing and new risks. Monitoring is conducted to reduce downside risk, ensure the quality and effectiveness of the management system, and the quality of processes and products.

Statoil has 11 corporate policies that describe how we work, and are common to all of Statoil's activities. The policies include Safety, Security, Sustainability, People, Communication, Risk Management, Finance and Control, Procurement, Ethics, Managing Information, and Human Rights.

2.3 Statoil Contacts

Statoil operates an office in St. John's, where Statoil's offshore Newfoundland and Labrador activities are managed and key technical staff located. All communications regarding the EA process for this Project should be referred to the following:

Primary Contact for EA Process

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Regulatory Lead
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2 Steers Cove, Level 2, St. John's, NL, A1C 6J5
709-726-9091
scurr@statoil.com

Primary Contact for Statoil Canada Ltd., Newfoundland Operations

David Ralph, P. Eng.
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709-726-9091
dral@statoil.com

3 Project Description

3.1 Overview

The Project includes the drilling, testing, and abandonment of exploration wells using one or more mobile offshore drilling unit (MODUs) or drill ships. For the purposes of EA, and to allow for drilling on licences held by Statoil, over the course of 10 years it is estimated that up to 10 wells could be drilled. The Project is located in the Flemish Pass area of the Newfoundland and Labrador offshore area, as shown in Figure 2.

The Project includes supporting activities typically, associated with offshore exploration drilling, including: well flow testing, wellsite / geohazard surveys, ice management operations, geotechnical and soil investigation surveys, environmental surveys, video / surveillance campaigns using a remotely-operated vehicle (ROV) from either the drilling unit or supply vessel, and wellhead decommissioning / removal. The Project is aimed at defining and drilling for potential oil and gas resources on current or potential future Statoil-held land holdings within the Project Area. Future land holdings may be acquired through the 2016 C-NLOPB land rights issuance process and/or through a change in licensing ownership or operatorship.

Vessels to support the list of activities described above will be required throughout the life of field as needed, and include, but not limited to: MODUs and/or drill ships, supply / stand-by and support vessels, helicopters, 2D seismic vessels, well intervention vessels, vessels for the conduct of geotechnical, geological, environmental and geophysical surveys, and ice management operations.

3.2 Project Boundaries

3.2.1 Project Area

The Project Area describes an area where drilling activities may occur on ELs where no drilling activity has occurred and includes ELs currently operated by Statoil (EL 1125, 1139, 1140, 1141, 1142) or in which Statoil is a partner (Figure 2).

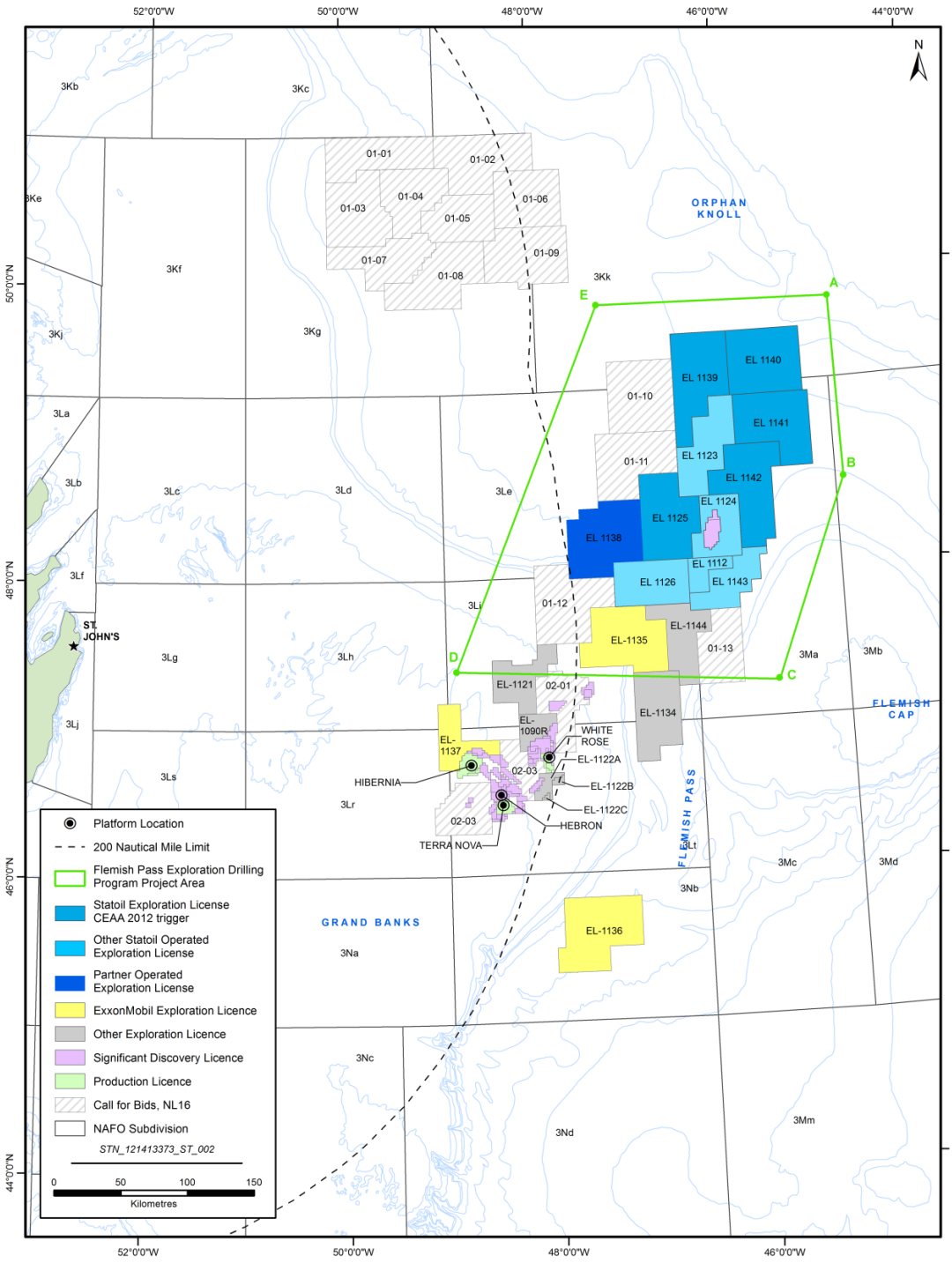


Figure 2 Project Area

The boundaries of the Project Area incorporate licences where Statoil may undertake exploration drilling and includes an area surrounding those licences to accommodate spatial boundaries of ancillary activities that are often carried out in support of drilling activities. For instance, for wellsite surveys, the survey area must include requirements per the C-NLOPB guidelines and be sized to accommodate the turning of vessels towing streamers. Therefore, the Project Area boundary has been sized to include a 20 km buffer surrounding the outer boundaries of licences. While it is not certain exactly where drilling activities will be conducted, it is likely that it may occur on ELs identified above in the Project Area within the term of the EL.

Figure 2 illustrates the Project Area (coordinates are listed in Table 2). The EIS will include an assessment of drilling activities within the identified licences (see above). Specific drilling locations cannot be identified at this time as they will be based on the interpretation of seismic data yet to be acquired, and may be modified due to changes in licencing ownership or operatorship.

Statoil may acquire new exploration licenses under the C-NLOPB land tenure process through the current 2016 Call for Bids (NL16-CFB01 and NL16-CFB02) (Figure 2). If Statoil is awarded additional exploration license(s), these may be included in the scope of the Project to be assessed in the Environmental Impact Statement, should an environmental assessment be required.

Table 2 Project Area Coordinates

Project Area Vertices	Coordinates - NAD83 UTM ZONE 22N			
	Longitude (DMS)	Latitude (DMS)	Easting (m)	Northing (m)
A	-44° 56' 47.837"	49° 47' 31.003"	935561.8	5533101
B	-44° 55' 20.940"	48° 34' 29.722"	948190.3	5398059
C	-45° 41' 44.381"	47° 16' 25.966"	901154.7	5249260
D	-47° 21' 4.077"	49° 49' 18.334"	762439.6	5525202
E	-48° 54' 9.763"	47° 22' 44.044"	658313.9	5249404

3.2.2 Study Area Spatial Boundaries

The boundaries of the EIS Study Area will be determined during the preparation of the EIS report and is based on potential interaction between project activities and environmental components. In addition to environmental interactions arising from routine project activities, the definition of the Study Area will consider results of trajectory modelling of accidental events.

3.2.3 Temporal Boundaries

The temporal period upon which drilling activities may occur, including abandonment, will be aligned with the EL term (see Section 1.2.3). The temporal scope will end once regulatory obligations and commitments have been met and the licences have either reverted back to the Crown or have been converted to a SDL. A period of 10 years, commencing in 2018, has been selected to provide an adequate and conservative timeframe within which Project activities may occur. Within the period from

2018 to 2028, Project activities, as described herein, may be carried out at any time of the year. The temporal scope includes anticipated changes to EL terms and additional time for an adequate period for completion of well activities (i.e., abandonment) and any future licence applications prior to land reversion to the Crown. Drilling, testing and/or abandonment may occur on ELs within the Project Area (as identified above). Drilling plans are still being developed and a drilling commencement date cannot be identified. However, for the purposes of EA, the temporal scope of the drilling program will be from 2018 to 2028 with project activities, as described herein, occurring at any time of the year.

Activities to be carried out during each phase of the project are provided below. Table 3 provides an overview of the estimated timeframe for each of the project activities as defined in the Project scope.

Table 3 Anticipated Timing of Project Phases

Activity	Anticipated Timeframe
Exploration drilling Well flow testing Geotechnical surveys Geophysical / 2D Seismic / Geohazard / Wellsite and Seabed surveys Vertical Seismic Profile (VSP) surveys Environmental surveys ROV/Autonomous Underwater Vehicle surveys Well Abandonment	Could occur at any time of the year, from 2018 to end of 2028

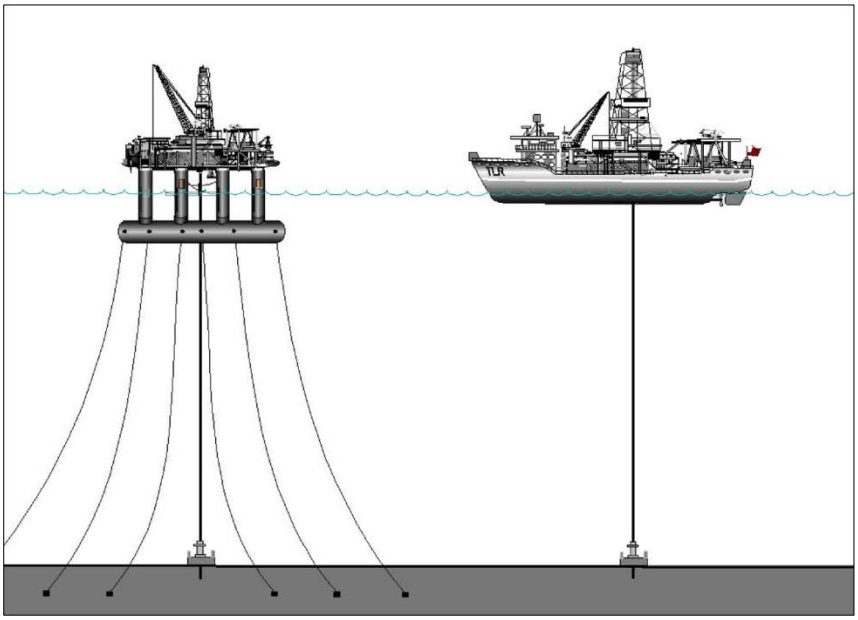
3.3 Project Components

The scope of the Project, as identified in this Project description, includes the drilling facilities, drilling activities, supporting / ancillary activities to a drilling program and well abandonment. These components are described in the following sections. Should an environmental assessment be required, the CEA Agency would set the scope of the Project for assessment.

3.3.1 Facilities

3.3.1.1 Drilling Facilities

Water depths in the Project Area range from approximately 500 to over 3,000 m. In shallow waters (typically less than 500 m), drilling activities can be carried out with a semi-submersible drilling unit (floating). Semi-submersibles can be used in either shallow or deep waters; they would either be moored via anchors in shallower waters, or use dynamic positioning to maintain location in deep water. In deeper waters (greater than 500 m), semi-submersible drilling units or drill ships would be the preferred drilling facility. Drill ships maintain position through dynamic positioning. The drilling units will be capable of drilling year-round and in the environmental conditions prevalent in the North Atlantic. During the Project life, there may be multiple drilling units actively engaged in drilling activities in the Project Area at any one time. Figure 3 provides a schematic of a drill ship and a semi-submersible.



Source: Adapted from MMS 2000

Figure 3 Schematic of a Drillship and a Semi-submersible

3.3.1.2 Project Vessels

Multiple project vessels will be engaged to support drilling activities. Vessels will be acquired from third party suppliers.

The following project vessels are likely to be engaged during the Project life

- support / supply vessels for drilling unit(s)
- geophysical vessels (e.g., 2D seismic, wellsite / geohazard surveys; vertical seismic profile (VSP) surveys)
- seabed survey vessels (mulitbeam surveys, side-scan sonar, subbottom profiler, magnetometer, etc.)
- geotechnical vessels (soil investigation programs, cone penetration testing, piezometers, etc.)
- vessels capable of undertaking environmental sampling
- vessels equipped with ROVs / autonomous underwater vehicles (AUVs), and the deployment of ROVs / AUVs
- support / picket vessels for any of the above
- vessels engaged in ice management operations (only during ice season)

3.3.2 Logistical Support

3.3.2.1 Onshore Supply Base

A supply base provides temporary storage, staging and loading of materials and supplies to support offshore drilling and other exploration activities. Shore base facilities have operated on the island of Newfoundland since the 1970s when offshore exploration activity began in Newfoundland. Shore base facilities are owned and operated by independent third party service providers. In addition to A. Harvey's Marine Base in St. John's currently being used by Statoil and other operators, there are other established marine shore base facilities on the island servicing the offshore oil and gas sector. These facilities operate with the required government permits and approvals and are certified as compliant port facilities under the *Marine Transportation Security Act*. These port facilities operate independently of Statoil. Their services are procured through a competitive bid process in accordance with the requirements of the Accord Acts. Statoil currently holds a contract with A. Harvey's Marine Base; however, should that contract expire over the temporal scope of the Project, services would be procured with established suppliers in accordance with the Atlantic Accord Acts. Synergy with other operators in the supply of the above support, where existing services can be shared among operators, will also be investigated. The Project would not require any upgrades or new construction associated with established shore base facilities. Therefore, project-specific environmental effects associated with services provided by the shore base facilities are not expected. As a result, the supply base and associated activities are not considered part of the Project scope.

3.3.2.2 Vessel and Helicopter Traffic

Supply and support vessels will be contracted from third party suppliers. Vessels contracted by the Operator must have valid marine certification and meet regulatory requirements as set out by Canada and international organizations as well as Statoil's marine vetting requirements. It is estimated that there could be an average of eight to ten return transits per month if servicing one drilling unit or up to an average of 16 return transits per month for two drilling installations, an increase of approximately 12 to 20 percent from current offshore oil and gas-associated vessel transits. Vessels supporting the Project will transit in a straight line approach to and from a port to a facility, a common industry practice for energy efficiency employed for over 20 years by operators with facilities offshore Newfoundland. Figure 4 depicts supply and support vessel traffic routes servicing the existing production facilities and potential traffic routes for two points in the Flemish Pass area of the Project Area. These are representative only and the route would change depending on the location of the drilling unit. If operators shared support vessels, the vessel could transit from St. John's to one facility and then transit to another facility; however, the transit out of and to St. John's would be similar to that shown in the figure. During the ice season, the routes could be altered if there was pack ice along the transit route.

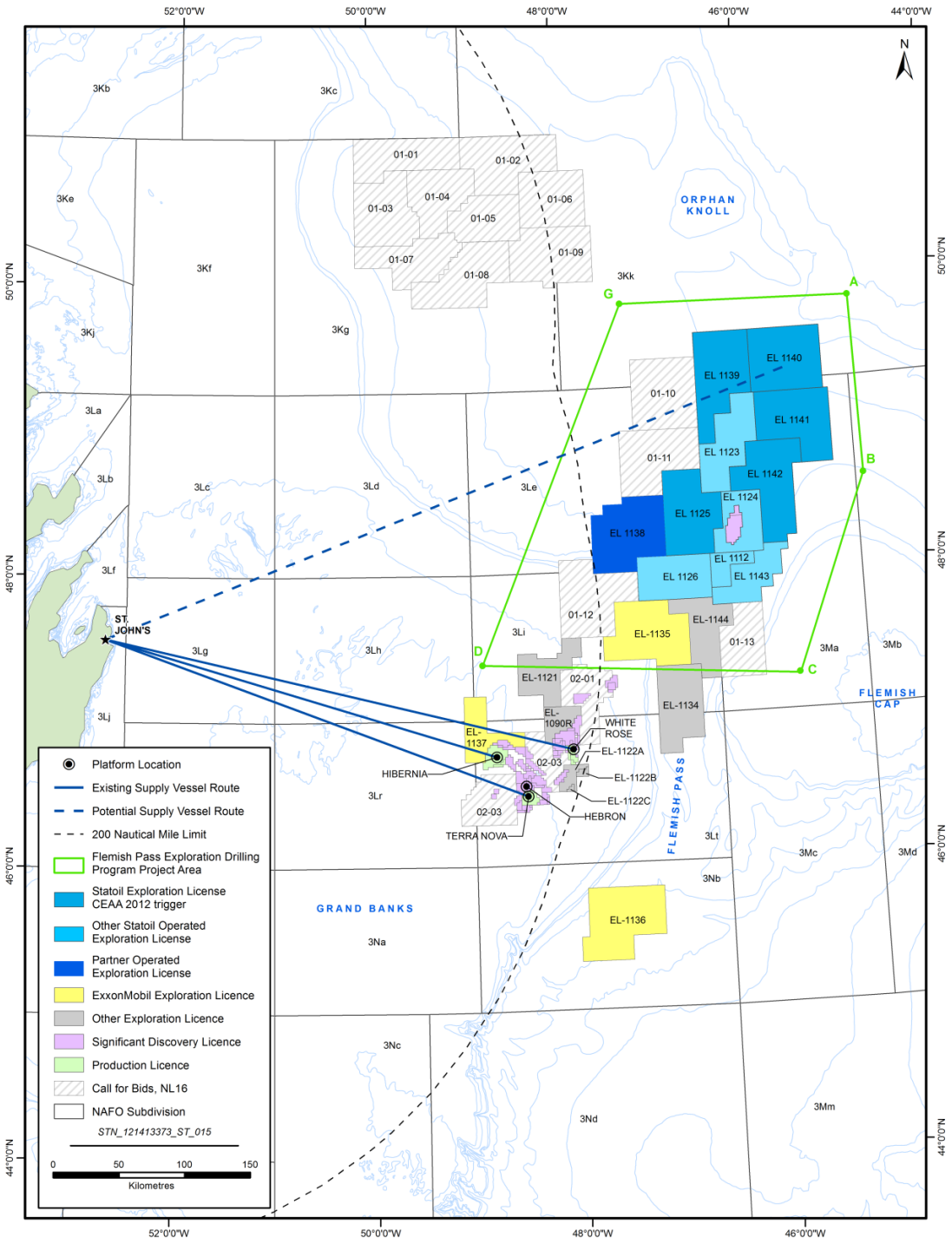


Figure 4 Vessel Routes

The industry works in cooperation with other marine users (e.g., commercial fisheries) to minimize potential effect along traffic routes. In the history of offshore exploration drilling EAs for the Newfoundland offshore area, support vessel traffic was never raised as an issue. Similarly, supply vessel traffic associated with ongoing drilling and production operations in offshore Newfoundland has not been raised as a concern by the fishing industry in the One Ocean forum. Established communication and cooperation methods between the fishing and petroleum industries in vessel traffic are effective. Project-specific environmental effects associated with vessel traffic outside the Project Area are not expected. Therefore, transit through routes commonly and currently used by other vessels outside the Project Area is not part of the Project scope for the EIS.

Helicopter support will be used for crew transfers. Helicopter support will be supplied by a third-party licenced operator under contract to Statoil. For areas further offshore (e.g., greater than 400 km), it is estimated that there would be one to -three helicopter transits per day to the drilling facility and up to four transits per day for facilities that are within 300 km. Helicopter support will be based out of St. John's and operate out of the St. John's International Airport. Helicopters supporting the Project will transit to and from the Project using routes commonly used over the past 20 years of oil and gas activities and therefore, helicopter transit through these routes is not part of the Project scope. There are no anticipated project-specific environmental effects associated with helicopter traffic transiting to and from the airport to offshore facilities.

3.4 Project Activities

3.4.1 Drilling activities

Wells (including exploration, delineation and appraisal wells) could be drilled at varying water depths, ranging from approximately 500 to 3,000 m within the Project Area. Well designs have not been completed but the following information provides a general overview of the sequence of drilling a well

Each well is drilled in sections, gradually reducing the size of the well bore. The first part of the well, the surface casing and conductor, are drilled are either drilled with seawater or a water-based drilling mud (WBM) and the cuttings are discharged to the seafloor, in accordance with the OWTG.

Once the initial sections are drilled, a steel casing is cemented in place to prevent the wall of the wellbore from caving in and to prevent the seepage of muds and other fluids. The riser and blowout preventer (BOP) are then installed onto a wellhead. The riser is a large diameter pipe that acts as a conduit connecting the rig to the wellhead through the water column, and the wellhead provides structural integrity to house the BOP and pressure integrity for drilling operations. A 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. The remaining sections of the well are drilled to predefined depth using either WBM or synthetic-based drilling muds (SBM). At intervals along the well, casing is cemented in place at set depths to reinforce the wellbore.

The selection and use of drill fluids and cuttings will be in accordance with regulatory requirements and in consideration of C-NLOPB guidance documents. Chemicals that may be discharged to the marine environment will be screened for use in accordance to the Chemical Selection Guidelines. With the riser in place, SBM drill cuttings will be treated and discharged in accordance with the OWTG. WBM drill cuttings will be discharged overboard.

Drilling activities may also include batch drilling, which is the process of consecutively drilling the top hole portions of a well for multiple wells. During batch drilling activities, the conductor hole section and surface hole section are drilled riserless using water-based muds and cuttings will be discharged at sea at the seabed. It can be done with either a MODU or a vessel designed for riserless drilling. The number of top hole sections to be batch drilled at any one time is dependent on the number of wells proposed in any drilling campaign, and will be determined to optimize MODU and/or vessel efficiency and overall logistics.

Discharges and emissions associated with activities includes wastes that will be disposed of offshore as well as waste that will be transferred to shore for disposal in approved and established waste handling facilities. Section 4 provides information on the anticipated discharges and emissions during the life of the Project.

3.4.2 Well Flow Testing

The *Newfoundland Offshore Petroleum Drilling and Production Regulations SOR/2009-316* pursuant to the Accord Acts require the formation in a well is tested to obtain reservoir pressure data and fluid samples in order to obtain an SDL. Therefore, based on the evaluation reservoir data collected during the drilling of a well, it may be determined that a formation flow test is warranted. Flow testing may occur while the rig is drilling the well, or it may be carried out at a later date by re-entering a suspended well.

Well flow testing involves the flowing of well fluids from the reservoir. Reservoir fluids may contain hydrocarbons and/or formation water. The formation fluid sampled during testing may be stored for future data analysis. Upon completion of well flow testing, the well may be suspended or abandoned in accordance with regulatory requirements. In certain situations, a formation flow test in the form of a Drill Stem Test may be conducted. In such cases, test equipment will be installed on the drilling unit and some of the hydrocarbons recovered and the small volume of produced water is sent to a flare.

3.4.3 Decommissioning and Well Abandonment

Well suspension and abandonment will adhere to the requirements set out under the *Newfoundland Offshore Petroleum Drilling and Production Regulations SOR/2009-316*. Suspension and abandonment involves the isolation of the well bore by placing cement and/or mechanical plugs at varying depths in the wellbore, thereby separating and isolating subsurface zones to prevent subsurface fluids from escaping. There may be instances when it is necessary to re-enter the wellbore. In such circumstances,

the well is not abandoned but suspended. The same safeguards, regarding wellbore isolation are implemented.

Water depths in the Project Area will determine the method by which well heads are removed. In depths greater than 1,500 m, wellheads will be left in place and not removed; at these depths there is little if any commercial fishing activity. At water depths between 500 and 1,500 m, the well head will be removed either by mechanical cutting inside the casing or using an external mechanical cutter. At depths up to 500 m, the wellhead will be removed using internal mechanical cutters.

3.4.4 Geophysical, Geological, Geotechnical and Environmental Surveys

Throughout the Project there may be surveys to support drilling operations such as geophysical, geotechnical and environmental surveys.

Geophysical surveys include 2D seismic surveys, geohazard / wellsite surveys, and VSPs.

Geophysical / Geohazard / Wellsite and Seabed Surveys: These surveys are used to identify unstable areas beneath the seafloor (i.e., shallow gas deposits) or hazards (large boulders, ocean debris, shipwrecks) so as to avoid these hazards when drilling. They typically take 14 to 21 days to complete, and will occur as needed throughout the Project. These surveys can involve the mapping of the seabed through multibeam echo sounder, side scan sonar, subbottom profiler, 2D seismic, video and other non-invasive equipment. The equipment is deployed either as hull mounted equipment, on a towfish or on ROV / AUVs. In some instances, equipment may be towed by the vessel. 2D Seismic surveys typically involve a specialized vessel, towing a submerged sound source and one to four streamers. These surveys may occur throughout the Project at any time of the year.

VSP surveys: A VSP survey uses a sound source in the wellbore, rather than towed behind a vessel. The hydrophone is either towed via a vessel (a walk away VSP) or deployed over the side of the drilling unit. VSP surveys will be conducted as required and occur throughout the project life

Geological Surveys: involve the collection and analysis of lithological, paleontological or geochemical materials. They may occur throughout the project life at any time of the year.

Geotechnical Surveys: involve the measurement of the physical properties of the seabed and subsoil through the collection of sediment samples and in-situ testing. Methods to collect the samples typically include drilled boreholes or gravity coring. In-situ testing is done through cone penetration testing and pore pressure measurements. Installation of piezometers in boreholes to measure soil properties may also be carried out. Piezometers could be left in place to collect data for up to 12 months or longer. Geotechnical surveys may occur throughout the Project life at any time of the year.

Environmental Surveys: involve the collection of samples to analyze the physical, chemical, and biological aspects of the Project Area. Sampling is typically carried out from a support / supply vessel or a dedicated vessel suitable to the survey. Environmental surveys may include oceanography, meteorology, and ice / iceberg surveys. It can also include biota, water, and sediment sample collection,

and ROV-video or drop camera surveys. Environmental surveys may occur throughout Project life at any time of the year.

ROV / AUV surveys: conduct visual inspections (camera equipped) of facilities. ROV surveys may also be used during pre-drill surveys and before marine installations to determine presence / absence of physical objects on seafloor. They may also be used during any or all of the surveys described above to support drilling operations. They will be conducted throughout the Project-life at any time of the year using vessels of opportunity associated with the Project.

4 Waste Discharges and Emissions

Discharges during drilling activities include air emissions, treated overboard discharges to the sea, and disposal of wastes in approved shorebase waste management facilities. The OWTG provide performance targets for overboard discharges from drilling and production operations. In accordance with the OWTG, discharges will be treated before release overboard, where applicable. The Project's Environmental Protection Plan, as required by the Operations Authorization, will provide details regarding the management of discharges and emissions from the drilling units. Chemicals used for drilling operations will be screened in accordance with a chemical management system that adheres to the C-NLOPB requirements. Typical discharges and waste management practices associated with drilling activities include but are not limited to those listed in Table 4.

Table 4 Typical Emissions and Discharges Associated with Offshore Drilling Activities and Associated Activities

Waste Stream	Facility	Waste Management Practices
Air Emissions Exhaust from power and heat generation Flaring (if required during testing or for safety reasons) Fugitive emissions Emissions from rig well control degassing system	Drilling Installation Vessels	Energy efficiency planning Emergency Flare Planning
Water-based fluids, muds and cuttings	Drilling Installation	WBM drill cuttings discharged overboard in accordance with OWTG Spent muds / fluids discharged overboard (including tank clean-outs)
Synthetic-based fluids, muds and cuttings	Drilling Installation	SBM drill cuttings – treated in accordance with OWTG and discharged overboard Fluids / mud recovered and reused; spent fluids shipped to shore for disposal at approved waste management facility
Cement	Drilling Installation	Surplus cement disposed of at seabed prior to installation of riser Cement mix water discharged to sea Discharge of small volumes during testing/certification of cement unit Cement returned to drilling unit transported to shore for disposal at an approved facility
Produced water	Well testing	Treated in accordance with OWTG and discharged overboard or sent to flare
Cooling water	Drilling Installation	Treated in accordance with OWTG and discharged overboard
Seawater return	Drilling Installation	Treated in accordance with OWTG and discharged overboard
Drilling and completion chemicals Rig chemicals	Drilling Installation	Chemicals used offshore are screened in accordance with Statoil chemical management system (per C-NLOPB guidelines) and are approved for use and discharge in the marine environment

Waste Stream	Facility	Waste Management Practices
Bilge / Ballast water	Drilling Installation Vessels	Treated in accordance with OWTG and discharged overboard. Vessels - Per Canadian and international requirements
Deck Drainage	Drilling Installation	Non-contaminated areas: Discharged overboard Contaminated areas: Treated in accordance with OWTG and discharged overboard Effluent that does not meet discharge criteria is shipped to shore for disposal at approved waste disposal facility
Open Drains	Drilling Installation Vessels	Discharged overboard Vessels - Per Canadian and international requirements
Fire water	Drilling Installation	Discharged overboard
Sanitary waste	Drilling Installation Vessels	Maceration, in accordance with OWTG and discharged overboard Vessels - Per Canadian and international requirements
Grey Water	Drilling Installation Vessels	Discharged overboard in accordance with OWTG Vessels - Per Canadian and international requirements
Hazardous Waste	Drilling Installation Vessels	Shipped to shore for disposal at an approved and established waste management facility
Non-hazardous solid waste Scrap wood Scrap metal Recyclables (glass, paper, plastic, aluminum) Other non-hazardous wastes	Drilling Installation Vessels	Shipped to shore for disposal at an approved and established waste management facility

4.1 Atmospheric Emissions

Exhaust emissions from the operation of the drilling vessel and support vessels will be the primary source of atmospheric emissions for the Project; well testing could result in potential flaring associated with produced gas. Flaring activities will be kept to a minimum, and will only be carried out if a drill stem test is required (see Section 3.4.2). Duration of flaring during a drill stem test may be one to two days.

Air emissions, including greenhouse gasses (GHG), resulting from Project activities may include:

- MODU, vessel and helicopter traffic (carbon monoxide (CO), nitrogen oxides (NO_X), total suspended particulates (TSP), volatile organic compounds (VOCs), GHGs
- power generation (CO, NO_X, TSP, VOCs, sulphur dioxide, GHGs)
- flaring (CO, NO_X, VOCs, TSP, GHGs)

For the purposes of the Project Description requirements, the following is an estimate of potential greenhouse gas emissions associated with the drilling of a single well. Assuming that it could take up to 45 days to drill well, it is estimated that CO_2e emissions associated with operational drilling and vessel traffic could be in the range of 5000 to 10,000 tonnes CO_2e per well. Given the location of ELs offshore

Newfoundland, the drilling rig could be over 350 km from the nearest community, and it is anticipated that there will be no project related effects on coastal communities. Note that these are estimates only and emissions are specific to a drilling unit class, vessel class, time of year, and number of days drilling a well. An estimate of GHG emissions (CO_2 equivalent units) will be calculated and compared to regional, sector, provincial, national, and global estimates as applicable, in the EIS.

These exhaust emissions will be in accordance with the CEPA. National Ambient Air Quality Objectives and the *Newfoundland and Labrador Air Pollution Control Regulations* for specified criteria air contaminants, and relevant regulations under MARPOL. Potential flaring will occur in accordance with the Drilling and Production Guidelines (C-NLOPB and Canada-Nova Scotia Offshore Petroleum Board 2011).

4.2 Sound

The operation of helicopters, supply vessels and the drilling vessel will generate sound underwater and above water; the level of sound will reflect the type of vessel being used and method of positioning. Underwater sound generated from a drilling vessel is continuous during a drilling program, while underwater sound from VSP operations is impulsive in nature, with sound occurring over a much shorter period.

4.3 Drilling Waste

A combination of WBM and SBM will be used to drill a well. Wastes generated from drilling include drilling muds, drilling fluid and cuttings that retain a portion of the drilling mud. Salt or fresh water is the carrier liquid for WBM, while the carrier fluid for SBM is a synthetic base fluid; PureDrill IA35-LV is currently used in the Newfoundland and Labrador offshore. Both WBM and SBM are typically composed of barite, bentonite or other clays, silicates, lignite, caustic soda, sodium carbonate/bicarbonate, inorganic salts, surfactants, corrosion inhibitors, lubricants and other additives for unique drilling problems (Thomas 1984; GESAMP 1993). Chemicals used in SBM and WBM are screened in accordance with the OWTG.

The initial surface sections are normally drilled riserless with WBM, with mud and cuttings returned to the seabed where they will accumulate in the vicinity of the wellhead. WBM cuttings are discharged for the first sections of the well, which is consistent with the OWTG and is accepted as industry practice. Once the riser is connected, SBM are generally used. Synthetic-based cuttings are treated prior to discharge to the sea as per the OWTG. The recovered drilling mud is reconditioned and reused until it is spent, at which point it is returned to shore for disposal at an approved facility.

4.4 Cement

Cement will be used to set the drill casing strings in place. Surplus cement associated with riserless drilling, if any, will be discharged at the seabed, which is considered standard practice. Cement returned to the drilling unit will be transported to shore to be disposed at an approved facility. During initial commissioning and testing of the cementing unit, small volumes may be discharged at sea. Any spent cement created as a result of riser drilling will be transported back to shore to be disposed of at an approved facility.

4.5 Liquid Wastes

The following liquid wastes (outlined in Table 4), if generated, will be treated and managed in accordance with the OWTG on the drilling vessel.

- produced water
- bilge and deck drainage water
- ballast water
- grey / black water (sewage)
- cooling water
- fire control water

Liquid wastes that do not meet the performance, sampling and analysis targets set out in the OWTG are stored and transported to shore for disposal at an approved facility.

4.6 Hazardous and Non-Hazardous Solid Waste

Hazardous wastes generated during the Project, including any dangerous goods, will be stored in designated areas in appropriate containers/containment for transport to shore in compliance with the *Transportation of Dangerous Goods Act* and its regulations. Non-hazardous wastes generated during the Project will be stored in appropriate containers onboard, to be transported back to shore. Once onshore, a third-party contractor will collect and dispose of the waste at an approved facility and in compliance with any federal and provincial regulations and requirements.

Waste food will be macerated to maximum particle size, and discharged overboard after treatment in accordance with the OWTG and MARPOL.

Vessels used to support project activities will adhere to Canadian and international (International Convention for the Prevention of Pollution from Ships (Marpol 73/78)) requirements, as appropriate for the handling and disposal of vessel waste material.

A waste management plan will be developed that outlines waste handling, storage and discharge criteria for the Project.

5 Regulatory, Aboriginal and Stakeholder Engagement

Statoil's values of openness, caring, hands-on and courageous are the core of Statoil's Management System. It is how business is conducted. Statoil is committed to delivering a transparent and respectful engagement program, and strives to develop and maintain constructive dialogue with relevant stakeholders and Aboriginal groups that may be affected by our Project. The engagement process is designed to be ongoing from initial planning through operation and decommissioning of the Project. Statoil aims to be sensitive to community's needs, understand differences, and develop effective ways to work together.

5.1 Regulatory Agencies

The following regulatory agencies have been identified as likely having an interest in the Project. In developing the EIS Statoil will continue to meet with regulatory agencies to share information on the Project, note issues and concerns raised and as appropriate identify how the concerns have been addressed:

- CEA Agency
- C-NLOPB
- Fisheries and Oceans Canada (DFO)
- Environment Canada
- Canadian Wildlife Service
- Transport Canada
- Canadian Coast Guard
- Industry Canada
- Newfoundland and Labrador Department of Environment and Conservation
- Department of Defence
- Natural Resources Canada
- Newfoundland and Labrador Department of Natural Resources

5.2 Aboriginal Engagement

Statoil is committed to ensuring that relevant Aboriginal organizations are appropriately engaged regarding the company's ongoing and planned drilling activities, particularly where Aboriginal groups are known to reside and/or undertake activities in areas where Statoil is or is planning to carry out its operations.

Several Aboriginal groups hold commercial fishing licenses for areas that overlap the Project Area. The commercial fishing licenses are held by the following Aboriginal groups, and are discussed further in Section 6.3.2:

1. Labrador Inuit (Nunatsiavut Government)
2. Labrador Innu (Innu Nation)
3. NunatuKavut Community Council
4. Conne River Mi'kmaw (Miawpukek First Nation (MFN))
5. Qalipu Mi'kmaq First Nation Band (QMFNB)

The Mi'kmaq Alsumk Mowimsikik Koqoey Association, a fishing organization formed by MFN and QMFNB also hold commercial fishing licence for areas that overlap the Project Area.

While these groups hold commercial fishing licenses for areas that include the Project Area or transportation route, Statoil is not aware that these (or any other) Aboriginal groups hold, claim or otherwise assert Aboriginal or Treaty rights within or near the Project Area or transportation route, pursuant to Section 35 of the Canadian *Constitution Act*, 1982. Rather, it is Statoil's understanding that these organizations undertake fishing activity off Eastern Newfoundland through commercial licences issued by the federal government under the *Fisheries Act* and its associated *Aboriginal Communal Fisheries Licencing Regulations* and other federal policies and strategies that are designed to involve Aboriginal people and communities in commercial fisheries in Canada.

As part of its planned engagement with relevant commercial fishing interests in and near the Project area during the EA process, Statoil will engage with each of the Aboriginal organizations that are known to be involved in the commercial fishery in the area. As part of the planning and preparation of this Project Description stage, Statoil wrote to each group on June 3 2016 to inform them of the Project and sought initial feedback through a follow-up telephone call (see Table 5).

5.3 Public and Stakeholder Engagement

Statoil understands the importance and benefit of meaningful engagement with interested and potentially affected stakeholders, including relevant communities, organizations and the general public. Indeed, early and ongoing stakeholder engagement comprises a key aspect of the planning and implementation of the company's oil and gas exploration and other activities. As part of its ongoing operations in Newfoundland and Labrador, for example, Statoil regularly engages with interested and applicable stakeholders through various existing forums, such as the One Ocean initiative, and conducts additional and specific engagements with particular persons and groups if and as new activities, issues and requirements arise. A number of engagement initiatives have been undertaken, are in progress, or are being planned in relation to the Project, and Statoil plans to continue to engage with stakeholders during its ongoing Project planning, in the completion of the EIS, and throughout the life of the Project in order to provide continuous updates and to identify and address any issues as they may arise.

As part of the initial planning phase of the Project, and during the preparation of this EA Project Description, Statoil provided information on the Project Description to the following stakeholders:

- Fish, Food and Allied Workers-Unifor (FFAW-Unifor)
- One Ocean
- Ocean Choice International
- Canadian Parks and Wilderness Society (CPAWS)
- Nature Newfoundland and Labrador

5.4 Results of Engagement to Date and Future Engagement

Table 5 provides a summary of engagement with the regulatory agencies, Aboriginal groups, and stakeholders.

Table 5 Regulatory, Aboriginal and Stakeholder Engagement Meetings

Organization	Date	Type of Engagement	Key Topics	Comments / Concerns
Regulatory Agencies				
CEA Agency	14-Apr-16 9-May-16	Meeting	Introduce Project, discuss EA process requirements and information requirements for Project Description; discuss collaboration with ExxonMobil in EA process	Clarification on scope of Project and Project Area
	12-May-16	Meeting	EA Engagement Strategy	
	26-May-16	Conference call	Project Description information requirements	
C-NLOPB	29-Apr-16	Meeting	Discuss C-NLOPB EA requirements	EIS should include information to satisfy C-NLOPB regulatory requirements for future authorizations
DFO	10-May-16	Meeting	Discuss Aboriginal commercial fishery licences program	No concerns / issues identified; provided information regarding Aboriginal communal fishery licences
Commercial Fisheries Stakeholders				
FFAW-Unifor	19-May-16	Meeting	Introduce Project and EA process, initial feedback.	No issues / concerns raised; provided initial feedback on appropriate time to engage fishers (fall fleet meetings)
One Ocean	19-May-16	Meeting	Introduce Project and EA process, initial feedback.	No issues / concerns raised
Ocean Choice International	27-May-16	Meeting	Introduce Project and EA process, initial feedback.	No issues / concerns raised;

Organization	Date	Type of Engagement	Key Topics	Comments / Concerns
Aboriginal Groups				
Innu Nation	3-Jun-16	Letter / Phone Call	Introduce Project and EA process; follow-up phone call for initial feedback	EA contact out of office until August. Will provide response at that time.
MFN	3-Jun-16	Letter	Introduce Project and EA process; follow-up phone call for initial feedback	Currently do not have commercial fishing activities in the Project Area. Fishing licence does cover the Project Area so there is the potential for future activities. Would prefer to review Project Description before providing feedback
Nunatsiavut	3-Jun-16 / 6-Jul-16	Letter / Phone Call	Introduce Project and EA process; follow-up phone call for initial feedback	Hold commercial fishing licences that include the Project Area. Will be participating in the EA process. Would prefer to review Project Description before providing feedback
NunatuKavut	3-Jun-16 / 8-Jun-16	Letter / Phone Call	Introduce Project and EA process; follow-up phone call for initial feedback	Project Area is south of the main areas for commercial and subsistence fishing. Would prefer to review Project Description before providing feedback
QMFNB	3-Jun-16 / 5-Jul-16	Letter / Phone Call	Introduce Project and EA process; follow-up phone call for initial feedback	Project Area is outside the current fishing areas. Fishing licence does cover the Project Area so there is potential for future activities. Would prefer to review Project Description before providing feedback
Mi'kmaq Alsumk Mowimsikik Koqoey Association	3-Jun-16 / 5-Jul-16	Letter / Phone Call	Introduce Project and EA process; follow-up phone call for initial feedback	Project Area is outside the current fishing areas. Fishing licence does cover the Project Area so there is potential for future activities. Would prefer to review Project Description before providing feedback
Stakeholders				
Canadian Parks and Wilderness Society	10-Jun-16 / 6-Jul-16	E-mail / Follow-up email	Introduce Project; follow-up email for initial feedback	No comments received
Nature Newfoundland and Labrador	10-Jun-16 / 6-Jul-16	E-mail / Follow-up email	Introduce Project; follow-up email for initial feedback	Initial feedback provided for consideration in EIS: • Assessment of cumulative environmental effects with respect to underwater noise and light attraction to marine birds • Deeper water / oceanographic environment considerations for effects of environment on project (i.e., presence of icebergs) • Consideration to a higher level of precautionary approach in terms of logistics and response capability for accidental events

As part of the preparation of the EIS for the Project under CEAA 2012, Statoil will continue its engagement with regulatory agencies, Aboriginal groups, and stakeholders identified above, providing various opportunities for these groups to receive and review information, as well as to provide information and perspectives related to the Project and its potential effects. This will include opportunities to identify questions, concerns and issues that may require consideration in the EIS. Any identified questions and issues will be recorded at each engagement interface for consideration in Project planning and EA, and for follow up as appropriate.

6 Environmental Setting

This section provides an overview of the existing physical and biological setting within the Project Area, along with the socio-economic setting, including commercial fisheries and other ocean users.

The Project Area is located in the Flemish Pass and Central Ridge portion of the Grand Banks, in the eastern offshore area of Newfoundland and Labrador. This area has a complex geological setting, varying depths, and a climate that is typical of many harsh marine environments. It is also a highly productive area and contains a diverse range of marine species, some of which are commercially important both for Canada and internationally.

6.1 Previous Studies and Available Information

Oil and gas activities have been occurring in offshore Newfoundland for over 30 years, and there have been many EAs carried out for exploration and development projects in the area. The primary studies that will be referenced to describe the existing environmental setting include project-specific EAs that have been conducted for other projects with similar spatial boundaries, and the Strategic Environmental Assessment (SEA) for the eastern Newfoundland offshore region (AMEC 2014).

No regional studies, as defined in CEAA 2012, have been undertaken in the Newfoundland and Labrador Offshore area, including the Project Area. However, the C-NLOPB completed a SEA of offshore oil and gas activities for the eastern Newfoundland offshore area in 2014. The “Eastern Newfoundland Strategic Environmental Assessment” (AMEC 2014) provides information on the existing environment within the defined SEA Study Area and identifies and highlights key environmental features and considerations for future oil and gas activities in the region. The defined SEA Study Area includes the Project Area (Figure 5). The SEA report will be considered a primary reference document for the Project EIS.

Other project-specific EAs that have been completed within the vicinity of the Project include, but are not limited to:

- Suncor Energy’s Eastern Newfoundland Offshore Area 2D / 3D / 4D Seismic Program, 2014-2024 (Suncor Energy 2013)
- Environmental Assessment East Canada CSEM Survey, 2014-2018 (LGL Limited 2014)
- White Rose Extension Project Environmental Assessment (Husky 2012)
- Environmental Assessment of Statoil’s Geophysical Program for Jeanne d’Arc and Central Ridge / Flemish Pass Basins, 2011-2019 (LGL Limited 2011)
- Hebron Project Comprehensive Study Report (ExxonMobil Canada Properties 2011)
- Husky Delineation/Exploration Drilling Program for Jeanne d’Arc Basin Area, 2008-2017, Environmental Assessment (LGL Limited 2007)
- Orphan Basin Exploration Drilling Program Environmental Assessment (LGL Limited 2005)

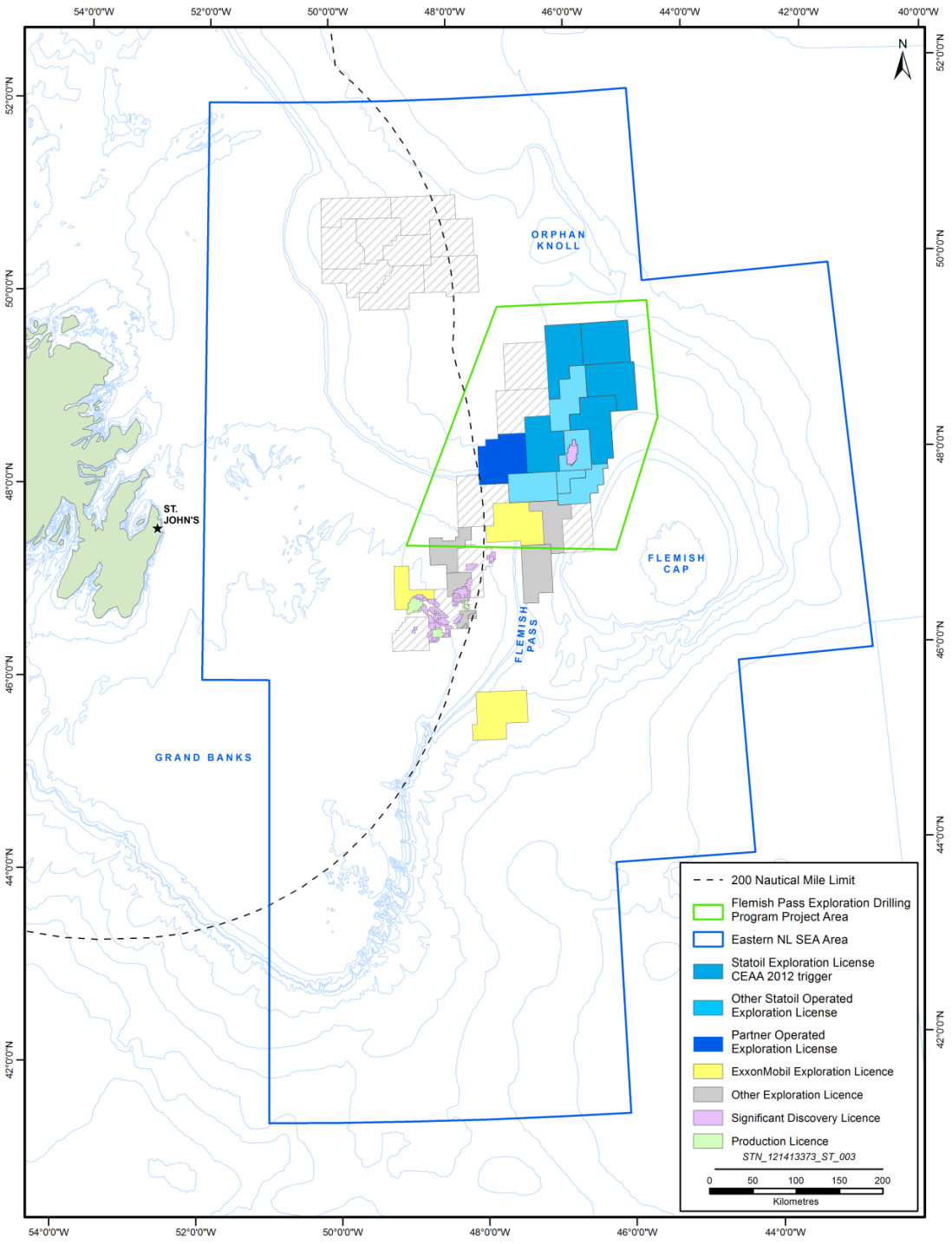


Figure 5 Eastern Newfoundland Strategic Environmental Assessment Study Area

- Environmental Assessment of Exploration Drilling in Annieopsquotch (Exploration License (EL) 1052), Bonnawinkie (EL 1056) and Gambo (EL 1048) Leases (Jacques Whitford Environment Limited 2002a)
- Flemish Pass Drilling Environmental Assessment (Jacques Whitford Environment Limited 2002b)

Since 2008 Statoil collected biological, physical sediment, meteorological, and oceanographic data during its drilling and seismic / geotechnical surveys in the Flemish Pass area. Subject to approval from its licence partners, Statoil will include these data in the EIS. Such data may include the following:

- seabird and marine mammal observations
- side scan sonar data (seafloor mapping)
- core samples provide sediment grain size and sediment distribution
- ROV video data at well locations (visual data of seafloor regarding presence/absence of some benthic organisms and corals)
- met-ocean data

It is anticipated that the information from the above reports and other relevant studies provide sufficient data to characterize the existing environment in the Project and Study Areas and assess potential environmental effects associated with Project activities.

6.2 Biophysical Setting

6.2.1 Physical Environment

The following sections provide an overview description of relevant aspects of the existing physical environment of the Project Area, including geology, bathymetry, climatology, oceanography, and ice conditions.

6.2.1.1 Geology and Bathymetry

The geology of the Eastern Newfoundland offshore area is complex and dynamic, and the current bedrock and surficial characteristics of the area have been shaped by various natural and human factors and processes over time. Located on the eastern continental shelf, this area was formed by extension during the breakup of Pangea and the opening of the Atlantic Ocean during the Late Triassic to mid-Cretaceous and is underlain by pre-rift basement rocks (Fader et al. 1989). Rifting, combined with salt tectonics in the area, created a complex series of Mesozoic rift basins that are separated by basement highs along the central to outer shelf. The resulting combination of stratigraphy, structure and timing have been conducive to hydrocarbon generation and entrapment (Bell and Campbell 1990). The main sedimentary basins in the area include the Orphan, Flemish Pass, Jeanne d'Arc, and Carson (Fader et al. 1989). The primary reservoirs are located in the shallow marine and fluvial shale and sandstone deposited during the Late Jurassic and Early Cretaceous periods of the Mesozoic Era.

All of the Eastern Canadian continental shelf has been strongly influenced by Quaternary glaciation, which has resulted in an erosional morphology (Piper 1991). This glaciation produced a variety of glacial deposits, including sands and gravels, which are generally present as a veneer, basinal muds, muddy sands and gravels, glaciomarine sediments, and glacial drift sediments. In and around the Project Area, the identified deposits have been classified as the Grand Banks Sand and Gravel and Adolphus Sand and Gravel (Piper et al. 1988). Seabed features in the area include iceberg scouring, sand ridges and waves, shell beds, pockmarks, and seabed depressions of unknown origin (Cameron and Best 1985).

Canada's eastern continental margin is tectonically passive and seismicity is relatively rare throughout much of the region. Natural Resources Canada (NRCan) (2016a) estimates that approximately 450 earthquakes occur each year in Eastern Canada. Seismicity generally occurs randomly along the Grand Banks margin. The most recent edition of the Seismic Hazard Map prepared by NRCan (2016b) indicates that the Project Area has been classified as having a low seismic hazard. According to the National Earthquake Database (NRCan 2016c) there have been seven seismic events recorded within the boundaries of the Project Area in the 1985 to 2016 period. The magnitudes of these events have been fairly low, ranging from 3.0 to 4.5, with an average magnitude of 3.9 and a median magnitude of 4.0. All of the recorded events have epicentres in the southwest portion of the Project Area, and are likely related to the various tectonic lineaments in the area.

The Project Area is in deep water; the Project Area primarily includes the Flemish Pass, with surrounding areas having depths up to and beyond 3,000 m (Figure 6).

6.2.1.2 Climatology

Existing and available climatological information for sites within the Project Area indicate that air temperatures are coolest in January or February and warmest from July through September. Air temperatures exhibit strong seasonal variations and also vary by geography. Daily mean values can range from -5°C in winter to 18°C in summer. Prevailing winds in the area are from the west to northwest in winter and from the southwest in summer. Extreme wind gusts greater than 51 m/s (100 knots) have been measured in winter and in association with tropical and post-tropical weather systems (Bowyer 1995). Mean hourly wind speeds can range from 6 m/s in summer to 13 m/s in winter. Extreme wind speeds in winter can reach 36 m/s or more (based on available climatology MSC50 data created by Oceanweather).

Precipitation varies within localized regions of the Project Area. Rain or drizzle can occur at any time of year and is most likely to occur with southerly or south-westerly winds. Snow and freezing rain are possible any time from October through May, and snow can accompany winds of any direction. Freezing rain is most common with easterly or north-easterly winds, and frequently persists for days in the spring along the East Coast. There is also a year-round potential for thunderstorms and hail, with hail most likely in winter, and thunderstorms most frequently reported in summer. In general, visibility is most favourable in fall and winter and most frequently restricted in summer and spring with some of the highest occurrences of marine fog in North America (AMEC 2014).

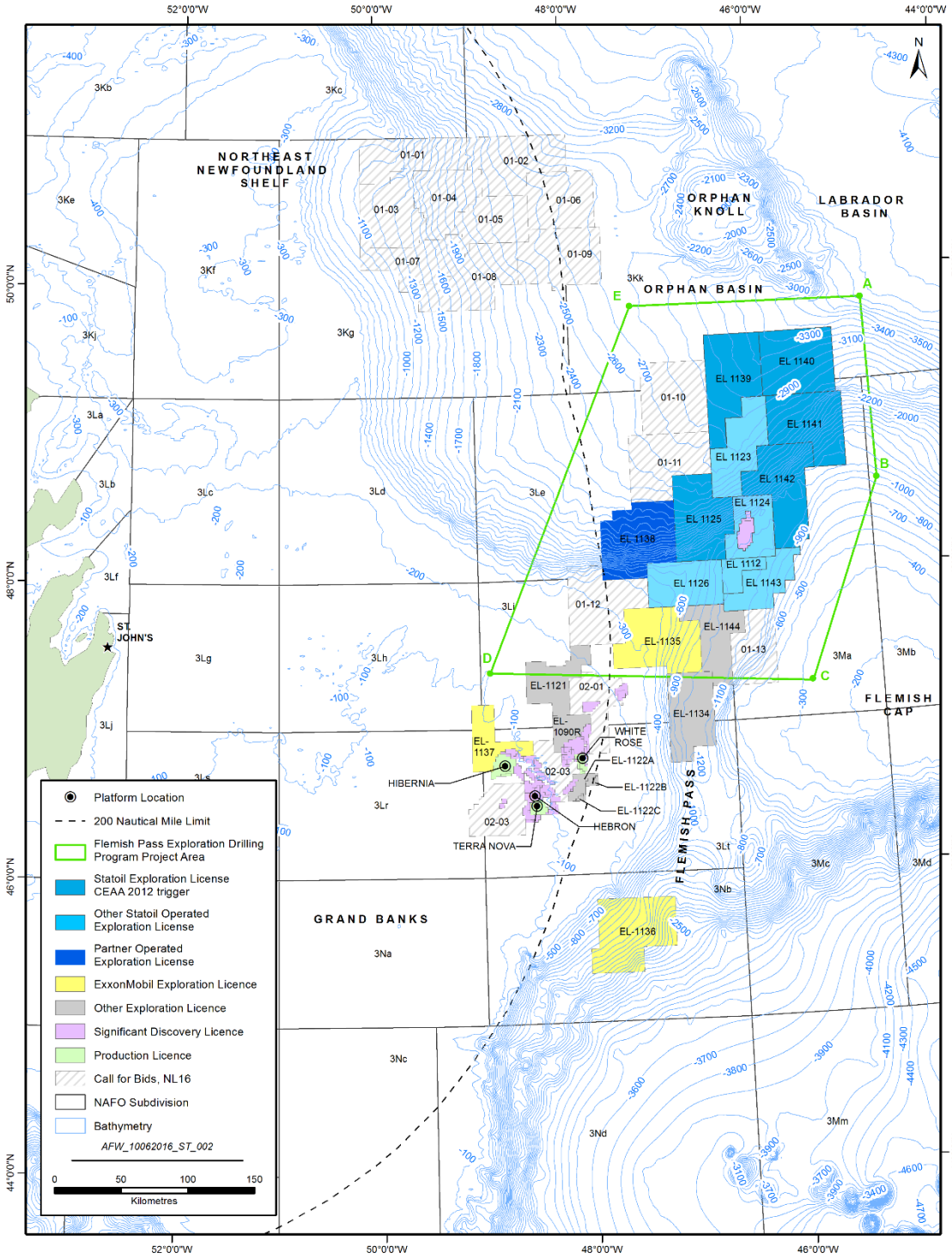


Figure 6 Bathymetric Features

6.2.1.3 Oceanography

Within the Project Area and surrounding area, the largest seas are typically found farthest offshore, usually during the winter season. For the Orphan Basin to the north, mean significant wave heights range from about 1.7 m in July to 4.3 m in July, with maximum significant wave heights ranging 6.3 m in July to 15.9 m in January (AMEC 2014). Circulation, which includes the continental shelf waters, is dominated by a generally southward flow of the cold Labrador Current, which includes an inshore branch that flows along the Newfoundland coast at speeds approximately 10 cm/s and an offshore branch flowing along the outer edge of the Grand Banks. The inshore branch sometimes meanders over the Grand Banks. The offshore branch of the Labrador Current flows over the upper Continental Slope at depth, and through the Flemish Pass with average speeds of about 20 to 25 cm/s. Over parts of the Grand Banks, the mean currents are generally weak (less than 10 cm/s) and flow southward, dominated by wind-induced and tidal current variability. Average sea surface temperatures generally range from 0°C to 7°C in February to 10°C to 16°C in summer, whereas near-bottom sea temperatures generally range from 3°C to 4°C on average year-round. Average sea surface salinities range from about 32 psu to the south to almost 34 psu to the north. Near-bottom salinities are typically around 34 psu in both summer and winter (AMEC 2014).

6.2.1.4 Ice Conditions

The Project Area is subject to seasonal intrusions of sea ice and icebergs, as well as vessel icing during particular meteorological conditions. Sea ice and iceberg conditions vary each year and by location, and are influenced by colder or milder winter conditions over Newfoundland and the surrounding waters, and seasonal wind patterns. Cold and dry winds from the west through north have the effect of moving ice further offshore, while north-easterly winds tend to bring ice towards shore. Sea ice is possible as early as the first week of January and in thicknesses up to 30 cm. By the end of March, most of the ice is thin first year (30 to 70 cm) ice, with patches of medium (70 to 120 cm) and thick (greater than 120 cm) first year ice. Generally, sea ice begins to retreat over the entire area by mid-April. By early May, the southern Grand Banks and Flemish Cap areas are generally ice-free. At the beginning of June, there is a risk of small areas of thick first year ice and occasionally old ice (ice which has survived at least one summer's melt) in the northern parts of the Orphan Basin. In general, the Project Area could be considered ice-free by mid-May, but this does vary year to year. The iceberg season may typically last from March to July and comprise growlers (less than 1 m height) to very large (100 to 200 m in length) icebergs. Ice islands, broken away from an Arctic ice shelf, may have areas of a few thousand square metres to 500 km^2, although they do not occur every year. The International Ice Patrol annual count of icebergs south of 48°N is highly variable but has an annual mean of approximately 550 icebergs and range from 0 to 2,202 icebergs (based on data thru 2006) (AMEC 2014).

6.2.2 Biological Environment

There are a wide range of fish, marine mammals, and marine birds that could occur in the Project Area. A list of common (and at-risk) species is provided in Appendix A.

Fish species known to occur within the Project Area include wolffish, skate, hake, cusk, eel, spike, sculpin, sand lance, tuna, and shark species (AMEC 2014). Some of these species are listed as species of conservation interest under SARA and assessed as at-risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The Project Area also hosts a number of commercially important fish and shellfish species (discussed in Section 6.3).

Benthic invertebrate species known to occur within the Project Area include polychaetes, whelks, echinoderms, isopods, crustaceans, and molluscs. Previous studies have shown that the Project Area is host to a wide range of benthic species depending on the habitat type (AMEC 2014). Deep-water corals, sponges, and sea pens have been recorded within the Project Area, primarily in the vicinity of the Flemish Pass and around the edges of the Grand Banks and Flemish Cap (AMEC 2014). These organisms increase habitat complexity, provide habitat to fin fish and shellfish species. Corals identified in the Project Area include alcyonaceans, pennatulaceans, scleratcinians, and antipatharians. These coral species are noted as being of conservation interest due to their role in marine habitat development, and their sensitivity to stressors on the environment, including anthropogenic impacts such as fishing and oil and gas activities (DFO 2015; Statoil 2016).

Approximately 20 species of marine mammals (including species of conservation interest), including cetaceans (whales and dolphins) and pinnipeds (seals), are known to occur in offshore Newfoundland. The majority of species are not year-round residents in the area, and many use it as a migratory passage or for foraging. Mysticetes (i.e., baleen whale) species include the fin, humpback, blue, North Atlantic right, sei, and minke whales. Odontocetes (i.e., toothed whale) species include sperm, killer and false killer, long-finned pilot, Sowerby's beaked, and northern bottlenose whales. Delphinid (i.e., dolphin) species known to occur within the region include the common bottlenose, short-beaked common, Atlantic white-sided, and striped dolphins, and harbour porpoise (LGL Limited 2011; AMEC 2014). There are three species of seals that are generally known to occur in the offshore area of eastern Newfoundland: harp; hooded; and grey seals. None of these species are listed under SARA or assessed as at-risk by COSEWIC.

Sea turtles are known to occur in Newfoundland's offshore area. Three species of sea turtles have potential to occur within the Project Area; the loggerhead and leatherback sea turtles are the two predominant species. The likelihood of the Kemp's Ridley sea turtle occurring in the Project Area is considered remote (AMEC 2014). Of the three species, the leatherback has been designated as endangered under both SARA and COSEWIC, while the loggerhead has been assessed as endangered under COSEWIC only (LGL Limited 2011).

The Project Area encompasses the Flemish Pass, a portion of the Flemish Cap, and deeper waters associated with the Orphan Basin (LGL Limited 2011). This area is known to support an abundance of seabird species, including kittiwake, fulmar, gannet, gull, shearwater, and storm-petrel. Seabirds are at their highest density during the spring and summer months, when species are migrating and

zooplankton productivity is highest (Templeman 2010; AMEC 2014). Other species with potential to occur within the Project Area include puffins, razorbills, phalarope, skua, and jaeger.

There are currently 22 species of fish, 7 species of marine mammals, 2 species of sea turtles and 1 species of marine bird that are of conservation interest (i.e., listed under SARA or COSEWIC) that could occur within the Project Area (Table 6).

Table 6 Species of Conservation Interest with Potential to Occur in and Around the Project Area

Species		Status	
Common Name	**Scientific Name**	**SARA**	**COSEWIC**
Fish			
White shark (Atlantic population)	*Carcharodon carcharias*	Schedule 1 Endangered	Endangered
Northern wolffish	*Anarhichas denticulatus*	Schedule 1 Threatened	Threatened
Spotted wolffish	*Anarhichas minor*	Schedule 1 Threatened	Threatened
Atlantic wolffish	*Anarhichas lupus*	Schedule 1 Special Concern	Special Concern
Atlantic bluefin tuna (Grand Banks of Newfoundland only)	*Thunnus thynnus*	No Status	Endangered
Atlantic cod (Newfoundland and Labrador population)	*Gadus morhua*	No Status	Endangered
Cusk	*Brosme brosme*	No Status	Endangered
Porbeagle shark	*Lamna nasus*	No Status	Endangered
Roundnose grenadier	*Coryphaenoides rupestris*	No Status	Endangered
Winter skate (Eastern Scotian Shelf - Newfoundland population))	*Leucoraja ocellata*	No Status	Endangered
Acadian redfish (Atlantic population)	*Sebastes fasciatus*	No Status	Threatened
American eel	*Anguilla rostrata*	No Status	Threatened
American plaice (Newfoundland and Labrador population)	*Hippoglossoides platessoides*	No Status	Threatened
Atlantic salmon (Southern Population)	*Salmo salar*	No Status	Threatened
Deepwater redfish (Northern population)	*Sebastes mentella*	No Status	Threatened
Shortfin mako shark (Atlantic population)	*Isurus oxyrinchus*	No Status	Threatened
White hake (Atlantic and Northern Gulf of St. Lawrence population)	*Urophycis tenuis*	No Status	Threatened
Basking shark (Atlantic population)	*Cetorhinus maximus*	No Status	Special Concern
Blue shark (Atlantic population)	*Prionace glauca*	No Status	Special Concern

Species		Status	
Common Name	**Scientific Name**	**SARA**	**COSEWIC**
Roughhead grenadier	*Macrourus berglax*	No Status	Special Concern
Spiny dogfish (Atlantic population)	*Squalus acanthias*	No Status	Special Concern
Thorny skate	*Amblyraja radiate*	No Status	Special Concern
Marine Mammals			
Blue whale (Atlantic population)	*Balaenoptera musculus*	Schedule 1 Endangered	Endangered
North Atlantic right whale	*Eubalaena glacialis*	Schedule 1 Endangered	Endangered
Fin whale (Atlantic population)	*Balaenoptera physalus*	Schedule 1 Special Concern	Special Concern
Sowerby's beaked whale	*Mesoplodon bidens*	Schedule 1 Special Concern	Special Concern
Harbour Porpoise (Northwest Atlantic population)	*Phocoena phocoena*	Schedule 2 Threatened	Special Concern
Killer whale (Northwest Atlantic-Eastern Arctic population)	*Orcinus orca*	No Status	Special Concern
Northern bottlenose whale (Davis Strait-Baffin Bay-Labrador Sea population population)	*Phocoena phocoena*	No Status	Special Concern
Sea Turtles			
Leatherback sea turtle (Atlantic population)	*Dermochelys coriacea*	Schedule 1 Endangered	Endangered
Loggerhead sea turtle	*Caretta caretta*	No Status	Endangered
Marine Birds			
Ivory Gull	*Pagophila eburnea*	Schedule 1 Endangered	Endangered

Currently, there are no known Marine Protected Areas within the vicinity of the Project. However, nationally DFO is increasing the number of Marine Protected Areas. This initiative includes the marine waters off Newfoundland and Labrador. Statoil will include updates to the Marine Protected Areas status in the EIS, as information is available. Multiple areas within offshore Newfoundland have been designated as Ecologically and Biologically Significant Areas (EBSAs) (DFO 2004) (Figure 7). Table 7 identifies the EBSAs within 150 km of the Project, and their reasons for designation. Figure 7 highlights these special areas within and adjacent to the Project Area.

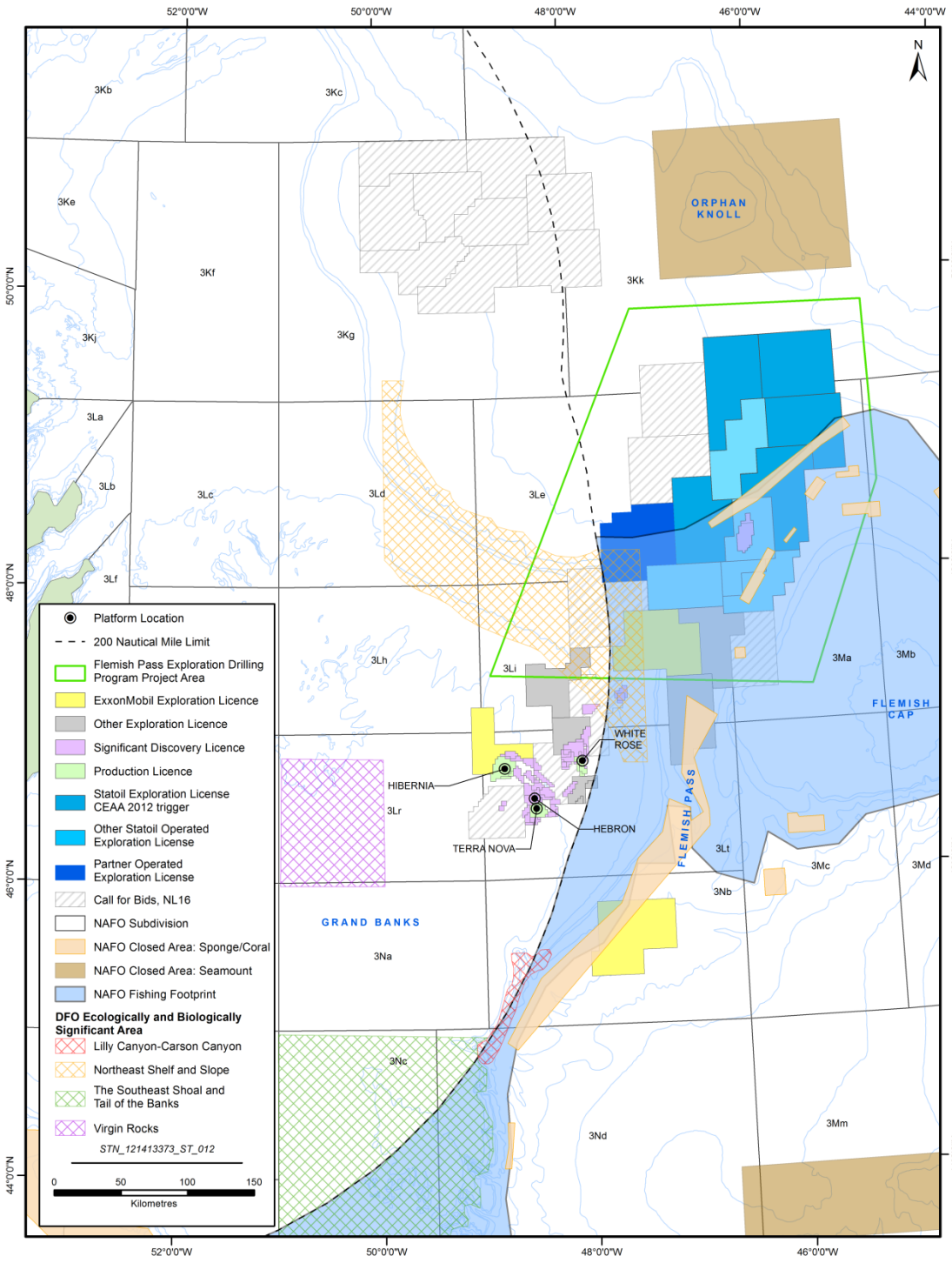


Figure 7 Special Areas and Northwest Atlantic Fisheries Organization Fishing Footprint

Table 7 Designated Ecologically and Biologically Significant Areas Within 150 km Radius of the Project Area

EBSA	Purpose / Rationale
The Southeast Shoal and Tail of the Banks	• Only sandy offshore shoal in the Placentia Bay-Grand Banks Large Ocean Management Area • Only known offshore spawning site for capelin • Single nursery area of entire yellowtail flounder stock • Contains highest benthic biomass on the Grand Banks • Contains relict populations of blue mussel, wedge clam, and capelin associated with beach habitat
The Northeast Shelf and Slope	• Contains two important coral areas at Tobin's Point and Funk Island Supr (CPAWS 2009) • Spring aggregation of spotted wolffish • High spring concentrations of Greenland halibut and marine mammals such as harp seal and pilot whales
Lily Canyon-Carson Canyon	• High proportion of Iceland scallop known to occur • Year-round aggregations of marine mammals for feeding and overwintering (CPAWS 2009)
The Virgin Rocks	• Known to attract aggregations of capelin and marine birds • Support for breeding of Atlantic cod, American plaice, and yellowtail flounder

In addition to Canadian-designated EBSAs, the Northwest Atlantic Fisheries Organization (NAFO) has identified a number of areas as Vulnerable Marine Ecosystems (VMEs) for deep-water corals and sponges in the offshore region, including many canyons around the continental shelf, seamounts, and knolls (see Figure 7). The Newfoundland Seamounts and the Beothuk Knoll have been identified as potential VMEs (NAFO 2008). The VMEs are closed to bottom trawling activities in the area, to manage habitat for corals such as gorgonians, black corals, sea pens, and sponges. These areas were created in response to the known sensitivity of corals and sponges, particularly gorgonians and black corals that cannot reattach themselves to substrate after disturbance (NAFO 2009). In the NL offshore area, there are no areas identified where drilling cannot occur. While DFO and NAFO have identified EBSAs and VMEs, there are no restrictions in these areas regarding drilling activity. The C-NLOPB requires mitigation be put in place to reduce potential effects on sensitive marine organisms (e.g., corals). Prior to spudding a well in waters where there is a potential for corals, the C-NLOPB requires a pre-spud survey be conducted at a wellsite and the final spud location be set back 100 m from any coral colonies (defined as either a *Lophelia pertusa* reef complex or five or more corals larger than 30 cm in height or width).

6.3 Commercial Fisheries and Other Ocean Users

6.3.1 Commercial Fisheries

Commercial fishing activity occurs in the Project region. In particular, NAFO Unit Areas 3KLMN (Figure 8) fall within the Project Area. The Government of Canada has jurisdiction over commercial fisheries for sedentary and non-sedentary species within its 200 nm EEZ, and for sedentary commercial fisheries to

the extent of the defined continental shelf. Beyond the EEZ, NAFO has jurisdiction over the management of non-sedentary species, and the ability to designate protected areas (AMEC 2014).

Key commercial fisheries for Newfoundland and Labrador include groundfish, shellfish, and large pelagic fisheries such as shark and tuna. Commercial fisheries generally take place along the shelf of the Grand Banks, where ocean productivity is highest. Key commercial fisheries within the Project Area include snow crab, northern shrimp, Greenland halibut (turbot), and redfish (LGL Limited 2011; AMEC 2014) (Figure 9, Canadian fish landings only). Atlantic cod and American plaice have historically been important fisheries on the Grand Banks, but due to overfishing and other economic conditions, commercial fishing of the species has ceased and they have been placed under moratoria. These moratoria have the potential to be lifted during the life of the Project.

Internationally, NAFO manages 19 fish stocks comprising 11 different species. The NAFO Regulatory Area (NRA) is approximately 2,707,895 km² and is comprised of the seas adjacent to Canada's EEZ. Within the NRA lies the NAFO fishing footprint (see Figure 7), an area of 120,048 km² that identifies areas of bottom fishing activity. Fishing activity within the NRA comprises of cod, halibut, shrimp, skates, and other species. The most commercially important fisheries internationally are northern shrimp, Greenland halibut, Atlantic cod, and Atlantic redfish (AMEC 2014).

6.3.2 Aboriginal Fisheries

The following Aboriginal groups have communal commercial fishing licences issued under the *Aboriginal Communal Fishing Licences Regulations*:

- Innu Nation - has a mid-shore enterprise (65 to 100 ft) with a groundfish licence permitting access to a variety of areas (Atlantic-wide) including 3KLMN. The *Atlantic Optimist* is operated on this licence. They also have an Area 6 (3K) shrimp licence attached to this enterprise. They also hold an inshore enterprise with a mobile gear and fixed gear groundfish licence that can operate in 3KL.
- Nunatsiavut Government - have three inshore groundfish enterprises that are licenced to operate in 3KL. They also hold two seal licences that permit access in Seal Fishing Areas (SFAs) 4-33 (Atlantic-wide).
- NunatuKavut Community Council - have nine inshore enterprises with access to 3KL groundfish. Two of these enterprises also have an Area 6 (3K) shrimp licence. They also hold two seal licences permitting access in SFAs 4-33 (Atlantic-wide).
- MFN - holds nine enterprises that permit access to 3KL. They hold three tuna licences that permit access to 3LN. They also hold one seal licence that permits access in SFAs 4-33 (Atlantic-wide).
- QMFNB - hold one inshore enterprise with groundfish licence permitting access to 3K and a shrimp licence for Area 6 (3K), as well as pelagic fishery access (herring, mackerel, and capelin) which occurs close to shore in 3KL.
- Mi'kmaq Alsumk Mowimsikik Koqoey Association (formed by MFN and QMFNB) - holds one enterprise with a groundfish licence permitting access to 3KL.

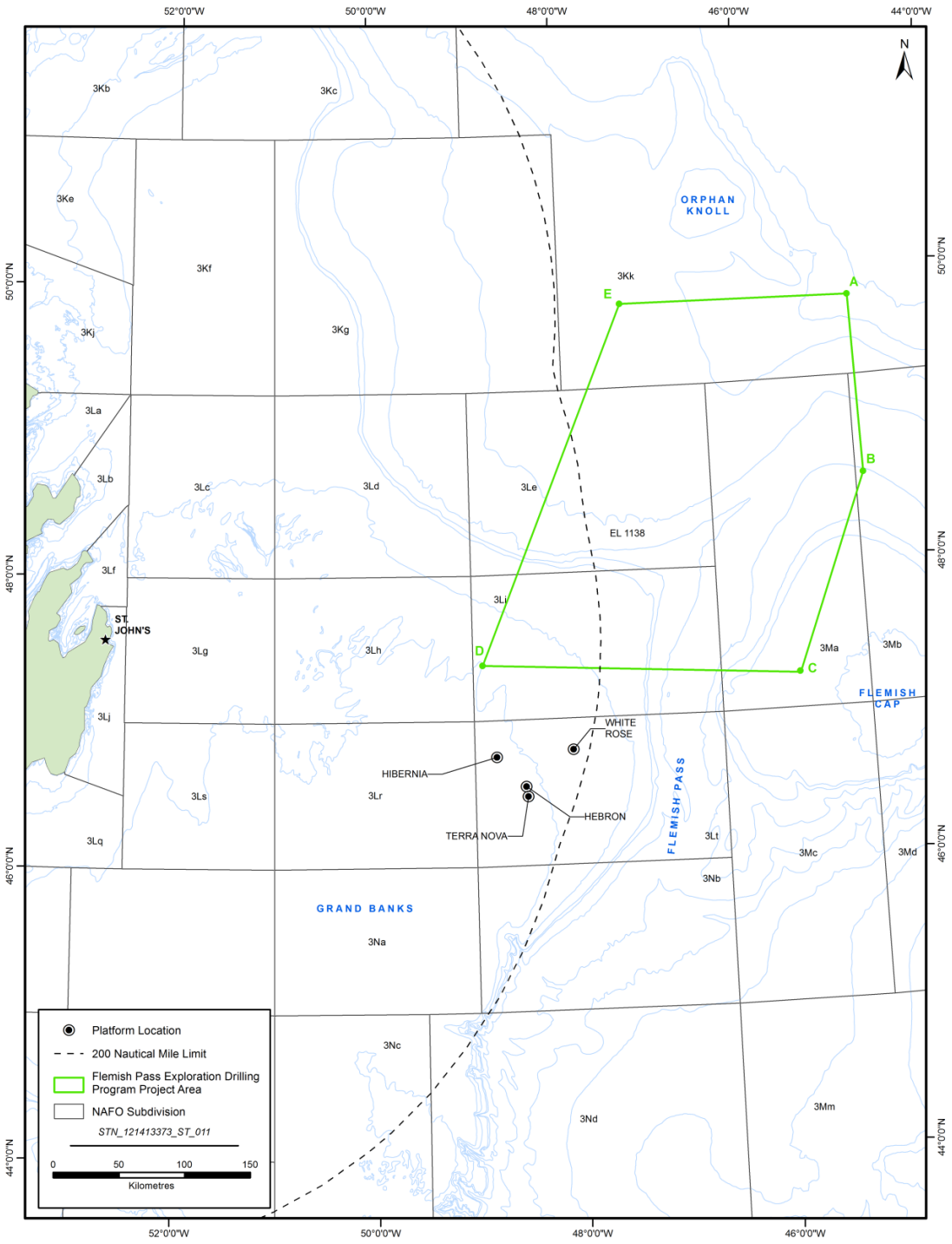


Figure 8 Northwest Atlantic Fisheries Organization Unit Areas

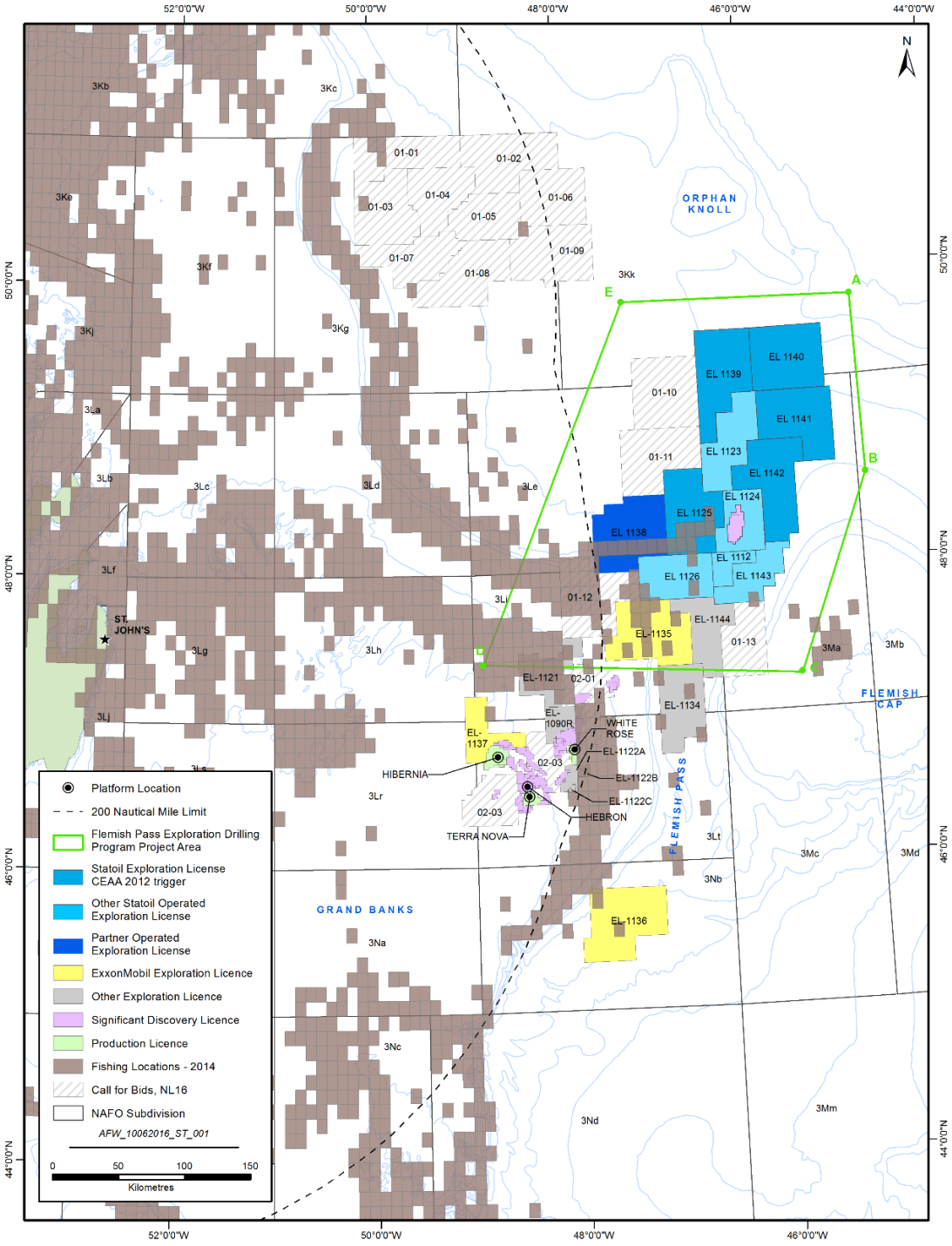


Figure 9 Commercial Fisheries Locations in Offshore Newfoundland, 2014 (Canadian fish landings only)

There are no documented food, social, or ceremonial licences within the Project Area. The closest Aboriginal reserve to the Project, the MFN, is Conne River located in Bay d'Espoir, on the south coast of Newfoundland, approximately 900 km west of the Project Area. The MFN holds a food, social, or ceremonial licence for waters adjacent to their reserve.

6.3.3 Other Ocean Users

In addition to commercial fishing activity, other ocean users within the Newfoundland offshore area include research and scientific studies, military defence operations, other oil and gas activities, marine shipping, and underwater transmission cables.

Marine research is typically conducted annually by DFO and activities include, but are not limited to, annual multi-species trawl surveys to monitor the status of fish populations, and collection of data from buoys and moorings for DFO's RAPID Climate Change Program Study and the Atlantic Zone Off-Shelf Monitoring Program. Bottom trawl surveys typically occur in NAFO divisions 3LNOPs in the spring (Spring Atlantic Zone Monitoring Program), and in divisions 2HJ3KLMNO in the fall (AMEC 2014). Other research activities have the potential to develop and occur within the Project Area during the duration of the Project. After the annual commercial snow crab fishery has closed, industry-DFO collaborative post-season trap surveys for snow crab are conducted by FFAW-Unifor in NAFO Divisions 2J3KLOPs4R. Each year approximately 1,500 stations are sampled.

The Department of National Defence is responsible for overseeing national security, including the defence and protection of waters in Canada's jurisdiction. The Royal Canadian Navy and Royal Canadian Air Force conduct routine surveillance operations throughout Atlantic Canadian waters, which may include aircraft or marine patrols within the Project Area. Military vessels sometimes support DFO with research operations or conducting fishery patrols (AMEC 2014). In the past, many sites across Canada have been used for military training and weapons testing by Department of National Defence. Legacy sites exist across Canada's coastline where unexploded ordnance may still remain, and there are 1,100 known unexploded ordinance sites that exist off Canada's east coast (AMEC 2014). It is not anticipated that legacy sites currently exist within the Project Area (Figure 10).

Offshore oil and gas production activities have been occurring off the coast of Newfoundland and Labrador for approximately 20 years; exploration has occurred for a much longer period. Various international oil and gas operators hold interests offshore Newfoundland and Labrador. There are currently three producing fields within the Jeanne d'Arc Basin: Hibernia (Hibernia Management and Development Company Limited), Terra Nova (Suncor Energy Inc.), and White Rose (Husky Energy Inc.). Hebron (ExxonMobil Canada Properties), the newest production field, is scheduled to begin production in 2017.

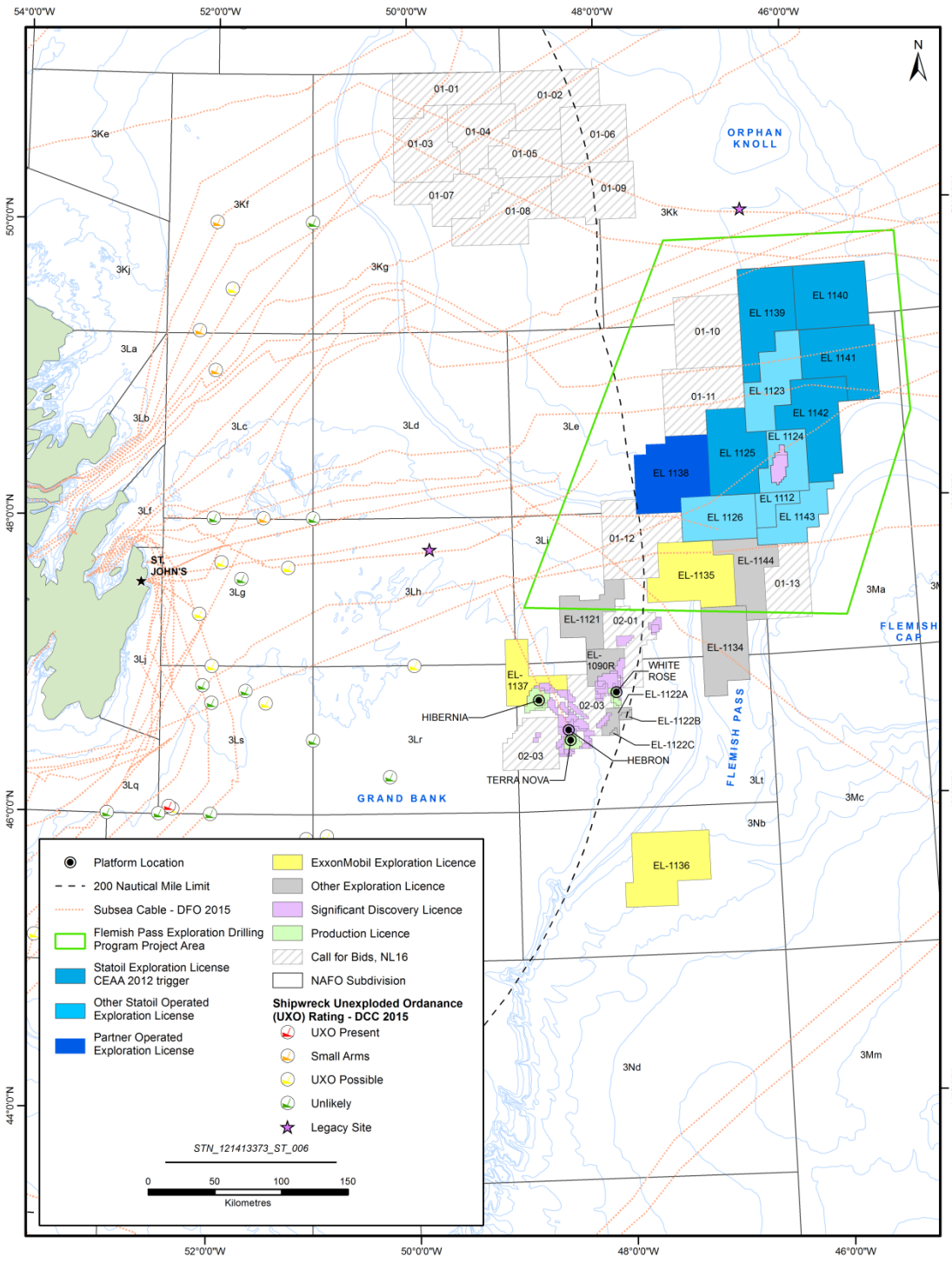


Figure 10 Undersea Cable Locations and Department of National Defence Legacy Sites

There are numerous oil and gas exploration activities that occur within the Project Area (see Figure 3). The C-NLOPB moved into a scheduled land tenure system in 2013, dividing offshore Newfoundland and Labrador into eight regions. As of April 2016, there were 29 ELs, 58 SDLs, and 11 Production PLs in the Newfoundland and Labrador offshore area (C-NLOPB 2015). It is possible that new ELs, SDLs, and PLs could be awarded during the life of the Project, and exploration or development activities could be undertaken by other operators in the region.

Both active and inactive marine subsea cables are known to occur within the Project Area (AMEC 2014). The majority of these cables span the Atlantic Ocean, connecting North America to the United Kingdom and Europe. There is the potential for more marine cables to be constructed within the Project Area over the life of the Project (Figure 10). Marine cables have not been substantially affected by offshore exploration drilling from previous projects, and are not anticipated to be affected by project activities.

Due to the Project being located in offshore Newfoundland, the consideration of heritage sites is limited to the identification of shipwrecks in the Project Area. While shipwrecks have been identified within the offshore region (AMEC 2014), it is not anticipated there are any currently located in the Project Area. Pre-drilling ROV video surveys at the wellsite may identify shipwrecks near the well location.

7 Potential Project-Related Environmental Interactions

Pursuant to the CEAA 2012 and the "Prescribed Information for a Description of a Designated Project Regulation" and in accordance with the "Guide to Preparing a Description of a Designated Project Under the *Canadian Environmental Assessment Act, 2012*" (CEAA 2012), the project description must include a description of any changes that may be caused by the Project to fish and fish habitat (as defined in the *Fisheries Act*), aquatic species (as defined in *SARA*), and migratory birds (as defined in the *Migratory Birds Convention Act*, 1994), and any changes to the environment that may occur on federal lands, in other provinces or internationally. The project description must also include a description of the effects on Aboriginal peoples of any changes to the environment that result from carrying out the Project. The following sections provide an overview of the potential environmental interactions of the Project on the environment and any changes to the environment that may occur as a result of carrying out the Project, according to requirements of Section 5, CEAA 2012.

7.1 Routine Project Activities

Routine project activities, including logistical activities, have the potential to result in Project-related changes to the environment. This section provides information on routine project activities and potential discharges. Routine project activities that may result in changes to the environment include:

- presence and operation of the drilling vessel(s), including discharges from drilling operations and presence of a safety zone
- 2D seismic surveys, VSP surveys, geophysical surveys
- Vessels associated with drilling, geotechnical / geohazard / wellsite / seabed / environmental / ROV / AUV surveys
- well abandonment
- vessel traffic within the Project Area
- helicopter traffic within the Project Area

An overview of the potential environmental interactions with routine project activities that may result in changes to the environmental components identified in the CEAA 2012 are provided in Table 8.

Table 8 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 (including marine plants)	5(1)(a)(i) 5(1)(a)(ii)	Routine project activities may result in changes affecting fish, fish habitat, and aquatic species as defined under SARA, marine mammals, and other aquatic species including the following interactions with the environment: • sensory disturbance to aquatic species from underwater noise emissions associated with drilling and geophysical activities • localized effects to the benthic environment (including benthic species) due to seabed deposition at drill site(s) (i.e., drilling discharges) including smothering and mortality of benthic organisms • localized effects on marine water quality due to routine discharges to the ocean (as identified in Table 4) from the drilling facility and offshore supply vessels • potential injury or mortality to marine mammal(s) from vessel collisions Routine activities associated with helicopter flights are not expected to result in changes to aquatic species or fish habitat
Migratory Birds	5(1)(a)(iii)	Routine project activities could potentially result in changes to the environment that may affect migratory birds, as defined under the *Migratory Birds Convention Act, 1994*, due to the following interactions with the environment: • attraction of migratory birds to artificial lighting (including flares) and discharges (e.g., food wastes) • mortality or stranding of migratory birds
Project Activities Occurring on Federal Lands	5(1)(b)(i)	Routine project activities could potentially result in changes to the environment (i.e., as described above and including air and noise emissions) that would occur on federal land as defined by the Accord Acts
Transboundary Issues	5(1)(b)(iii)	Routine project activities are not anticipated to result in changes to the environment outside Newfoundland and Labrador, or outside the marine waters under the jurisdiction of Canada
Health and Socio-Economic Conditions for Aboriginal and Non-Aboriginal People	5(1)(c)(i) 5(2)(b)(i)	Routine project activities may result in the following changes to the environment that may affect commercial fishing activities, including those carried out under Aboriginal communal commercial licenses in and around the Project Area: • establishment of a safety zone, as required by the C-NLOPB, and associated spatial and temporal restrictions on Aboriginal communal commercial fish harvesting and commercial fishing activity within the safety zone • routine supply vessel operations outside of the safety zone will be consistent with existing offshore and nearshore shipping traffic in the Project Area and are not anticipated to result in any changes to the environment that would have an effect on Aboriginal commercial fishing and commercial fishing activities • 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 or non-Aboriginal peoples
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)	Given the location of the Project offshore, 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 of historical, archaeological, paleontological, or architectural significance. Information gathered during 3D seismic surveys, geotechnical and geohazard surveys, and pre-drill ROV site surveys in the Project Area may identify marine heritage resources on the seabed

Environmental Component of Concern	Relevant Section of CEAA, 2012	Potential Environmental Interactions
Current Use of Lands and Resources for Traditional Purposes by Aboriginal Groups	5(1)(c)(iii)	No Aboriginal groups are known to undertake traditional activities within or near the Project Area, and so routine project activities, including supply vessel traffic, are not likely to result in any interaction with or effect on the current use of land and resources for traditional purposes by Aboriginal persons
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(1)(b)(i)	Routine project activities authorized by the C-NLOPB have the potential to result in directly related or necessarily incidental changes to the atmospheric environment

7.2 Non-Routine Project Activities

Non-routine activities, or accidental events, can include hydrocarbon and/or chemical spills (batch spills) from drilling facilities and vessels, uncontrolled release of hydrocarbons from a well during drilling, and spills of drilling mud, hydraulic fluid, etc. Spills are defined in the Accord Acts as "a discharge, emission, or escape of petroleum, other than one that is authorized…" Collectively, these accidental events are referred to as "spills". Spill trajectory modelling will predict areas that could potentially be affected by a batch spill of hydrocarbon and an uncontrolled discharge from a well. The EIS will address the potential environmental effects from spill events.

Statoil's objective in its operations is to ensure safe and efficient operations; spill prevention is our primary focus in all our operations. During drilling, well control measures will be in place, such as well casings and BOPs, to prevent incidents from occurring. Emergency response plans, consistent with those employed on Statoil's previous exploration drilling activities in the Newfoundland and Labrador offshore will be developed. Spill response plans ensure, that should a spill event occur, our response is robust, efficient and adapted to the conditions in which we operate. The EIS will provide additional details regarding measures implemented to prevent accidental events, and contingency and response plans designed to reduce adverse environmental effects in the unlikely event that they should occur.

Table 9 provides an overview of the potential environmental interactions resulting from non-routine activities.

Table 9 Potential Environmental Interactions with Non-Routine Activities

Environmental Component of Concern	Relevant Section of CEAA 2012	Potential Environmental Interactions
Fish, Fish Habitat, and Aquatic Species (including marine plants)	5(1)(a)(i) 5(1)(a)(ii)	An accidental event during project activities could potentially result in changes to the environment that may affect fish, fish habitat, aquatic species as defined in SARA, marine mammals, and other aquatic species, including: • reduced availability and quality of habitat • degradation and reduction in marine water quality • injury, mortality and/or reduced health for fish and other aquatic species
Migratory Birds	5(1)(a)(iii)	An accidental event during project activities could potentially result in changes to migratory birds, as defined under the *Migratory Birds Convention Act, 1994*, including: • oiling of feathers • ingestion of oil • injury or mortality of marine birds
Project Activities Occurring on Federal Lands	5(1)(b)(i)	An accidental event during Project activities could potentially result in changes to the environment, as described above and including air and noise emissions, that would occur in federal lands as defined by the Accord Acts
Transboundary Issues	5(1)(b)(iii)	An accidental event has the potential to result in transboundary effects (e.g., fish and fish habitat, aquatic species, migratory birds, air quality, water quality) outside the marine waters under the jurisdiction of Canada; no land masses are anticipated to be affected. Spill trajectory modelling will be conducted to predict areas that could potentially be affected by a spill
Health and Socio-Economic Conditions for Aboriginal and Non-Aboriginal People	5(1)(c)(i) 5(2)(b)(i)	An accidental event may result in the following changes to the environment that may have an effect on commercial fisheries, including Aboriginal communal fishing licenses: • contamination-related closure of commercial fishing areas, and associated restrictions on commercial and Aboriginal communal commercial fish harvesting activity • reduced catchability associated with damage to fishing gear (e.g., fouling) • changes in population size and health of individuals among commercial fish species, and associated loss of income through reduced catch value • an accidental event is not anticipated to result in any changes to the environment that would have an effect on the health conditions of Aboriginal or non-Aboriginal persons
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)	Given the location of the Project offshore, non-routine Project activities are not expected to result in changes to resources of historical, archeological, paleontological, or architectural significance. Information gathered during 3D seismic surveys, geotechnical and geohazard surveys, and well site pre-drill ROV video surveys in the Project Area may identify marine heritage resources on the seabed

Environmental Component of Concern	Relevant Section of CEAA 2012	Potential Environmental Interactions
Current Use of Lands and Resources for Traditional Purposes	5(1)(c)(iii)	No Aboriginal groups are known to undertake traditional activities within or near the Project Area or transportation route, and so non-routine project activities are not likely to result in any interaction with or effect on the current use of land and resources for traditional purposes by Aboriginal persons.
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(1)(b)(i)	An accidental event occurring as a result of Project activities authorized by the C-NLOPB could potentially result in temporary and localized changes to the marine and atmospheric environment. These potential changes have been discussed above.

7.3 Environmental Assessment Scoping Considerations

Based on potential Project-environment interactions provided in Tables 8 and 9, as well as guidance from previously completed C-NLOPB scoping documents, the eastern Newfoundland SEA, and project-specific EAs of other offshore exploration projects, should an environmental assessment be required, Statoil proposes to focus it on the following components:

- Marine Fish and Fish Habitat (including Species of Conservation Concern)
- Marine Mammals and Sea Turtles (including Species of Conservation Concern)
- Marine and Migratory Birds (including Species of Conservation Concern)
- Commercial Fisheries and Other Ocean Users
- Special Areas

Onshore activities (i.e., onshore supply base) will occur at an existing, well-established facility that is currently servicing Statoil and other offshore operators. The onshore supply base has been approved through the C-NLOPB and provincial permitting process, and is compatible with Project servicing and supply requirements. Should an environmental assessment be required, Statoil recommends that the scope of the EIS be limited to offshore components. Logistical support from support vessels and helicopters is also well established for the offshore Newfoundland oil and gas industry and it is recommended that onshore supply base, support vessel and helicopter transit not be included within the scope of the Project.

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Appendices

App A List of Species Likely to Occur in the Project Area

Common Name	Scientific Name
Fish	
Atlantic cod	*Gadus morhua*
American plaice	*Hippoglossoides platessoides*
Atlantic halibut	*Hippoglossus hippoglossus*
Atlantic wolffish	*Anarhichas lupus*
Barndoor skate	*Dipturus laevis*
Black dogfish	*Centoscyllium fabricii*
Blue hake	*Antimora rostrata*
Cusk	*Brosme brosme*
Greenland halibut	*Reinharditus hippoglossoides*
Haddock	*Melanogrammus aeglefinus*
Longnose eel	*Synaphobranchus kaupi*
Longfin hake	*Physis chesteri*
Marlin-spike	*Nezumia bairdi*
Monkfish	*Lophius americanus*
Northern wolffish	*Anarhichas denticulatus*
Northern Sandlance	*Ammodytes dubius*
Pollock	*Pollachius virens*
Redfish	*Sebastes mentella / Sebastes fasciatus*
Roughhead grenadier	*Macrourus berglax*
Roundnose grenadier	*Coryphaenoides rupestris*
Sculpin	*Triglops sp.*
Smooth skate	*Malacoraja senta*
Spotted Wolffish	*Anarhichas minor*
Spiny dogfish	*Squalus acanthias*
Thorny skate	*Amblyraja radiata*
Vahl's eelpout	*Lycodes vahlii*
White hake	*Urophycis tenuis*
Winter skate	*Leucoraja ocellata*
Witch flounder	*Glyptocephalus cynoglossus*
Yellowtail flounder	*Limanda ferruginea*
Albacore tuna	*Thunnus alalunga*
Atlantic bluefin tuna	*Thunnus thynnus*
American eel	*Anguilla rostrata*
Atlantic herring	*Clupea harengus*
Atlantic mackerel	*Scomber scombrus*
Atlantic salmon	*Salmo salar*
Basking shark	*Cetorhinus maximus*
Bigeye tuna	*Thunnus obesus*
Blue shark	*Prionace glauca*
Capelin	*Mallotus villosus*
Greenland shark	*Somniosus microcephalus*
Lanternfish	*Myctophidae*
Porbeagle shark	*Lamna nasus*
Shortfin mako shark	*Isurus oxyrinchus*
Swordfish	*Xiphias gladius*
White shark	*Carcharodon carcharias*
Marine Mammals	

Common Name	Scientific Name
Sei whale	*Balaenoptera borealis*
Fin whale	*Balaenoptera physalus*
Humpback whale	*Megaptera novaengliae*
Blue whale	*Balaenoptera musculus*
North Atlantic right whale	*Eubalaena glacialis*
Sowerby's beaked whale	*Mesoplodon bidens*
Harbour Porpoise	*Phocoena phocoena*
Killer whale	*Orcinus orca*
Northern bottlenose whale	*Phocoena phocoena*
Blue whale	*Balaenoptera musculus*
Minke whale	*Balaenoptera acutorostrata*
Sperm whale	*Physeter macrocephalus*
False killer whale	*Pseudorca crassidens*
Long-finned pilot whale	*Globicephala melas*
Common bottlenose dolphin	*Tursiops truncatus*
Atlantic white-sided dolphin	*Lagenorhynchus acutus*
Short-beaked common dolphin	*Delphinus delphis*
Striped dolphin	*Stenella coeruleoalba*
Harp seal	*Pagophilus groenlandicus*
Hooded seal	*Cystophora cristata*
Grey seal	*Halichoerus grypus*
Sea Turtles	
Leatherback sea turtle	*Dermochelys coriacea*
Loggerhead sea turtle	*Caretta caretta*
Marine Birds	
Northern Fulmar	*Fulmarus glacialis*
Razorbill	*Alca torda*
Kittiwake	*Rissa* sp.
Gannet	Sulidae
Skua	Stercorariidae
Storm petrel	Hydrobatidae
Puffin	*Fratercula* sp.
Gull	Laridae
Shearwater	Procellariidae
jaeger	*Stercorarius parasiticus*

App B Environmental Baseline Information – Available Literature

Category	Reference	Geographic Area
Benthos / Special Areas	Altuna, A., F.J. Murillo and D.R. Calder. 2013. Aglaopheniid hydroids (Cnidaria: Hydrozoa: Aglaopheniidae) from bathyal waters of the Flemish Cap, Flemish Pass, and Grand Banks of Newfoundland (NW Atlantic). Zootaxa, 3737: 501-537. Doi: http://dx.doi.org/10.11646/zootaxa.3737.5.1	Grand Banks / Flemish Pass
	Baker, K.D., V.E. Wareham, P.V.R. Snelgrove, R.L. Haedrich, D.A. Fifield, E.N. Edinger and K.D. Gilkinson. 2012. Distributional patterns of deep-sea coral assemblages in three submarine canyons off Newfoundland, Canada. Mar. Ecol. Prog. Ser., 445(2012):235-249	Grand Banks / Flemish Pass
	Barrio Froján, C.R.S., K.G. MacIsaac, A.K. McMillan, M. del Mar Sacau Cuadrado, P.A. Large, A.J. Kenny, E. Kenchington, and E. de Cárdenas González. 2012. An evaluation of benthic community structure in and around the Sackville Spur closed area (Northwest Atlantic) in relation to the protection of vulnerable marine ecosystems. J. Mar. Sci., 69: 213-222.	Flemish Pass / Orphan Basin
	Beazley, L., E. Kenchington, F.J. Murillo and M. del Mar Sacau. 2013. Deep-sea sponge grounds enhance diversity and abundance of epibenthic megafauna in the Northwest Atlantic. J. Mar. Sci., 70: 1471-1490.	Grand Banks / Flemish Pass
	Beazley, L.I. and E.L. Kenchington. 2015. Epibenthic megafauna of the Flemish Pass and Sackville Spur (Northwest Atlantic) identified from in situ benthic image transects. Can. Tech. Rep. Fish. Aquat. Sci., 3127: v + 496 pp.	Flemish Pass
	Christian, J.R., C.G.J. Grant, J.D. Meade and L.D. Noble. 2010. Habitat requirements and life history characteristics of selected marine invertebrate species occurring in the Newfoundland and Labrador Region. Can. Manuscr. Rep. Fish. Aquat. Sci., 2925: vi + 207 pp.	Eastern Newfoundland
	DFO (Fisheries and Oceans Canada). 2010. Assessment of Newfoundland and Labrador snow crab. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep., 2010/020.	Newfoundland Region
	DFO (Fisheries and Oceans Canada). 2010. Occurrence, susceptibility to fishing, and ecological function of corals, sponges, and hydrothermal vents in Canadian waters. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep., 2010/041.	Eastern Newfoundland
	DFO (Fisheries and Oceans Canada). 2011. Assessment of the Arctic surf clam (*Mactromeris polynuma*) stock on Grand Bank. DFO Can. Sci. Advis. Sec. Res. Doc., 2011/052: v + 55 pp.	Grand Banks
	Edinger, E., K. Baker, R. Devillers and V. Wareham. 2007a. Coldwater Corals in Newfoundland and Labrador Waters: Distribution and Fisheries Impacts. WWF-Canada, 41 pp. plus enclosed map CD.	Grand Banks / Flemish Pass
	Edinger, E., V. Wareham, K. Baker and R. Haedrich. 2009. Relationships between deep-sea corals and groundfish. Pp. 39-55. In: K. Gilkinson and E. Edinger (eds.). The Ecology of Deep-sea Corals of Newfoundland and Labrador Waters: Biogeography, Life History, Biogeochemistry, and Relation to Fishes. Can. Tech. Rep. Fish. Aquat. Sci., 2830: vi + 136 pp.	Eastern Newfoundland

Category	Reference	Geographic Area
	Edinger, E., V.E. Wareham and R.L. Haedrich. 2007. Patterns of groundfish diversity and abundance in relation to deep-sea coral distributions in Newfoundland and Labrador waters. Bull. Mar. Sci., 81: 289-313.	Grand Banks / Flemish Pass
	Gilkinson, K. 2013. Recent DFO (Newfoundland & Labrador Region) studies of the Grand Banks benthos at small and large spatial scales. DFO Can. Sci. Advis. Sec. Res. Doc., 2012/114: v + 30 pp.	Grand Banks
	Gilkinson, K. and E. Edinger (Editors). 2009. The ecology of deep-sea corals of Newfoundland and Labrador waters: biogeography, life history, biogeochemistry, and relation to fishes. Can. Tech. Rep. Fish. Aquat. Sci., 2830.	Grand Banks / Flemish Pass
	Knudby, A., C. Lirette, E. Kenchington and F.J. Murillo. 2013. Species distribution models of black corals, large Gorgonian corals and sea pens in the NAFO Regulatory Area. NAFO SCR Doc., 13/078: 1-17.	Grand Banks / Flemish Pass
	Mortensen, P.B., L. Buhl-Mortensen, S.E. Gass, D.C. Gordon, Jr., E.L.R. Kenchington, C. Bourbonnais and K.G. MacIsaac. 2006. Deep-water corals in Atlantic Canada: A summary of ESRF-funded research (2001-2003), March 2006, Environmental Studies Research Funds Report No. 143: 83 pp.	Grand Banks
	Murillo, F.J., P. Durán Muñoz, A. Altuna and A. Serrano. 2011. Distribution of deep-water corals of the Flemish Cap, Flemish Pass, and the Grand Banks of Newfoundland (Northwest Atlantic Ocean): Interaction with fishing activities. J. Mar. Sci., 68: 319-332	Grand Banks / Flemish Pass
	Murillo, F.J., E. Kenchington, J.M. Lawson, G. Li and D.J.W Piper. 2016. Ancient deep-sea sponge grounds on the Flemish Cap and Grand Bank, Northwest Atlantic. Mar. Bio., 163: 63. Doi: 10.1007/s00227-016-2839-5	Grand Banks / Flemish Pass
	Murillo, F.J., P.D. Munoz, J. Cristobo, P. Rios, C. Gonzalez, E. Kenchington and A. Serrano. 2012. Deep-sea sponge grounds of the Flemish Cap, Flemish Pass and the Grand Banks of Newfoundland (Northwest Atlantic Ocean): Distribution and species composition. Mar. Biol. Res., 8: 842-854.	Grand Banks / Flemish Pass
	NAFO (Northwest Atlantic Fisheries Organization). 2011. New VME indicator species (excluding corals and sponges) and some potential VME elements of the NAFO Regulatory Area. NAFO SCR Doc., 11/73.	Eastern Newfoundland
	Wareham, V.E. and E.N. Edinger. 2007. Distribution of deep-sea corals in the Newfoundland and Labrador region, Northwest Atlantic Ocean. Bull. Mar. Sci., 81:289-313.	Grand Banks / Flemish Pass
	Wareham, V.E. and E.N. Edinger. 2007. Distribution of deep-sea corals in the Newfoundland and Labrador region, Northwest Atlantic Ocean. Pp. 289-313. In: R.Y. George and S.D. Cairns (eds), Conservation and Adaptive Management of Seamount and Deep-sea Coral Ecosystems. Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, FL.	Grand Banks / Flemish Pass
Fish	Baker, K.D., R.L. Haedrich, P.V.R. Snelgrove, V.E. Wareham, E.N. Edinger and K.D. Gilkinson. 2012. Small-scale patterns of deep-sea fish distributions and assemblages of the Grand Banks, Newfoundland continental slope. Deep-Sea Res. Part I: Oceano. Res. Pap., 65: 171-188.	Grand Banks
	Casas, J.M. and D.G. Troncoso. 2007. Results from bottom trawl survey on Flemish Cap of June-July 2006. NAFO SCR Doc., 07/10.	Flemish Cap / Flemish Pass

Category	Reference	Geographic Area
	DFO (Fisheries and Oceans Canada). 2008. Fishery Management Plan, Greenland halibut, NAFO Subarea 0, 2006-2008. Produced by Fisheries and Oceans Canada, Central and Arctic Region. Winnipeg, MB. 59 pp.	Eastern Canada
	Gomes, M.C., R.L. Haedrich and J.C. Rice. 1992. Biogeography of groundfish assemblages on the Grand Bank. J. NW Atl. Fish. Sci., 14:13-27.	Grand Banks
	González-Troncoso, D., F. González and X. Paz. 2007b. Atlantic cod and yellowtail flounder indices from the Spanish survey conducted in Divisions 3NO of the NAFO Regulatory Area. NAFO SCR Doc., 07/36.	Grand Banks
	González-Troncoso, D., M. Sacau and F. González-Costas. 2007a. A study of Spanish Greenland halibut commercial effort and CPUE in 3LMNO using GIS with comparisons to the Spanish Div. 3NO and EU Flemish Cap survey catches. NAFO SCR Doc., 07/54.	Flemish Pass
	Healey, B.P. 2007. Greenland halibut (*Reinhardtius hippoglossoides*) in NAFO Subarea 2 and Divisions 3KLMNO: stock trends based on annual Canadian research vessel survey results during 1978-2006. NAFO SCR Doc., 07/45.	Grand Banks / Flemish Pass
	Kulka D.W., N.C. Antle and J.M. Simms. 2003a. Spatial analysis of 18 demersal species in relation to petroleum licence areas on the Grand Bank (1980-2000). Can. Tech. Rep. Fish. Aquat. Sci., 2473.	Grand Banks
	Kulka, D., C. Miri and A.B. Thompson. 2007. Identification of wolffish, hake and rockling in the northwest Atlantic. NAFO Sci. Coun. Studies, 40: 1-4. doi:10.2960/S.v40.m1	Eastern Canada
	Murua, H. and E. de Cardenas. 2005. Depth-distribution of deepwater species in Flemish Pass. J. Northw. Atl. Fish. Sci., 37: 1-12. doi:10.2960/J.v37.m563	Flemish Pass
	Murua, H. and F. Gónzalez. 2007. A review of roughhead grenadier (*Macrourus berglax*) biology and population structure on Flemish Cap (NAFO Division 3M) 1991-2006 based upon EU Flemish Cap bottom survey data. NAFO SCR Doc., 07/25.	Flemish Cap
	Scott, W.B. and M.F. Scott. 1988. Atlantic fishes of Canada. Can. Bull. Fish. Aquat. Sci., 219: 731 pp.	Atlantic Canada
Fisheries	DFO (Fisheries and Oceans Canada). Commercial Fishery Landings. http://www.dfo-mpo.gc.ca	Eastern Newfoundland
	NAFO (Northwest Atlantic Fisheries Organization). 2015. STATLANT21A Database. Retrieved from: http://www.nafo.int/data/frames/data.html	Eastern Newfoundland
	NAFO (Northwest Atlantic Fisheries Organization). 2015. STATLANT21B Datasets for 2010-2013. Retrieved from: http://www.nafo.int/data/frames/data.html	Eastern Newfoundland
Geology	Fader, G.B., G.D.M. Cameron and M.A. Best. 1989. Geology of the Continental Margin of Eastern Canada, Geological Survey of Canada, Map 1705A.	Grand Banks
	Natural Resources Canada. 2016. National Earthquake Database, http://www.earthquakescanada.nrcan.gc.ca/stndon/NEDB-BNDS/bull-eng.php	Canada
	Piper, D.J.W., E. Tripsanas, D.C. Mosher and K. MacKillop. 2011. Paleoseismicity of the continental margin of eastern Canada: rare regional failures and associated turbidites in Orphan Basin. Geosphere. Unpublished Manuscript.	Orphan Basin / Grand Banks

Category	Reference	Geographic Area
	Piper, D.J.W. and D.C. Campbell. 2005. Quaternary geology of Flemish Pass and its application to geohazard evaluation for hydrocarbon development. Pp. 29-43. In: R. Hiscott and A. Pullham (eds.). Petroleum Resources and Reservoirs of the Grand Banks, Eastern Canadian Margin, Geological Association of Canada, Special Paper 43.	Flemish Pass
	Piper, D.J.W. 2005. Late Cenozoic evolution of the continental margin of Eastern Canada. Norw. J. Geol., (85): 231-244.	Grand Banks
	Sonnichssen, G.V. and E.L. King. 2005. Grand Bank seabed and shallow subsurface geology in relation to subsea engineering design. Pp. 11-27. In: R. Hiscott and A. Pullham (eds.).Petroleum Resources and Reservoirs of the Grand Banks, Eastern Canadian Margin Geological Association of Canada, Special Paper 43.	Grand Banks
Marine Birds	Abgrall, P., B.D. Mactavish and V.D. Moulton. 2008. Marine Mammal and Seabird Monitoring of Orphan Basin Controlled Source Electromagnetic Survey Program, 2006–2007. LGL Rep. SA904/939. Rep. by LGL Limited, St. John's, NL, for ExxonMobil Canada Ltd., St. John's, NL.	Orphan Basin
	Ballie, S.M., G.J. Robertson, F.K. Wiese and U.P. Williams. 2005. Seabird data collected by the Grand Banks offshore hydrocarbon industry 1999-2002: results, limitations and suggestions for improvement. Canadian Wildlife Service Technical Report Series No. 434. Atlantic Region.	Grand Banks
	Burke, C.M., G.K. Davoren, W.A. Montevecchi and F.K. Wiese. 2005. Surveys of seabirds along support vessel transects and at oil platforms on the Grand Banks. Pp. 587-614. In: P.J. Cransford and K. Lee (eds.). Offshore Oil and Gas Environmental Effects Monitoring. Battele Press, Columbus, OH.	Grand Banks
	Chardine, J.W. 2000. Census of Northern Gannet Colonies in the Atlantic Region in 1999. Canadian Wildlife Service Technical Report Series No. 361. Atlantic Region.	Eastern Newfoundland
	Fifield, D.A., K.P. Lewis, C. Gjerdrum, G.J. Robertson and R. Wells. 2009. Offshore Seabird Monitoring Program. Environment Studies Research Funds Report No. 183. St. John's, NL. 68 pp.	Eastern Newfoundland
	IBA (Important Bird Areas). 2013. Important Bird Areas of Canada. Available online at: http://www.ibacanada.ca/. Accessed 13 October 2013.	Canada
	Lang, A. L., V.D. Moulton and R.A. Buchanan. 2006. Marine Mammal and Seabird Monitoring of Husky Energy's 3-D Seismic Program in the Jeanne d'Arc Basin, 2005. LGL Rep. SA836. Rep. by LGL Limited, St. John's, NL, for Husky Energy Inc., Calgary, AB.	Grand Banks
	Montevecchi, W.A. 2006. Influences of artificial light on marine birds. Pp. 94-113. In: C. Rich and T. Longcore (eds.). Ecological Consequences of Artificial Night Lighting, Island Press, Washington, DC. 478 pp.	Eastern Newfoundland
	Montevecchi, W.A., F.K. Wiese, G. Davoren, A.W. Diamond, F. Huettmann and J. Linke. 1999. Seabird Attraction to Offshore Platforms and Seabird Monitoring from Support Vessels and Other Ships: Literature Review and Monitoring Designs. Rep. by Memorial University of Newfoundland, St. John's, NL, and University of New Brunswick, Saint John, NB, for Canadian Association of Petroleum Producers. 35 pp.	Eastern Newfoundland

Category	Reference	Geographic Area
	Thomas, P. W., L.A. McFarlane-Tranquilla, B.E. Toms, A.W. Boyne and G.J. Robertson. 2011. Second census of terns, gulls, kittiwakes and cormorants along the coast of insular Newfoundland, 2005-2007. Canadian Wildlife Service, Atlantic Region, Newfoundland. Draft Technical Report Series 999.	Eastern Newfoundland
Marine Birds / Marine Mammals	Lang, A.L. and V.D. Moulton. 2008. Marine Mammal and Seabird Monitoring of Petro-Canada's 3-D Seismic Program in the Jeanne d'Arc Basin, 2007. LGL Rep. SA938. Rep. by LGL Limited, St. John's, NL, for Petro-Canada, St. John's, NL. 32 pp. + appendices.	Grand Banks
	Lang, A.L. and V.D. Moulton. 2004. Marine mammal and seabird monitoring during the CCGS Hudson research expedition, June-July 2004. LGL Rep. SA818. Rep. from LGL Ltd., King City, ON, and St. John's, NL, for ExxonMobil Canada Ltd., St. John's, NL, and Chevron Canada Resources, Calgary, AB. 22 pp.	Eastern Newfoundland
	Moulton, V.D., B.D. Mactavish, R.E. Harris and R.A. Buchanan. 2006. Marine Mammal and Seabird Monitoring of Chevron Canada Limited's 3-D Seismic Program on the Orphan Basin, 2005. LGL Rep. SA843. Rep. by LGL Limited, St. John's, NL, for Chevron Canada Limited, Calgary, AB, ExxonMobil Canada Ltd., St. John's, NL, and Imperial Oil Resources Ventures Ltd., Calgary, AB. 109 pp. + appendices.	Orphan Basin
	Wiese, F.K. and W. Montevecchi. 2000. Marine Bird and Mammal Surveys on the Newfoundland Grand Banks from Offshore Supply Boats, 1999-2000. Report prepared for Husky Oil, St. John's, NL.	Grand Banks
Marine Mammals and Sea Turtles	ALTRT (Atlantic Leatherback Turtle Recovery Team). 2006. Recovery Strategy for Leatherback Turtle (*Dermochelys coriacea*) in Atlantic Canada. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vi +45 pp.	Eastern Canada
	Brown, M.W., D. Fenton, K. Smedbol, C. Merriman, K. Robichaud-Leblanc and J.D. Conway, J.D. 2009. Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters [Final]. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada. vi + 66 pp.	Eastern Canada
	DFO (Fisheries and Oceans Canada). 2012. Using Satellite Data to define important habitat for leatherback turtles in Atlantic Canada. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep., 2012/036.	Eastern Canada
	DFO (Fisheries and Oceans Canada). 2010. Current status of Northwest Atlantic harp seals, *Pagophilus groenandicus*. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep., 2009/074.	Eastern Canada
	DFO (Fisheries and Oceans Canada). 2010. Stock assessment of Northwest Atlantic grey seals (*Halichoerus grypus*). DFO Can. Sci. Advis. Sec. Sci. Advis. Rep., 2010/091.	Eastern Canada
	Lawson, J., T. Stevens and D. Snow. 2007. Killer whales of Atlantic Canada, with particular reference to the Newfoundland and Labrador region. DFO Can. Sci. Advis. Sec. Res. Doc., 2007/062.	Eastern Canada
	Lawson, J.W. 2006. Preliminary information on distribution and abundance of fin whales (*Balaenoptera physalus*) in Newfoundland and Labrador, Canada. SC/14/FW/21-SC/M06/FW21. Joint NAMMCO/IWC Scientific Workshop on the Catch History, Stock Structure and Abundance of North Atlantic Fin Whales. Reykjavik, Iceland, 23-26 March, 2006. 12 pp.	Eastern Newfoundland
Met-Ocean	CIS (Canadian Ice Service). 2011. Sea Ice Climactic Atlas, East Coast.	Eastern Canada

Category	Reference	Geographic Area
	DFO (Fisheries and Oceans Canada). 2012. The Newfoundland Shelf - Climatology. http://www2.mar.dfo-mpo.gc.ca/science/ocean/nfld/nfld_hydro.html	Eastern Newfoundland
	DFO (Fisheries and Oceans Canada). 2013. Oceanographic Databases, Ocean Data Inventory. http://bluefin2.dfo-mpo.gc.ca/odiqry/servlet/MainServlet	Canada
	EC (Environment Canada). 2013. Canadian Tropical Cyclone Season Summaries. http://www.ec.gc.ca/ouragans hurricanes/default.asp?lang=Enandn=23B1454D-1	Canada
	Gregory, D.N. 2004. Ocean Data Inventory (ODI): A database of ocean current, temperature and salinity time series for the Northwest Atlantic. DFO Can. Sci. Advis. Sec. Res. Doc., 2004/097: ii + 7 pp.	Eastern Canada
	Han, G. 2007. Surface water current database developed by the Biological and Physical Oceanography Section of Fisheries and Oceans Canada.	Canada
	Hill, B.T. 2013. Ice Charts and Ship/Iceberg Database. Retrieved from http://researchers.imd.nrc.ca/~hillb/icedb/ice/	Canada
	NRC (National Research Council Canada). 2013. NRC-PERD Iceberg Sighting Database. October 2013	Canada
	Oceans Ltd. 2005. Meteorology and Oceanography of the Orphan Basin. Unpubl. Report. Submitted to LGL Limited, St. John's, NL. 153 pp.	Orphan Basin
	Oceanweather Inc. and Environment Canada. 2011. MSC50 Wind and Wave Climatologies. Available at: http://www.oceanweather.net/MSC50WaveAtlas/ then go to MSC50: Canadian East Coast Region, Wave Climate.	Canada
Special Areas	ACZISC (Atlantic Coastal Zone Information Steering Committee). 2013. National Wildlife Areas and Marine Wildlife Areas. www.coinatlantic.ca	Eastern Canada
	DFO (Fisheries and Oceans Canada). 2013. Identification of Additional Ecologically and Biologically Sensitive Areas (EBSAs) within the Newfoundland and Labrador Shelves Bioregion. DFO Can. Sci. Advis. Sec. Proc. Ser., 2013/048.	Eastern Newfoundland
	DFO (Fisheries and Oceans Canada). 2013. Marine Protected Areas. http://www.dfo-mpo.gc.ca	Canada
	Placentia Bay / Grand Banks Large Ocean Management Area (PB/GB LOMA). 2013. Placentia Bay / Grand Banks Large Ocean Management Area. Retrieved from: http://www.pbgbloma.ca. October 7, 2013.	Eastern Newfoundland
Species of Concern	Beauchamp, J., H. Bouchard, P. de Margerie, N. Otis and J.Y. Savaria. 2009. Recovery Strategy for the blue whale (*Balaenoptera musculus*), Northwest Atlantic population, in Canada [FINAL]. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa, ON. 62 pp.	Eastern Canada
	Brown, M.W., D. Fenton, K. Smedbol, C. Merriman, K. Robichaud-Leblanc and J.D. Conway. 2009. Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters [Final]. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada. vi + 66 pp.	Eastern Canada

Category	Reference	Geographic Area
	DFO (Fisheries and Oceans Canada). 2009. Recovery Strategy for the Northern Bottlenose Whale (*Hyperoodon ampullatus*), Scotian Shelf population, in Atlantic Canadian Waters [Proposed]. *Species at Risk Act* Recovery Strategy Series. Fisheries and Oceans Canada. vi + 60 pp.	Eastern Canada
	Environment Canada. 2014. Recovery Strategy for the Ivory Gull (*Pagophila eburnea*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa, ON. iv+ 21 pp.	Eastern Canada
	Kulka, D., C. Hood and J. Huntington. 2007. Recovery strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada [Proposed]. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's, NL. x + 103 pp.	Eastern Canada
	Simpson, M.R., D. Chabot, K. Hedges, J. Simon, C.M. Miri and L.G.S. Mello. 2013. An update on the biology, population status, distribution, and landings of wolffish (*Anarhichus denticulatus*, *A. minor*, and *A. lupus*) in the Canadian Atlantic and Arctic Oceans. Can. Sci. Advis. Sec. Res. Doc., 2013/089. v + 82 pp.	Eastern Canada