

**Husky Exploration Drilling Project:  
Environmental Impact Statement**



Prepared for:  
Husky Energy

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**REVISED REPORT IN RESPONSE TO  
CEA AGENCY CONFORMITY REVIEW**

September 2018

## Executive Summary

Husky Oil Operations Limited (Husky) proposes to conduct exploration drilling activities within the area of its existing offshore exploration licences (ELs) on the Grand Banks, including two ELs acquired during the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) 2016 Call for Bids and one EL acquired during the C-NLOPB 2017 Call for Bids. These ELs are located approximately 350 km east of St. John's, Newfoundland and Labrador, in the Northwest Atlantic Ocean. This document is an Environmental Impact Statement (EIS) submitted to the Canadian Environmental Assessment Agency (CEA Agency) to fulfil the requirements of the Guidelines issued December 9, 2016 (amended March 27, 2017, and updated May 31, 2018), under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012).

The Project is defined as a multi-well exploration drilling program on EL 1151, EL 1152, and EL 1155. The Project includes up to ten wells to be drilled at any time between 2019 and 2027 to cover the duration of the licence term. The Project activities described herein are standard components of an offshore drilling program; however, not all details surrounding the Project have been finalized, such as drilling platform type, selection of service and supply contractors, and location of wells. Routine operations represent physical activities that would occur throughout the life of the Project and include:

- presence and operation of mobile offshore drilling unit (presence of structure; safety zone; lighting; drilling; air emissions; noise emissions; chemical use and management; operation of seawater systems; water management, well testing; cementing and completing wells)
- drilling-associated surveys (VSP and wellsite surveys; geotechnical/geophysical/environmental surveys; diving surveys; ROV surveys)
- waste management (WBM and SBM cuttings discharge; domestic waste; sanitary waste; oily water treatment; cooling water; deck drainage; bilge water; BOP fluid; cement; vent and flare system)
- supply and servicing (operation of helicopters and supply/support/standby tow vessels within the Project Area)
- well abandonment (plugging, suspending, and abandoning of wells)

The environmental assessment (EA) method is focused on the identification and assessment of potential adverse environmental effects of the Project on valued components (VCs) (see Section 5). VCs are environmental attributes associated with the Project that are of particular value or interest because they have been identified to be of concern to Indigenous peoples, regulatory agencies, Husky, resource managers, scientists, key stakeholders, and/or the general public. The following six VCs were selected to facilitate a focused and effective EA process that complies with government requirements and supports public review:

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- fish and fish habitat;
- commercial fisheries;
- marine mammals and sea turtles;
- migratory birds;
- special areas; and
- Indigenous people and community values.

The potential environmental effects of Project activities and components are assessed in Section 6 using a standard framework to facilitate assessment of each VC. Evaluation tables and matrices are used to document the assessment. Residual Project-related environmental effects (i.e., those environmental effects that remain after the planned mitigation measures have been applied) are characterized for each individual VC using specific analysis criteria (i.e., magnitude, geographic extent, duration, frequency, reversibility, and context). The significance of residual Project-related environmental effects is then determined based on pre-defined standards or thresholds (i.e., significance rating criteria).

The EA methods used in the preparation of this EIS included an evaluation of the potential environmental effects for each VC that may arise during the Project as well as from accidental events (see Section 7). The evaluation of potential cumulative environmental effects considers whether there is potential for the residual environmental effects of the Project to interact cumulatively with the residual environmental effects of other past, present, or future (i.e., certain or reasonably foreseeable) physical activities in the vicinity of the Project (see Section 9).

The residual adverse environmental effects from planned routine activities associated with the Project are predicted to be not significant. Most environmental effects are predicted to be reversible, of limited duration, magnitude, and geographic extent. Mitigation measures have been proposed to address potential Project and cumulative environmental effects and address all components of the Project scope (see Section 11.2). They include both general Project mitigation measures and best management practices as well as VC-specific mitigation measures.

The only potential for significant residual adverse environmental effects as a result of the Project is associated with an accidental event (see Section 7.3). Should an accidental event occur, significant adverse environmental effects have been predicted for commercial fisheries, migratory birds, and Indigenous people and community values; however, the likelihood of an accidental event occurring is considered low (see Section 7.2). Husky will design the Project and conduct all activities with a focus on safety and pollution prevention (see Section 7.1).

In summary, with the implementation of these proposed mitigation measures, residual adverse environmental effects of routine Project activities and components are predicted to be not significant for all VCs.

Husky has and will continue to follow a performance-based assessment and continuous improvement approach with respect to environmental management of the Project using the Husky Operational Integrity Management System, which covers all of Husky's businesses, with

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particular emphasis on projects and operations, and manages operational integrity through the life-cycle of the assets.

A concordance table (Table E.1) is provided to demonstrate compliance with the EIS Guidelines and indicate where requirements have been addressed in this EIS document.

**Table E.1 Concordance with Guidelines for the Preparation of an Environmental Impact Statement pursuant to the Canadian Environmental Assessment Act, 2012 for the Husky Energy Exploration Drilling Project**

EIS Guidelines	EIS Reference
<b>Part 1 - Key Considerations</b>	
<b>1. INTRODUCTION</b>	
<b>2. GUIDING PRINCIPLES</b>	
2.1. Environmental assessment as a planning and decision-making tool	EIS Submission
2.2. Public participation The proponent is required to provide current information about the project to the public and especially to the communities likely to be most affected by the project.	Section 3.2: Stakeholder Consultation Section 3.2.1.5: Public
2.3. Engagement with Indigenous groups The proponent will make reasonable efforts to integrate Aboriginal traditional knowledge into the assessment of environmental effects.	Section 3.3 Indigenous Engagement Section 6.6 Indigenous People and Community Values
2.4. Application of the precautionary approach The proponent will demonstrate that all aspects of the project have been examined and planned in a careful and precautionary manner in order to avoid significant adverse environmental effects.	Section 5.1: Scope of the Assessment Section 6: Environmental Effects Assessment Section 7: Accidental Events
<b>3. SCOPE OF THE ENVIRONMENTAL ASSESSMENT</b>	
3.1. Designated project Based on the project description, the Agency determined that an EA is required under CEAA 2012 and will include the following project components: - the mobilization, operation and demobilization of Mobile Offshore Drilling Units designed for year-round operations for the drilling, testing and abandonment of up to ten wells within exploration licences operated by Husky Oil Operations Ltd. (exploration licences 1151, 1152, and 1155), including consideration of any proposed safety exclusion zones. Drilling may occur in various water depths under consideration, with various types of drilling units, and with multiple drilling units operating simultaneously, if applicable; - vertical seismic profiling surveys and in-water work to support the specific exploration wells under consideration (excluding surveys potentially required to support the conduct of the EA [e.g. environmental baseline surveys] and surveys related to the broader delineation of resources); and	Section 2: Project Description Section 5.1: Scope of the Assessment

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EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>- the loading, refuelling and operation of marine support vessels and helicopter support including transportation to the Mobile Offshore Drilling Unit.</li> </ul>	
<p>3.2. Factors to be considered</p> <ul style="list-style-type: none"> <li>- environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other physical activities that have been or will be carried out;</li> <li>- the significance of the effects referred to above;</li> <li>- comments from the public;</li> <li>- mitigation measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;</li> <li>- the requirements of the follow-up program in respect of the project;</li> <li>- the purpose of the project;</li> <li>- alternative means of carrying out the project that are technically and economically feasible and the environmental effects of any such alternative means;</li> <li>- any change to the project that may be caused by the environment; and</li> <li>- the results of any relevant regional study pursuant to CEAA 2012.</li> </ul>	<p>Section 5.1.2: Factors to be Considered</p>
<p>3.2.1. Changes to the environment</p> <p>An examination of environmental effects that result from changes to the environment as a result of the project being carried out or as a result of the federal government exercising any power duty or function that would allow the project to be carried out must be considered in the EIS.</p>	<p>Section 6.1: Fish and Fish Habitat            Section 6.2: Commercial Fisheries            Section 6.3: Marine Mammals and Sea Turtles            Section 6.4: Migratory Birds            Section 6.5: Special Areas            Section 6.6: Indigenous People and Community Values            Section 10.1: Changes to Components of the Environment within Federal Jurisdiction            Section 10.2: Changes to the Environment that would occur on Federal or Transboundary Lands</p>
<p>3.2.2. Valued components to be examined</p> <p>The proponent must conduct and focus its analysis on VCs as they relate to section 5 of CEAA 2012, including the ones identified in Section 6.2 (Part 2) of these guidelines that may be affected by changes in the environment, as well as species at risk and their critical habitat as per the requirement outlined in section 79 of the <i>Species at Risk Act</i>.</p>	<p>Section 5.2.2: Selection of Valued Components            Section 10.1.4: Species at Risk/Species of Conservation Concern</p>

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EIS Guidelines	EIS Reference
<p>3.2.3. Spatial and temporal boundaries The EIS will describe the spatial boundaries, including local and regional study areas, of each VC to be used in assessing the potential adverse environmental effects of the project and provide a rationale for each boundary. The temporal boundaries of the EA will span all phases of the project determined to be within the scope of this EA. Community knowledge and Aboriginal traditional knowledge should factor into decisions around defining boundaries.</p>	<p>Section 5.2.3.4: Boundaries Section 6.1.5: Boundaries (Fish and Fish Habitat VC) Section 6.2.5: Boundaries (Commercial Fisheries VC) Section 6.3.5: Boundaries (Marine Mammals and Sea Turtles VC) Section 6.4.5: Boundaries (Migratory Birds VC) Section 6.5.5: Boundaries (Special Areas VC) Section 6.6.5: Boundaries (Indigenous People and Community Values VC)</p>
<p><b>4. PREPARATION AND PRESENTATION OF THE ENVIRONMENTAL IMPACT STATEMENT</b></p>	
<p>4.1. Guidance While the EIS must outline applicable federal authorizations required for the project to proceed, the proponent must provide information relevant to the regulatory role of the federal government. It should be noted that the issuance of these other applicable federal legislative, regulatory and constitutional requirements are within the purview of the relevant federal authorities and are subject to separate processes post EA decision.</p>	<p>Section 1.3: Regulatory Framework and the Role of Government</p>
<p>4.2. Use of information</p>	
<p>4.2.1. Government expert advice The Agency will advise the proponent of the availability of pertinent information or knowledge or expert and specialist knowledge received from other federal authorities or other levels of government so that it can be incorporated into the EIS.</p>	<p>Noted.</p>
<p>4.2.2. Community knowledge and Aboriginal traditional knowledge The proponent will incorporate into the EIS the community knowledge and Aboriginal traditional knowledge to which it has access or that is acquired through public participation and engagement with Indigenous groups, in keeping with appropriate ethical standards and obligations of confidentiality. The proponent will integrate Aboriginal traditional knowledge into all aspects of its assessment including both methodology (e.g. establishing spatial and temporal boundaries, defining significance criteria) and analysis (e.g. baseline characterization, effects prediction, development of mitigation measures).</p>	<p>Section 3.3: Indigenous Engagement</p>
<p>4.2.3. Existing information In preparing the EIS, the proponent can use existing information relevant to the project. When relying on existing information to meet requirements of the EIS Guidelines, the proponent will either include the information directly in the EIS and clearly direct the reader to where the information may be found (i.e. through cross-referencing).</p>	<p>Section 4: Existing Environment</p>

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EIS Guidelines	EIS Reference
<p>4.2.4. Confidential information For this reason, the EIS will not contain information that:</p> <ul style="list-style-type: none"> <li>- is sensitive or confidential (i.e. financial, commercial, scientific, technical, personal, cultural or other nature), that is treated consistently as confidential, and the person affected has not consented to the disclosure; or</li> <li>- may cause substantial harm to a person or specific harm to the environment through its disclosure.</li> </ul> <p>The proponent will consult with the Agency regarding whether specific information requested by these guidelines should be treated as confidential.</p>	N/A
<p>4.3. Study strategy and methodology The proponent is expected to respect the intent of these guidelines and to consider the environmental effects that are likely to arise from the project (including situations not explicitly identified in these guidelines), the technically and economically feasible mitigation measures that will be applied, and the significance of any residual effects.</p>	Section 5: Environmental Effects Assessment Scope and Methods
<p>The EIS will include a description of the environment (both biophysical and human), including the components of the existing environment and environmental processes, their interrelations as well as the variability in these components, processes and interactions over time scales appropriate to the likely effects of the project.</p>	Section 4: Existing Environment
<p>In describing and assessing effects to the physical and biological environment, the proponent will take an ecosystem approach that considers both scientific and community knowledge and Aboriginal traditional knowledge and perspectives regarding ecosystem health and integrity. The proponent will consider the resilience of relevant species populations, communities and their habitats.</p>	Section 6: Environmental Effects Assessment
<p>The proponent will provide Indigenous groups the opportunity to review and provide comments on the information used for describing and assessing effects on Aboriginal peoples (further information on engaging with Indigenous groups is provided in Part 2, Section 5 of the guidelines).</p>	Section 3.3: Indigenous Engagement Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<p>4.4. Presentation and organization of the environmental impact statement The EIS will be written in clear, precise language. A glossary defining technical words, acronyms and abbreviations will be included. The EIS will include charts, diagrams, tables, maps and photographs, where appropriate, to clarify the text. Perspective drawings that clearly convey the various components of the project will also be provided. Wherever possible, maps will be presented in common scales and datum to allow for comparison and overlay of mapped features.</p>	Title Page Table of Contents List of Tables and Figures Concordance Table Acronyms
<p>4.5. Summary of the environmental impact statement The proponent will prepare a summary of the EIS in both of Canada's official languages (French and English) to be provided to the Agency at the same time as the EIS.</p>	EIS Summary

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EIS Guidelines	EIS Reference
<b>Part 2 – Content of the Environmental Impact Statement</b>	
<b>1. INTRODUCTION AND OVERVIEW</b>	
<p>1.1. The proponent In the EIS, the proponent will:</p> <ul style="list-style-type: none"> <li>- provide contact information (e.g. name, address, phone, fax, email);</li> <li>- identify itself and the name of the legal entity(ies) that would develop, manage and operate the project;</li> <li>- describe corporate and management structures;</li> <li>- specify the mechanism used to ensure that corporate policies will be implemented and respected for the project; and</li> <li>- identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS.</li> </ul>	<p>Section 1.2: Proponent Information Section 1.2.2: Commitment to Health, Safety and the Environment Section 1.2.3: Proponent Contacts Section 1.2.4: Environmental Assessment Study Team</p>
<p>1.2. Project overview The EIS will describe the project, key project components and associated activities, scheduling details, the timing of each phase of the project and other key features. If the project is part of a larger sequence of projects, the EIS will outline the larger context.</p>	<p>Section 1.1: Project Overview Section 2.4: Project Components Section 2.5: Project Activities Section 2.8: Project Schedule</p>
<p>1.3. Project location The following information will be included:</p> <ul style="list-style-type: none"> <li>- the Universal Transverse Mercator (UTM) projection coordinates of the main project site;</li> </ul>	<p>Section 2.3: Project Location Figure 2-1: Proposed Study and Project Areas</p>
<ul style="list-style-type: none"> <li>- current resource use in the area;</li> </ul>	<p>Section 4: Existing Environment</p>
<ul style="list-style-type: none"> <li>- distance of the project facilities and components to any federal lands;</li> </ul>	<p>Section 2.3: Project Location</p>
<ul style="list-style-type: none"> <li>- the environmental significance and value of the geographical setting in which the project will take place and the surrounding area;</li> </ul>	<p>Section 4: Existing Environment</p>
<ul style="list-style-type: none"> <li>- environmentally sensitive areas, such as national, provincial and regional parks, ecological reserves, ecologically and biologically significant areas and habitats of federally or provincially listed species at risk and other sensitive areas;</li> </ul>	<p>Section 4: Existing Environment</p>
<ul style="list-style-type: none"> <li>- description of local and Indigenous communities; and</li> </ul>	<p>Section 3.3.1: Indigenous Organizations</p>
<ul style="list-style-type: none"> <li>- traditional territories and/or consultation areas, treaty lands, and Indian Reserve lands.</li> </ul>	<p>Section 3.3.1: Indigenous Organizations Section 4.3.2: Indigenous Use (Existing Environment)</p>
<p>1.4. Regulatory framework and the role of government</p>	
<p>The EIS will identify:</p> <ul style="list-style-type: none"> <li>- any federal power, duty or function that may be exercised that would permit the carrying out (in whole or in part) of the project or associated activities;</li> </ul>	<p>Section 1.3: Regulatory Framework and the Role of Government</p>
<ul style="list-style-type: none"> <li>- legislation and other regulatory approvals that are applicable to the project at the federal, provincial, regional and municipal levels;</li> </ul>	<p>Section 1.3.3: Other Applicable Requirements and Resources</p>



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EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>- government policies, resource management plans, planning or study initiatives pertinent to the project and/or EA and their implications;</li> </ul>	Section 1.3.4: Applicable Guidelines
<ul style="list-style-type: none"> <li>- any treaty, self-government or other agreements between federal or provincial governments and Indigenous groups that are pertinent to the project and/or EA;</li> </ul>	Section 1.3.4.2: Aboriginal Policies and Guidelines
<ul style="list-style-type: none"> <li>- any relevant land use plans, or land zoning; and</li> </ul>	N/A
<ul style="list-style-type: none"> <li>- regional, provincial and/or national objectives, standards or guidelines that have been used by the proponent to assist in the evaluation of any predicted environmental effects.</li> </ul>	Section 1.3: Regulatory Framework and the Role of Government Section 6.1.2: Regulatory and Policy Setting (Fish and Fish Habitat) Section 6.2.2: Regulatory and Policy Setting (Commercial Fisheries) Section 6.3.2: Regulatory and Policy Setting (Marine Mammals and Sea Turtles) Section 6.4.2: Regulatory and Policy Setting (Migratory Birds) Section 6.5.2: Regulatory and Policy Setting (Special Areas) Section 6.6.2: Regulatory and Policy Setting (Indigenous Use)
<b>2. PROJECT JUSTIFICATION AND ALTERNATIVES CONSIDERED</b>	
2.1. Purpose of the project	
The EIS will describe the purpose of the project by providing the rationale for the project, explaining the background, the problems or opportunities that the project is intended to satisfy and the stated objectives from the perspective of the proponent.	Section 2.1: Project Purpose, Rationale and Need
The EIS will also describe the predicted environmental, economic and social benefits of the project.	Section 2.2: Benefits of the Project
2.2. Alternative means of carrying out the project The EIS will identify and consider the environmental effects of alternative means of carrying out the project that are technically and economically feasible. In its alternative means analysis, the proponent will address, at a minimum, the following project components: <ul style="list-style-type: none"> <li>- choice of drilling fluid (i.e. water-based drilling mud or synthetic-based drilling mud);</li> <li>- choice of drilling unit (i.e. drillship or semi-submersible);</li> <li>- management of drilling wastes (i.e. disposal on seabed or into water column, recover and ship to shore, re-inject);</li> <li>- water management and location of the final effluent discharge points; and</li> <li>- alternative ways to light the platform at night (or flare at night when testing the well), to reduce attraction and associated mortality of birds, such as by installing flare shields.</li> </ul>	Section 2.9.1: Identification of Alternatives Section 2.9.1.1: Drilling Unit Section 2.9.1.2: Drilling Fluid Section 2.9.1.3: Drill Waste Management Section 2.9.1.4: Water Management Section 2.9.1.5: MODU Lighting and Flaring

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<p>With the objective of minimizing potential environmental impacts of discharges to the marine environment, the proponent should identify the quantity and type of chemicals (or constituents) that may be used in support of the proposed project that are:</p> <ul style="list-style-type: none"> <li>– included on the <i>Canadian Environmental Protection Act's</i> List of Toxic Substances;</li> <li>– not included on the OSPAR Pose Little or No Risk to the Environment (PLONOR) list of chemicals and have a PARCOM Offshore Chemical Notification Scheme Hazard Rating of A, B or purple, orange, blue, or white; or</li> <li>– not included on the PLONOR list of chemicals and have not been assigned a PARCOM Offshore Chemical Notification Scheme Hazard Rating.</li> </ul> <p>Alternatives to the use of the above-listed chemicals (e.g. through alternative means of operating or use of less-toxic alternatives) should be discussed in the EIS.</p>	Section 2.9.2: Chemical Selection
<b>3. PROJECT DESCRIPTION</b>	
3.1. Project components	
<ul style="list-style-type: none"> <li>– maps, at an appropriate scale, of the project location;</li> </ul>	Figure 2-1: Proposed Study and Project Areas
<ul style="list-style-type: none"> <li>– project components;</li> </ul>	Section 2.4: Project Components
<ul style="list-style-type: none"> <li>– boundaries of the proposed exploration licences (1121, 1134, 1151, and 1152) with UTM coordinates;</li> </ul>	Section 2.3: Project Location
<ul style="list-style-type: none"> <li>– the major existing infrastructure;</li> </ul>	Section 2.4: Project Components Section 2.5: Project Activities
<ul style="list-style-type: none"> <li>– adjacent land and resource uses; and</li> </ul>	Section 4.3: Socio-Economic Environment
<ul style="list-style-type: none"> <li>– any important environmental features.</li> </ul>	Section 4.1: Marine Physical Environment Section 4.2: Marine Biological Environment
<p>In its EIS, the proponent will describe:</p> <ul style="list-style-type: none"> <li>– the Mobile Offshore Drilling Units and/or drill ships and their operations (drilling, testing, abandonment) in locations and water depths under consideration;</li> </ul>	Section 2.4.1: Drilling Platform Section 2.5.2: Drilling Section 2.5.4: Well Testing Section 2.5.5: Decommissioning and Abandonment
<ul style="list-style-type: none"> <li>– the size and types of vessels that will be used including navigation activities (i.e. routes, number and frequency of trips) and icebreaking activities (time of year, frequency, duration, expected start and end dates);</li> </ul>	Section 2.4.3.2: Offshore Supply Vessels Section 8.3.2: Sea Ice and Icebergs
<ul style="list-style-type: none"> <li>– helicopters, including routes, number and frequency of trips;</li> </ul>	Section 2.4.3.3: Helicopter Support
<ul style="list-style-type: none"> <li>– vertical seismic profiling or any other in-water works to support the specific exploration wells under consideration, but excluding surveys potentially required to support the conduct of the EA (e.g. environmental baseline surveys) and surveys related to the broader delineation of resources;</li> </ul>	Section 2.5.1: Well Site/Geohazard/ Geotechnical Surveys Section 2.5.3: Vertical Seismic Profiling

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EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>- reagent requirements and uses (e.g. volumes, storage, types);</li> </ul>	Section 2.6: Waste Discharges and Emissions
<ul style="list-style-type: none"> <li>- petroleum products (e.g. source, volume, storage);</li> </ul>	Section 2.6.2: Other Wastes
<ul style="list-style-type: none"> <li>- the nature, composition and fate (e.g. areal extent) of drilling wastes (e.g. muds, cuttings) at various water depths and at various stages of drilling, including during riserless drilling and drilling with the marine riser in place, using dispersion modelling;</li> </ul>	Section 2.6.1: Drilling Waste
<ul style="list-style-type: none"> <li>- the management or disposal of wastes (e.g. type and constituents of waste, quantity, treatment and method of disposal) including:               <ul style="list-style-type: none"> <li>✓ drilling muds, drill solids;</li> <li>✓ bilge and ballast water;</li> <li>✓ deck drainage;</li> <li>✓ cooling water;</li> <li>✓ fire control system test water;</li> <li>✓ operational discharges from subsea systems and the installation of subsea systems;</li> <li>✓ sewage and food wastes;</li> <li>✓ well treatment or testing fluids; and</li> <li>✓ other operational discharges.</li> </ul> </li> </ul>	Section 2.6: Waste Discharges and Emissions
<ul style="list-style-type: none"> <li>- contributions to atmospheric emissions, including emissions profile (i.e. type, rate and source) for activities including routine or upset flaring, routine drilling, testing, shipping etc.;</li> </ul>	Section 2.6.3.1: Atmospheric Emissions
<ul style="list-style-type: none"> <li>- sources and extent of light, heat and noise;</li> </ul>	Section 2.6.3.2: Noise Emissions Section 2.6.3.3: Light Emissions
<ul style="list-style-type: none"> <li>- transfers of bulk materials (e.g. mud) and fuel;</li> </ul>	Section 2.4.3: Logistical Support Section 2.6.2: Other Wastes
<ul style="list-style-type: none"> <li>- number of employees and transportation of employees;</li> </ul>	Section 2.4.1: Drilling Platform Section 2.4.3: Logistical Support
<ul style="list-style-type: none"> <li>- drinking and industrial water requirements (source, quantity required, need for water treatment);</li> </ul>	Section 2.6: Waste Discharges and Emissions Section 2.6.2: Other Wastes
<ul style="list-style-type: none"> <li>- energy supply (source, quantity); and</li> </ul>	Section 2.6.3.1: Atmospheric Environment
<ul style="list-style-type: none"> <li>- waste disposal (types of waste, methods of disposal, quantity).</li> </ul>	Section 2.6: Waste Discharges and Emissions. Section 2.6.2: Other Wastes
<p>3.2. Project activities</p>	
<p>The EIS will include descriptions of the drilling, testing and decommissioning, suspension or abandonment of exploration wells associated with the proposed project.</p>	Section 2.5: Project Activities Section 2.5.2: Drilling Section 2.5.4: Well Testing Section 2.5.5: Decommissioning and Abandonment

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This will include descriptions of the activities to be carried out during each phase, the location of each activity, expected outputs and an indication of the activity's magnitude and scale. Water depths for potential drill sites will be specified.	Section 2.5: Project Activities Section 2.5.1: Well Site/Geohazard/Geotechnical Surveys Section 2.5.2: Drilling Section 2.5.3: Vertical Seismic Profiling Section 2.5.4: Well Testing Section 2.5.5: Decommissioning and Abandonment
The EIS will include a summary of the changes that have been made to the project since originally proposed, including the benefits of these changes to the environment, Indigenous groups, and the public.	Section 2.2: Benefits of the Project
The EIS will include a schedule including time of year, frequency, and duration for all project activities.	Section 2.8: Project Schedule
3.2.1. Drilling and testing activities:	
<ul style="list-style-type: none"> <li>- operation of the Mobile Offshore Drilling Unit and/or drill ships, including:               <ul style="list-style-type: none"> <li>✓ drilling at various water depths and in locations under consideration</li> </ul> </li> </ul>	Section 2.4.1: Drilling Platform Section 2.5.2: Drilling Section 2.3: Project Location
<ul style="list-style-type: none"> <li>✓ well flow testing</li> </ul>	Section 2.5.4: Well Testing
<ul style="list-style-type: none"> <li>✓ waste management</li> </ul>	Section 2.6: Waste Discharges and Emissions Section 2.7: Husky's Environmental Management System and Environmental Compliance Plan
<ul style="list-style-type: none"> <li>✓ water management</li> </ul>	Section 2.6.2: Other Wastes Section 2.9.1.4: Water Management
<ul style="list-style-type: none"> <li>- vertical seismic profile surveys;</li> </ul>	Section 2.5.3: Vertical Seismic Profiling
<ul style="list-style-type: none"> <li>- equipment requirements (type, quantity); and</li> </ul>	Section 2.4: Project Components
<ul style="list-style-type: none"> <li>- storage and management of hazardous materials, fuels and residues.</li> </ul>	Section 2.6.2: Other Waste
3.2.2. Supply and servicing	
<ul style="list-style-type: none"> <li>- vessel support, including loading, refuelling and operation of marine support vessels (i.e. for transfer, re-supply and on-site safety during drilling activities) and.</li> </ul>	Section 2.4.3.2: Offshore Supply Vessels
<ul style="list-style-type: none"> <li>- helicopter support (i.e. crew transport and delivery of supplies and equipment).</li> </ul>	Section 2.4.3.3: Helicopter Support
3.2.3. Decommissioning, suspension or abandonment of wells <ul style="list-style-type: none"> <li>- the preliminary outline of a well decommissioning, suspension and abandonment plan for wells at varying water depths</li> </ul>	Section 2.5.5: Decommissioning and Abandonment
<b>4. PUBLIC PARTICIPATION AND CONCERNS</b>	
The EIS will describe the ongoing and proposed public participation activities that the proponent will undertake or that it has already conducted on the project.	Section 3.2: Stakeholder Consultation
It will provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process.	Section 3.2.2: Summary of Engagement Activities

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The EIS will indicate the methods used, where the consultation was held, the persons and organizations consulted, the concerns voiced and the extent to which this information was incorporated in the design of the project as well as in the EIS.	Section 3.2.2: Summary of Engagement Activities Section 3.2.3: Questions and Comments Raised During Public Consultation
The EIS will provide a summary of key issues raised related to the project and its potential effects to the environment as well as describe any outstanding issues and ways to address them.	Section 3.2.3: Questions and Comments Raised During Public Consultation
<b>5. ENGAGEMENT WITH INDIGENOUS GROUPS AND CONCERNS RAISED</b>	
For the purposes of developing the EIS, the proponent will engage with Indigenous groups that may be affected by the project, to obtain their views on: <ul style="list-style-type: none"> <li>- effects of changes to the environment on Aboriginal peoples (health and socio-economic conditions; physical and cultural heritage, including any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; and current use of lands and resources for traditional purposes) pursuant to paragraph 5(1)(c) of CEAA 2012; and</li> </ul>	Section 3.3: Indigenous Engagement Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement) Section 4.3.2: Indigenous Use
<ul style="list-style-type: none"> <li>- potential adverse impacts of the project on potential or established section 35 rights, including title and related interests, in respect of the Crown's duty to consult, and where appropriate, accommodate Aboriginal peoples.</li> </ul>	Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)
With respect to potential adverse impacts of the project on potential or established section 35 rights, including title and related interests, the EIS will document for each group identified in Section 5.1 below (or in subsequent correspondence from the Agency): <ul style="list-style-type: none"> <li>- potential or established section 35 rights<sup>7</sup>, including title and related interests, when this information is directly provided by a group to the proponent, the Agency or is available through public records, including: <ul style="list-style-type: none"> <li>✓ geographical extent, nature, frequency and timing of the practice or exercise of the right; and,</li> <li>✓ maps and data sets (e.g. fish catch numbers);</li> </ul> </li> </ul>	Section 4.3.2: Indigenous Use (Existing Environment) Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)
<ul style="list-style-type: none"> <li>- potential adverse impacts of each of the project components and physical activities, in all phases, on potential or established section 35 rights, including title and related interests. This assessment is to be based on a comparison of the exercise of the identified rights, title and related interests between the predicted future conditions with the project and the predicted future conditions without the project. Include the perspectives of potentially impacted groups where these were provided to the proponent by the groups;</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement) Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)

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<ul style="list-style-type: none"> <li>- measures identified to accommodate potential adverse impacts of the project on the potential or established section 35 rights, including title and related interests. These measures will be written as specific commitments that clearly describe how the proponent intends to implement them, and may go beyond mitigation measures that are developed to address potential adverse environmental effects;</li> </ul>	Section 6.6.10: Assessment of Residual Effects on Indigenous People and Community Values Section 6.6.10.2: Mitigation (Indigenous People and Community Values)
<ul style="list-style-type: none"> <li>- potential adverse impacts on potential or established section 35 rights, including title and related interests that have not been fully mitigated or accommodated as part of the EA and associated engagement with Indigenous groups. The proponent will also take into account the potential adverse impacts that may result from the residual and cumulative environmental effects. Include the perspectives of potentially affected groups where these were provided to the proponent by the groups.</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement) Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)
<p>The information sources, methodology and findings of the assessment of paragraph 5(1)(c) effects under CEAA 2012 may be used to inform the assessment of potential adverse impacts of the project on potential or established section 35 rights, including title and related interests. However, there may be distinctions between the adverse impacts on potential or established section 35 rights, including title and related interests and paragraph 5(1)(c) effects under CEAA 2012. The proponent will carefully consider the potential distinction between these two aspects and, where there are differences, will include the relevant information in its assessment.</p>	Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)
<p>In terms of gathering views from potentially affected groups with respect to both environmental effects of the project and the potential adverse impacts of the project on potential or established section 35 rights, including title and related interests, the EIS will document:</p> <ul style="list-style-type: none"> <li>- VCs suggested by groups for inclusion in the EIS, whether they were included, and the rationale for any exclusions;</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- specific suggestions raised by each group for mitigating the effects of changes to the environment on Aboriginal peoples or accommodating potential adverse impacts of the project on potential or established section 35 rights, including title and related interests;</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- views expressed by each group on the effectiveness of the mitigation or accommodation measures;</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)

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<ul style="list-style-type: none"> <li>- from the proponent's perspective, any potential cultural, social and/or economic impacts or benefits to each group identified that may arise as a result of the project. Include the perspectives of potentially affected groups where these were provided to the proponent by the groups;</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- any other comments, specific issues and concerns raised by potentially affected groups and how they were responded to or addressed;</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- changes made to the project design and implementation directly as a result of discussions with potentially affected groups;</li> </ul>	Section 2.2.1: Changes to the Project since Originally Proposed Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- where and how Aboriginal traditional knowledge was incorporated into the environmental effects assessment (including methodology, baseline conditions and effects analysis for all VCs) and the consideration of potential adverse impacts on potential or established section 35 rights, including title and related interests, and related mitigation measures; and</li> </ul>	Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)
<ul style="list-style-type: none"> <li>- any additional issues and concerns raised by potentially affected groups in relation to the environmental effects assessment and the potential adverse impacts of the project on potential or established section 35 rights, including title and related interests.</li> </ul>	Section 3.3.3: Questions and Comments Raised During Engagement (Indigenous Engagement)
<p>The Agency recommends the proponent create a tracking table of key issues raised by each group, including the concerns raised related to the project, proposed mitigation measures, and where appropriate, a reference to the proponent's analysis in the EIS.</p>	Table 3.4: Questions and Comments Raised During Indigenous Engagement and Where They are Addressed in the Environmental Assessment
<p>5.1. Indigenous groups and engagement activities</p>	
<p>With respect to engagement activities, the EIS will document:</p> <ul style="list-style-type: none"> <li>- the engagement activities undertaken with each group prior to the submission of the EIS, including the date and means of engagement (e.g. meeting, mail, telephone);</li> </ul>	Section 3.3.2: Engagement Activities (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- any future planned engagement activities; and</li> </ul>	Section 3.3.2: Engagement Activities (Indigenous Engagement)
<ul style="list-style-type: none"> <li>- how engagement activities by the proponent allowed groups to understand the project and evaluate its effects on their communities, activities, potential or established section 35 rights, including title and related interests.</li> </ul>	Section 3.3.2: Engagement Activities (Indigenous Engagement)
<p>The EIS will describe all efforts, successful or not, taken to solicit the information required from groups to support the preparation of the EIS.</p>	Section 3.3.2: Engagement Activities (Indigenous Engagement)

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<p>The proponent will ensure these groups are reflected in the baseline information and assessment of potential effects or impacts in the EIS. These groups include:</p> <p>The following Indigenous groups in Newfoundland and Labrador:</p> <ul style="list-style-type: none"> <li>– <i>the Labrador Inuit (Nunatsiavut Government),</i></li> <li>– <i>the Labrador Innu (Innu Nation),</i></li> <li>– <i>the NunatuKavut Community Council,</i></li> </ul> <p>The following Indigenous groups in Nova Scotia (as per April 27, 2017 letter from CEA Agency):</p> <ul style="list-style-type: none"> <li>– <i>Acadia First Nation</i></li> <li>– <i>Annapolis Valley First Nation</i></li> <li>– <i>Bear River First Nation</i></li> <li>– <i>Eskasoni First Nation</i></li> <li>– <i>Glooscap First Nation</i></li> <li>– <i>Membertou First Nation</i></li> <li>– <i>Paqtnkek Mi'kmaw Nation</i></li> <li>– <i>Pictou Landing First Nation</i></li> <li>– <i>Potlotek First Nation</i></li> <li>– <i>Wagmatcook First Nation</i></li> <li>– <i>Waycobah First Nation</i></li> <li>– <i>Millbrook First Nation</i></li> <li>– <i>Sipekne'katik First Nation</i></li> </ul> <p>The following Indigenous groups in New Brunswick (as per April 27, 2017 letter from CEA Agency):</p> <ul style="list-style-type: none"> <li>– <i>Elsipogtog First Nation</i></li> <li>– <i>Fort Folly First Nation</i></li> <li>– <i>Eel Ground First Nation</i></li> <li>– <i>Pabineau First Nation</i></li> <li>– <i>Esgenoôpetitj First Nation</i></li> <li>– <i>Buctouche First Nation</i></li> <li>– <i>Indian Island First Nation</i></li> <li>– <i>Eel River Bar First Nation</i></li> <li>– <i>Metepenagiag Mi'kmaq Nation</i></li> <li>– <i>Kingsclear First Nation</i></li> <li>– <i>Madawaska Maliseet First Nation</i></li> <li>– <i>Oromocto First Nation</i></li> <li>– <i>Tobique First Nation</i></li> <li>– <i>St. Mary's First Nation</i></li> <li>– <i>Woodstock First Nation</i></li> <li>– <i>Peskotomuhkati Nation at Skutik (Passamaquoddy of New Brunswick) (as per July 27, 2017 letter from CEA Agency)</i></li> </ul> <p>The following Indigenous groups in Prince Edward Island (as per April 27, 2017 letter from CEA Agency):</p> <ul style="list-style-type: none"> <li>– <i>Abegweit First Nation</i></li> <li>– <i>Lennox Island First Nation</i></li> </ul> <p>The following Indigenous groups in Quebec (as per April 27, 2017 letter from CEA Agency):</p> <ul style="list-style-type: none"> <li>– <i>Micmacs of Gesgapegiag</i></li> </ul>	<p>Section 3.3.1: Indigenous Organizations (Indigenous Engagement)</p> <p>Section 4.3.2: Indigenous Use (Existing Environment)</p> <p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)</p>



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<ul style="list-style-type: none"> <li>- <i>La Nation Micmac de Gespeg</i></li> <li>- <i>Listuguj Mi'gmaq Government</i></li> <li>- <i>Les Innus de Ekuanitshit</i></li> <li>- <i>Montagnais de Natashquan</i></li> </ul>	
<p>In addition, for the purposes of good governance, the proponent should also provide information to and discuss potential environmental effects from the Project, as described under section 5 of CEEA 2012, with the Qalipu Mi'kmaq First Nation Band and the Miawpukek First Nation.</p>	<p>Section 10.3: Effect of Changes to the Environment on Indigenous People (CEEA 2012 section 5(1)(c))</p>
<p><b>6. EFFECTS ASSESSMENT</b></p>	
<p>6.1. Project setting and baseline conditions</p>	
<p>Based on the scope of the project described in Section 3 (Part 1), the EIS will present baseline information in sufficient detail to enable the identification of how the project could affect the VCs and an analysis of those effects.</p>	<p>Section 4: Existing Environment</p>
<p>6.1.1. Atmospheric environment</p>	
<p>The EIS will describe the atmospheric environment and climate at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:</p> <ul style="list-style-type: none"> <li>- ambient air quality in the project areas and in the airshed likely to be affected by the project, including consideration of the following contaminants: total suspended particulates (TSP), fine particulates smaller than 2.5 microns (PM<sub>2.5</sub>), respirable particulates of less than 10 microns (PM<sub>10</sub>), carbon monoxide (CO), sulphur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), hydrogen sulfide (H<sub>2</sub>S) and any other potentially toxic air pollutants;</li> </ul>	<p>Section 2.6.3.1: Atmospheric Emissions Section 4.1.2: Atmospheric Environment</p>
<ul style="list-style-type: none"> <li>- identify and quantify existing greenhouse gas emissions by individual pollutant measured as kilotonnes of CO<sub>2</sub> equivalent per year in the project study areas;</li> </ul>	<p>Section 2.6.3.1: Atmospheric Emissions</p>
<ul style="list-style-type: none"> <li>- direct and indirect sources of air emissions;</li> </ul>	<p>Section 2.6.3.1: Atmospheric Emissions</p>
<ul style="list-style-type: none"> <li>- current provincial/territorial/federal limits for greenhouse gas emission targets; and</li> </ul>	<p>Section 2.6.3.1: Atmospheric Emissions</p>
<ul style="list-style-type: none"> <li>- information on the variation in weather conditions over the project area using historical records of relevant meteorological parameters, including the following: <ul style="list-style-type: none"> <li>✓ precipitation (rain and snow);</li> <li>✓ air temperature (mean, maximum and minimum temperatures);</li> <li>✓ wind speed and direction;</li> <li>✓ freezing spray;</li> <li>✓ lightning; and</li> <li>✓ visibility.</li> </ul> </li> </ul>	<p>Section 4.1.2.3: Precipitation Section 4.1.2.2: Air and Sea Temperature Section 4.1.2.1: Wind Climatology Section 4.1.2.4: Icing Section 4.1.2.6: Lightning Section 4.1.2.5: Visibility</p>

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Particular attention should also be given to the analysis of extreme meteorological events that have the potential to result in adverse effects on the project (e.g. high wind events).	Section 4.1.2.1: Wind Climatology Section 4.1.2.3: Precipitation Section 4.1.2.7: Tropical Systems Section 4.1.3.4: Wave Climatology Section 4.1.3.5: Extreme Waves Section 4.1.3.6: Extreme Winds
<b>6.1.2. Marine environment</b>	
The EIS will describe the marine environment within areas that could be affected by routine project operations or by accidents and malfunctions, including: <ul style="list-style-type: none"> <li>– marine water quality (e.g. water temperature, turbidity, salinity and pH);</li> </ul>	Section 4.1.3.8: Temperature, Salinity and pH
<ul style="list-style-type: none"> <li>– marine geology and geomorphology (i.e. bottom sediments, including quality, thickness, grain size, and mobility);</li> </ul>	Section 4.1.1: Marine Geology
<ul style="list-style-type: none"> <li>– physical oceanography including surface and subsurface current patterns, current velocities, waves, storm surges, long shore drift processes, tidal patterns, and tide gauges levels for the site, in proximity to the site, and along the shipping routes;</li> </ul>	Section 4.1.3.2: Ocean Currents Section 4.1.3.3: Tides
<ul style="list-style-type: none"> <li>– available bathymetric information (e.g. maximum and mean water depths) for the site and along shipping routes if applicable;</li> </ul>	Section 4.1.3.1: Bathymetry
<ul style="list-style-type: none"> <li>– ice climate in the regional study area, including ice formation and thickness, breakup and movement;</li> </ul>	Section 4.1.4: Sea Ice and Icebergs
<ul style="list-style-type: none"> <li>– ice conditions along the shipping routes with consideration of predicted climate change and its possible effect on the timing of ice formation in the future;</li> </ul>	Section 4.1.4: Sea Ice and Icebergs
<ul style="list-style-type: none"> <li>– fast-ice characteristics, including its surface area and seasonal stability along the shipping routes;</li> </ul>	Section 4.1.4: Sea Ice and Icebergs
<ul style="list-style-type: none"> <li>– marine plants, including all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton;</li> </ul>	Section 4.2.1: Plankton
<ul style="list-style-type: none"> <li>– acoustic environment (ambient noise levels from natural sources, shipping, seismic surveys, and other sources), including information on geographic extent and temporal variations and how the acoustic environment may be affected by the project.</li> </ul>	Section 2.6.3.2: Noise Emissions Section 4.1.5: Acoustic Environment
<b>6.1.3. Fish and fish habitat</b>	
The EIS will describe fish and fish habitat within areas that could be affected by routine project operations or by accidents and malfunctions, including: <ul style="list-style-type: none"> <li>– a characterization of fish populations on the basis of species and life stage, including information on the surveys carried out (e.g. location of sampling stations, catch methods, date of catches, species, catch per-unit effort) and the source of data available (e.g. government and historical databases, commercial fishing data);</li> </ul>	Section 4.2.4: Marine Fish Appendix D

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<ul style="list-style-type: none"> <li>– a description of primary and secondary productivity in affected water bodies with a characterisation of seasonal variability;</li> </ul>	Section 4.2.1: Plankton
<ul style="list-style-type: none"> <li>– a list of any fish or invertebrate species at risk that are known to be present; and</li> </ul>	Section 4.2.4.4: Fish Species at Risk and Species of Conservation Concern Section 4.2.8: Species at Risk and Species of Conservation Concern Appendix D
<ul style="list-style-type: none"> <li>– benthic flora and fauna and their associated habitat, including sensitive features such as corals and sponges (Note: a benthic habitat survey (ROV / camera), including transects of seafloor in the area of the well locations, may be required).</li> </ul>	Section 4.2.2: Benthic Habitat Section 4.2.3: Corals and Sponges
<p>Emphasis will be placed on the waters likely to be affected by the project and their physical characteristics, water and sediment quality. Hence, for all areas in which effects are anticipated, the EIS will describe the biophysical water and sediment characteristics, including:</p> <ul style="list-style-type: none"> <li>– a description of the physical and biological characteristics of the fish and fish habitat likely to be directly or indirectly affected by the project;</li> </ul>	Section 4.2.4: Marine Fish Appendix D
<ul style="list-style-type: none"> <li>– maps, at a suitable scale, indicating the surface area of potential or confirmed fish habitats and a description of these habitats as determined by water depths, type of substrate (sediments), aquatic vegetation, and potential use (i.e. spawning, rearing, nursery, feeding, overwintering, migration routes, etc.). Where appropriate, this information should be linked to water depths (bathymetry) to identify the extent of a water body's littoral / photic zone;</li> </ul>	Figure 4-23: Potential Critical Habitat under SARA for Northern and Spotter Wolffish Figure 4-20: Sediment samples from the White Rose EEM Sediment Survey Figure 1 (Appendix D): General Ocean Distribution and Migration Patters of Canadian Atlantic Salmon Section 4.2.2: Benthic Habitat Section 4.2.3: Corals and Sponges
<ul style="list-style-type: none"> <li>– quality, thickness, grain size and mobility of bottom sediments; and</li> </ul>	Section 4.1.1: Marine Geology Section 4.2.2: Benthic Habitat
<ul style="list-style-type: none"> <li>– a discussion of sea bottom stability at the project site.</li> </ul>	Section 4.2.2: Benthic Habitat
<p>Any sampling survey methods used by the proponent will be described in order to allow experts to ensure the quality of the information provided. If previous studies on the habitat in the study area were conducted, they are to be submitted with the EIS.</p>	Noted.
<p>6.1.4. Migratory birds and their habitat</p>	
<p>The EIS will describe migratory and non-migratory marine birds and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions.</p>	Section 4.2.7: Migratory Birds

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<p>Preliminary data from existing sources will be gathered, including information such as:</p> <ul style="list-style-type: none"> <li>- birds and their habitats that are found or are likely to be found in the study area. This description may be based on existing sources, but supporting evidence is required to demonstrate that the data used are representative of the avifauna and habitats found in the study area. The existing data must be supplemented by surveys, if required;</li> </ul>	Section 4.2.7: Migratory Birds
<ul style="list-style-type: none"> <li>- abundance, distribution, and life stages of migratory and non-migratory birds likely to be affected in the project area based on existing information, or surveys, as appropriate, to provide current field data;</li> </ul>	Section 4.2.7: Migratory Birds Appendix D
<ul style="list-style-type: none"> <li>- year-round migratory bird use of the area (e.g. winter, spring migration, breeding season, fall migration), based on preliminary data from existing sources and surveys to provide current field data if appropriate; and</li> </ul>	Section 4.2.7: Migratory Birds Appendix D
<ul style="list-style-type: none"> <li>- areas of concentration of migratory birds, such as for breeding, feeding or resting.</li> </ul>	Section 4.2.7: Migratory Birds Appendix D
<p>6.1.5. Species at Risk</p>	
<p>The EIS will describe federal species at risk and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:</p> <ul style="list-style-type: none"> <li>- a list of all potential or known federally listed species at risk that may be affected by the project, using existing data and literature as well as surveys to provide current field data;</li> </ul>	Section 4.2.8: Species at Risk and Species of Conservation Concern
<ul style="list-style-type: none"> <li>- a list of all federal species designated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) for listing on Schedule 1 of the <i>Species at Risk Act</i>. This will include those species in the risk categories of extirpated, endangered, threatened and of special concern;</li> </ul>	Section 4.2.8: Species at Risk and Species of Conservation Concern
<ul style="list-style-type: none"> <li>- any published studies that describe the regional importance, abundance and distribution of species at risk including management plans, recovery strategies or plans. The existing data must be supplemented by surveys, if required; and</li> </ul>	Section 4.2.4.4: Fish Species at Risk and Species of Conservation Concern Section 4.2.5.4: Marine Mammal Species at Risk and Species of Conservation Concern Section 4.2.6: Sea Turtles Section 4.2.7.5: Species at Risk and Species of Conservation Concern (Migratory Birds) Section 4.2.8: Species at Risk and Species of Conservation Concern Appendix D

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<ul style="list-style-type: none"> <li>– residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified and proposed critical habitat and/or recovery habitat (where applicable) and general life history of species at risk that may occur in the project area, or be affected by the project.</li> </ul>	Section 4.2.4.4: Fish Species at Risk and Species of Conservation Concern Section 4.2.5.4: Marine Mammal Species at Risk and Species of Conservation Concern Section 4.2.6: Sea Turtles Section 4.2.7.5: Species at Risk and Species of Conservation Concern (Migratory Birds) Appendix D
<b>6.1.6. Marine mammals</b>	
The EIS will describe marine mammals and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as: <ul style="list-style-type: none"> <li>– marine mammal species that may be present, the times of year they are present, the ranges of the species and their migration patterns, and</li> </ul>	Section 4.2.5: Marine Mammals Appendix D
<ul style="list-style-type: none"> <li>– important areas in the vicinity of the drilling sites or supply routes (e.g. for mating, breeding, feeding and nursing of young) or that could be impacted by the project (e.g. acoustics, spills, etc.).</li> </ul>	Section 4.2.5: Marine Mammals Appendix D
<b>6.1.7. Marine turtles</b>	
The EIS will describe marine turtles and their habitat at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as: <ul style="list-style-type: none"> <li>– marine turtle species that may be present, the times of year they are present, the ranges of the species and their migration patterns; and</li> </ul>	Section 4.2.6: Sea Turtles Appendix D
<ul style="list-style-type: none"> <li>– important areas in the vicinity of the drilling sites or supply routes (e.g. for mating, breeding, and feeding) or that could be impacted by the project (e.g. routine discharges, spills, etc.).</li> </ul>	Section 4.2.6: Sea Turtles Appendix D
<b>6.1.8. Indigenous peoples</b>	
With respect to potential effects on Indigenous peoples and the related VCs, baseline information will be provided for <b>each group</b> identified in Section 5 (Part 2) of these guidelines (and any groups identified after these guidelines are finalized).	Section 4.3.2: Indigenous People and Community Values (Existing Environment) 4.3.2.2: Newfoundland and Labrador Indigenous Groups 4.3.2.3: Mi'kmaq of the Maritime Provinces 4.3.2.4: Wolastoqiyik of New Brunswick (Maliseet) 4.3.2.5: Peskotomuhkati Nation (Passamaquoddy) 4.3.2.6: Mi'kmaq and Innu of Québec
Baseline information will describe and characterize the elements in paragraph 5(1)(c) of CEAA 2012 based on the spatial and temporal scope selected for the EA according to the factors outlined in Part 1, Section 3.3.3 of this document.	Section 4.3.2: Indigenous People and Community Values (Existing Environment)

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<p>Baseline information will also characterize the regional context of each of the elements of paragraph 5(1)(c) of CEEA 2012 to support the assessment of project related effects and cumulative effects. Baseline information will be sufficient to provide a comprehensive understanding of the current state of each VC.</p>	<p>Section 3.3.1: Indigenous Organizations (Consultation and Engagement) Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<p>Baseline information for current use of lands and resources for traditional purposes will focus on the traditional activity (e.g. fishing) and include a characterization of all attributes of the activity that can be affected by environmental change. This includes not only identifying species of importance, but also assessing the quality and quantity of preferred traditional resources and locations, timing (e.g. seasonality, access restrictions, distance from community), ambient/sensory environment (e.g. noise, air quality, visual landscape, presence of others) and cultural environment (e.g., historical/generational connections, preferred areas). As applicable, specific aspects that will be considered include, but are not limited to:</p> <ul style="list-style-type: none"> <li>- current use of lands and resources for traditional purposes, including: <ul style="list-style-type: none"> <li>✓ location of traditional territory (including maps where available);</li> </ul> </li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<ul style="list-style-type: none"> <li>✓ commercial and traditional fishing activity within the project's potential zone of influence, including licences and maps;</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<ul style="list-style-type: none"> <li>✓ fish, wildlife, birds, plants or other natural resources of importance for traditional use;</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<ul style="list-style-type: none"> <li>✓ places where fish, wildlife, birds, plants or other natural resources are harvested, including places that are preferred;</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<ul style="list-style-type: none"> <li>✓ access and travel routes for conducting traditional practices;</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<ul style="list-style-type: none"> <li>✓ frequency, duration or timing of traditional practices; and</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment)</p>
<ul style="list-style-type: none"> <li>✓ cultural values associated with the area affected by the project and the traditional uses identified.</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment) Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values</p>
<ul style="list-style-type: none"> <li>- any Project components and a description of any activities (e.g. exclusion zones) that may affect commercial fisheries or other uses;</li> </ul>	<p>Section 4.3.2: Indigenous People and Community Values (Existing Environment) Section 6.6: Assessment of Potential Effects of Indigenous People and Community Values Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values</p>

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<ul style="list-style-type: none"> <li>- human health, primarily with respect to potential contamination of food sources;</li> </ul>	Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values
<ul style="list-style-type: none"> <li>- location of reserves and communities; and</li> </ul>	Section 4.3.2: Indigenous People and Community Values (Existing Environment)
<ul style="list-style-type: none"> <li>- physical and cultural heritage (including any site, structure or thing of archaeological, paleontological, historical or architectural significance).</li> </ul>	Section 4.3.2: Indigenous People and Community Values (Existing Environment) Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values
6.1.9. Other changes to the environment arising as a result of a federal decision or due to changes on federal lands, in another province or outside Canada	
6.1.9.1. Special areas	
<p>The EIS will describe special areas (e.g. species at risk critical habitat that has been designated and that has been proposed or that may be under consideration, Important Bird Areas, Migratory Bird Sanctuaries, ecological reserves, etc.) at the project site and within areas that could be affected by routine project operations or accidents and malfunctions, such as:</p> <ul style="list-style-type: none"> <li>- Ecologically and Biologically Significant Areas (e.g. The Southeast Shoal and Tail of the Banks, The Northeast Shelf and Slope, Lily Canyon-Carson Canyon and The Virgin Rocks)</li> </ul>	Section 4.2.9: Special Areas Section 4.2.9.1: Ecologically and Biologically Sensitive Areas
<ul style="list-style-type: none"> <li>- Fishery Closure Areas (e.g. Northwest Atlantic Fisheries Organization Coral Closures, Orphan Knoll Seamount)</li> </ul>	Section 4.2.9.3: NAFO Coral, Sponge and Seapen Closure Areas
<ul style="list-style-type: none"> <li>- Preliminary Representative Marine Areas (South Grand Bank Area)</li> </ul>	Section 4.2.9.6: South Grand Bank Preliminary Representative Marine Area
<p>The EIS will describe the distances between the edge of the project area (i.e. drill sites and shipping routes) and special areas. It shall state the rationale for designating specific areas as "special" (i.e. the defining environmental features of the special area).</p>	Section 4.2.9: Special Areas
6.1.9.2. Human environment	
<p>At a minimum, this should include:</p> <ul style="list-style-type: none"> <li>- any federal lands, lands located outside the province or Canada that may be affected by the project operations or by accidents and malfunctions;</li> </ul>	Section 2.3: Project Location Section 10.2: Changes to the Environment that Would Occur on Federal or Transboundary Lands

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<ul style="list-style-type: none"> <li>– the current and historical use of waters that may be affected by routine project operations or by accidents and malfunctions, including:               <ul style="list-style-type: none"> <li>✓ current commercial and recreational fishing activity, including licence holders and species fished;</li> <li>✓ other ocean uses (e.g. shipping, research, oil and gas, military, ocean infrastructure [e.g. subsea cable]);</li> </ul> </li> </ul>	Section 4.3: Socio-economic Environment Section 4.3.1: Commercial Fisheries Section 4.3.2: Indigenous People and Community Values Section 4.3.3: Marine Research Section 4.3.4: Marine Shipping Section 4.3.5: Other Offshore Oil and Gas Activity Section 4.3.6: Department of National Defence Operations Section 4.3.7: Additional Ocean Infrastructure
<ul style="list-style-type: none"> <li>– the location of and proximity of any permanent, seasonal or temporary residences or camps that could be affected by routine project operations or accidents and malfunctions;</li> </ul>	N/A
<ul style="list-style-type: none"> <li>– health and socio-economic conditions that could be affected by routine project operations or accidents and malfunctions, including the functioning and health of the socio-economic environment, encompassing a broad range of matters that affect communities in the study area in a way that recognizes interrelationships, system functions and vulnerabilities;</li> </ul>	Section 9: Cumulative Effects Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values Section 10.4: Exercise of Power of Duty or Function by Federal Authority
<ul style="list-style-type: none"> <li>– physical and cultural heritage, including structures, sites or things of historical, archaeological, paleontological or architectural significance that could be affected by routine project operations or accidents and malfunctions;</li> <li>– the rural and urban settings that could be affected by routine project activities or accidents and malfunctions; and</li> <li>– any project components and activities (e.g. exclusion zones) that may affect commercial or recreational fisheries or other uses.</li> </ul>	Section 4.3.2: Indigenous Use Section 4.3.7: Additional Ocean Infrastructure Section 9: Cumulative Effects Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values Section 10.4.1: Effects of Changes to the Environment that are Directly Linked or necessarily Incidental to Federal Decisions
<p>The EIS should also discuss the potential to encounter unexploded ordnance (UXOs), based on consultation with the Department of National Defence.</p>	Section 4.3.6: Department of National Defence Operations
<p>6.2. Predicted changes to the physical environment</p>	
<p>The EA will include a consideration of the predicted changes to the environment as a result of the project being carried out or as a result of any powers, duties or functions that are to be exercised by the federal government in relation to the project.</p>	Section 10.1: Changes to Components of the Environment within Federal Jurisdiction (CEAA, 2012 section 5(1)(a))
<p>The EIS will include stand-alone sections that summarise those changes that may be caused by the project on the components of the environment listed in paragraph 5(1)(a) of CEAA 2012, namely fish and fish habitat, aquatic species and migratory birds.</p>	Section 10.1: Changes to Components of the Environment within Federal Jurisdiction (CEAA, 2012 section 5(1)(a))



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The EIS will include a stand-alone section that summarises any change the project may cause to the environment that may occur on federal lands or lands outside the province in which the project is to be located (including outside of Canada).	Section 10.2: Changes to the Environment that Would Occur on Federal or Transboundary Lands (CEAA, 2012 section 5(1)(b))
In situations where the project requires one or more federal decisions identified in section 5(2), the EIS will also include a stand-alone section that describes any change that may be caused by the project on the environment that is directly linked or necessarily incidental to these decisions (e.g. changes to commercial fishing).	Section 10.4.1: Changes to the Environment that are Directly or Necessarily Incidental to Federal Decisions
6.3. Predicted effects on valued components	
6.3.1. Fish and fish habitat	
<ul style="list-style-type: none"> <li>- the identification of any potential adverse effects to fish and fish habitat as defined in subsection 2(1) of the <i>Fisheries Act</i>, including the calculations of any potential habitat loss (temporary or permanent) in terms of surface areas (e.g. spawning grounds, fry-rearing areas, feeding), and in relation to availability and significance. The assessment will include a consideration of:               <ul style="list-style-type: none"> <li>✓ effects on water quality including changes to chemical composition, temperature, oceanographic conditions, etc.;</li> </ul> </li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ the geomorphological changes and their effects on hydrodynamic conditions and fish habitats (e.g. modification of benthic habitat including corals and sensitive habitat, area affected by drilling waste, disturbance to water column);</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ the modifications of hydrological and hydrometric conditions on fish habitat and on the fish species' life cycle activities (e.g. reproduction, juvenile, rearing, and feeding, movements);</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ any potential imbalances in the food web in relation to baseline conditions;</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ underwater noise and vibration emissions from project activities (i.e. drilling, vertical seismic profiling, offshore supply vessel operation, well abandonment) and how it may affect fish health and behaviour;</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ effects on the primary and secondary productivity of water bodies and how project-related effects may affect fish food sources;</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>- the effects of changes to the aquatic environment on fish and their habitat, including:</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ the anticipated changes in the composition and characteristics of the populations of various fish species, including shellfish and forage fish including mortality of fish, eggs and larvae; environment and species (e.g. corals, plants);</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>✓ any modifications in migration or local movements during and after project activities (e.g. vertical seismic profiling, drilling);</li> </ul>	Section 6.1: Fish and Fish Habitat

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<ul style="list-style-type: none"> <li>✓ any modifications and use of habitats by federally or provincially listed fish species;</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>– a discussion of the effects of drilling waste disposal on marine benthos and other components of the aquatic environment, recognizing that the disposal of these wastes is expected to be a primary cause of effect on benthos;</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>– a discussion of the length of time it would take for the benthic environment to return to baseline conditions in water depths within which the Project would occur;</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>– a discussion of how project timing correlates to key fisheries windows and any potential effects resulting from overlapping periods; and</li> </ul>	Section 6.1: Fish and Fish Habitat
<ul style="list-style-type: none"> <li>– a discussion of how data examining the deposition of drilling-related wastes (e.g. fluid, mud residues, cuttings) and acoustic monitoring data would be collected during and after drilling operations and how this would be used to verify effects predictions.</li> </ul>	Section 6.1: Fish and Fish Habitat
6.3.2. Marine plants	
<ul style="list-style-type: none"> <li>– effects on marine plants, including all benthic and detached algae, marine flowering plants, brown algae, red algae, green algae and phytoplankton.</li> </ul>	Section 6.1: Fish and Fish Habitat
6.3.3. Marine mammals	
<ul style="list-style-type: none"> <li>– effects on marine mammals, including but not limited to:                             <ul style="list-style-type: none"> <li>✓ mortality and other effects from vessel collisions or disturbance; and</li> </ul> </li> </ul>	Section 6.3: Marine Mammals and Sea Turtles
<ul style="list-style-type: none"> <li>✓ direct and indirect effects caused by increased disturbance (e.g. noise, light, vibrations) including mortality, physical injury and behavioural changes (e.g. habitat avoidance, disruption to feeding behaviour, deviation in migration routes, communication masking, discomfort and behavioural disturbance).</li> </ul>	Section 6.3: Marine Mammals and Sea Turtles
6.3.4. Marine turtles	
<ul style="list-style-type: none"> <li>– effects on marine turtles, including but not limited to:                             <ul style="list-style-type: none"> <li>✓ mortality and other effects from vessel collisions or disturbance; and</li> </ul> </li> </ul>	Section 6.3: Marine Mammals and Sea Turtles
<ul style="list-style-type: none"> <li>✓ direct and indirect effects caused by increased disturbance (e.g. noise, light, vibrations) including mortality, physical injury and behavioural changes (e.g. habitat avoidance, disruption to feeding behaviour, deviation in migration routes, communication masking, discomfort and behavioural disturbance).</li> </ul>	Section 6.3: Marine Mammals and Sea Turtles
6.3.5. Migratory birds	
<ul style="list-style-type: none"> <li>– direct and indirect adverse effects on migratory birds, including population level effects that could be caused by all project activities, including but not limited to:</li> </ul>	Section 6.4: Migratory Birds

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✓ noise disturbance from seismic equipment including both direct effects (physiological), or indirect effects (foraging behaviour of prey species);	
✓ physical displacement as a result of vessel presence (e.g. disruption of foraging activities);	Section 6.4: Migratory Birds
✓ night-time illumination levels from lights and flares during different weather conditions and seasons and during different project activities (e.g. drilling, well testing) and associated nocturnal disturbance (e.g. increased opportunities for predators, attraction to the drilling unit and vessels and subsequent collision or exposure to vessel-based threats, incineration in flares, disruption of normal activities);	Section 6.4: Migratory Birds
✓ exposure to spilled contaminants (e.g. fuel, oils) and operational discharges (e.g. deck drainage, gray water, black water);	Section 6.4: Migratory Birds
✓ attraction of, and increase in, predator species as a result of waste disposal practices (i.e. sanitary and food waste) and the presence of incapacitated/dead prey near the Mobile Offshore Drilling Unit or support vessels;	Section 6.4: Migratory Birds
✓ physical harm or mortality from flaring on the drilling unit or other vessel-based threats;	Section 6.4: Migratory Birds
✓ collision risk with the drilling unit and other project infrastructure;	Section 6.4: Migratory Birds
✓ the effects of oil spills in the nearshore or that reach land on landbird species;	Section 6.4: Migratory Birds Section 7.3.4: Migratory Birds (Accidental Events)
✓ change in marine habitat quality from drill muds and cuttings and sedimentation; and	Section 6.4: Migratory Birds
✓ indirect effects caused by increased disturbance (e.g. noise, light, presence of workers), relative abundance movements and changes in migratory bird habitat.	Section 6.4: Migratory Birds
6.3.6. Species at risk	
<ul style="list-style-type: none"> <li>– the potential effects of the project on federally listed species at risk and those species listed by the Committee on the Status of Endangered Wildlife in Canada classified as extirpated, endangered, threatened or of special concern (flora and fauna) and their critical habitat, including:               <ul style="list-style-type: none"> <li>✓ alteration of habitat (including critical habitat) features;</li> </ul> </li> </ul>	Section 6.1: Fish and Fish Habitat Section 6.3: Marine Mammals and Sea Turtles Section 6.4: Migratory Birds Section 7.3.1: Fish and Fish Habitat (Accidental Events) Section 7.3.3: Marine Mammals and Sea Turtles (Accidental Events) Section 7.3.4: Migratory Birds (Accidental Events) Section 10.1.4: Species at Risk/Species of Conservation Concern

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EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>✓ direct and indirect effects from noise, vibrations and increased exposure to contaminants of concern;</li> </ul>	Section 6.1: Fish and Fish Habitat Section 6.3: Marine Mammals and Sea Turtles Section 6.4: Migratory Birds Section 7.3.1: Fish and Fish Habitat (Accidental Events) Section 7.3.3: Marine Mammals and Sea Turtles (Accidental Events) Section 7.3.4: Migratory Birds (Accidental Events)
<ul style="list-style-type: none"> <li>✓ a discussion of migration patterns of federal species at risk and related effects (e.g. displacement, increased risk of collision); and</li> </ul>	Section 6.1: Fish and Fish Habitat Section 6.3: Marine Mammals and Sea Turtles Section 6.4: Migratory Birds Section 7.3.1: Fish and Fish Habitat (Accidental Events) Section 7.3.3: Marine Mammals and Sea Turtles (Accidental Events) Section 7.3.4: Migratory Birds (Accidental Events)
<ul style="list-style-type: none"> <li>✓ direct and indirect effects on the survival or recovery of federally listed species (list species).</li> </ul>	Section 6.1: Fish and Fish Habitat Section 6.3: Marine Mammals and Sea Turtles Section 6.4: Migratory Birds Section 7.3.1: Fish and Fish Habitat (Accidental Events) Section 7.3.3: Marine Mammals and Sea Turtles (Accidental Events) Section 7.3.4: Migratory Birds (Accidental Events)
<b>6.3.7. Indigenous peoples</b>	
<ul style="list-style-type: none"> <li>– The underlying changes to the environment will also be described, including, but not limited to:               <ul style="list-style-type: none"> <li>✓ any changes to resources (fish, birds, or other natural resources) used for traditional purposes (e.g. fishing, use of sacred sites);</li> </ul> </li> </ul>	Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)
<ul style="list-style-type: none"> <li>✓ effects on food, social, ceremonial, and commercial fishing;</li> </ul>	Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)
<ul style="list-style-type: none"> <li>✓ a discussion of how drilling activities correlates to key fisheries windows, and any potential impacts resulting from overlapping periods;</li> </ul>	Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)

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<p>✓ changes related to species important to Indigenous people's current use of resources, including changes to key habitat;</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p>
<p>✓ any changes or alterations to access into the areas used for traditional purposes and commercial fishing, including implementation of exclusion zones;</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p>
<p>✓ any changes to the environment that affect cultural value or importance associated with traditional uses or areas affected by the project (e.g. values or attributes of the area that make it important as a place for inter-generational teaching of language or traditional practices, communal gatherings, integrity of preferred traditional practice areas);</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p>
<p>✓ how timing of project activities (e.g. drilling, flaring) have the potential to interact with the timing of traditional practices, and any potential effects resulting from overlapping periods;</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 9.2.8: Assessment of Cumulative Environmental Effects on Indigenous People and Community Values</p>
<p>✓ consideration of the regional context for traditional use and the value of the project area in that regional context, including alienation of lands from traditional use;</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p>
<p>✓ any changes to environmental quality (e.g. air, water), the sensory environment (e.g. noise, light, visual landscape), or perceived disturbance of the environment (e.g. fear of contamination of water or country foods) that could detract from use of the area or lead to avoidance of the area;</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events) Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values (CEAA 2012 section 5(1)(c))</p>
<p>✓ an assessment of the potential to return affected areas to pre-project conditions to support traditional practices;</p>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment) Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p>

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<ul style="list-style-type: none"> <li>- human health, focusing on effects on health outcomes or risks in consideration of, but not limited to, potential changes in water quality (recreational and cultural uses), availability of country foods (e.g. marine species), and noise exposure. When risks to human health due to changes in one or more of these components are predicted, a complete Human Health Risk Assessment (HHRA) examining all exposure pathways for pollutants of concern may be necessary to adequately characterize potential risks to human health. Where adverse health effects are predicted, any incidental effects such as effects on current use of lands and resources for traditional purposes will also be assessed. The proponent must provide a justification if it determines that an assessment of the potential for contamination of country foods is not required or if some contaminants are excluded from the assessment;</li> </ul>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)</p> <p>Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p> <p>(Recommend scoping out of assessment in Table 5.1)</p> <p>Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values (CEAA 2012 section 5(1)(c))</p>
<ul style="list-style-type: none"> <li>- socio-economic conditions, including, but not limited to:               <ul style="list-style-type: none"> <li>✓ the use of navigable waters</li> <li>✓ commercial fishing (e.g. catch rates, exclusion zones, gear damage or loss, well abandonment, marketability of seafood products) and food security</li> <li>✓ commercial outfitters</li> <li>✓ recreational use</li> </ul> </li> </ul>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)</p> <p>Section 7.3.6: Current Indigenous Use of Lands and Resources for Traditional Purposes (Accidental Events)</p> <p>Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values (CEAA 2012 section 5(1)(c))</p>
<ul style="list-style-type: none"> <li>- physical and cultural heritage, and structures, sites or things of historical, archaeological, paleontological or architectural significance to groups, including, but not limited to:               <ul style="list-style-type: none"> <li>✓ the loss or destruction of physical and cultural heritage</li> <li>✓ changes to access to physical and cultural heritage</li> <li>✓ changes to the cultural value or importance associated with physical and cultural heritage</li> </ul> </li> </ul>	<p>Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values (CEAA 2012 section 5(1)(c))</p>
<ul style="list-style-type: none"> <li>- other effects of changes to the environment on groups should be reflected as necessary.</li> </ul>	<p>Section 6.6: Indigenous People and Community Values (Environmental Effects Assessment)</p> <p>Section 7.3.6: Indigenous People and Community Values (Accidental Events)</p> <p>Section 10.3: Effects of Changes to the Environment on Indigenous People and Community Values (CEAA 2012 section 5(1)(c))</p>

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6.3.8. Other valued components that may be affected as a result of a federal decision or due to effects on federal lands, another province or outside Canada	
If there is the potential for a change to the environment arising as a result of a federal decision(s), for example an authorization under section 138(1) of the <i>Canada-Newfoundland and Labrador Atlantic Accord Implementation Act</i> or section 35 of the <i>Fisheries Act</i> , the EIS should include a description of the specific project components for which a federal authorisation/decision is required, and an assessment of any other VCs (not already covered in other subsections of these guidelines) that may be affected by the changes to the environment caused by these specific project components.	Section 10.4.1: Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions
If there is the potential for the project to result in environmental changes on federal lands (or waters), another province, or another country, then VCs of importance not already identified should be included.	Section 10.2: Changes to the Environment that Would Occur on Federal or Transboundary Lands (CEAA, 2012 section 5(1)(b))
6.3.8.1. Air quality and greenhouse gas emissions	
<ul style="list-style-type: none"> <li>- comparison of anticipated air quality concentration against the <i>Canadian Ambient Air Quality Standards</i> (CAAQS) for fine particulate matter or other relevant federal and/or provincial criteria for other contaminants of potential concern;</li> </ul>	Section 2.6.3.1: Atmospheric Emissions Section 10.4.1: Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions
<ul style="list-style-type: none"> <li>- description of all methods and practices (e.g. control equipment) that will be implemented to minimize and control atmospheric emissions throughout the project life cycle. If the best available technologies are not included in the project design, the proponent will need to provide a rationale for the technologies selected;</li> </ul>	Section 2.6.3.1: Atmospheric Emissions
<ul style="list-style-type: none"> <li>- an estimate of the direct greenhouse gas emissions associated with all phases of the project (i.e. including drilling, well testing and marine and helicopter transportation) as well as any mitigation measures proposed to minimize greenhouse gas emissions. This information is to be presented by individual pollutant and should also be summarized in CO<sub>2</sub> equivalent per year. The proponent is responsible for the following:</li> </ul>	Section 2.6.3.1: Atmospheric Emissions Section 10.4.1: Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions
<ul style="list-style-type: none"> <li>✓ provide an estimate of the contribution of the project emissions at the local, provincial and federal scale, and indicate the category into which the project falls in terms of the relative magnitude of its contribution to greenhouse gas emissions (project with low, medium or high emission rates);</li> <li>✓ justify all estimated emissions and emission factors used;</li> <li>✓ provide the estimation or derivation method, and disclose and describe all assumptions and emission intensity factors used;</li> <li>✓ compare and assess the level of estimated emissions to the regional, provincial and federal emission targets;</li> </ul>	Section 2.6.3.1: Atmospheric Emissions Section 10.4.1: Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>✓ provide information related to the project's electrical demand and sources of electrical power for equipment, i.e. the project's main source and any other additional sources (generators, etc.), as appropriate;</li> </ul>	
<ul style="list-style-type: none"> <li>– changes in ambient noise levels; and</li> </ul>	Section 2.6.3.2: Noise Emissions Section 6.3: Marine Mammals and Sea Turtles
<ul style="list-style-type: none"> <li>– changes in night-time light levels.</li> </ul>	Section 2.6.3.3: Light Emissions
<b>6.3.8.2. Commercial fisheries</b>	
<ul style="list-style-type: none"> <li>– effects of changes to the environment on commercial fishing activities (e.g. effects on fished species affecting fisheries success, displacement from fishing areas (e.g. exclusion zones), gear loss or damage);</li> </ul>	Section 6.2: Commercial Fisheries Section 7.3.2: Commercial Fisheries (Accidental Events)
<ul style="list-style-type: none"> <li>– a discussion of how drilling activities correlates to key commercial fisheries windows, and any potential impacts resulting from overlapping periods;</li> </ul>	Section 6.2: Commercial Fisheries Section 7.3.2: Commercial Fisheries (Accidental Events) Section 9: Cumulative Effects
<ul style="list-style-type: none"> <li>– effects from subsea infrastructure that could be left in place (e.g. wellheads) following abandonment; and</li> </ul>	Section 6.2: Commercial Fisheries
<ul style="list-style-type: none"> <li>– changes to habitat of commercial fish species (e.g. noise, water and sediment quality).</li> </ul>	Section 6.2: Commercial Fisheries Section 7.3.2: Commercial Fisheries (Accidental Events)
<b>6.3.8.3. Special areas</b>	
<ul style="list-style-type: none"> <li>– effects on special areas, including, but not limited to:</li> </ul>	6.5: Special Areas 7.3.5: Special Areas (Accidental Events)
<ul style="list-style-type: none"> <li>✓ use of dispersants, and</li> </ul>	Section 7.1 3.2: Net Environmental Benefit (Response Strategy) Section 7.3.5.3: Assessment of Residual Environmental Effects on Special Areas (Accidental Events)
<ul style="list-style-type: none"> <li>✓ change to habitat quality (e.g. noise, light, water, sediment quality).</li> </ul>	Section 6.5: Special Areas Section 7.3.5: Special Areas (Accidental Events)
<b>6.3.8.4. Human environment</b>	
<ul style="list-style-type: none"> <li>– effects of changes to the environment on health and socio-economic conditions, physical and cultural heritage and any structure, site or thing that is of historical, archaeological, paleontological, or architectural value, including, but not limited to the following, as applicable:                             <ul style="list-style-type: none"> <li>✓ recreational activities;</li> <li>✓ other ocean uses;</li> <li>✓ socio-economic conditions;</li> <li>✓ human health;</li> <li>✓ physical and cultural heritage (e.g. shipwrecks);</li> <li>✓ rural and urban settings that could be affected by routine activities and/or accidents and malfunctions.</li> </ul> </li> </ul>	Section 5.2.2: Selection of Valued Components Section 10.4.2: Effects of Changes to the Environment that are Directly Linked or Necessarily Incidental to Federal Decisions



## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
6.4. Mitigation measures	
Every EA conducted under CEAA 2012 will consider measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project.	Section 11.2: Summary of Mitigation Commitments Section 11.4: Monitoring and Follow-up
The EIS will describe mitigation measures in relation to species and/or critical habitat listed under the <i>Species at Risk Act</i> . These measures will be consistent with any applicable recovery strategy and action plans.	Section 6.1.10.2: Mitigation (Fish and Fish Habitat) Section 6.3.10.2 Mitigation (Marine Mammals and Sea Turtles) Section 6.4.10.2: Mitigation (Migratory Birds)
The EIS will specify the actions, works, minimal disturbance footprint techniques, best available technology, corrective measures or additions planned during the project's various phases to eliminate or reduce the significance of adverse effects. The EIS will also present an assessment of the effectiveness of the proposed technically and economically feasible mitigation measures.	Section 6.1.10.2: Mitigation (Fish and Fish Habitat) Section 6.2.10.2: Mitigation (Commercial Fisheries) Section 6.3.10.2 Mitigation (Marine Mammals and Sea Turtles) Section 6.4.10.2: Mitigation (Migratory Birds) Section 6.5.10.2: Mitigation (Special Areas) Section 6.6.10.2: Mitigation (Indigenous People and Community Values)
The EIS will indicate what other technically and economically feasible mitigation measures were considered and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation measures will be justified.	Section 2.9: Alternative Means of Carrying out the Project
The EIS will identify who is responsible for the implementation of these measures and the system of accountability.	Section 2.7: Husky's Environmental Management System and Environmental Compliance Plan
Where mitigation measures are proposed to be implemented for which there is little experience or for which there is some question as to their effectiveness, the potential risks and effects to the environment should those measures not be effective will be clearly and concisely described.	Section 7.1: Spill Prevention and Response Section 7.3: Accidental Events Environmental Effects Assessment
In addition, the EIS will identify the extent to which technological innovations will help mitigate environmental effects. Where possible, it will provide detailed information on the nature of these measures, their implementation, management and the requirements of the follow-up program.	Section 7.1: Spill Prevention and Response

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<p>6.5. Significance of residual effects</p> <p>After having established the technically and economically feasible mitigation measures, the EIS will present any residual environmental effects of the project on the VCs identified in Section 6.3 above. The residual effects, even if very small or deemed insignificant, will be described.</p>	<p>Section 6.1.10.3: Characterization of Residual Project-related Environmental Effects (Fish and Fish Habitat)</p> <p>Section 6.2.10.3: Characterization of Residual Project-related Environmental Effects (Commercial Fisheries)</p> <p>Section 6.3.10.3: Characterization of Residual Project-related Environmental Effects (Marine Mammals and Sea Turtles)</p> <p>Section 6.4.10.3: Characterization of Residual Project-related Environmental Effects (Migratory Birds)</p> <p>Section 6.5.10.3: Characterization of Residual Project-related Environmental Effects (Special Areas)</p> <p>Section 6.6.10.3: Characterization of Residual Project-related Environmental Effects (Indigenous People and Community Values)</p> <p>Section 7.3: Accidental Events Environmental Effects Assessment</p>
<p>The EIS will then provide a detailed analysis of the significance of the residual environmental effects that are considered adverse following the implementation of mitigation measures, using guidance described in Section 4 of the Agency's Operational Policy Statement, Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012.</p>	<p>Section 6.1.10.3: Characterization of Residual Project-related Environmental Effects (Fish and Fish Habitat)</p> <p>Section 6.2.10.3: Characterization of Residual Project-related Environmental Effects (Commercial Fisheries)</p> <p>Section 6.3.10.3: Characterization of Residual Project-related Environmental Effects (Marine Mammals and Sea Turtles)</p> <p>Section 6.4.10.3: Characterization of Residual Project-related Environmental Effects (Migratory Birds)</p> <p>Section 6.5.10.3: Characterization of Residual Project-related Environmental Effects (Special Areas)</p> <p>Section 6.6.10.3: Characterization of Residual Project-related Environmental Effects (Indigenous People and Community Values)</p>

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<p>The EIS will identify the criteria used to assign significance ratings to any predicted adverse effects. It will contain clear and sufficient information to enable the Agency, technical and regulatory agencies, Indigenous groups, and the public to review the proponent's analysis of the significance of effects. The EIS will document the terms used to describe the level of significance.</p>	<p>Section 6.1.7: Significance Definition (Fish and Fish Habitat)            Section 6.2.7: Significance Definition (Commercial Fisheries)            Section 6.3.7: Significance Definition (Marine Mammals and Sea Turtles)            Section 6.4.7: Significance Definition (Migratory Birds)            Section 6.5.7: Significance Definition (Special Areas)            Section 6.6.7: Significance Definition (Indigenous People and Community Values)</p>
<p>In assessing significance against these criteria, the proponent will, where possible, use relevant existing regulatory documents, environmental standards, guidelines, or objectives such as prescribed maximum levels of emissions or discharges of specific hazardous agents into the environment. The EIS will contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each VC.</p>	<p>Section 6.1.2: Regulatory and Policy Setting (Fish and Fish Habitat)            Section 6.2.2 Regulatory and Policy Setting (Commercial Fisheries)            Section 6.3.2: Regulatory and Policy Setting (Marine Mammals and Sea Turtles)            Section 6.4.2: Regulatory and Policy Setting (Migratory Birds)            Section 6.5.2: Regulatory and Policy Setting (Special Areas)            Section 6.6.2: Regulatory and Policy Setting (Indigenous People and Community Values)</p>
<p>Where significant adverse effects are identified, the EIS will set out the probability (likelihood) that they will occur and describe the degree of scientific uncertainty related to the data and methods used within the framework of this environmental analysis.</p>	<p>Section 6.0: Environmental Effects Assessment            Section 7.3: Accidental Events Environmental Effects Assessment</p>
<p>6.6. Other effects to consider</p>	
<p>6.6.1. Effects of potential accidents or malfunctions</p>	
<p>The proponent will therefore conduct an analysis of the risks of accidents and malfunctions, determine their effects, and present preliminary emergency response measures.</p>	<p>Section 7: Accidental Events</p>
<p>Taking into account the lifespan of different project components, the proponent will identify the probability of potential accidents and malfunctions related to the project, including an explanation of how those events were identified, potential consequences (including the environmental effects as defined in section 5 of CEEA 2012), the plausible worst case scenarios for each accident and malfunction type and the environmental effects of these scenarios. The EIS will identify the measures to be put in place to prepare, prevent for and respond to all such scenarios (e.g. contingency and emergency procedures). The EIS will also describe the existing mechanisms and arrangements with response organizations for emergency response within the spatial extent of the project.</p>	<p>Section 7.1: Spill Prevention and Response            Section 7.2.1: Oil Spill Risk and Probabilities</p>

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<p>This assessment will include an identification of the magnitude of an accident and/or malfunction, including the quantity, mechanism, rate, form and characteristics of the contaminants and other materials likely to be released into the environment during the accident and malfunction events and would potentially result in an adverse environmental effect as defined in section 5 of CEEA 2012. The spatial boundaries will identify the areas that could potentially be affected by a worst-case scenario for each accident type.</p>	<p>Section 7.3: Accidental Events Environmental Effects Assessment</p>
<p>The EIS will describe the safeguards that have been established to protect against such occurrences and the contingency and emergency response procedures that would be put in place if such events do occur.</p>	<p>Section 7.1: Spill Prevention and Response</p>
<p>The effects of accidental spills and blowouts will therefore require assessment in the EIS, including fate and behaviour modelling, and hydrologic trajectory modelling for worst-case large-scale spill scenarios that may occur, including any assumptions, limitations, and formulated hypotheses, accompanied by supporting documentation of methodologies and the cumulative results of the modelling. Pre-SCAT (Shoreline Clean-up Assessment Technique) surveys and mapping for shorelines likely to be affected by a worst-case scenario spill or blowout shall also be provided in the EIS.</p>	<p>Section 7: Accidental Events</p>
<p>A discussion on water depth and its effect on blow-out rate and spill trajectory modelling assumptions must be provided. Where well locations have not yet been identified, points of origin selected for spill trajectory models should be conservative (e.g. selecting a potential location within the proposed drilling area that is closest to a sensitive feature or that could result in greatest effects).</p>	<p>Section 7.2: Accidental Event Probabilities and Models</p>
<p>Based on the results of the spill modelling and analysis in the EIS, an emergency response plan (e.g. oil spill contingency plan) for spills (small and large) and blowouts will be required. At a minimum, an outline of the emergency response plan along with key commitments is required in the EIS. Depending on the outcomes of the effects analysis, specific detail on key components of the plan will be required in the EIS. The proponent should commit to finalizing the plan in consultation with regulators prior to the application of permits.</p>	<p>Section 7.1: Spill Prevention and Response</p>
<p>The EIS shall include a discussion on the use, availability (including nearest location), timing (testing and mobilizing) and feasibility of a capping stack to stop a blowout and resultant spills.</p>	<p>Section 7.1: Spill Prevention and Response</p>
<p>If dispersants are to be used, the proponent shall consider associated environmental effects in the EIS (e.g. effects on marine life) and provide a plan for their use.</p>	<p>Section 7.1.3.2 Net Environmental Benefit</p>

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<p>The environmental effects of other measures outlined in the emergency response plan should also be considered (e.g. effects from burns). A pre-incident Net Environmental Benefit Analysis (NEBA) shall be undertaken to help guide the development of the response methods and plans. The EIS shall include the means by which design and/or operational procedures, including follow-up measures, will be implemented to mitigate significant adverse effects from malfunctions and/or accidental events.</p>	<p>Section 7.3: Accidental Events Environmental Effects Assessment</p>
<p>The potential to encounter shallow gas pockets, and associated implications, should also be discussed.</p>	<p>Section 7.2.1.3: Shallow Gas versus Deep-well Blowout</p>
<p>The EIS should also consider effects of accidents in the near-shore environment (e.g. spills and ship groundings, as applicable) and of spills reaching shore; including effects on species at risk and their critical habitat, colonial nesters and concentrations of birds, and their habitat. The proponent will also demonstrate what long-term actions it would be prepared to undertake to remediate spill-affected lands and waters.</p>	<p>Section 7.3: Accidental Events Environmental Effects Assessment</p>
<p>The EIS should include a summarization of the nature, extent and magnitude of spills, and accidental releases related to existing production installations and past exploration drilling programs in the Newfoundland and Labrador offshore.</p>	<p>Section 7.2.1: Oil Spill Risk and Probabilities</p>
<p>6.6.2. Effects of the environment on the project</p>	
<p>The EIS will take into account how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events (e.g. icebergs, seismic events and submarine landslide potential), could adversely affect the project and how this in turn could result in effects to the environment (e.g. extreme environmental conditions result in malfunctions and accidental events). These events will be considered in different probability patterns (e.g. 5-year event vs. 100-year event). The EIS will provide details of planning, design and construction strategies intended to minimize the potential environmental effects of the environment on the project.</p>	<p>Section 8: Effects of the Environment on the Project</p>
<p>6.6.3. Cumulative effects assessment</p>	
<p>In its EIS, the proponent will:</p> <ul style="list-style-type: none"> <li>– Identify and provide a rationale for the VCs that will constitute the focus of the cumulative effects assessment, focussing the cumulative effects assessment on the VCs most likely to be affected by the project and other project and activities. To this end, the proponent must consider, without limiting itself thereto, the following components likely to be affected by the project: <ul style="list-style-type: none"> <li>✓ fish and fish habitat,</li> <li>✓ migratory birds,</li> <li>✓ marine mammals and marine turtles,</li> <li>✓ species at risk,</li> <li>✓ marine plants,</li> <li>✓ special areas,</li> <li>✓ commercial fisheries,</li> <li>✓ Indigenous peoples,</li> </ul> </li> </ul>	<p>Section 9.1.1.1: Valued Components (Cumulative Effects - Scope)</p>

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>✓ air quality and greenhouse gases, and</li> <li>✓ human environment.</li> </ul>	
<ul style="list-style-type: none"> <li>– Identify and justify the spatial and temporal boundaries for the cumulative effect assessment for each VC selected. The boundaries for the cumulative effects assessments will generally be different for each VC considered. These cumulative effects boundaries will also generally be larger than the boundaries for the corresponding project effects.</li> </ul>	Section 9.1.1.2: Spatial and Temporal Boundaries (Cumulative Effects - Scope)
<ul style="list-style-type: none"> <li>– Identify the sources of potential cumulative effects. Specify other projects or activities that have been or that are likely to be carried out that could cause effects on each selected VC within the boundaries defined, and whose effects would act in combination with the residual effects of the project. This assessment may consider the results of any relevant study conducted by a committee established under section 73 or 74 of CEAA 2012.</li> </ul>	Section 9.2.1: Context for Cumulative Environmental Effects in the Study Area
<ul style="list-style-type: none"> <li>– Assess the cumulative effects on each VC selected by comparing the future scenario with the project and without the project. Effects of past activities (activities that have been carried out) will be used to contextualize the current state of the VC. In assessing the cumulative effects on current use of lands and resources for traditional purposes, the assessment will focus on the cumulative effects on the relevant activity (e.g. fishing).</li> </ul>	Section 9.2: Cumulative Environmental Effects Assessment
<ul style="list-style-type: none"> <li>– Describe the mitigation measures that are technically and economically feasible. The proponent shall assess the effectiveness of the measures applied to mitigate the cumulative effects. In cases where measures exist that are beyond the scope of the proponent's responsibility that could be effectively applied to mitigate these effects, the proponent will identify these effects and the parties that have the authority to act. In such cases, the EIS will summarize the discussions that took place with the other parties in order to implement the necessary measures over the long term.</li> </ul>	Section 9.2: Cumulative Environmental Effects Assessment
<ul style="list-style-type: none"> <li>– Determine the significance of the cumulative effects; and</li> </ul>	Section 9.2: Cumulative Environmental Effects Assessment
<ul style="list-style-type: none"> <li>– Develop a follow-up program to verify the accuracy of the assessment or to dispel the uncertainty concerning the effectiveness of mitigation measures for certain cumulative effects.</li> </ul>	Section 9.2: Cumulative Environmental Effects Assessment
<p><b>7. SUMMARY OF ENVIRONMENTAL EFFECTS ASSESSMENT</b></p>	
<p>The EIS will contain a table summarizing the following key information:</p> <ul style="list-style-type: none"> <li>– potential environmental effects on valued components;</li> <li>– proposed mitigation measures to address the effects identified above; and</li> </ul>	Section 11.1: Summary of Potential Effects Table 11.1: Potential Project-VC Interactions and Effects

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<ul style="list-style-type: none"> <li>- potential residual effects and the significance of the residual environmental effects.</li> </ul>	
<p>In a second table, the EIS will summarize all key mitigation measures and commitments made by the proponent which will more specifically mitigate any significant adverse effects of the project on VCs (i.e. those measures that are essential to ensure that the project will not result in significant adverse environmental effects).</p>	<p>Section 11.2: Summary of Mitigation Commitments Table 11.2: Summary of Commitments</p>
<p><b>8. FOLLOW-UP AND MONITORING PROGRAMS</b></p>	
<p>Considerations for developing a follow-up program include:</p> <ul style="list-style-type: none"> <li>- whether the project will impact environmentally sensitive areas/VCs or protected areas or areas under consideration for protection;</li> <li>- the nature of Indigenous and public concerns raised about the project;</li> <li>- the accuracy of predictions;</li> <li>- whether there is a question about the effectiveness of mitigation measures or the proponent proposes to use new or unproven techniques and technology;</li> <li>- the nature of cumulative environmental effects;</li> <li>- the nature, scale and complexity of the program; and</li> <li>- whether there was limited scientific knowledge about the effects in the EA.</li> </ul>	<p>Section 11.2: Summary of Mitigation Commitments Section 11.4: Monitoring and Follow-up</p>
<p>8.1. Follow-up program</p>	
<p>The EIS shall present a preliminary follow-up program and shall include:</p> <ul style="list-style-type: none"> <li>- objectives of the follow-up program and the VCs targeted by the program;</li> <li>- list of elements requiring follow-up</li> <li>- number of follow-up studies planned as well as their main characteristics (list of parameters to be measured, planned implementation timetable, etc.);</li> <li>- intervention mechanism used in the event that an unexpected deterioration of the environment is observed;</li> <li>- mechanism to disseminate follow-up results among the concerned populations;</li> <li>- accessibility and sharing of data for the general population;</li> <li>- opportunity for the proponent to include the participation of Indigenous groups and stakeholders on the affected territory, during the development and implementation of the program; and</li> <li>- involvement of local and regional organizations in the design, implementation and evaluation of the follow-up results as well as any updates, including a communication mechanism between these organizations and the proponent.</li> </ul>	<p>Section 11.2: Summary of Mitigation Commitments Section 11.4: Monitoring and Follow-up</p>

## HUSKY EXPLORATION DRILLING PROJECT: ENVIRONMENTAL IMPACT STATEMENT

EIS Guidelines	EIS Reference
<p>The discussion / description of follow up and monitoring programs relative to the currently proposed drilling program should include a short summary of the design and results/outcomes of monitoring programs that have been undertaken for previously assessed and/or completed offshore exploration drilling programs in similar environments and how these will be factored into the verification of impact predictions and design of the follow up and monitoring for the current exploration drilling program.</p>	<p>Section 2.7.5: Environmental Effects Monitoring                      Section 4.2.2.1: Environmental Effects Monitoring Results                      Section 4.2.2.2: Most Recent (2014) Environmental Effects Monitoring Results                      Section 6.1.8: Summary of Existing Conditions for Fish and Fish Habitat                      Section 6.2.10.3: Characterization of Residual Project-related Environmental Effects (Commercial Fisheries)</p>
<p>8.2. Monitoring</p>	
<p>The proponent will prepare an environmental monitoring program for all phases of the project.</p>	<p>Section 11.2: Summary of Mitigation Commitments</p>
<p>Specifically, the environmental impact statement shall present an outline of the preliminary environmental monitoring program, including the:</p> <ul style="list-style-type: none"> <li>– identification of the interventions that pose risks to one or more of the environmental and/or valued components and the measures and means planned to protect the environment;</li> <li>– identification of regulatory instruments that include a monitoring program requirement for the valued components;</li> <li>– description of the characteristics of the monitoring program where foreseeable (e.g. location of interventions, planned protocols, list of measured parameters, analytical methods employed, schedule, human and financial resources required);</li> <li>– description of the proponent's intervention mechanisms in the event of the observation of non-compliance with the legal and environmental requirements or with the obligations imposed on contractors by the environmental provisions of their contracts;</li> <li>– guidelines for preparing monitoring reports (number, content, frequency, format) that will be sent to the authorities concerned; and</li> <li>– plans to engage Indigenous groups in monitoring, where appropriate.</li> </ul>	<p>Section 11.2: Summary of Mitigation Commitments                      Section 11.4: Monitoring and Follow-up</p>



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## Abbreviations and Acronyms

\$	dollars (Canadian)
°C	degree Celsius
µg/m <sup>3</sup>	microgram per cubic metre
µPa	micropascal
2D	2-dimensional
3D	3-dimensional
4D	4-dimensional
ADCP	Acoustic Doppler Current Profiler
ASP	Atlantic Seafood Producers
bbl	barrel of oil
BLM	Bureau of Land Management
BOEMRE	Bureau of Ocean Energy Management, Regulation and Enforcement
BOP	blow-out preventer
bopd	barrels of oil per day
BP	British Petroleum / BP Canada Energy Group ULC
CBC	Canadian Broadcasting Company
CCG	Canadian Coast Guard
CEA	cumulative effects assessment
CEA Agency	Canadian Environmental Assessment Agency
CEAA 2012	<i>Canadian Environmental Assessment Act, 2012</i>
CEPA, 1999	<i>Canadian Environmental Protection Act, 1999</i>
CETAP	Cetacean and Turtle Assessment Program
CH <sub>4</sub>	Methane
Chevron	Chevron Canada Resources
CIS	Canadian Ice Service
CGS	Concrete gravity structure
cm	centimetre
cm/s	centimetre per second
CMA	Crab Management Area
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2eq</sub>	carbon dioxide equivalents
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
cP	centipoise (non-SI unit of dynamic viscosity)
CPAWS	Canadian Parks and Wilderness Society

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CPUE	catch per unit effort
CRA	commercial, recreational and Aboriginal
CSEM	controlled source electromagnetic
CTD	conductivity, temperature, and depth
CWS	Canadian Wildlife Service
db	decibel
dB re 1 $\mu$ Pa	decibel relative to a standard reference pressure of 1 $\mu$ Pa
DFO	Fisheries and Oceans Canada
DOM	dissolved organic matter
DP	dynamic positioning
DST	drillstem test
EA	Environmental Assessment
EBSA	Ecologically and Biologically Significant Area
ECCC	Environment and Climate Change Canada
ECRC	Eastern Canada Response Corporation
ECSAS	Eastern Canada Seabirds at Sea
EEM	environmental effects monitoring
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
EL	exploration licence
EMF	electromagnetic field
ENGO	non-government organizations
EPCMP	Environmental Protection and Compliance Monitoring Plan
ExxonMobil	ExxonMobil Canada Ltd.
FAO	Food and Agriculture Organization
FFAW	Fish, Food and Allied Workers
FJGI	Fugro Jacques Geosurveys Inc.
FLO	Fisheries Liaison Officer
FPSO	floating production, storage and offloading
FSC	food, social and ceremonial
ft	feet
g	gram
GBS	gravity-based structure
GEAC	Groundfish Enterprise Allocation Council
GHG	greenhouse gas
GPS	Global Positioning System
GRN	Global Response Network
GT	grosse tonne
HF	high frequency
HFC	high frequency cetaceans

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Hibernia	Canada Hibernia Holding Corp.
HMDC	Hibernia Management and Development Company Ltd.
HOIMS	Husky Operational Integrity Management System
Husky	Husky Oil Operations Limited
HP	Horsepower
Hz	Hertz
IBA	Important Bird Area
IIP	International Ice Patrol
IOGP	International Association of Oil and Gas Producers
IPIECA	Industry Environmental Conservation Association and the International Association of Oil
kHz	kilohertz
km	kilometre
km <sup>2</sup>	square kilometre
km/hr	kilometre per hour
L	litre
LF	low frequency
LFC	low frequency cetaceans
LISA	Labrador Inuit Settlement Area
m	metre
m/s	metres per second
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
m <sup>3</sup> /m <sup>3</sup>	gas-to-oil flow ratio
m <sup>3</sup> /day	cubic metre per day
MARPOL	<i>International Convention for the Prevention of Pollution from Ships</i>
mb	millibar
MBCA	<i>Migratory Birds Convention Act</i>
MF	medium frequency
MFC	medium frequency cetaceans
mg/kg	milligram per kilogram
mg/L	milligram per litre
mm	millimetre
MMO	marine mammal observer
MODU	mobile offshore drilling unit
Murphy Oil	Murphy Atlantic Offshore Oil
N <sub>2</sub> O	nitrous oxide
NAFO	Northwest Atlantic Fisheries Organization
NAO	North Atlantic Oscillation
NEB	National Energy Board



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NEBA	net environmental benefit analysis
NEFSC	Northeast Fisheries Science Center
NL ESA	Newfoundland and Labrador <i>Endangered Species Act</i>
nm	nautical mile
NO <sub>2</sub>	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NPA	<i>Navigation Protection Act</i>
NRA	NAFO Regulatory Area
OA	Operation Authorization
OBIS	Ocean Biogeographic Information System
OCI	Ocean Choice International
OCSG	Offshore Chemical Selection Guidelines
OPS	Operational Policy Statement
OMA	oil-mineral-aggregates
OSRO	oil spill response organization
OSRL	Oil Spill Response Limited
OSV	offshore supply vessel
OWTG	Offshore Waste Treatment Guidelines
PAH	Polycyclic aromatic hydrocarbon
PBGB-LOMA	Placentia Bay-Grand Banks Large Ocean Management Area
PERD	Program of Energy Research and Development
PIROP	Programme Intégré de Recherches sure les Oiseaux Pélagiques
PL	Production Licence
PLONOR	Pose Little or No Risk
PM	particulate matter
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
ppm	parts per million
the Project	Husky Exploration Drilling Project
psi	pounds per square inch
psu	practical salinity unit
PTS	permanent threshold shift
RFMO	Regional Fisheries Management Organization
rms	root mean square
ROV	remotely operated vehicle
RRMT	(Husky) Regional Response Management Team
SAR	Species at Risk
SARA	<i>Species at Risk Act</i>
SBA	Significant Benthic Areas

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SBM	synthetic-based (drilling) mud
SDL	Significant Discovery Licence
SEA	Strategic Environmental Assessment
SEL	sound exposure level
SFA	Shrimp Fishing Area
SO <sub>2</sub>	sulphur dioxide
SOCC	Species of Conservation Concern
SOCP	Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment
SPL	sound pressure level
SPOC	single point of contact
SSAC	Special Status Advisory Committee
Statoil	Statoil Canada Ltd.
Suncor	Suncor Energy Inc.
Sv	Sverdrup (non-SI unit of volume transport of ocean currents)
SVSS	Single Vessel Side Sweep
SWRX	South White Rose Extension Drill Centre
UA	Unit area
US GOM	United States Gulf of Mexico
US OCS	United States Outer Continental Shelf
UXO	Unexploded ordnance
†	tonnes
TAC	total allowable catch
TNASS	Trans North Atlantic Sighting Survey
TPH	total petroleum hydrocarbon
TPM	total particulate matter
TSP	total suspended matter
TSS	total suspended solids
TTS	temporary threshold shifts
TVD	total vertical depth
VC	valued component
VME	vulnerable marine ecosystem
VOC	volatile organic compound
VSP	vertical seismic profiling
WBM	water-based (drilling) mud
WREP	White Rose Extension Project

## 1.0 INTRODUCTION

Husky Oil Operations Limited (Husky) proposes to conduct exploration drilling activities within the area of its existing offshore exploration licences (ELs) on the Grand Banks, located approximately 350 km east of St. John's, Newfoundland and Labrador (NL), in the Northwest Atlantic Ocean.

The Project is defined as a multi-well exploration drilling program on EL 1151, EL 1152, and EL 1155. Activities associated with exploration drilling on the ELs will occur within the Project Area delineated within Figure 1-1. The Project includes up to ten wells to be drilled at any time between 2019 and 2027. This document is an Environmental Impact Statement (EIS) submitted to the Canadian Environmental Assessment Agency (CEA Agency) to fulfil the requirements of the Guidelines issued March 27, 2017, under the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). The Guidelines were revised on April 27, 2017 with a letter from the CEA Agency identifying additional Indigenous groups to be considered in engagement and the environmental assessment (EA) and amended May 31, 2018, to remove EL 1121 and EL 1134 and add EL 1155.

Exploration drilling on Husky's EL 1122 is not considered within the scope of this Project since the licence has previously been drilled under an existing EA approval (CEAR#07-01-28877) by the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) (refer to Section 1.3 for regulatory context).

The Project activities described herein are standard components of an offshore drilling program; however, not all details surrounding the Project have been finalized, such as drilling platform type, selection of service and supply contractors, and location of wells.

### 1.1 Project Overview

The Project will involve activities associated with exploration drilling within EL 1151, EL 1152, and EL 1155 within the Project Area (see Figure 1-1) to the end of the respective licence terms. The number of wells to be drilled is contingent upon geophysical surveys, drilling results, and whether new ELs are acquired. Activities associated with a drilling program may include:

- exploration drilling using a mobile offshore drilling unit (MODU) (either a semi-submersible, drillship or jack-up rig);
- vertical seismic profiling (VSP), wellsite surveys, well testing, well completions, workovers/data logging and geohazard/environmental surveys; and
- decommissioning and abandonment of wells.

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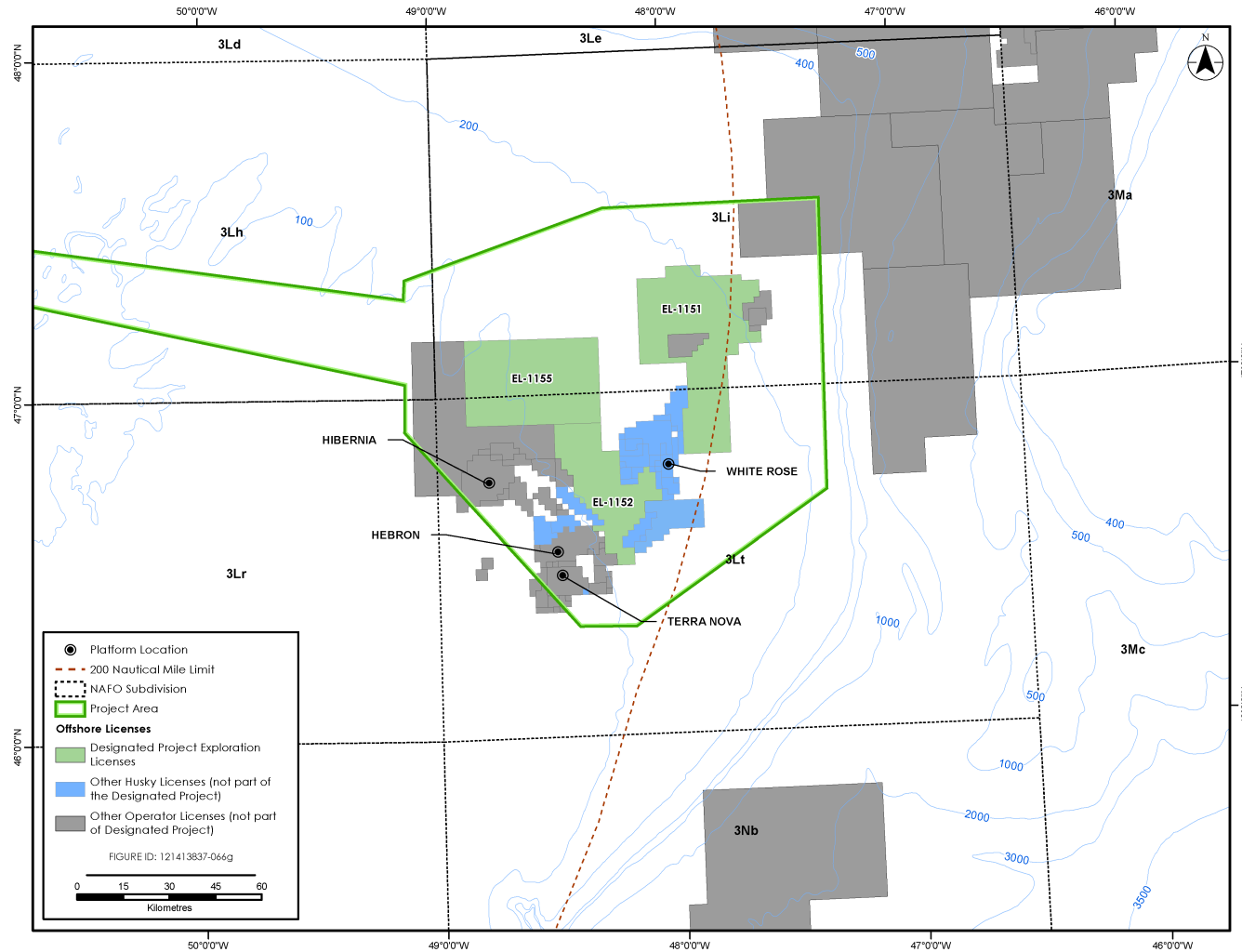


Figure 1-1 Proposed Exploration Drilling Project Area and Designated Project Exploration Licences

These activities will be supported by Husky's existing infrastructure (Harvey's Marine Base, offshore support vessels (OSVs), and helicopters). OSVs and helicopters will continue to use established travel routes to and from the Project Area as they have since 2002. If a different contractor is selected for supply base services over the duration of this Project, all permitting, and approvals will be the sole responsibility of the supplier and is therefore not included in this EIS.

## 1.2 Proponent Information

Husky is a Canadian-based integrated energy company with headquarters in Calgary, Alberta. Through the dedicated efforts of its people, Husky is committed to maximizing returns to its shareholders in an ethical and socially responsible way. Husky is involved in:

- exploration and development of crude oil and natural gas;
- production, purchase, transportation, refining, and marketing of crude oil, natural gas and natural gas liquids, and sulphur; and
- transportation and marketing of refined products.

Atlantic Region operations are managed from the local offices in St. John's, NL, and are supported using established logistics infrastructure and resources in St John's.

Husky is committed to enhancing the business opportunities for Canada and Newfoundland and Labrador consistent with requirements of *Canada-Newfoundland Atlantic Accord Implementation Act* and the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act* (collectively, the Accord Acts).

### 1.2.1 Offshore Experience

Husky is operator of the White Rose field, located approximately 360 km east-southeast of St. John's, 50 km northeast of the Terra Nova floating production, storage, and offloading (FPSO) facility and 50 km east-northeast of the Hibernia Platform. The White Rose development involves an FPSO, with five drill centres (Northern, Central, Southern, North Amethyst, and South White Rose Extension), and subsea flowlines tied-back to the *SeaRose FPSO*. Husky is currently investigating the development of the White Rose Extension Project (WREP), west of the Central Drill Centre, using either a wellhead platform or a drill centre similar to existing drill centres in the White Rose field.

Husky is the operator of several Production Licences (PLs), Significant Discovery Licences (SDLs), and ELs in the Newfoundland and Labrador offshore area, and has conducted exploration in the region since 1982. Husky is the operator of four ELs, two as the sole interest holder (EL 1151 and EL 1152), one in partnership with Equinor (EL 1122) and one in partnership with BP (EL 1155).

Husky has drilled a total of 87 wells, to date. Among all operators, there have been 171 exploration wells and 57 delineation wells in the Newfoundland and Labrador offshore drilled, to date.

### 1.2.2 Commitment to Health, Safety, and the Environment

Husky is strongly committed to protecting its employees, contractors, public, assets, and the environment in which they operate. This commitment is clearly communicated in its Health, Safety, and Environment Policy. Healthy, safe, secure, reliable, injury- and incident-free operations are key to Husky's success. This commitment requires compliance with applicable laws and regulations, facilities that are designed and operated to a high standard and the systematic identification and management of safety, health, security, and environmental risks.

Husky has developed the Husky Operational Integrity Management System (HOIMS) as a systematic approach towards operational excellence. HOIMS includes 14 fundamental elements that contain well-defined aims and expectations; the elements are:

- Leadership, Commitment, and Accountability
- Safe Operations
- Risk Assessment and Management
- Emergency Preparedness
- Reliability and Integrity
- Personnel Competency and Training
- Incident Management
- Environmental Stewardship
- Management of Change
- Information, Documentation, and Effective Communication
- Compliance Assurance and Regulatory Advocacy
- Design, Construction, Commissioning, Operating, and De-Commissioning
- Contracting Services and Materials
- Performance Assessment and Continuous Improvement

Compliance with HOIMS and regulatory requirements is achieved through the implementation of effective management systems and processes as well as the availability of adequate resources. The Atlantic Region's management system includes plans for ice management, waste management, oil spill response, and contingency plans for emergency events.

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### 1.2.3 Proponent Contacts

Husky's Atlantic Region office is in St. John's, Newfoundland and Labrador. All communications regarding the EA for this Project should be sent to the following:

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### 1.2.4 Environmental Assessment Study Team

This EIS was prepared by Husky and a consulting team led by Stantec Consulting Ltd. (Stantec). Stantec is a consulting firm with extensive experience conducting environmental assessments in Newfoundland and Labrador, Canada, and internationally. Stantec was supported by Oceans Ltd., a Newfoundland and Labrador-based firm who provided the description of the existing physical environment and by Jay Hartling on Indigenous engagement, community profiles and assessment.

## 1.3 Regulatory Framework and the Role of Government

### 1.3.1 Offshore Petroleum Regulatory Regime

Oil and gas exploration and development activities in the Newfoundland and Labrador offshore area are regulated by the Accord Acts. The C-NLOPB, established by the joint operation of the Accord Acts, is a prescribed federal authority to which CEAA 2012 applies. In accordance with CEAA 2012, the C-NLOPB and other federal authorities are required to conduct an environmental

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assessment of proposed oil and gas projects before they may issue authorizations, licenses and permits for the purpose of enabling such projects to be developed. The environmental assessment process requires projects be considered in a careful and precautionary manner before federal authorities take action in connection with them, to determine that such projects do not cause significant adverse environmental effects.

Offshore petroleum activities and the C-NLOPB's decision-making processes are governed by a variety of legislation, regulations, guidelines, and memoranda of understanding. Exploration drilling projects require an Operations Authorization under the Accord Acts. Prior to issuing an Operations Authorization, the C-NLOPB requires the following to be submitted:

- an EA Report
- a Canada-Newfoundland and Labrador Benefits Plan
- a Safety Plan
- an Environmental Protection Plan (EPP) (including a waste management plan)
- Emergency Response and Spill Contingency Plans
- appropriate financial security
- appropriate certificates of fitness for the equipment proposed for use in the activities

For each well in the drilling program, a separate Approval to Drill a Well is required. This authorization process requires specific technical details about the drilling program and well design.

There are several regulations under the Accord Acts, which govern specific exploration or development activities. There are also guidelines, some of which have been jointly developed with the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) and National Energy Board (NEB), which are intended to address environmental, health, safety and economic aspects of offshore petroleum exploration and development activities. Of relevance to the environmental assessment of this Project are the Offshore Waste Treatment Guidelines (OWTG) (NEB et al. 2010) and the Offshore Chemical Selection Guidelines (OCSG) for Drilling and Production Activities on Frontier Lands (NEB et al. 2009). Relevant regulations and guidelines that fall under the jurisdiction of the C-NLOPB are summarized in Table 1.1. Additional legislation and regulations relevant to offshore exploration activity are discussed in Section 1.3.3. Husky will comply with all applicable Canadian regulations and the terms and conditions for all permits, authorizations and licenses obtained in support of the Project.



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**Table 1.1 Summary of Key Relevant Offshore Legislation and Guidelines**

<b>Legislation/Guideline</b>	<b>Regulatory Authority</b>	<b>Relevance</b>	<b>Potentially Applicable Permitting Requirement(s)</b>
<i>Canada-Newfoundland Atlantic Accord Implementation Act (S.C. 1987, c. 3) and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act (R.S.N.L. 1990, c. C-2)</i>	Natural Resources Canada / Newfoundland and Labrador Department of Environment and Climate Change	The Accord Acts give the C-NLOPB the authority and responsibility for the management and conservation of the petroleum resources offshore Newfoundland and Labrador in a manner that protects health, safety and the environment while maximizing economic benefits. The Accord Acts are the governing legislation under which various regulations are established to govern specific petroleum exploration and development activities.	The regulatory approvals identified below may be required pursuant to section 142 of the <i>Canada-Newfoundland Offshore Petroleum Resources Accord Implementation Act</i> , section 135 of the <i>Canada-Newfoundland Offshore Petroleum Resources Accord Implementation (Newfoundland and Labrador) Act</i> , and the regulations made under the Accord Acts.
<i>Newfoundland Offshore Petroleum Drilling and Production Regulations (and associated Guidelines)</i>	C-NLOPB	These regulations outline the various requirements that must be adhered to when conducting exploratory and or production drilling for petroleum.	The primary regulatory approvals necessary to conduct an offshore drilling program are an Operations Authorization (Drilling) and a Well Approval (Approval to Drill a Well) pursuant to the Accord Acts and these regulations.
<i>Newfoundland Offshore Certificate of Fitness Regulations</i>	C-NLOPB	These regulations outline the associated requirements for the issuance of a Certificate of Fitness to support an authorization for petroleum exploration and or production drilling in the Newfoundland offshore area.  More specifically, the Regulations are implemented to require that the equipment and/or installation of exploratory or production equipment is fit for the purposes for which it is intended to be used and may be operated safely without posing threat to persons or the environment in a specified location and timeframe.	A Certificate of Fitness will be required in support of the Project.

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Legislation/Guideline	Regulatory Authority	Relevance	Potentially Applicable Permitting Requirement(s)
OWTG	NEB/C-NLOPB/ CNSOPB	<p>These guidelines outline recommended practices for the management of waste materials from oil and gas drilling and production facilities operating in offshore areas regulated by the C-NLOPB and CNSOPB. The OWTG were prepared in consideration of the offshore waste/effluent management approaches of other jurisdictions, as well as available waste treatment technologies, environmental compliance requirements, and the results of environmental effects monitoring programs in Canada and internationally. The OWTG specify performance expectations for the following types of discharges (NEB et al. 2010):</p> <ul style="list-style-type: none"> <li>• emissions to air</li> <li>• produced water and sand</li> <li>• drilling muds and solids</li> <li>• storage displacement water</li> <li>• bilge water, ballast water and deck drainage</li> <li>• well treatment fluids</li> <li>• cooling water</li> <li>• desalination brine</li> <li>• sewage and food wastes</li> <li>• water for testing of fire control systems</li> <li>• discharges associated with subsea systems</li> <li>• naturally occurring radioactive material.</li> </ul>	Compliance with OWTG

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Legislation/Guideline	Regulatory Authority	Relevance	Potentially Applicable Permitting Requirement(s)
OCSG	NEB/C-NLOPB/ CNSOPB	<p>These guidelines provide a framework for chemical selection that minimizes the potential for environmental effects from the discharge of chemicals used in offshore drilling and production operations. The framework incorporates criteria for environmental acceptability that were originally developed by the Oslo and Paris Commissions for the North Sea.</p> <p>An operator must meet the minimum expectations outlined in the OCSG as part of the authorization for any work or activity related to offshore oil and gas exploration and production. The OCSG includes the following requirements (NEB et al. 2009):</p> <ul style="list-style-type: none"> <li>• the quantity of each chemical used, its hazard rating, and its ultimate fate (e.g., storage, discharge, onshore disposal, downhole injection, abandonment in the well, or consumption by chemical reaction) must be tracked and reported</li> <li>• all products to be used as biocides must be registered under the <i>Pest Control Products Act</i> and used in accordance with label instructions</li> <li>• all chemicals other than those with small quantity exemptions must be on the Domestic Substances List of approved substances pursuant to the <i>Canadian Environmental Protection Act, 1999</i> (CEPA, 1999), or must be assessed under the New Substances Notification process to identify any restrictions, controls, or prohibitions</li> </ul>	Compliance with OCSG

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Legislation/Guideline	Regulatory Authority	Relevance	Potentially Applicable Permitting Requirement(s)
		<ul style="list-style-type: none"> <li>• any chemicals included on the List of Toxic Substances under Schedule 1 of CEPA, 1999 must be used in accordance with CEPA, 1999 risk management strategies for the substance and alternatives must be considered for any substances on the CEPA, 1999 Virtual Elimination List</li> <li>• any chemicals intended for discharge to the marine environment must               <ul style="list-style-type: none"> <li>- be included on the Oslo and Paris Commissions Pose Little or No Risk (PLONOR) to the Environment List</li> <li>- meet certain requirements for hazard classification under the Offshore Chemical Notification Scheme</li> <li>- pass a Microtox test (i.e., toxicity bioassay)</li> <li>- undergo a chemical-specific hazard assessment in accordance with UK Offshore Chemical Notification Scheme models</li> <li>- and/or have the risk of its use justified through demonstration to the C-NLOPB that discharge of the chemical will meet OCSG objectives.</li> </ul> </li> </ul>	
Compensation Guidelines Respecting Damage Relating to Offshore Petroleum Activity (Compensation Guidelines)	C-NLOPB/CNSOPB	These guidelines describe compensation sources available to potential claimants for loss or damage related to petroleum activity offshore Newfoundland and Labrador and Nova Scotia; and outline the regulatory and administrative roles which the Boards exercise respecting compensation payments for actual loss or damage directly attributable to offshore operators.	Compliance with Compensation Guidelines

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Environmental Protection Plan Guidelines	C-NLOPB/ CNSOPB/ NEB	These guidelines assist an operator in the development of an environmental protection plan that meets the requirements of the Accord Acts and associated regulations and the objective of protection of the environment from its proposed work or activity.	Compliance with Environmental Protection Plan Guidelines
Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment (SOCP)	Fisheries and Oceans Canada (DFO)/ Environment and Climate Change Canada (ECCC)/ C-NLOPB/CNSOPB	The SOCP specifies the minimum mitigation requirements that must be met during the planning and conduct of marine seismic surveys, in order to reduce effects on life in the oceans. These mitigation measures can be applied to walk-away vertical seismic profiling operations and wellsite surveys. These mitigation requirements focus on planning and monitoring measures to avoid interactions with marine mammal and sea turtle species at risk where possible and reduce adverse effects on species at risk and marine populations.	Compliance with SOCP
Source: Modified from Shell 2014			

## 1.3.2 Environmental Assessment Requirements

In addition to C-NLOPB requirements for environmental assessment noted above, offshore exploration drilling is a designated activity under CEAA 2012 as stated by section 10 of the *Regulations Designating Physical Activities*:

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

EL 1151, EL 1152, and EL 1155 have not had a well drilled during the term of the licence; therefore, the proposed exploration drilling program will constitute the first drilling program in those ELs and CEAA 2012 will apply.

A Project Description was filed by Husky with the CEA Agency on September 13, 2016. Following a public review and comment period on the Project Description, the CEA Agency determined that an EA under CEAA 2012 would be required for the Project and subsequently issued a Notice of Commencement on October 28, 2016 to mark the beginning of the federal EA process. Draft EIS Guidelines were issued by the CEA Agency for public review and comment on October 28, 2016. Final EIS Guidelines were issued on the CEA Agency website on March 27, 2017. In addition to the Final EIS Guidelines, Husky received a letter from the CEA Agency on April 27, 2017, identifying the need to consider additional Indigenous groups that may be affected by the Husky Exploration Drilling Project. The Final Guidelines were amended on May 31, 2018, to remove ELs 1121 and 1134 and add EL 1155 to the scope of the Project.

This EIS has been completed to satisfy the CEAA 2012 requirements and also satisfy the C-NLOPB EA requirements. In addition to the requirements for an EA, a Drilling Program Authorization and one (or more) Approvals to Drill a Well are required from the C-NLOPB.

A provincial-level EA under the *Environmental Protection Act* is not anticipated based on the proposed Project scope.

## 1.3.3 Other Applicable Requirements and Resources

In addition to requirements described in Table 1.1, the Project is subject to various other federal legislative and regulatory requirements (see Table 1.2).

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**Table 1.2 Summary of Key Relevant Federal Legislation**

Legislation	Regulatory Authority	Relevance	Potentially Applicable Permitting Requirement(s)
<i>Canada Oil and Gas Operations Act</i> (R.S., 1985, c. O-7)	Natural Resources Canada	The Act is intended to promote, in respect of the exploration for and exploitation of oil and gas: (a) safety, particularly by encouraging persons exploring for and exploiting oil or gas to maintain a prudent regime for achieving safety; (b) the protection of the environment; (b.1) the safety of navigation in navigable waters; (c) the conservation of oil and gas resources; (d) joint production arrangements; and (e) economically efficient infrastructures.	No specific permitting requirements are anticipated under this legislation although new legislation ( <i>Energy Safety and Security Act; Regulations Establishing a List of Spill-treating Agents</i> ) will have implications for spill prevention and response (see below).
CEPA, 1999	ECCC	CEPA, 1999 pertains to pollution prevention and the protection of the environment and human health to contribute to sustainable development. Among other items, CEPA, 1999 provides a wide range of tools to manage toxic substances, and other pollution and wastes, including disposal at sea.	Disposal at Sea Permits (under the <i>Disposal at Sea Regulations</i> pursuant to CEPA, 1999) have not been required in the past for exploration drilling projects. Therefore, such a permit is not anticipated to be required in support of the Project.
<i>Energy Safety and Security Act</i> (S.C. 2015, c. 4)	Natural Resources Canada	The <i>Energy Safety and Security Act</i> aims to strengthen the safety and security of offshore oil production through improved oil spill prevention, response, accountability, and transparency and amends the Accord Acts and the <i>Canadian Oil and Gas Operations Act</i> with the intent of updating, strengthening and increasing the level of transparency of the liability regime that is applicable to spills and debris in the offshore areas.	Financial Responsibility and Financial Resources requirements have increased. Specific additional relevance to be determined, but likely to have specific implications for spill prevention and response. It establishes a legal framework to permit the safe use of spill-treating agents in specific circumstances.

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Legislation	Regulatory Authority	Relevance	Potentially Applicable Permitting Requirement(s)
<i>Fisheries Act</i>	DFO ECCC (administers section 36, specifically)	The <i>Fisheries Act</i> contains provisions for the protection of fish, shellfish, crustaceans, marine mammals, and their habitats. Under the <i>Fisheries Act</i> , no person shall carry on any work, undertaking, or activity that results in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery, unless this activity has been authorized by the Minister of Fisheries and Oceans. Section 36 of the <i>Fisheries Act</i> pertains to the prohibition of the deposition of a deleterious substance into waters frequented by fish.	Authorization from the Minister of Fisheries and Oceans under section 35(2) of the <i>Fisheries Act</i> has not been required in the past for offshore exploration drilling projects. Therefore, such an authorization is not anticipated to be required in support of the Project.
<i>Migratory Birds Convention Act, 1994</i>	ECCC	Under the <i>Migratory Birds Convention Act, 1994</i> , it is illegal to kill migratory bird species not listed as game birds or destroy their eggs or young. The Act also prohibits the deposit of oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.	The salvage of stranded birds during offshore Project operations would require a handling permit under section 4(1) of the <i>Migratory Birds Regulations</i> pursuant to the <i>Migratory Birds Convention Act, 1994</i> .
<i>Navigation Protection Act (NPA)</i>	Transport Canada	The NPA is intended to protect specific inland and nearshore navigable waters (as identified on the list of "Scheduled Waters" under the NPA) by regulating the construction of works on those waters and by providing the Minister of Transport with the power to remove obstructions to navigation.	No applicable permitting requirements under the NPA have been identified for the Project, as the Project Area is located offshore, outside of the Scheduled Waters specified in the NPA.
<i>Oceans Act</i>	DFO	The <i>Oceans Act</i> provides for the integrated planning and management of ocean activities and legislates the marine protected areas program, integrated management program, and marine ecosystem health program. Marine protected areas are designated under the authority of the <i>Oceans Act</i> .	No applicable permitting requirements under the <i>Oceans Act</i> have been identified for the Project.



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<i>Species at Risk Act</i> (SARA)	DFO/ECCC/ Parks Canada	SARA is intended to protect species at risk in Canada and their "critical habitat" (as defined by SARA). The main provisions of the Act are scientific assessment and listing of species, species recovery, protection of critical habitat, compensation, and permits and enforcement. The Act also provides for development of official recovery plans for species found to be most at risk, and management plans for species of special concern. Under the Act, proponents are required to complete an assessment of the environment and demonstrate that no harm will occur to listed species, their residences or critical habitat or identify adverse effects on specific listed wildlife species and their critical habitat, followed by the identification of mitigation measures to avoid or minimize effects. All activities must comply with SARA. Section 32 of the Act provides a complete list of prohibitions.	Under certain circumstances, the Minister of Fisheries and Oceans may issue a permit under section 73 of SARA authorizing an activity that has potential to affect a listed aquatic species, any part of its critical habitat, or the residences of its individuals. However, such a permit is not anticipated to be required in support of this Project.
Regulations Establishing a List of Spill-treating Agents (SOR/2016-108)	ECCC	The Minister of the Environment has determined that certain spill treating agents (as listed in the Regulations) are acceptable for use in Canada's offshore. As a result, the C-NLOPB is able to authorize the use of one or more of the two spill-treating agent products listed in Schedule 1 of the Regulations to respond to an oil spill.	Specific implications for spill prevention and response, should Husky decide to use dispersants in the unlikely event of an oil spill.
Source: Modified from Shell 2014			

### 1.3.4 Applicable Guidelines

Other applicable guidelines and resources include federal government guidelines, Aboriginal policies and guidelines, and other relevant studies that will be used to inform the EA process. Project activities and components will be located in areas of the marine environment that are under federal jurisdiction and are not subject to provincial or municipal regulatory requirements.

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## 1.3.4.1 Government Guidelines and Resources

In addition to the EIS Guidelines (CEA Agency 2017) developed for the Project (refer to Appendix A), other guidance developed by the CEA Agency and federal government has been used during the preparation of the EIS.

- The Operational Policy Statement, *Determining Whether a Designated Project is Likely to Cause Significant Environmental Effects under the Canadian Environmental Assessment Act, 2012* (CEA Agency 2015a) was considered in defining criteria or established thresholds for determining the significance of residual adverse environmental effects.
- The Operational Policy Statement, *Assessing Cumulative Environmental Effects Under the Canadian Environmental Assessment Act, 2012* (CEA Agency 2016a) was taken into consideration during the development of the cumulative effects assessment scope and methods.
- The Operational Policy Statement, *Addressing "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act, 2012* (CEA Agency 2015b) was consulted with respect to the assessment of Project alternatives (refer to Section 2.9).
- The CEA Agency's *Technical Guidance for Assessing Physical and Cultural Heritage or any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance under the Canadian Environmental Assessment Act, 2012* (CEA Agency 2015c) was consulted with respect to the consideration of effects on heritage and culture.
- The CEA Agency's *Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012* (CEA Agency 2016a) was consulted with respect to the consideration of effects on Indigenous Peoples.
- Health Canada's *Useful Information for Environmental Assessments* (Health Canada 2010) was consulted with respect to the consideration of effects on quality, noise, and Aboriginal health.

Environmental assessment of Newfoundland offshore oil and gas activities started approximately 35 years ago. Husky alone has conducted six EAs of drilling activities. Key environmental studies, relevant to this EA include:

- Eastern Newfoundland Strategic Environmental Assessment (SEA) (Amec 2014)
- White Rose Extension Project Environmental Assessment (Husky Energy 2012a)
- Environmental Assessment of StatoilHydro Canada Ltd. Exploration and Appraisal/ Delineation Drilling Program for Offshore Newfoundland, 2008-2016 (LGL 2008a)
- Husky Delineation/Exploration Drilling Program for Jeanne d'Arc Basin Area, 2008-2017, Environmental Assessment (LGL 2007a)
- Husky White Rose Development Project: New Drill Centre Construction & Operations Program Environmental Assessment (LGL 2006a)
- Husky Lewis Hill Prospect Exploration Drilling Program Environmental Assessment (LGL 2003)
- White Rose Oilfield Comprehensive Study (Husky Oil 2000)
- Suncor Energy's Eastern Newfoundland Offshore Area 2D/3D/4D Seismic Program, 2014-2024 (Suncor Energy 2013)

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- Hebron Project Comprehensive Study Report (ExxonMobil Canada Properties 2011)
- Orphan Basin Exploration Drilling Program Environmental Assessment (LGL 2005a)
- Flemish Pass Drilling Environmental Assessment (JWEL 2002a)

The information from the above reports and other relevant studies will be reviewed and referenced as part of the EIS. While none of the lands have been subject to a regional study as described in section 73 to 77 of CEEA 2012, the C-NLOPB has conducted an SEA (Amec 2014). Sufficient data are available to characterize the existing environment in the Project and Study Areas, and no new field work is proposed to support the EIS.

#### **1.3.4.2 Aboriginal Policies and Guidelines**

Pertinent guidelines which influenced the EA process with respect to Aboriginal engagement include:

- Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (Aboriginal Affairs and Northern Development Canada 2011); and
- Reference Guide: Considering Aboriginal Traditional Knowledge in Environmental Assessments Conducted Under the *Canadian Environmental Assessment Act, 2012* (CEA Agency 2013a).

## 2.0 PROJECT DESCRIPTION

### 2.1 Project Purpose, Rationale, and Need

Husky is proposing to conduct exploration drilling and associated activities within ELs 1151, EL 1152, and EL 1155, adjacent to its existing offshore production operations on the Grand Banks.

Exploration drilling is required to determine the presence, nature, and quantities of the potential hydrocarbon resources within the ELs and to fulfill Husky's work expenditure commitments that must be met over the term of the licence period. The Project is expected to provide Newfoundland and Labrador, and Canada with economic benefits, including a contribution to energy security. Exploration drilling is required to enable oil and gas discoveries and maintain production in order to meet the ongoing demand for energy.

### 2.2 Benefits of the Project

#### 2.2.1 Changes to the Project Since Originally Proposed

The following is a list of the changes that have been made to the Project since originally proposed, including the benefits of these changes to the environment, Indigenous groups, and the public.

- change in Husky's EL portfolio from EL 1121 and 1134 to EL 1151, 1152, and 1155
- change in temporal scope from 2018-2016 to 2019-2027
- addition of transit corridor from the original Project Area to the Port of St. John's (as per Guidelines)
- inclusion of Indigenous People and Community Values as a Valued Component (VC) and assessment of interactions with routine Project activities and accidental events (as per consultation and engagement and Guidelines)

Specifically, by considering environmental effects early in the Project planning phase, the EA can support better decision making and result in many benefits, such as (CEA Agency 2013a):

- avoidance or minimization of adverse environmental effects
- opportunities for public participation and Indigenous engagement
- increased protection of human health
- reduced project costs and delays
- reduced risks of environmental harm or disasters
- increased government accountability and harmonization
- lessened probability of transboundary environmental effects
- informed decisions that contribute to responsible development of natural resources

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### 2.2.2 Benefits of the Project

Husky has demonstrated a strong commitment to ensuring that maximum benefits accrue to Newfoundland and Labrador. Husky has in place policies and procedures to provide Newfoundland and Labrador companies full and fair opportunity to supply goods and services in support of the Project.

The Project is expected to generate economic and social benefits to Canadians and to the Province of Newfoundland and Labrador. The Project is also expected to contribute sharing of technological and scientific knowledge, advancing the understanding of drilling operations in offshore Newfoundland and Labrador.

The following sections describe the predicted environmental, economic, and social benefits of the Project.

#### 2.2.2.1 Energy Diversity and Sustainability

Population growth and increases in per capita income are the key drivers behind the growth in energy demand. The global population is predicted to reach more than 9 billion by 2040 and energy demand has been forecast to increase 48% between 2012 and 2040 (United States Energy Information 2016 (US EIA)). The global energy mix continues to shift as the balance of energy demand and supply varies, economies expand, and contract and energy prices fluctuate. There is a continuing need for reliable and sustainable energy supplies.

One of the goals of Newfoundland and Labrador's Energy Plan, *Focusing Our Energy* (Newfoundland and Labrador Department of Natural Resources 2007), is a secure, reliable, and competitively-priced supply of energy for the current and future needs of the people of Newfoundland and Labrador. The Plan also emphasizes the importance of sustainable economic development. In order to maximize the long-term value of oil and gas, the Province aims to effectively invest the value received from these resources to ensure current and future generations benefit from their development, while providing a fair return to oil and gas companies that participate in resource development. Exploration is a critical activity to enable continued oil and gas discoveries, and subsequently to maintain production that meets global demand for energy.

Husky is committed to responsible corporate citizenship. This includes the integration of social, environmental, and economic considerations into its core businesses while engaging key stakeholders and conducting business in an ethical manner. Mitigating the impact of climate change is an integral part of Husky's business strategy. In the absence of regulatory clarity on climate change, the Climate Change Management Framework, established in 2011, is Husky's main tool in reviewing and approving emissions compliance and emissions reduction strategies, as well as allocating the appropriate resources to ensure emissions are managed according to compliance and reduction objectives. Husky is working to reduce its emissions, including capturing carbon dioxide, reducing fugitive emissions, and mitigating flaring and venting, as well as reducing its energy consumption (Husky Energy 2014).

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Husky is committed to continuous improvement in environmental performance by reducing the impact to land and habitat, air, and water. It meets and strives to exceed regulatory requirements, reflecting its commitment to continuous improvement across all of its operations. One of the purposes of the EIS is to fulfil this commitment through a comprehensive analysis of Project-specific effects, including proposed mitigation measures to reduce adverse effects (Sections 6, 7, and 8).

#### **2.2.2.2 Economic and Employment Benefits**

Newfoundland and Labrador's Energy Plan discusses the importance of the energy industry to the economy of Newfoundland and Labrador. Energy accounts for more of the province's exports than any other sector and the oil and gas industry (and supporting activities) is the largest contributor to provincial Gross Domestic Product. It is estimated that the industry accounted for 25.7% of the province's nominal Gross Domestic Product in 2014 (Newfoundland and Labrador Department of Finance 2016). The offshore oil and gas industry has generated billions of dollars in economic activity for the people of Newfoundland and Labrador through royalties, crown share adjustment payments, offshore accord payments, forfeiture payments from offshore licenses, and rental payment from offshore exploration licenses (C-NLOPB 2016a).

Oil and gas industry employment in Newfoundland and Labrador 2015 was approximately 8,400 person-years, or 3.6% of total provincial employment (Newfoundland and Labrador Department of Finance 2016).

The proposed exploration drilling program will use mobile drilling unit technology. These installations typically employ between 120 and 140 people to support drilling operations. These are skilled, well-paying positions with the majority being held by residents of Canada. The offshore drilling operations also require support services including OSVs and helicopters, as well as a substantial onshore workforce in areas such as marine supply base, warehousing, and support for contracted companies working offshore. The time period covered by the proposed exploration drilling program will represent long-term employment and considerable indirect benefits to the people of Canada and to the people of Newfoundland and Labrador in particular. The exploration drilling program is also a necessary precursor to any potential future development project, which will provide even more substantial long-term employment and positive economic spin-offs, as well as providing a source of revenue for both the Government of Canada and the Government of Newfoundland and Labrador.

Husky owns interests in several exploration, development, and production licenses offshore Newfoundland, and has an office in St. John's, staffed with engineering, technical, management, and administrative support positions. During planning and operations, technical staff directly working on the Project will also work in the St. John's office.

Employment opportunities associated with the Project will be communicated to local and regional audiences through local and social media. Where employment opportunities are identified, all hiring will be carried out according to a transparent hiring procedure. First

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consideration will be given to residents of Newfoundland and Labrador and Canada as a whole, where they have the appropriate competencies.

#### **2.2.2.3 Benefits Plan**

The C-NLOPB was created in 1986 through the Atlantic Accord for the purposes of regulating the oil and gas industry offshore Newfoundland and Labrador. The C-NLOPB administers provisions in the Accord Acts relating to industrial and employment benefits from the development of oil and gas resources in the Newfoundland and Labrador offshore area for Canada in general, and for the Province of Newfoundland and Labrador, in particular.

Before any work or activity is authorized in the offshore area, a Canada-Newfoundland and Labrador Benefits Plan must be approved by the C-NLOPB. In general terms, a benefits plan must describe a plan for the employment of Canadians and members of the labour force of the province; and for providing manufacturers, consultants, contractors, and service companies in the province and other parts of Canada with a full and fair opportunity to participate on a competitive basis in the supply of goods and services.

In accordance with section 45 of the Accord Acts, Husky, as operator, has a benefits plan approved by the C-NLOPB. Husky was required to have an approved benefits plan prior to the approval or authorization of any work or activity in the Newfoundland and Labrador offshore area. This plan describes how Husky provides benefits to Newfoundland and Labrador in terms of procurement opportunities for goods and services and employment opportunities in its operations. It also addresses how Husky has developed and implemented an education, training, research and development expenditure program in Newfoundland and Labrador. The benefits plan also describes how Husky gives first consideration to Canadian residents and organizations and to members of the labour force of the Province of Newfoundland and Labrador, throughout the recruitment and procurement processes.

Consistent with the objectives of the Atlantic Accord, Husky provides Canadian and Newfoundland and Labrador companies with the opportunity to participate in its projects, on a commercially competitive basis. Husky encourages the participation of designated groups (women, Aboriginal peoples, persons with disabilities and members of visible minorities), and corporations or cooperatives owned by them, to supply goods and services. Pre-qualified companies will be required to complete a Canada/Newfoundland and Labrador Benefits Questionnaire at the bid stage (Husky Energy 2016a).

Provincial residents are given first consideration for training and employment opportunities. Canada-Newfoundland and Labrador benefits, as outlined in Husky's White Rose Benefits Plan and subsequent amendments, is an integral part of its operations in the Atlantic Region (Husky Energy 2016a).

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#### 2.2.2.4 Technological Innovations and Scientific Knowledge

In addition to economic and associated community and social benefits, the Project is likely to contribute to technological and scientific knowledge sharing and advancement in Canada and in Newfoundland and Labrador.

The C-NLOPB regulates all oil and gas-related activity in the Newfoundland offshore area. The approval of Husky's White Rose Project by the C-NLOPB and subsequently the Governments of Canada and Newfoundland and Labrador included a requirement that research and development activities be carried out in Newfoundland and Labrador. There is an obligation to spend a certain amount of money (based on a formula defined by the C-NLOPB) in each phase of industry activity, including exploration.

Husky has invested over \$50 million in research and development since approval of the White Rose Project. Initiatives are meant to resolve a scientific or technological uncertainty or make a scientific or technological advancement. Notable technological advancements that have been funded by Husky and developed in Newfoundland and Labrador include work with Virtual Marine Technology on development of training simulators for emergency egress, lifeboat maintenance and operation and evacuation in ice, work with Oceanic Consulting, National Research Council and Memorial University in the development of a hydrodynamic loads and motions simulator for the *SeaRose FPSO*, work with Oceans Ltd on development of sidescan sonar iceberg profiling technology and a Husky-led initiative related to the advancement of Fueltrax fuel efficiency management technology to reduce OSV fuel consumption and emissions.

Husky sits on the Management Board of the Environmental Studies and Research Fund, a national research program that sponsors environmental and social studies. Funding is provided through levies paid by oil and gas companies who have interests in Canada's frontier lands. Priority research areas include spill preparedness and response, fate and effects, impacts of seismic activity on the marine environment, and oil and gas liquids spill fate and effects.

Husky has supported increases in scientific knowledge through funding to the Environmental Studies and Research Fund for numerous studies, including effects of seismic activity on shrimp behaviour and marine dredge disposal – measuring recovery to natural conditions and development of diagnostic bio-indicators for marine life environmental effects assessment.

#### 2.2.2.5 Community and Social Benefits

In addition to the thousands of direct and spin-off jobs in energy-related industries, the sector also generates substantial social benefits that are shared by all residents of Newfoundland and Labrador. Husky's Community Investment program supports charitable organizations in the regions where the Company operates. Priority funding areas include education and training, health and wellness, and community building initiatives.



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Husky works with municipal, First Nations and business leaders, and charitable organizations to identify community needs. The community investment program builds and strengthens meaningful relationships (Husky Energy 2016b). The following are examples of Husky's commitment and investment in local communities in Newfoundland and Labrador:

- A donation to the Canadian Cancer Society, Newfoundland and Labrador to expand an education and prevention program in the province
- A donation to Stella's Circle in Newfoundland and Labrador for improved job skills training
- A contribution to the Heart and Stroke Foundation Newfoundland and Labrador Division, allowing them to install 70 Automated External Defibrillators in schools around the province
- Participation in Pink Shirt Day, including a presentation by Dr. David Dyer regarding tips for parents to prevent and address bullying and a webinar regarding how to address bullying in the workplace
- Monetary support for Women in Resource Development Committee's Techsploration Program and the Women in Science and Engineering Student Summer Employment Program
- Mentoring by female role models to students in schools throughout the province to encourage participation of females in non-traditional jobs
- Providing scholarships to students at Memorial University, College of the North Atlantic and the Coalition of Persons with Disabilities.

Husky also seeks to attract, retain, and engage employees with a strategy that supports a more inclusive workplace. Husky continues to show strong leadership in terms of its diversity activities within the community. It is through these activities that the company has forged strong working relationships with a number of groups that make Husky's diversity achievements possible. Its Diversity and Respectful Workplace Council provides local representation in all areas of operations and organizes employee events to increase awareness and understanding.

Husky holds annual White Rose Diversity Forums to discuss diversity in the context of the White Rose Project, and to focus on the broader considerations of diversity. The eleventh such event was held at Husky Energy Easter Seals House on January 31, 2017, with more than 90 people (employees, contractors, and representatives from community partners) in attendance.

### 2.3 Project Location

The Project Area delineated in Figure 2-1 encompass all activities associated with exploration drilling on ELs 1151, 1152, and 1155. Water depth ranges from approximately 87 to 211 m. The southern boundary is approximately 180 km long; the northern boundary is approximately 140 km long; and each side is approximately 95 km long, with a corridor extending approximately 270 km from the western boundary back to St. John's. These coordinates create a total area of approximately 19,366 km<sup>2</sup>. The corner coordinates of the Project Area are provided in Table 2.1. The corner coordinates for the ELs are provided in Table 2.2. The Designated Project is on Federal Lands.

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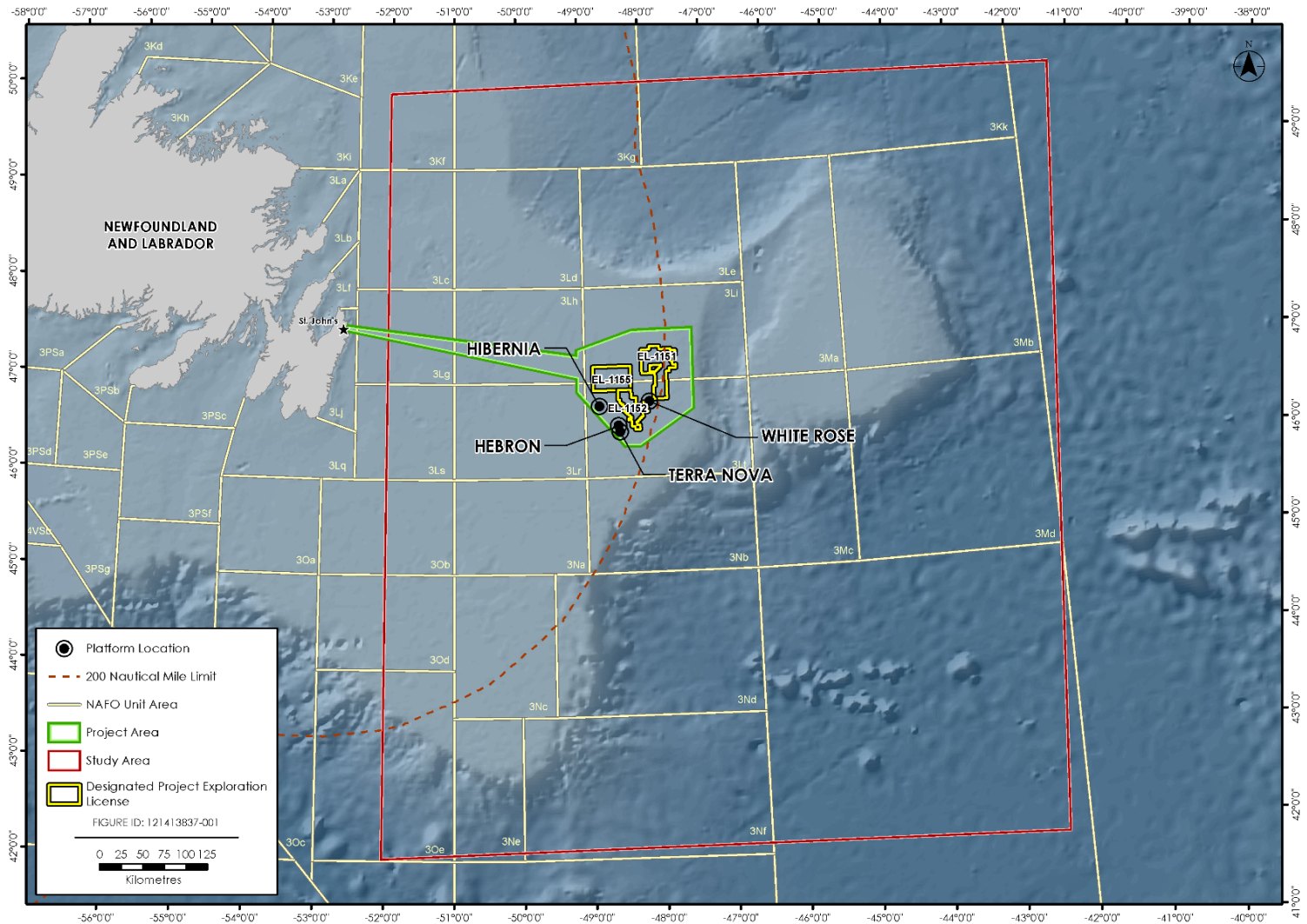


Figure 2-1 Study and Project Areas

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**Table 2.1 Project Area Corner Coordinates (NAD\_1983\_UTM\_Zone\_22N)**

Latitude	Longitude
47° 36' 43.117" N	52° 39' 21.268" W
47° 17' 28.383" N	49° 7' 44.996" W
47° 20' 51.343" N	49° 7' 26.990" W
47° 32' 36.669" N	48° 15' 44.477" W
47° 32' 47.246" N	47° 59' 57.518" W
47° 32' 55.447" N	47° 19' 36.515" W
46° 41' 54.498" N	47° 20' 48.249" W
46° 19' 12.155" N	48° 10' 25.499" W
46° 19' 25.593" N	48° 24' 46.793" W
46° 54' 10.945" N	49° 8' 10.476" W
47° 2' 30.910" N	49° 7' 51.111" W
47° 33' 3.753" N	52° 40' 54.781" W

**Table 2.2 Corner Coordinates for Exploration Licences 1151, 1152, and EL 1155 (NAD\_1398\_UTM\_Zone\_22N)**

EL	Latitude	Longitude
1151	47° 19' 59.651" N	48° 7' 26.012" W
	47° 19' 59.646" N	47° 59' 55.999" W
	47° 21' 59.646" N	47° 59' 55.996" W
	47° 21' 59.641" N	47° 50' 55.981" W
	47° 19' 59.641" N	47° 50' 55.984" W
	47° 19' 59.635" N	47° 40' 25.966" W
	47° 18' 59.635" N	47° 40' 25.967" W
	47° 18' 59.633" N	47° 35' 55.959" W
	47° 15' 59.633" N	47° 35' 55.963" W
	47° 15' 59.634" N	47° 37' 25.966" W
	47° 14' 59.634" N	47° 37' 25.967" W
	47° 14' 59.600" N	47° 37' 54.942" W
	47° 14' 59.600" N	47° 40' 25.900" W
	47° 14' 59.421" N	47° 40' 25.900" W
	47° 14' 59.420" N	47° 40' 25.972" W
	47° 11' 59.637" N	47° 40' 25.976" W
	47° 11' 59.637" N	47° 40' 25.900" W
	47° 11' 59.600" N	47° 40' 25.900" W
	47° 11' 59.600" N	47° 38' 55.973" W
	47° 9' 59.638" N	47° 38' 55.976" W
47° 9' 59.638" N	47° 38' 55.900" W	
47° 9' 59.600" N	47° 38' 55.900" W	

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EL	Latitude	Longitude
	47° 9' 59.600" N	47° 35' 55.971" W
	47° 7' 59.635" N	47° 35' 55.973" W
	47° 7' 59.639" N	47° 41' 55.983" W
	47° 5' 59.640" N	47° 41' 55.986" W
	47° 5' 59.641" N	47° 44' 55.991" W
	46° 48' 59.646" N	47° 44' 56.012" W
	46° 48' 59.653" N	47° 56' 56.000" W
	46° 52' 59.600" N	47° 56' 56.000" W
	46° 56' 59.600" N	47° 56' 56.000" W
	46° 56' 59.600" N	47° 55' 26.000" W
	47° 0' 59.600" N	47° 55' 26.000" W
	47° 0' 59.600" N	47° 55' 26.015" W
	47° 4' 59.648" N	47° 55' 26.010" W
	47° 4' 59.655" N	48° 7' 26.030" W
	47° 9' 59.600" N	47° 59' 56.000" W
	47° 9' 59.600" N	47° 49' 25.900" W
	47° 8' 59.600" N	47° 49' 25.900" W
	47° 8' 59.600" N	47° 50' 55.900" W
	47° 7' 59.600" N	47° 50' 55.900" W
	47° 7' 59.600" N	47° 52' 26.000" W
	47° 6' 59.600" N	47° 52' 26.000" W
	47° 6' 59.600" N	47° 53' 56.000" W
	47° 5' 59.600" N	47° 53' 56.000" W
	47° 5' 59.600" N	47° 59' 56.000" W
1152	46° 54' 59.670" N	48° 29' 56.081" W
	46° 54' 59.663" N	48° 17' 56.061" W
	46° 49' 59.665" N	48° 17' 56.067" W
	46° 49' 59.662" N	48° 13' 26.059" W
	46° 43' 59.664" N	48° 13' 26.066" W
	46° 43' 59.662" N	48° 8' 56.059" W
	46° 45' 59.661" N	48° 8' 56.056" W
	46° 45' 59.660" N	48° 7' 26.054" W
	46° 46' 59.600" N	48° 7' 26.053" W
	46° 46' 59.660" N	48° 7' 26.053" W
	46° 46' 59.659" N	48° 5' 56.050" W
	46° 45' 59.659" N	48° 5' 56.051" W
	46° 45' 59.658" N	48° 4' 26.049" W
	46° 42' 59.659" N	48° 4' 26.052" W
	46° 42' 59.659" N	48° 2' 56.050" W
	46° 40' 59.659" N	48° 2' 56.052" W
	46° 40' 59.662" N	48° 7' 26.060" W
	46° 37' 59.663" N	48° 7' 26.063" W
	46° 37' 59.664" N	48° 8' 56.066" W

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EL	Latitude	Longitude
	46° 36' 59.664" N	48° 8' 56.067" W
	46° 36' 59.665" N	48° 10' 26.070" W
	46° 35' 59.665" N	48° 10' 26.071" W
	46° 35' 59.666" N	48° 11' 56.073" W
	46° 34' 59.666" N	48° 11' 56.075" W
	46° 34' 59.667" N	48° 13' 26.077" W
	46° 32' 59.668" N	48° 13' 26.080" W
	46° 32' 59.668" N	48° 13' 26.000" W
	46° 32' 59.600" N	48° 13' 26.000" W
	46° 32' 59.666" N	48° 10' 26.075" W
	46° 29' 59.667" N	48° 10' 26.078" W
	46° 29' 59.670" N	48° 14' 56.086" W
	46° 31' 59.669" N	48° 14' 56.083" W
	46° 31' 59.669" N	48° 14' 56.100" W
	46° 31' 59.700" N	48° 14' 56.100" W
	46° 31' 59.671" N	48° 17' 56.088" W
	46° 34' 59.670" N	48° 17' 56.085" W
	46° 34' 59.671" N	48° 19' 26.087" W
	46° 35' 59.600" N	48° 19' 26.086" W
	46° 35' 59.670" N	48° 19' 26.086" W
	46° 35' 59.671" N	48° 20' 56.089" W
	46° 36' 59.671" N	48° 20' 56.088" W
	46° 36' 59.669" N	48° 17' 56.082" W
	46° 37' 59.669" N	48° 17' 56.081" W
	46° 37' 59.670" N	48° 19' 26.084" W
	46° 38' 59.669" N	48° 19' 26.083" W
	46° 38' 59.670" N	48° 20' 56.085" W
	46° 39' 59.600" N	48° 20' 56.000" W
	46° 39' 59.670" N	48° 20' 56.084" W
	46° 39' 59.671" N	48° 22' 26.086" W
	46° 40' 59.600" N	48° 22' 26.000" W
	46° 40' 59.600" N	48° 22' 26.085" W
	46° 40' 59.670" N	48° 22' 26.085" W
	46° 40' 59.671" N	48° 23' 56.088" W
	46° 41' 59.600" N	48° 23' 56.087" W
	46° 41' 59.671" N	48° 23' 56.087" W
	46° 41' 59.672" N	48° 25' 26.089" W
	46° 42' 59.671" N	48° 25' 26.088" W
	46° 42' 59.672" N	48° 26' 56.090" W
	46° 43' 59.600" N	48° 26' 56.000" W
	46° 43' 59.600" N	48° 26' 56.089" W
	46° 43' 59.672" N	48° 26' 56.089" W
	46° 43' 59.671" N	48° 25' 26.087" W

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EL	Latitude	Longitude
	46° 45' 59.671" N	48° 25' 26.084" W
	46° 45' 59.671" N	48° 26' 56.087" W
	46° 46' 59.671" N	48° 26' 56.086" W
	46° 46' 59.672" N	48° 28' 26.088" W
	46° 48' 59.671" N	48° 28' 26.086" W
	46° 48' 59.672" N	48° 29' 56.088" W
1155	47° 9' 59.925" N	48° 52' 26.101" W
	47° 9' 59.816" N	48° 17' 56.042" W
	46° 54' 59.823" N	48° 17' 56.060" W
	46° 54' 59.931" N	48° 52' 26.120" W

## 2.4 Project Components

The key Project components are:

- drilling platform; and
- drilling program (up to ten exploration wells).

All logistical support components (e.g., shore base) associated with the Project (refer to Section 2.4.3) are the same as those used for past and/or ongoing offshore oil and gas projects for Husky and other operators.

### 2.4.1 Drilling Platform

A MODU will be used to carry out exploration drilling activities. Three different MODU alternatives may be considered during the duration of the Project:

- semi-submersible;
- drillship; or
- jack-up rig.

The specific MODU to be used for each well has not yet been selected and will depend on suitability and availability. Key components of a MODU may include:

- dynamic positioning (DP) system, available on some units, used to maintain position while drilling. In addition to monitoring the MODU's position, DP systems also monitor environmental conditions with wind sensors, satellite global positioning system, and gyroscopes;
- drilling derrick or mast (housing the drilling equipment);
- maintaining stability through ballast control;
- power supplied through diesel generation;
- helideck with refueling capabilities;
- storage for drilling materials (fuel oil, drilling muds, cement) and equipment (casing);
- storage for subsea equipment (including well control equipment and marine risers);

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- waste management facilities including treatment (for offshore disposal) or temporary storage for shipment to shore;
- emergency and life-saving equipment, including lifeboats and rafts for emergency evacuation; and
- accommodations for up to 200 persons on board, depending on the unit.

As per the *Newfoundland Offshore Petroleum Drilling and Production Regulations* (Section 71), Husky establishes a safety zone around all exploration drilling operations. The safety zone typically extends to 500 m beyond the outermost physical footprint of a DP or jack-up rig, or 50 m around the anchors for a semi-submersible.

### 2.4.1.1 Semi-submersible

Semi-submersible drill rigs (Figure 2-2) can use either a thruster/DP system to maintain position while drilling in deep water or be moored to the seafloor with anchors while drilling in shallower (up to 1,000 m) water. If moored, the anchor chain length can vary up to a maximum of approximately 1,500 m, depending on water depth and the semi-submersible used for drilling. The drill rig is partially submerged using water-filled pontoons, leaving the deck of the rig floating above water, resulting in a platform that remains stable when the seas are rough. Semi-submersibles are either towed into position or are self-propelled.



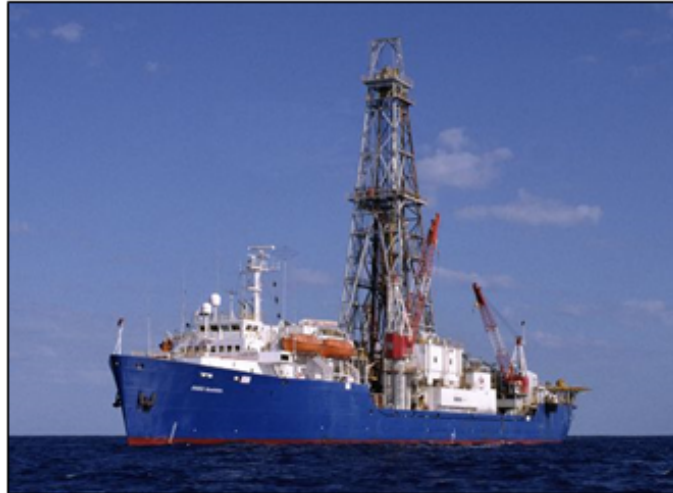
Source: C-NLOPB 2008

**Figure 2-2 Semi-Submersible Drill Rig**

### 2.4.1.2 Drillship

Drillships (Figure 2-3) are self-propelled (i.e., do not need to be towed) and use a DP system to remain on location (therefore, no anchors). They are typically used for drilling in deep and ultra-deep water (up to 3,500 m). Onboard equipment typically includes a drilling derrick and moon pool (i.e., opening in the base of the vessel hull that provides direct water access for drilling operations).

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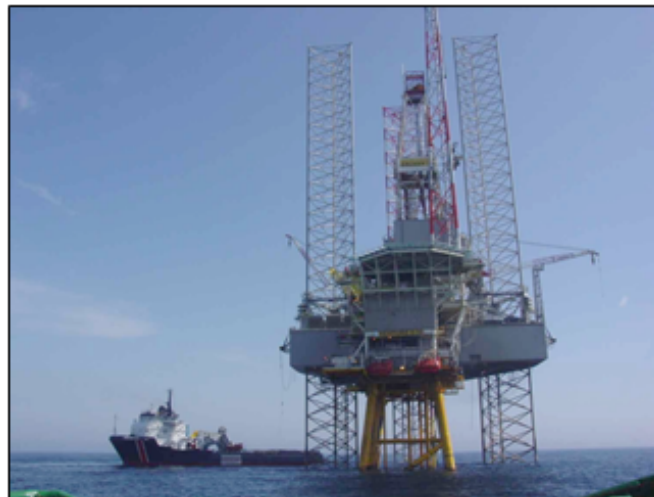


Source: C-NLOPB 2008

**Figure 2-3 Drillship**

### **2.4.1.3 Jack-up Rig**

Jack-up rigs (Figure 2-4) have legs that rest on the seafloor while the unit is in operation; therefore, these stationary drilling platforms do not require a DP system. The legs jack down through the hull of the rig, and as the legs are jacked down to the sea floor, the hull is jacked up to the desired distance above the waterline (known as the air gap). A jack-up rig is limited to water depths within the length of its leg. These rigs are typically used in water depths of less than 120 m and cannot move under their own power (Canadian Association of Petroleum Producers 2001). The jack-up rig's hull floats, so it does not need a barge for transportation.



Source: C-NLOPB 2008

**Figure 2-4 Jack-up Rig**



## 2.4.2 Offshore Exploration Wells

Up to ten single vertical and/or dual side-tracked wells are proposed within the Project Area (see Figure 2-1). The drilling schedule will depend upon exploration priorities and the term of the licences, which extend to 2027 for ELs 1151, 1152, and EL 1155. The number of wells to be drilled is contingent upon geophysical/geotechnical surveys, drilling results, and whether new ELs are acquired. More than one well may be drilled concurrently.

## 2.4.3 Logistical Support

Husky currently maintains logistical support to the *SeaRose FPSO* facility and to MODUs operating within the White Rose field. Therefore, the required infrastructure and support services are already in place to support exploration drilling. Key areas of support during operation includes shore-based marine logistics, warehouse services, personnel transportation by helicopter, OSVs, communications, ice management services, marine fuel supply, waste management, medical services, and weather forecasting.

### 2.4.3.1 Supply Base

The current offshore supply base in St. John's Harbour (currently operated by A. Harvey and Company Ltd.) has been providing support to offshore oil and gas activity in the Newfoundland offshore since the early 1990s. These third-party facilities have the required permits and approvals to undertake activities related to offshore oil and gas projects. No additional modifications or changes to the existing supply base will be required for the purpose of supporting this Project. The current facilities are capable of crane support, bulk storage, logistics management services, and fuel and water storage and delivery. The supply base is an ISO 9001:2008 registered company supplying logistic support services to the offshore oil and gas and marine industries. The Marine Base is certified as a compliant port facility under the *Marine Transportation Security Act*. Husky's OSVs take on supplies and offload waste materials and samples at the site. As a result of the forgoing, the supply base and associated activities are not considered to be within the scope of the Project assessment.

### 2.4.3.2 Offshore Supply Vessels

Husky has a third party contracted to transport supplies (and sometimes personnel) from the supply base to the *SeaRose FPSO* and any MODUs employed. Depending on location of the exploration activity and operating conditions, one to three OSVs may be required. During drilling activities, the OSV responsible for transporting supplies will require one to three trips per week from the supply base to the MODU. One OSV is always on standby with the MODU if it is operating outside the White Rose field. A third OSV may occasionally be required for ice management. OSV requirements for ice management depend upon the severity of the ice season and the physical management option selected (see Section 8.3.3.3). Since 1988, all operators on the Grand Banks adopted a coordinated ice management approach. Under this system, the joint operators share ice information and ice management resources. Ice management maybe required at any time of year, but peak activity is typically during the spring months.

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All OSVs undergo Husky's internal audit process to confirm compliance with Husky, Transport Canada and C-NLOPB requirements. The OSVs are Canadian flagged and adhere to the *Canadian Shipping Act* and its regulations. OSVs will be compliant with the *Eastern Canadian Vessel Traffic Services Zone Regulations* when operating in near-shore or harbour areas and will follow applicable Port Authority requirements when in a port. The Atlantic Canada Standby Vessel Guidelines (C-NLOPB and Canada-Nova Scotia Offshore Petroleum Board (2015)) assist offshore operators to achieve compliance with the Newfoundland Offshore *Petroleum Drilling and Production Regulations*, which pertain to the suitability and capability of OSVs to act as a standby vessel to supply emergency services. OSVs follow established vessel traffic lanes (a straight-line approach to and from port) (see Section 4.3). Once in the vicinity of the Project Area, the OSV will select the route most appropriate for reaching the destination. OSV transit is a routine and ongoing activity among all operators in the region, with existing regulatory regime and best management practices.

According to the St. John's Port Authority, a total of 1,300 to 1,601 vessel transits in and out of the Port of St. John's were recorded annually between 2010 and 2015; of these, OSVs comprised 749 to 1,027 annual transits (R. McCarthy, pers. comm. 2016). Between 2010 and the end of 2017, there were 109 incident disclosures reported by the C-NLOPB (C-NLOPB 2018a). Of these, one occurred on an OSV while in transit (100 km from St. John's); three other incidents occurred on an OSV in-field (i.e., at a production platform or MODU) (C-NLOPB 2018a).

### 2.4.3.3 Helicopter Support

Drilling activities will require helicopter support for crew transfer and light supply transport. During drilling activities, it is anticipated that an average of five trips per week from St. John's to the MODU will be required. Helicopter support will also be used if emergency medical evacuation from the MODU is necessary during drilling activities. Helicopter operations fall under the jurisdiction of Transport Canada Civil Aviation. Their policies and procedures, applicable to flight operations, are conducted under Subpart 704 (Commuter Operations), 703 (Air Taxi Operations) including Subpart 702 (Aerial Work) of the *Canadian Aviation Regulations* using multi-engine helicopters. These Regulations also describe requirements specific to offshore operations flights (Part VI, Subsection 602.64 to 602.66). Helicopters file flight plans and follow set flight paths to and between the fields. Helicopter transit is a routine and ongoing activity among all operators in the region, with existing regulatory regime and best management practices.

## 2.5 Project Activities

The following Project activities are associated with the drilling of the Designated Project:

- well site/geohazard/geotechnical surveys
- drilling by MODU (semi-submersible, drillship, and/or jack-up rig)
- vertical seismic profiling (VSP)
- well testing, well completions, workovers/data logging
- decommissioning and abandonment of wells
- OSV and helicopter operations

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## 2.5.1 Well Site/Geohazard/Geotechnical Surveys

Well site/geohazard/geotechnical surveys are conducted in advance of initiating drilling to identify and avoid unstable areas and hazards or potential hazards (such as seabed instability, obstacles, and shallow gas) in the immediate vicinity of proposed well locations. A small air source array is typically used in a restricted area for a 12- to 18-hour period. Geohazard surveys may also include sonar. Geotechnical surveys are conducted to determine that substrate is suitable for positioning a jack-up rig. A borehole(s) is typically drilled at each potential well site to collect sediment samples and determine *in situ* sediment conditions.

## 2.5.2 Drilling

The casing setting depths and sizes vary for each well, but an overview of the associated steps for offshore drilling is provided below. As the Project is related to exploratory drilling and associated activities, commercial production of oil from these drill sites will not be considered within the scope of this assessment.

The drilling of an exploration well can be broken into riserless drilling (i.e., an open water operation with no conduit for returns back to the MODU) and riser drilling (i.e., closed loop system with fluid returns back to the MODU). Each well is anticipated to take up to approximately 80 days to drill to total vertical depth (TVD), but can be completed much quicker.

Drilling is a 24-hour operation, and the MODU will be lit to the extent required to maintain safe operations. More than one well may be drilled simultaneously.

### 2.5.2.1 Riserless Drilling

There is no closed loop system in place to return drilling fluid back to the MODU during the drilling of the initial sections of the well. As a result, the associated drilling fluids, excess cement, and cuttings are released directly to the seafloor. The initial well sections (conductor and surface strings) are drilled using water-based drilling mud (WBM) to cool the drill bit as well as transport the cuttings to the seabed. Riserless drilling includes:

- drilling the conductor section to approximately 100 m below sea floor;
- inserting the drill string into the conductor pipe and drilling a surface hole section to approximately 800 m to 1,700 m below sea floor. The surface casing is then lowered into the wellbore and cemented in place; and
- placing a blow-out preventer (BOP) stack at the end of the drilling riser; the BOP is connected to the wellhead via the surface casing, creating a connection between MODU and well via the marine riser system.

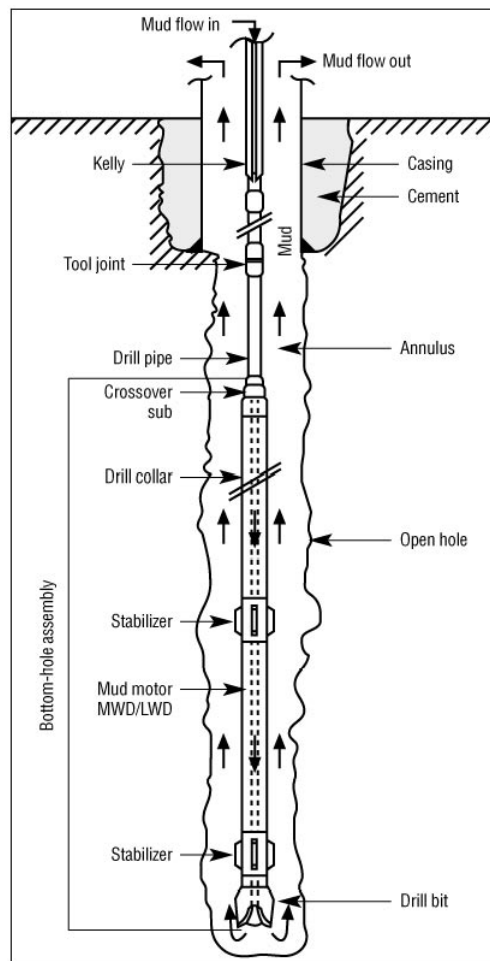
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## 2.5.2.2 Riser Drilling

A riser system is required for drilling the additional sections to target depth. Once the BOP stack is installed, the riser system transports the associated drilling fluids and cuttings back to the MODU for further processing. The remaining well sections are drilled to TVD using either a WBM or synthetic-based drilling mud (SBM). Intermediate casing is set at established depths to reinforce the wellbore, based on assessment of geological and pore pressure parameters. The casing is cemented in place at each intermediate section.

Specific section depths and associated casing sizes have not yet been determined and will require review and approval by the C-NLOPB for each well prior to drilling activities. An illustration of a typical well schematic showing the various sections is provided as Figure 2-5. Technical details are provided to the C-NLOPB as part of an Authorization to Drill a Well application submitted in association with the Project.



Source: Canadian Association of Petroleum Producers 2001

**Figure 2-5 Typical Offshore Well Schematic**

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## 2.5.2.3 Chemical Use and Management

All chemicals used will be screened as per the OCSG for Drilling and Production Activities on Frontier Lands (NEB et al. 2009) and Husky's chemical management system and chemical screening program. The purpose of the OCSG is to reduce the potential environmental effects from the discharge of chemicals used in offshore drilling and production operations (NEB et al. 2009). Husky's Chemical Management Plan is summarized in Section 2.9.2.

The following is a list of maximum amounts of reagents and petroleum products potentially stored on Husky's current MODU:

- drill water: 2,722 m<sup>3</sup>
- fuel oil: 694 m<sup>3</sup>
- base oil: 374 m<sup>3</sup>
- brine: 645 m<sup>3</sup>
- bulk mud (barite): 637 m<sup>3</sup>
- liquid mud storage (WBM or SBM): 543 t

## 2.5.3 Vertical Seismic Profiling

VSP is used to assist in further defining a petroleum resource. The measurements are used to correlate drilled strata with surface seismic data, for obtaining images of higher resolution than surface seismic images and may be used for collecting data ahead of the drill bit.

VSP uses a number of different configurations based on the positioning of the associated source and receivers (hydrophones typically placed within the wellbore), including: zero-offset VSP; offset VSP; and walkaway VSP. An imaging toolstring is run in the wellbore and is anchored at successive points as required to cover the entire recording depth. With a zero-offset VSP, a seismic source array is deployed over the side of the drilling platform. The source is activated three to five times to create a sonic wave that is picked up by the geophones in the toolstring. A walkaway VSP is a type of VSP in which the source is moved to progressively farther offset at the surface and receivers are held in a fixed location, providing more continuous coverage than an offset VSP.

VSP uses equipment similar to that used in seismic operations (i.e., a source array); however, the associated size and volume of the array are much smaller than a traditional surface seismic survey. The VSP is focused around a wellbore; therefore, sound effects are localized. VSP activity will be conducted in consideration of the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment*, according to Husky Procedure EC-M-99-X-PR-00121-001 Vertical Seismic Profiles and Well Site Surveys - Environmental Requirements.

## 2.5.4 Well Testing

The flow testing of hydrocarbons is an activity addressed under sections 34 and 52 of the C-NLOPB's *Newfoundland Offshore Petroleum Drilling and Production Regulations*. Under section 52(2) of the Regulations, an operator may conduct flow testing, but a detailed testing program

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must be submitted to the C-NLOPB for approval. Section 52(4) of the Regulations states that the C-NLOPB "shall approve a flow test if the operator demonstrates that the test will be conducted safely, without pollution and in accordance with good oilfield practices". In addition, the Approval to Drill a Well application, which operators must file with the C-NLOPB in advance of drilling, requires information regarding flow tests for exploration or delineation wells, and references the requirements under the Regulations (section 52).

Wells may be tested by multiple methods to gather additional details on a potential reservoir and to assess the associated commercial potential of a discovery. Two drillstem tests (DST) may be expected to be required from 10 exploration wells. A decision to proceed with a DST on an exploration well may be taken after cuttings, core samples and logs collected during drilling activities are evaluated in conjunction with other considerations. DST may not be conducted immediately following drilling activities but may occur at a later date from a returning MODU or on a subsequent well, as deemed appropriate.

Collecting a fluid sample is a key objective of well testing; DST generally requires perforating casing that has been set across the hydrocarbon-bearing reservoir. Once the casing and reservoir have been perforated, reservoir fluids are allowed to flow into and up the wellbore to the MODU, which will have a temporary DST facility installed to handle the flow of any fluids from the wellbore. The hydrocarbons in the reservoir fluids are measured and separated from any produced water. DST are typically required in one in four or five exploration wells. So, in a 10 well program, this Project may conduct two DSTs. Each DST would last at most for two nights each, but rarely, one well may require two DSTs. A seawater spray through a series of high pressure nozzles is used during a DST to dissipate the heat between the flare and the MODU. This seawater curtain is likely to deter birds near the flare. Once DST is complete, the associated test string is removed from the well and the well is abandoned in accordance with the *Newfoundland Offshore Petroleum Drilling and Production Regulations*.

### 2.5.5 Decommissioning and Abandonment

Well abandonment will follow industry standard abandonment procedures and practices in accordance with C-NLOPB regulations. Two possible scenarios exist for an exploratory well: suspension or abandonment. For a suspended well, a suspension cap is installed to protect the wellhead connector. The suspension cap protrudes above the seabed. Proper notification via Notice to Shipping is made to identify the subsea obstruction until it is removed. To abandon a well, all subsea infrastructure is removed upon completion of the well, so there are no protuberances above the seabed.

Well abandonment would include plugging the well with a cement mixture to isolate the wellbore and removing the wellhead and any associated equipment to below the seafloor with mechanical cutters. The plugs are placed at varying depths in the wellbore and the well casing is typically cut just below the surface of the seal. The seabed is inspected using a remotely operated vehicle (ROV) to confirm no equipment or obstructions remain. Husky's preferred method of wellhead severance and recovery is to use a mechanical cutting system, and well head designs make provision for this kind of removal. Wellheads may be removed by the drill rig or by ROV.

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However, circumstances can arise when mechanical cutting cannot effectively perform the task of wellhead severance. In such instances, shaped charges must be used. If shaped charges must be used, then the design objective will be that only the size of charge needed to achieve the task in hand will be used. Use of charges will only be used after the Drilling Superintendent, the C-NLOPB and any of its relevant advisory agencies thoroughly review the application; approval is granted on a case-by-case basis.

Operators are required to provide detailed plans to the C-NLOPB for monitoring of suspended wells and are also required to provide information regarding the specific proposed methods of suspension or abandonment of each well (Government of Canada 2014). Well abandonment is permanent decommissioning of a well and is designed in compliance with the *Newfoundland Offshore Petroleum Drilling and Production Regulations*. As abandonment is intended to be permanent, there is no requirement for on-going monitoring under the Regulations.

### 2.6 Waste Discharges and Emissions

Offshore drilling operations generate wastes that will be discharged both offshore and onshore, and in the atmosphere. Wastes discharged offshore will be treated as per the OWTG (NEB et al. 2010) (Table 2.3). Operational discharges during drilling will be in compliance with Husky's Environmental Protection and Compliance Monitoring Plan (EPCMP) for the drilling installation. Substances, wastes, residues, or discharges not identified in the EPCMP are not permitted for discharge. Potential activities that may be associated with exploration drilling and discharges are listed in Table 2.4.

In addition to the OWTG, the International Convention for the Prevention of Pollution from Ships (MARPOL) and the *Canada Shipping Act* and its regulations will apply to offshore waste discharges from ships associated with the Project.

As part of the Operations Authorization (OA) required from the C-NLOPB, and as outlined in Sections 6(d) and 9 of the *Newfoundland Drilling and Production Regulations* (Government of Canada 2014), an operator is required to prepare an EPP, which includes detailed information regarding waste management. Some operators choose to prepare separate Waste Management Plans and Environmental Compliance Monitoring Plans (ECMPs) to support their EPPs. EPPs and supporting documents are required to be submitted to the C-NLOPB for their review and approval as part of the OA application.

As outlined in Section 1.4.2 of the OWTG (NEB et al. 2010), the Operators are required to submit monthly compliance reports to the C-NLOPB, which will include volumes of liquid wastes discharged to the marine environment.

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**Table 2.3 Offshore Waste Treatment Discharge Guidelines**

Discharge	Guidelines
WBM	no treatment required
SBM	6.9 g/100 g or less oil on wet solids
Bilge Water	15 mg/L
Deck Drainage	15 mg/L
Well Treatment Fluids	30 mg/L
Ballast Water	15 mg/L
Cooling Water	biocides are screened through operator's chemical management system
Sewage and Food Wastes	macerated to a particle size of 6 mm or less
Source: NEB et al. 2010	

**Table 2.4 Waste Classification**

Potential Activities	Potential Discharges/Emissions/Wastes from All Activities
Power generation and flaring Normal platform operational activities Operation of seawater systems (cooling, firewater) Waste generated (domestic waste, construction waste, hazardous, sanitary waste) Corrosion protection system (use of corrosion inhibitors or biocides (e.g., hypochlorite) flowlines and pipelines) Chemical/fuel management and storage Operation of helicopters and OSVs within the Project Area Well testing Preparation and storage of drilling fluids Management of drilling fluids and cuttings (reconditioning and discharge) <sup>(A)</sup> Management and storage of BOP fluids and well treatment fluids Cementing wells Oily water treatment <sup>(B)</sup> Flare system <sup>(C)</sup> Ongoing wellsite/geohazard/geotechnical/environmental surveys and VSP Operation of ROVs	<ul style="list-style-type: none"> <li>• Drilling fluids and cuttings (WBM and non-aqueous fluid) disposal <sup>(A)</sup></li> <li>• Cement</li> <li>• Air emissions, including flaring</li> <li>• Lights</li> <li>• Bilge water</li> <li>• Deck drainage/open drains</li> <li>• Potable water, fire water, cooling water, and industrial water</li> <li>• Noise (including underwater noise)</li> <li>• Solid, hazardous, domestic, and sanitary waste disposal</li> <li>• Well treatment fluids</li> <li>• Ballast water</li> </ul>
Notes: (A,B) All operational discharges during drilling will be in compliance with Husky's EPCMP for the drilling installation. Any substances, wastes, residues, or discharges not identified in the EPCMP are not permitted for discharge. (C) Small amounts of fuel gas will be used for flare pilots and may also be used to sweep the flare system piping.	



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Wastes that will be disposed of onshore (either through treatment, recycling, and/or disposal) will meet the requirements of Part V (Waste Management; sections 18 to 21) of the Newfoundland and Labrador *Environmental Protection Act* (chapter E-14.2) and will comply with any applicable municipal by-laws. Onshore waste management and disposal will be handled by a third-party contractor.

## 2.6.1 Drilling Waste

All operational discharges during drilling will be in compliance with Husky's EPCMP for the drilling installation, which are based on the OWTG (NEB et al. 2010). Any substances, wastes, residues, or discharges not identified in the EPCMP are not permitted for discharge.

### 2.6.1.1 Drilling Mud and Cuttings

A combination of WBM and SBM will be used to drill a well. Wastes generated from drilling include drilling mud and cuttings that retain a portion of the drilling muds. Drill cuttings are the small pieces of rock, ranging in size from pebbles and sand to fine silts and clays, created when a drill bit penetrates rock. The composition of the drill cuttings is dependent on the stratigraphy of the area, the type of drill bit used, the type of drilling mud used, and the nature of the cuttings treatment applied on the platform or MODU prior to discharge. These factors, along with water depth and current, determine the deposition of the cuttings on the seabed.

Drilling mud is comprised of a carrier liquid containing a solution of suspended solids and dissolved materials. 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 typically 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). The drilling mud for a WBM system would typically include additives such as a polymer suspended in sodium chloride brine with the option of barite (weighting component), an encapsulator, mud loss additives, and glycol.

Until the riser is connected, WBM cuttings are transported up the annulus of the well to the seabed and disposed in place. Once the riser is connected, SBM are generally used and associated cuttings are transported back to the MODU, where they are separated from the drilling fluid for management and disposal through the use of shale shakers, mud recovery units, and centrifuges. Once treated, cuttings will be discharged to the sea in accordance with Husky's EPCMP. The recovered drilling mud is reconditioned and reused. Once spent, SBM is returned to shore for disposal at an approved facility.

#### 2.6.1.1.1 Drill Cuttings Deposition and Dispersion on the Grand Banks

The deposition of drill cuttings has been modelled numerous times within the Project Area. Predicted cuttings deposition for the White Rose field is described in the following sections. Drill cuttings deposition for ELs 1151, 1152, and 1155 is represented by modelling conducted within the

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White Rose field, which is adjacent to the ELs and in similar water depths, oceanographic, and biological environments.

Models of the fate of drill cutting deposition on the Grand Banks were developed by Amec in support of the WREP EA (Husky Energy 2012a). In the model, a transport computation is used to simulate the advection of the dispersed drill cuttings materials in three dimensions through the water column, following release into the sea, until the particles come to rest on the sea bottom. In response to comments on the WREP EA, Husky committed to design and implement a drill cuttings particle size distribution analysis using samples from a well within the White Rose field. Drill cutting samples were collected from Husky well J-05-3 located at the South White Rose Extension Drill Centre (SWRX) during January and February, 2015. These samples were then analyzed for particle size and the data used as new inputs into the cuttings dispersion model. Well hole section sizes, depths and volume used in the model are listed in Table 2.5. Details of the model method and metocean inputs are provided in the 2012 modelling report (Amec 2012), submitted as part of the WREP EA (Husky Energy 2012a) (<https://www.cnlopb.ca/wp-content/uploads/whiterose/drillcut.pdf>). Results of the revised model are presented below.

**Table 2.5 Well Hole Sections**

Well Hole Section	Hole Size (mm)	Casing Setting Depth (mKB) <sup>1</sup>	Volume (m <sup>3</sup> )
Conductor	914.0	230	79
Surface	406.0	1,200	188
Intermediate	311.0	3,290	192
Main	214.0	5,057	77

<sup>1</sup> mKB – metres below kelly bushing

The model is based on WBM cuttings being discharged on drilling days 3 and 20 of the well program for the top two well sections. The majority (87%) of the WBM is composed of very fine sands and smaller (diameters of 0.01 to 0.074 mm) with the remainder being a mix of pebble and sand (diameters of 0.149 to 9.5 mm) (Table 2.6). This is followed on days 40 and 60 of drilling, with the discharge of SBM cuttings associated with the bottom two well sections, where the grain sizes are larger and vary slightly by section (Table 2.6).

**Table 2.6 Drill Cuttings Size Particle Composition**

Well Type	Measured Weight Percent Material						
	Large	Cobble-Pebble	Granule	V. Coarse-Coarse	Med. Sand	Fine-V. Fine	Medium Silt-Clay
1. WBM drill cuttings (conductor and surface sections)		5	5	2	1	2	85
2. SBM drill cuttings (intermediate section)		3.0	10.3	30.8	3.2	2.3	50.4
3. SBM drill cuttings (main section)		0.1	0.2	2.0	28.8	15.6	53.3

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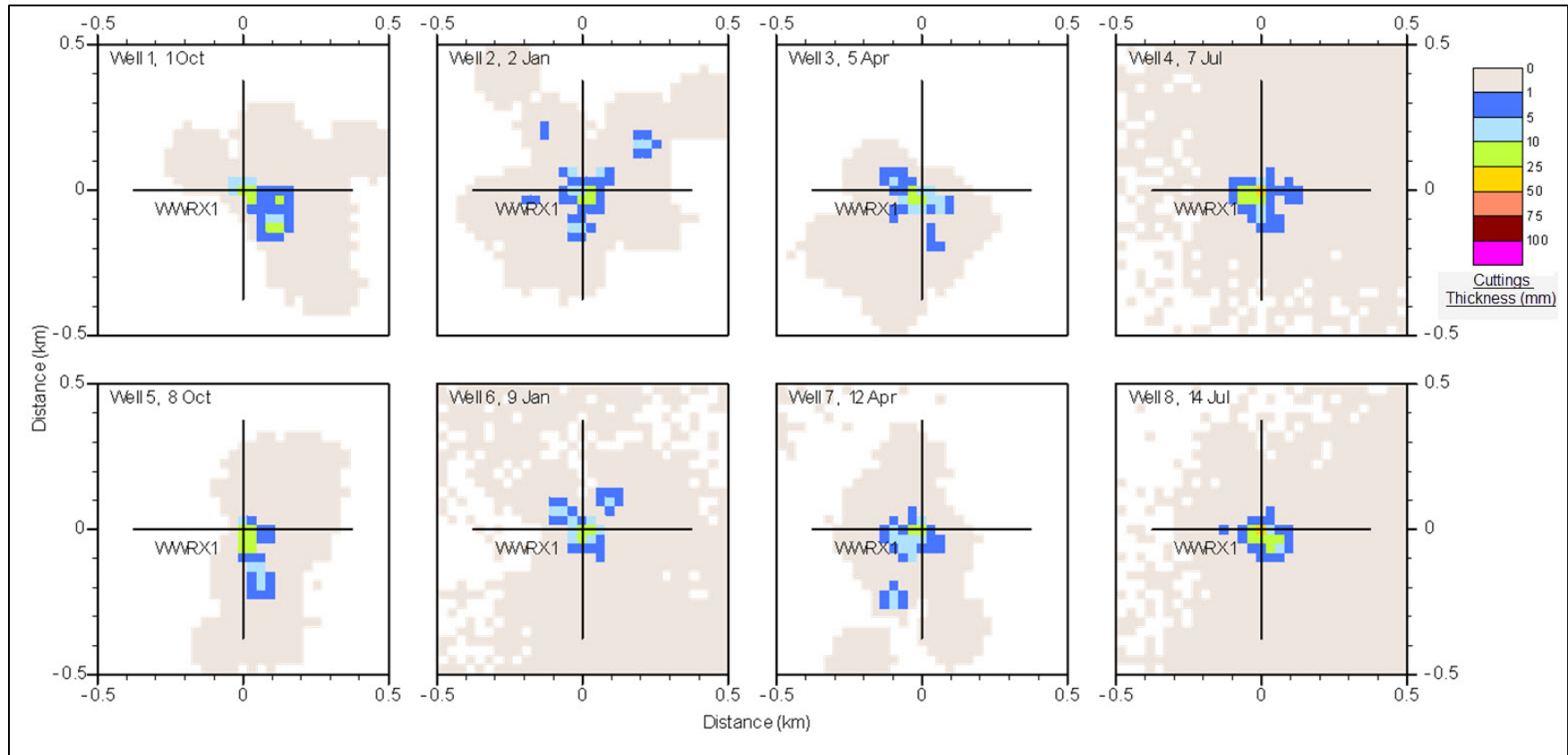
The model output is the total accumulation of WBM and SBM discharge at the end of each well. The total cuttings thickness from each of eight wells drilled individually, starting on different dates to illustrate the effect of seasonal variability, is illustrated in Figures 2-6 to 2-8 (at scales of 0.5, 2, and 12 km, respectively). Dispersion of fine SBM cuttings is affected by seasonal changes in wind-driven surface currents, since the discharge depth modeled is 8 m below the sea surface.

Even though the direction of deposition from the well site changes seasonally, the depositional footprints from each well are similar in that each consists of a well-defined cuttings patch covering an area about 0.03 to 0.06 km<sup>2</sup> and located generally within 100 to 200 m of the drill centre. Each patch is of thicknesses generally in the range of 1 to 10 mm, with portions that are as thick as 25 to 50 mm. Approximately 500 m from the well, there are approximately a dozen additional thin patches of cuttings of thicknesses up to 0.1 mm (Figures 2-7 and 2-8). Outside approximately 500 m from the drill centre, there are approximately a dozen additional thin patches of cuttings of thicknesses up to 0.2 mm. These patches are all approximately 1 km in radius and are scattered uniformly out to approximately 8 to 12 km from the drill centre. The faster settling components of SBMs (cobble-pebbles, granules, and sands) will settle within approximately 5 to 30 minutes following discharge. The fines, silts, and clays will take up to 25 days to settle at a water depth of 120 m. The coarse and medium sands tend to settle from the origin out to approximately 250 and 400 m away, respectively, with some drifting as far as approximately 350 m (coarse sand) and 620 m (medium sand). By approximately 120 m, all the cobble-pebbles have settled and by approximately 140 m, all the granules have settled. Cuttings thicknesses remain below 1 mm past approximately 200 to 250 m from the drill centres.

The model results provide a characterization of the spatial and temporal distribution of drilling discharges from the White Rose field. Allowing for seasonal variability, the model provides an understanding of the magnitude of potential effects. These model results may be applied in environments with analogous biological and physical characteristics. The White Rose field is located in biologically and physically similar environments to the adjacent ELs 1151, 1152, and 1155. Further assessment is provided where there may be risk to sensitive habitat or vulnerable species (Section 4.2.9).

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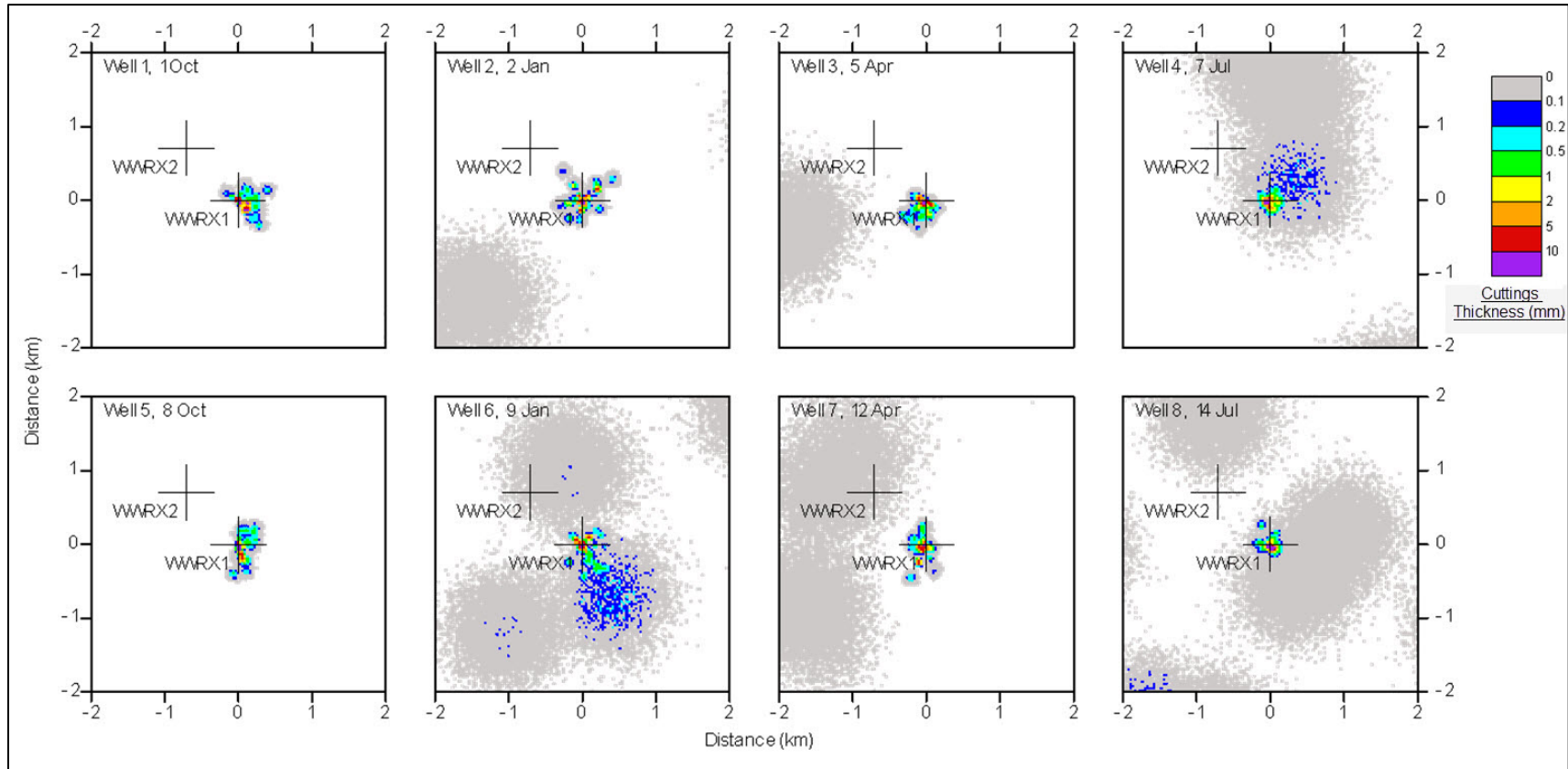


Note: Well start date labelled in the upper left of each plot panel

**Figure 2-6 Deposition of Total Drill Cuttings (WBM+SBM) from Eight Individual Wells, 500 m Scale**

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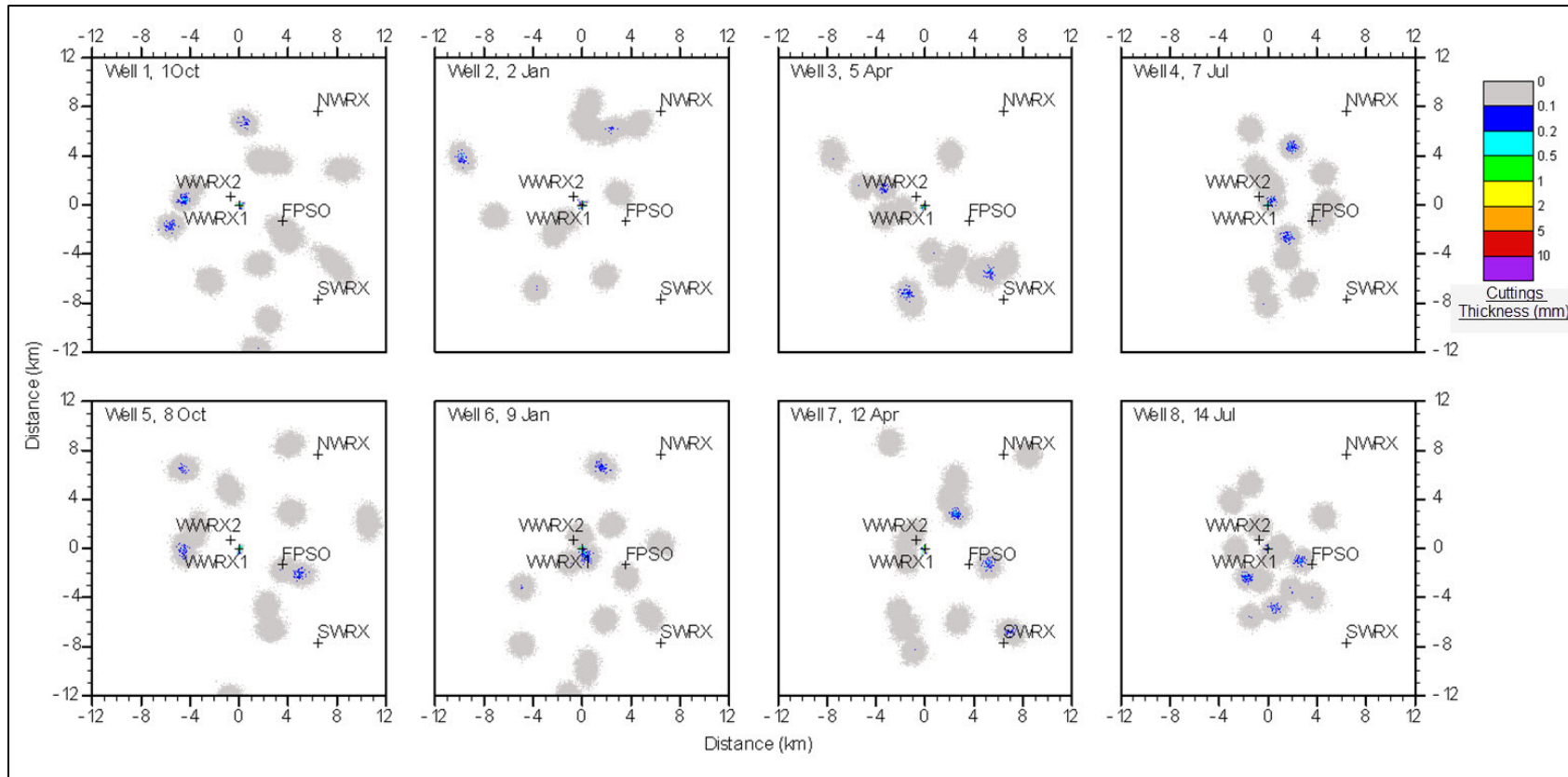


Note: Well start date labelled in the upper left of each plot panel

**Figure 2-7 Deposition of Total Drill Cuttings (WBM+SBM) from Eight Individual Wells, 2 km Scale**

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Note: Well start date labelled in the upper left of each plot panel

**Figure 2-8 Deposition of Total Drill Cuttings (WBM+SBM) from Eight Individual Wells, 12 km Scale**

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### 2.6.2 Other Wastes

Cement is used to set the drill casing strings in place. After the well section is completed, cement is injected within the well bore to establish well integrity and drill string stability. Cement may return to the seafloor from the annulus at an estimated volume of 25 m<sup>3</sup>.

In accordance with Husky's EPCMP, cement is mixed as required for usage based on detailed usage calculations. All chemical components of cement are screened through Husky's Chemical Management System and Chemical Screening Procedure. The chemical screening process selects for chemicals with the least toxicity while achieving technical requirements.

If cement reaches the seafloor (after the well section has been drilled), the volume of cement potentially discharged compared to the volume of drill cuttings that already settled on the seafloor is such that the cement will cover the drill cuttings and not affect additional benthic habitat.

Discharges associated with the operation of a MODU during the drilling program include bilge water, deck drainage, cooling water, produced water, BOP fluid, grey/black water, and ballast water. All operational discharges during drilling will be in compliance with Husky's EPCMP for the drilling installation. Any substances, wastes, residues, or discharges not identified in the EPCMP are not permitted for discharge.

Bilge water and deck drainage from the drill floor will be treated onboard the drilling platform via an oil-water separator and discharged according to the EPCMP. Cooling water associated with the drilling program will be treated. Small amounts of produced water may be created during well testing for hydrocarbons. Produced gas and fluids will be separated on the rig. Gas, oil, and condensate, if present, will be flared on the rig during DST. The flare boom contains a special burner that atomizes the oil and/or gas and mixes it with air. This allows for relatively complete combustion and minimizes air pollution. Produced water will be burned or transported to shore. No produced water will be discharged during exploratory drilling.

To ensure the proper functioning of the BOP, located at the wellhead on the seafloor, for safe well operations a regular program of testing the BOP mechanism is required. This will result in the discharge of a mixture of ethylene glycol and water (typically a 30% ethylene glycol solution) that is used as the hydraulic fluid to actuate the BOP. All chemical components of BOP fluids are screened and approved in accordance with Husky's Chemical Screening Procedure.

Ballast water provides stability for both the MODU and OSVs and is stored in dedicated tanks. Contamination of ballast tanks by hydrocarbons is therefore not possible. The MODU will undergo normal ballast tank flushing procedures prior to transiting into Canadian waters as required under Transport Canada's *Ballast Water Control and Management Regulations* under the *Canada Shipping Act*.

Husky will manage its waste materials in accordance with the Waste Management Plan. Waste generated in the living quarters and galley include food waste and grey/black water, which will

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be macerated to a maximum particle size and treated onboard, then discharged into the ocean in accordance with Husky's EPCMP. Solid waste garbage (and other non-hazardous waste) is returned to shore for recycling/disposal. Hazardous wastes generated during the Project, including any dangerous goods, will be stored on the MODU in designated areas in appropriate containers/containment for transport to shore in compliance with the *Transportation of Dangerous Goods Act* and its regulations. Once onshore, a third-party contractor will collect and dispose of the hazardous waste at an approved facility and in compliance with any federal and provincial regulations and requirements.

### 2.6.3 Emissions

#### 2.6.3.1 Atmospheric Emissions

The primary source of atmospheric emissions for the Project are exhaust emissions from the combustion of fuel during the operation of the MODU, OSVs, and helicopters. Well testing could also result in atmospheric emissions through the potential flaring of produced gas. Flaring activities will be kept to a minimum, reflecting only those tests necessary to determine reservoir parameters (including produced gas and fluids). Emissions released from these activities include greenhouse gases (GHGs), carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM) and volatile organic compounds (VOCs). As the Jeanne d'Arc Basin is not known to contain sour gas, emissions of hydrogen sulphide from flaring are not anticipated.

These emissions will comply with the Newfoundland and Labrador *Air Pollution Control Regulations, 2004*, the National Ambient Air Quality Objectives under *the Canadian Environmental Protection Act*, the Canada Wide Standard for fine particulate matter (particulate matter less than 2.5 microns in diameter, PM<sub>2.5</sub>), and any relevant regulations/limits under MARPOL. Potential flaring will occur in accordance with the Drilling and Production Guidelines (C-NLOPB and CNSOPB 2017).

The fuel source for the MODU, OSVs, and helicopters will be diesel. The diesel fuel used to operate the MODU, OSVs, and helicopters will meet the *Sulphur in Diesel Fuel Regulations*, for each regulated activity.

Estimates of the emissions of criteria air contaminants (CO, SO<sub>2</sub>, NO<sub>x</sub>, PM) and GHGs from the operation of the MODU, OSVs, and helicopters are presented in the following subsections.

##### 2.6.3.1.1 Criteria Air Contaminants

During exploratory drilling, emissions of criteria air contaminants (i.e., CO, SO<sub>2</sub>, NO<sub>x</sub>, PM) will occur from the operation of the MODU, OSVs, and helicopters and through flaring during well testing. In 2012 Stantec prepared an emissions inventory for the operation of a MODU, OSVs, and helicopters and flaring to aid in determining potential environmental effects related to the WREP (Husky Energy 2012a). The estimates prepared for the WREP are presented in Table 2.7. As activities are similar to those proposed for the exploration drilling program, the 2012 emission estimates (Appendix B) are considered representative of the emissions that could be released from the proposed Project. Details pertaining to how these emissions were calculated are provided in the



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Stantec (2012a) report (<https://www.cnlopb.ca/wp-content/uploads/whiterose/airemissions.pdf>).

**Table 2.7 Representative Annual Emissions of Criteria Air Contaminants from Exploration Activities**

Activity	Emissions (tonnes/year)			
	CO	NO <sub>x</sub>	SO <sub>2</sub>	PM
Operation of a MODU	76	285	18	6
Operation of OSVs	81	1,024	841	53
Operation of Helicopters	6	0.41	0.16	0
Flaring	35	6	-	720

Source: Husky Energy 2012a

Air dispersion modelling of the operation of a MODU was conducted to predict ground level concentrations of criteria air contaminants. Predictions were made at individual receptor locations representing the nearest offshore production facilities. A summary of the results of the modelling are presented in Table 2.8. Details pertaining to the methods used to conduct the modelling are contained within the WREP EA (Husky Energy 2012a).

**Table 2.8 Maximum Predicted Ground Level Concentrations for the Operation of a MODU**

Criteria Air Contaminant	Averaging Period	Receptor	Maximum Predicted GLC (µg/m <sup>3</sup> )	NL Air Pollution Control Regulations, 2004/NAAQO, Acceptable Level (µg/m <sup>3</sup> )
NO <sub>2</sub>	1-hour	Hibernia	0.81	400/400
		Terra Nova	1.1	
		White Rose (SeaRose FSPO)	24.5	
	24-hour	Hibernia	0.16	200/200
		Terra Nova	0.3	
		White Rose (SeaRose FSPO)	8.10	
	Annual	Hibernia	0.005	100/100
		Terra Nova	0.009	
		White Rose (SeaRose FSPO)	0.570	
SO <sub>2</sub>	1-hour	Hibernia	0.042	900/900
		Terra Nova	0.058	
		White Rose (SeaRose FSPO)	1.26	
	3-hour	Hibernia	0.026	600/600
		Terra Nova	0.049	
		White Rose (SeaRose FSPO)	0.980	
	24-hour	Hibernia	0.008	300/300
		Terra Nova	0.014	
		White Rose (SeaRose FSPO)	0.420	
	Annual	Hibernia	0.000	60/60
		Terra Nova	0.001	
		White Rose (SeaRose FSPO)	0.029	

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Criteria Air Contaminant	Averaging Period	Receptor	Maximum Predicted GLC ( $\mu\text{g}/\text{m}^3$ )	NL Air Pollution Control Regulations, 2004/NAAQO, Acceptable Level ( $\mu\text{g}/\text{m}^3$ )
CO	1-hour	Hibernia	0.210	35,000/35,000
		Terra Nova	0.300	
		White Rose (SeaRose FSPO)	6.50	
	8-hour	Hibernia	0.072	15,000/15,000
		Terra Nova	0.140	
		White Rose (SeaRose FSPO)	3.80	
TPM	1-hour	Hibernia	0.020	-
		Terra Nova	0.030	
		White Rose (SeaRose FSPO)	0.560	
	24-hour	Hibernia	0.004	120/120
		Terra Nova	0.006	
		White Rose (SeaRose FSPO)	0.180	
	Annual	Hibernia	0.00	60/70
		Terra Nova	0.00	
		White Rose (SeaRose FSPO)	0.013	
PM <sub>10</sub>	1-hour	Hibernia	0.010	-
		Terra Nova	0.020	
		White Rose (SeaRose FSPO)	0.450	
	24-hour	Hibernia	0.003	50/25
		Terra Nova	0.005	
		White Rose (SeaRose FSPO)	0.150	
PM <sub>2.5</sub>	1-hour	Hibernia	0.010	-
		Terra Nova	0.020	
		White Rose (SeaRose FSPO)	0.390	
	24-hour	Hibernia	0.003	25/15
		Terra Nova	0.004	
		White Rose (SeaRose FSPO)	0.130	
Source: Husky Energy 2012a NO <sub>2</sub> = nitrogen dioxide PM <sub>10</sub> = particulate matter less than 10 microns in diameter TPM = total particulate matter				

Results from the air dispersion modelling for the operation of a typical MODU were shown to meet the Newfoundland and Labrador *Air Pollution Control Regulations, 2004*, the NAAQ objectives, and the Canada Wide Standard for PM<sub>2.5</sub> (28  $\mu\text{g}/\text{m}^3$  for 24-hour; 10  $\mu\text{g}/\text{m}^3$  for annual).

## 2.6.3.1.2 Cumulative Effects of Normal Mobile Offshore Drilling Unit Operation

The maximum predicted 1-hour ground level concentrations at each of the three discrete installations for CO, NO<sub>2</sub> and SO<sub>2</sub> for the cumulative operation of the MODU are shown in Table 2.9.

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**Table 2.9 Maximum Predicted 1-Hour Ground Level Concentrations for Cumulative Mobile Offshore Drilling Unit Operation**

Receptor	CO ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	TPM ( $\mu\text{g}/\text{m}^3$ )	PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )
White Rose	6.23	23.6	1.59	0.57	0.50	0.49
Hibernia	3.14	15.0	0.056	0.69	0.69	0.69
Terra Nova	1.94	34.3	0.076	0.37	0.37	0.37
NL Regulatory Limit	35,000	400	900	-	-	-

The maximum predicted 3-hour ground level concentrations at each of the three discrete installations for SO<sub>2</sub> for the cumulative MODU operation are listed in Table 2.10.

**Table 2.10 Maximum Predicted 3-Hour Ground Level Concentrations for Cumulative Mobile Offshore Drilling Unit Operation**

Receptor	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )
White Rose	1.2
Hibernia	0.034
Terra Nova	0.065
NL Regulatory Limit	600

The maximum predicted 8-hour ground level concentrations at each of the three discrete installations for CO for the cumulative MODU operation are included in Table 2.11.

**Table 2.11 Maximum Predicted 8-Hour Ground Level Concentrations for Cumulative Mobile Offshore Drilling Unit Operation**

Receptor	CO ( $\mu\text{g}/\text{m}^3$ )
White Rose	3.7
Hibernia	0.70
Terra Nova	1.4
NL Regulatory Limit	15,000

The maximum predicted 24-hour ground level concentrations at each of the three discrete installations for NO<sub>2</sub> and SO<sub>2</sub> for the cumulative MODU operation are shown in Table 2.12.

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**Table 2.12 Maximum Predicted 24-Hour Ground Level Concentrations for Cumulative Mobile Offshore Drilling Unit Operation**

Receptor	NO <sub>2</sub> (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	TPM (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>2.5</sub> (µg/m <sup>3</sup> )
White Rose	8.0	0.54	0.18	0.15	0.13
Hibernia	3.9	0.011	0.07	0.07	0.07
Terra Nova	18.1	0.018	0.11	0.11	0.11
NL Regulatory Limit	200	300	120	50	25

The maximum predicted annual ground level concentrations at each of the three discrete installations for NO<sub>2</sub> and SO<sub>2</sub> for the cumulative MODU operation are shown in Table 2.13 and maximum predicted annual ground level concentration for NO<sub>2</sub> illustrated in Figure 2-9.

**Table 2.13 Maximum Predicted Annual Ground Level Concentrations for Cumulative Mobile Offshore Drilling Unit Operation**

Receptor	NO <sub>2</sub> (µg/m <sup>3</sup> )	TPM (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )
White Rose	0.85	0.021	0.037
Hibernia	0.15	0.005	0.0004
Terra Nova	0.54	0.010	0.0006
NL Regulatory Limit	100	60	60

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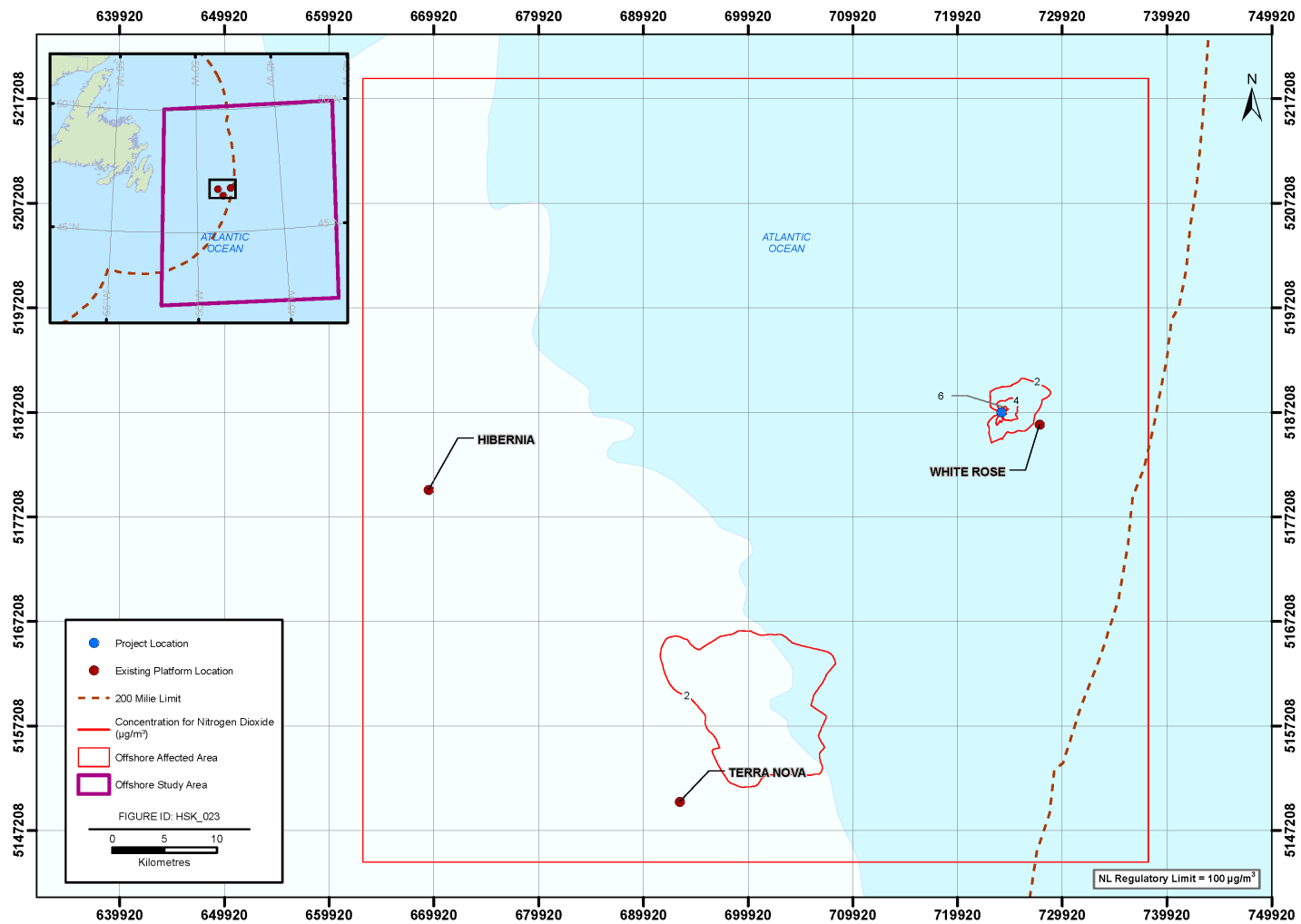


Figure 2-9 Maximum Predicted Annual Ground Level Concentration for Nitrogen Dioxide, µg/m<sup>3</sup> – Cumulative Operation Mobile Offshore Drilling Unit

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### 2.6.3.1.3 Greenhouse Gas Emissions

Emissions of GHGs will also occur from the operation of a MODU, OSVs, helicopters and through flaring. Estimates of GHG emissions from these activities were calculated and are presented in Table 2.14. Details pertaining to how these emissions were calculated are provided in the Stantec (2012a) report (<https://www.cnlopbc.ca/wp-content/uploads/whiterose/airemissions.pdf>) (Appendix B). The estimates provided in Table 2.14 are annual rates and are based on continuous operation of the MODU, and likely represents a worst-case scenario.

**Table 2.14 Representative Greenhouse Gas Emissions from Offshore Exploration Activities**

Activity	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2eq</sub> (tonnes/year)
MODU Operation	14,800	0.83	1.01	15,122
Operation of Support Vessel	47,485	0 <sup>(A)</sup>	0 <sup>(A)</sup>	47,485
Operation of Helicopter	403	0.01	0.04	415
Flaring	11,139	0.01	0.01	11,142
Total	73,827	0.85	1.06	74,164

Source: Husky Energy 2012a  
CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2eq</sub> = carbon dioxide equivalent units  
(A) Emissions for CH<sub>4</sub> and N<sub>2</sub>O have been determined to be minimal

An estimate of emissions of GHGs (CO<sub>2eq</sub>) from the operation of the MODU, OSV, and helicopter and flaring during the multi-well exploration drilling could be 74,164 tonnes CO<sub>2eq</sub>/yr (see Table 2.14). These emissions represent 0.70% of the total reported provincial GHG emissions (10,600,000 tonnes CO<sub>2eq</sub>) for 2014 and 0.01% of the national emissions (732,000,000 tonnes CO<sub>2eq</sub>) (Environment and Climate Change Canada 2016).

### 2.6.3.2 Noise Emissions

Atmospheric and underwater noise is generated from various activities associated with exploration drilling, including the operation of helicopters, OSVs and the drill rig. Sound is generated on a continuous basis from a MODU from operation of the drill string and drill bit, vibration of and mechanical sounds from the MODU structure and operation of the DP system. A MODU can produce sound pressure levels (SPLs) ranging from 130 to 190 dB re 1 µPa @ 1 m RMS SPL (peak frequency 10 to 10 kHz) (Richardson et al. 1995, in BP 2016; Hildebrand 2005, in BP 2016; OSPAR 2009, in BP 2016). Mean sound levels from a representative operating semi-submersible drill rig have been measured at 13 dB above baseline levels (Statoil 2017). Sound from MODUs used in the Canadian Arctic have been measured at approximately 150 dB re 1 µPa @ 1 m RMS SPL at 30 to 40 Hz (in the Beaufort Sea) (OSPAR 2009, in BP 2016) and 184 dB re 1 µPa @ 1 m RMS SPL (Baffin Bay) (NERI 2011, in BP 2016). Measurements of continuous acoustic levels generated from a jack-up rig drilling an exploration well in Cook Inlet Basin, Alaska never exceeded 160 dB re 1 µPa. The diesel engines, mud pump, electrical generators and ventilation fans were identified as the key sources of sound; the diesel engines generated a sound level of 137 dB re 1 µPa @ 1 m (rms) (Marine Acoustics, Inc. 2011).

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### 2.6.3.2.1 Underwater Noise Model

JASCO modelled underwater sound propagation from drilling, helicopters and OSV activities at a representative location within the White Rose field, which lies in the middle of the Project Area (<https://www.cnlopb.ca/wp-content/uploads/whiterose/soundprop.pdf>) (Appendix C). Distances to sound level thresholds were estimated for water temperature profiles representative of months that are the most (February) and least (August) conducive to long-range sound propagation, accounting for source directivity and the range-dependent environmental properties. Distances to level thresholds from all sources (impulsive and continuous) are provided as un-weighted and M-weighted root-mean-square sound pressure level (rms SPLs) of 200 through 120 dB relative to a standard reference pressure of 1  $\mu$ Pa (dB re 1  $\mu$ Pa).

The underwater sound fields predicted by the propagation models were sampled such that the received sound level at a surface sampling location is taken as the maximum value occurring over the entire water column. The predicted distances to specific sound exposure level and rms SPL thresholds were computed from these "maximum-over-depth" sound fields. Standard marine mammal frequency weighting (M-weighting) functions for four functional hearing groups of marine mammals were calculated: low-frequency cetaceans (LFC; mysticetes) (baleen whales); mid-frequency cetaceans (MFC; some odontocetes) (toothed whales); high-frequency cetaceans (HFC; odontometers) (specialized for using high-frequencies); and pinnipeds (seals, sea lions and walrus).

Modelled results for one scenario represent (continuous) noise from the drilling operations at the White Rose field site (Tables 2.15 and 2.16; Figures 2-10 and 2-11). The modelled scenario was from a wellhead platform, so source levels are 10 to 20 dB below the noise produced from a MODU (see above).

**Table 2.15 February: Maximum ( $R_{max}$ , m) and 95% ( $R_{95\%}$ , m) Horizontal Distances (measured in m) from the Drilling Platform to Modelled Maximum-over-depth Sound Level Thresholds With and Without M-weighting**

rms SPL (dB re 1 $\mu$ Pa)	<u>Un-weighted</u>		<u>LFC</u>		<u>MFC</u>		<u>HFC</u>		<u>Pinnipeds</u>	
	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$
170	–	–	–	–	–	–	–	–	–	–
160	< 5	< 5	< 5	< 5	–	–	–	–	–	–
150	7	7	7	7	< 5	< 5	< 5	< 5	< 5	< 5
140	18	18	18	18	7	7	7	7	11	11
130	97	95	96	94	32	32	29	29	47	47
120	720	584	699	565	205	178	145	139	306	266

Source: Husky Energy 2012a

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**Table 2.16 August: Maximum ( $R_{max}$ , m) and 95% ( $R_{95\%}$ , m) Horizontal Distances (measured in m) from the Drilling Platform to Modelled Maximum-over-depth Sound Level Thresholds With and Without M-weighting**

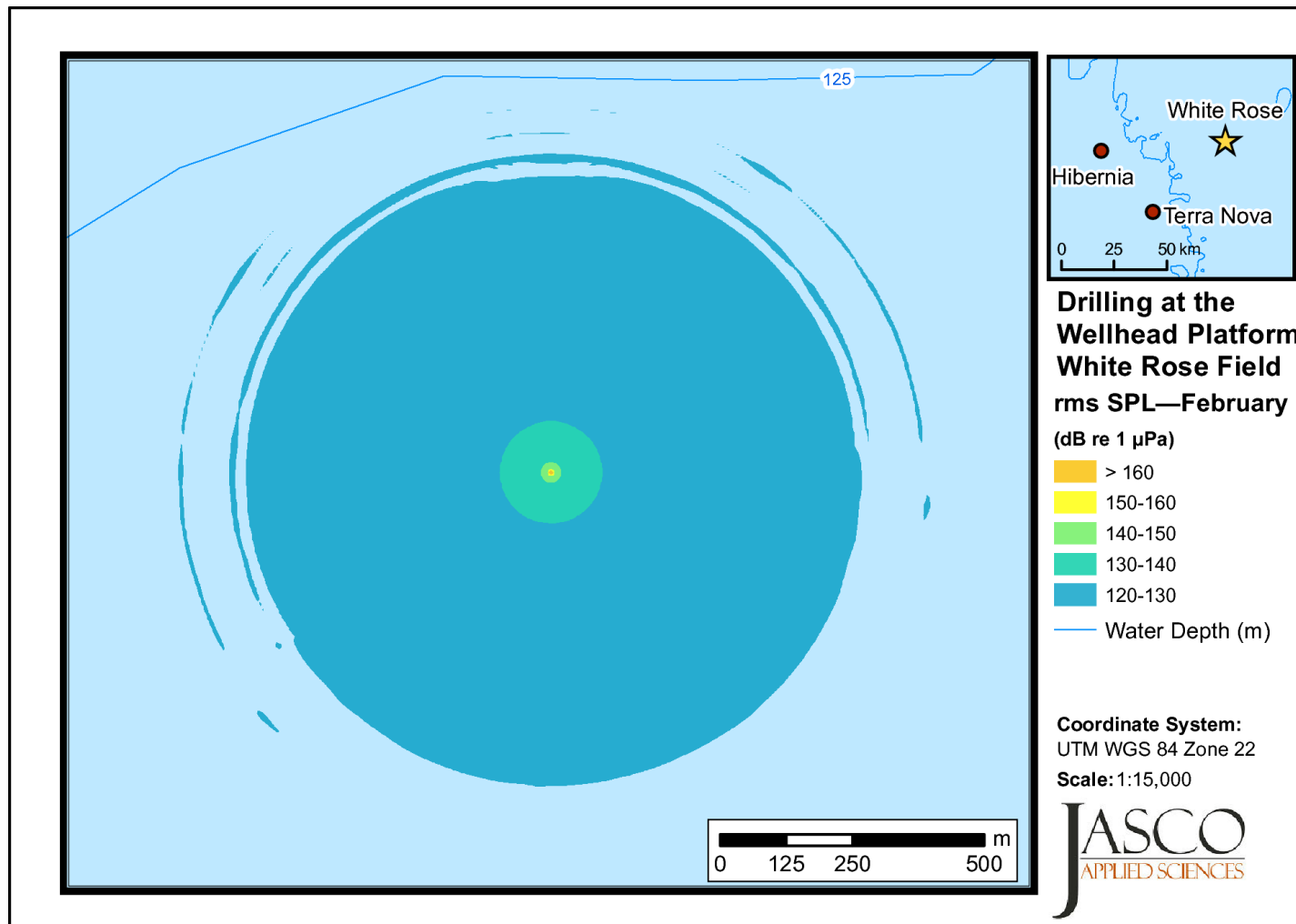
rms SPL (dB re 1 $\mu$ Pa)	<u>Un-weighted</u>		<u>LFC</u>		<u>MFC</u>		<u>HFC</u>		<u>Pinnipeds</u>	
	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$
170	–	–	–	–	–	–	–	–	–	–
160	< 5	< 5	< 5	< 5	–	–	–	–	–	–
150	7	7	7	7	< 5	< 5	< 5	< 5	< 5	< 5
140	18	18	18	18	7	7	7	7	11	11
130	97	94	96	93	32	32	30	29	51	50
120	858	677	850	666	186	173	155	139	326	297

Source: Husky Energy 2012a



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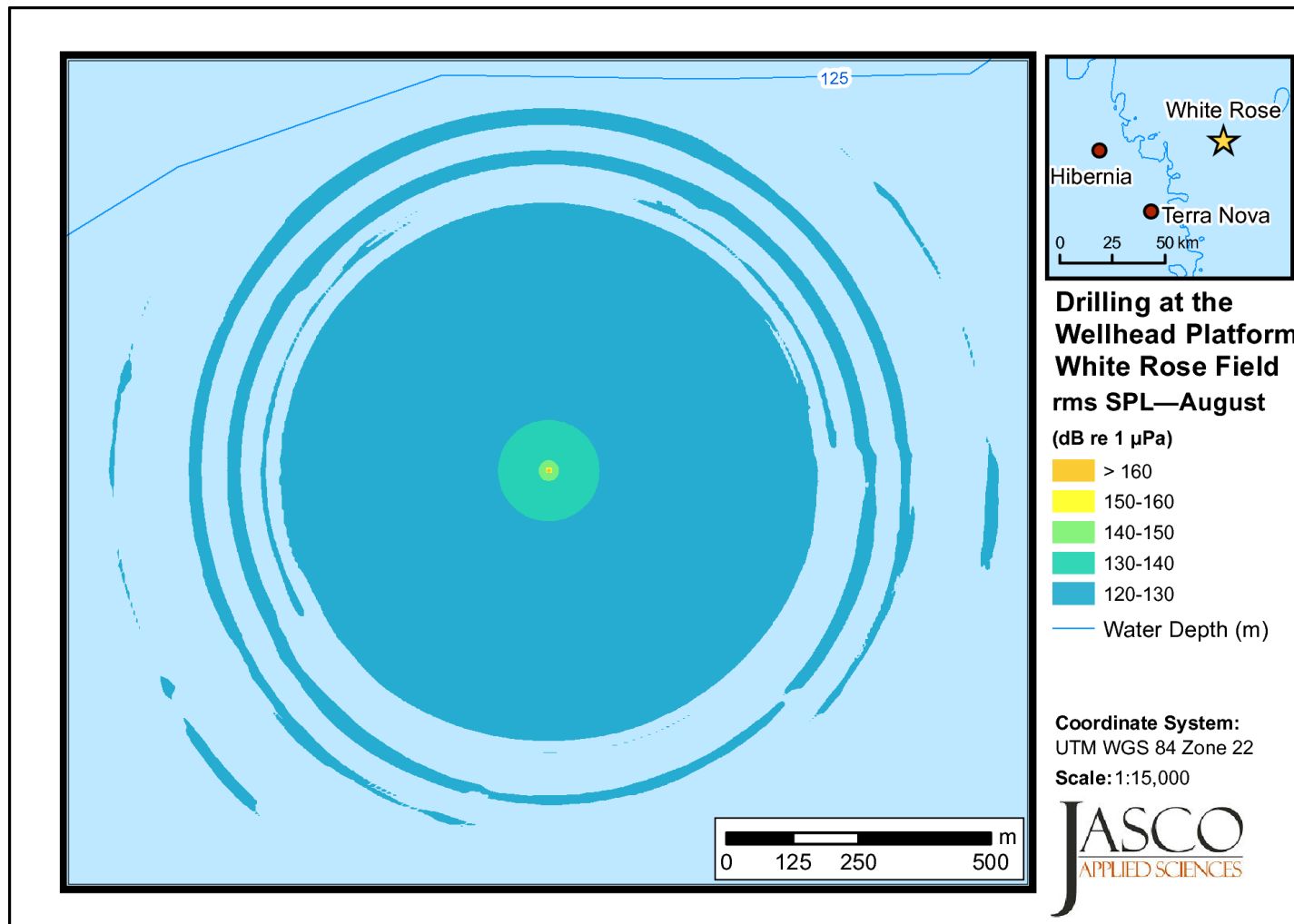


Source: Husky Energy 2012a

Figure 2-10 Received Maximum-over-depth Sound Levels from Drilling at the White Rose Field: February

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Source: Husky Energy 2012a

Figure 2-11 Received Maximum-over-depth Sound Levels from Drilling at the White Rose Field: August

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Modelled results for a second scenario represent (continuous) noise from an OSV (5,000 HP) operating at the White Rose field site (Tables 2.17 and 2.18; Figures 2-12 and 2-13).

**Table 2.17 February: Maximum ( $R_{max}$ , m) and 95% ( $R_{95\%}$ , m) Horizontal Distances (measured in m) from the Support Vessel to Modelled Maximum-over-depth Sound Level Thresholds With and Without M-weighting**

rms SPL (dB re 1 $\mu$ Pa)	<u>Un-weighted</u>		<u>LFC</u>		<u>MFC</u>		<u>HFC</u>		<u>Pinnipeds</u>	
	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$
190	—	—	—	—	—	—	—	—	—	—
180	< 5	< 5	< 5	< 5	—	—	—	—	—	—
170	7	7	7	7	< 5	< 5	< 5	< 5	< 5	< 5
160	22	22	22	22	18	18	18	18	21	21
150	83	81	83	81	65	63	63	61	75	73
140	641	528	641	526	495	365	355	303	541	487
130	4 725	3 701	4 690	3 660	4 367	2 442	3 560	2 088	4 555	3 115
120	21 800	15 650	21 800	15 598	19 483	12 986	17 204	12 026	19 553	14 427

Source: Husky Energy 2012a

**Table 2.18 August: Maximum ( $R_{max}$ , m) and 95% ( $R_{95\%}$ , m) Horizontal Distances (measured in m) from the Support Vessel to Modelled Maximum-over-depth Sound Level Thresholds With and Without M-weighting**

rms SPL (dB re 1 $\mu$ Pa)	<u>Un-weighted</u>		<u>LFC</u>		<u>MFC</u>		<u>HFC</u>		<u>Pinnipeds</u>	
	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$	$R_{max}$	$R_{95\%}$
190	—	—	—	—	—	—	—	—	—	—
180	< 5	< 5	< 5	< 5	—	—	—	—	—	—
170	7	7	7	7	< 5	< 5	< 5	< 5	< 5	< 5
160	22	22	22	22	18	18	18	18	22	22
150	81	79	81	79	64	62	61	60	73	71
140	600	533	600	532	536	437	440	378	552	517
130	5 155	3 567	5 155	3 546	4 431	2 882	3 374	2 554	5 036	3 215
120	19 927	13 759	19 927	13 730	16 356	11 877	15 219	11 007	19 040	13 064

Source: Husky Energy 2012a

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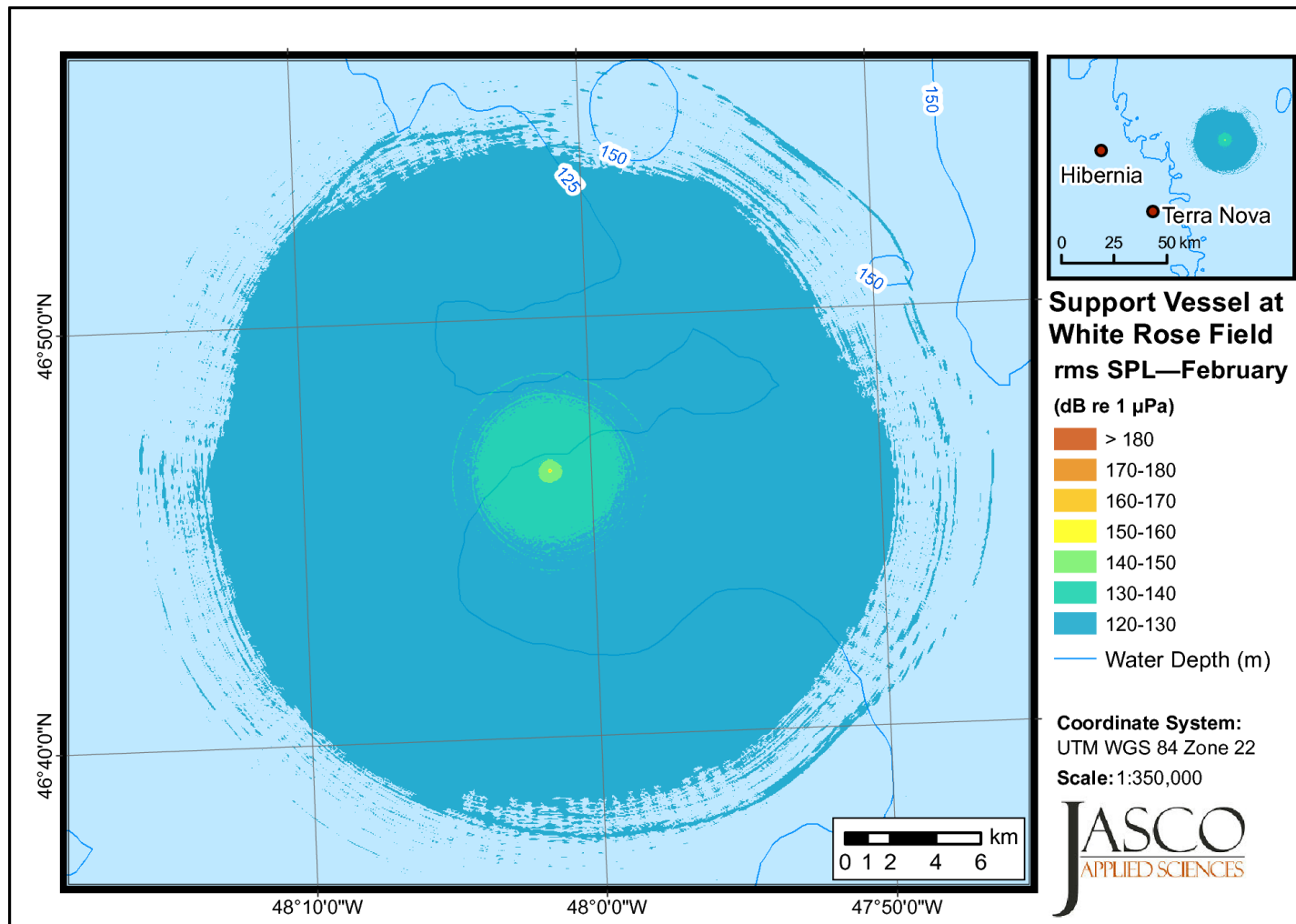
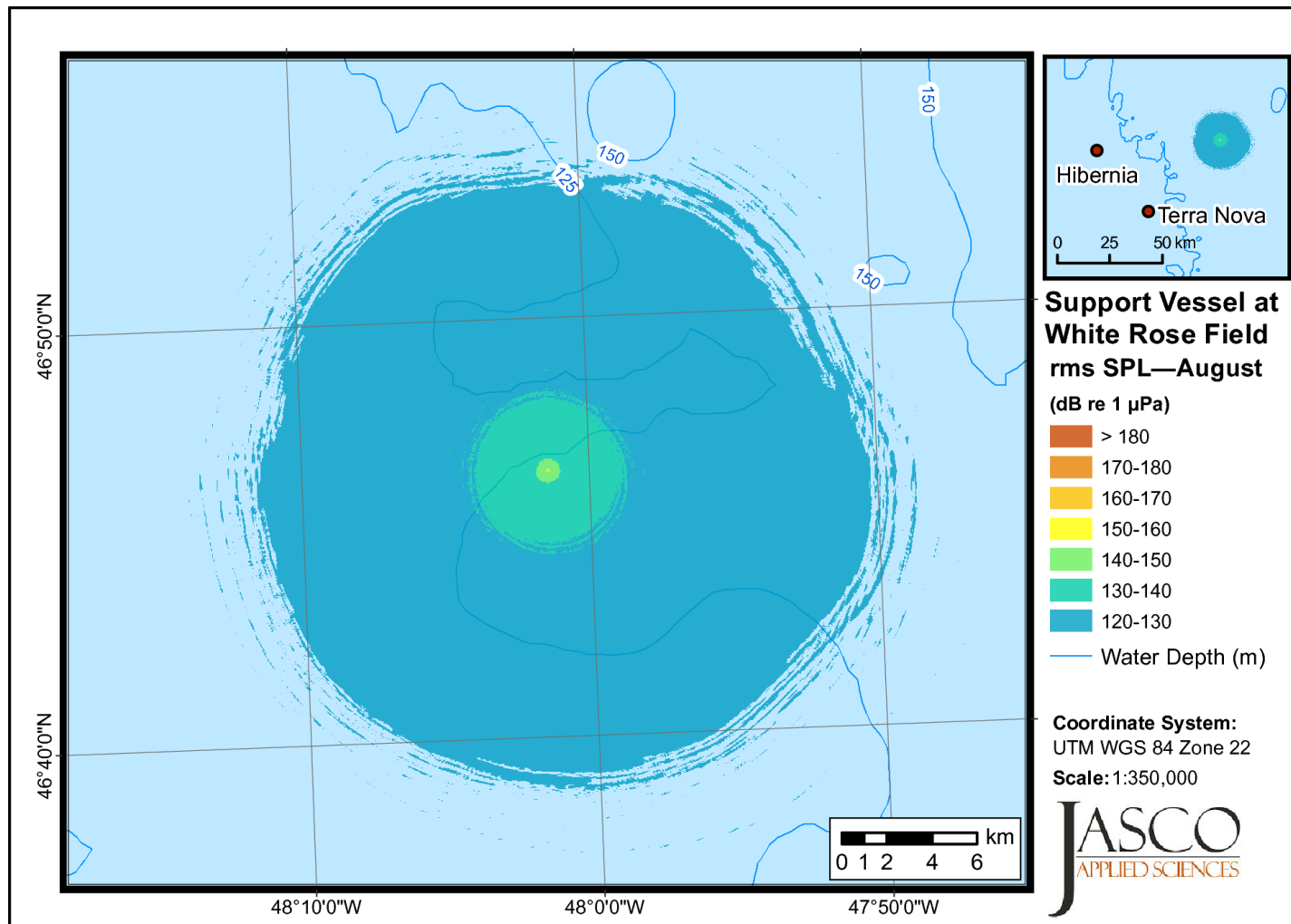


Figure 2-12 Received Maximum-over-depth Sound Levels from the Offshore Supply Vessel in Operation at the White Rose Extension Project Site: February

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Source: Husky Energy 2012a

Figure 2-13 Received Maximum-over-depth Sound Levels from the Offshore Supply Vessel in Operation at the White Rose Field: August

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Underwater received sound levels around a helicopter at an altitude of 91 m were estimated using the source levels from a Bell 206 helicopter and Young's (1973) model. Broadband-received levels no higher than 157 dB re 1  $\mu$ Pa are estimated at 3 m below the surface, directly under the source. Broadband-received levels no higher than 120 dB re 1  $\mu$ Pa are estimated at a lateral distance of 61 m from the source (Table 2.19). Since the threshold of the 120 dB re 1  $\mu$ Pa rms SPL is reached at a lateral distance of less than half the water depth (128 m), distances to received sound level thresholds of 130 to 150 dB re 1  $\mu$ Pa were estimated assuming spherical spreading.

The distances to the sound level thresholds are expected to vary by less than 1 m between the months. At short distances from the source (less than half the water depth (i.e., <64 m)), M-weighting is not expected to substantially affect distances to sound level thresholds (Table 2.19).

**Table 2.19 Maximum ( $R_{max}$ , m) and 95% ( $R_{95\%}$ , m) Horizontal Distances (measured in m) from Directly Under the Helicopter Modelled to Maximum-over-depth Sound Level Thresholds Without M-weighting**

rms SPL (dB re 1 $\mu$ Pa)	Un-weighted	
	$R_{max}$	$R_{95\%}$
170	—	—
160	< 3	< 3
150	6	6
140	10	10
130	26	26
120	61	61

Source: Husky Energy 2012a

### 2.6.3.3 Light Emissions

Light emissions will be generated from lights on the MODU and OSV, which operate 24 hours per day). A typical offshore platform emits 30 kW of artificial lighting. Lighting sources include pilot warning and obstruction avoidance lighting, navigation lights, strobe lights, and lighting for the safety of the employees. Light (and heat) is also generated during flaring. Flaring only occurs during well testing, which may be required in one of every four or five exploration wells over 1.5 to 2 days at the end of the exploration drilling operations. So in a 10-well program, this Project may conduct two DST. Each DST would last at most for two nights each, but rarely, one well may require two DSTs.

## 2.7 Husky’s Environmental Management System and Environmental Compliance Plan

Husky’s Environmental Management System is part of the Husky Operational Integrity Management System (HOIMS) which covers all of Husky’s businesses, with emphasis on projects and operations, and manages operational integrity through the life-cycle of the assets. An EPCMP is a C-NLOPB requirement for the operation of a MODU. Husky’s oil spill prevention and response plan is discussed in detail in Section 7.1. Husky’s ice management (including icebergs) is detailed in Section 8.3.2.

### 2.7.1 Husky’s Operational Integrity Management System

HOIMS includes 14 elements, with each element containing well-defined aims and a clear set of expectations. These expectations guide Husky employees in effectively managing the risks associated with Husky’s business and creating a safe and secure place to work. The 14 elements of HOIMS are listed in Table 2.20.

**Table 2.20 Husky Operational Integrity Management System Elements**

1	Leadership, Commitment & Accountability	8	Environmental Stewardship
2	Safe Operations	9	Management of Change
3	Risk Assessment & Management	10	Information, Documentation & Effective Communication
4	Emergency Preparedness	11	Compliance Assurance & Regulatory Advocacy
5	Reliability & Integrity	12	Design, Construction, Commissioning, Operating & Decommissioning
6	Personnel Competency & Training	13	Contracted Services & Materials
7	Incident Management	14	Performance Assessment & Continuous Improvement

Management is responsible for ensuring effective systems and procedures are implemented and adequate resources are made available to meet the HOIMS expectations. Business units, operating districts, facilities, and functional areas will implement HOIMS. The resources applied will be consistent with the evaluated operational integrity risk.

Achieving conformance to HOIMS expectations requires commitment and sustained efforts over many years. Strong leadership and commitment at all levels of Husky’s organization and clearly established responsibilities and accountabilities are key to the success of HOIMS.

Resources are applied and dedicated to the implementation of HOIMS, and progress is tracked and monitored at the business units, operating districts, facility, functional areas, and corporate

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levels. Periodic reviews and audits are undertaken to ensure that HOIMS is effectively integrated in Husky's daily operations and to continuously improve Husky's performance.

Husky's environmental management system has its basis in HOIMS. More specifically, Element 8 titled "Environmental Stewardship" sets a clear aim to: "Operate responsibly to minimize the environmental impact of how we conduct business" and "Leave a positive legacy behind us when we leave". A clear set of expectations details how Husky intends to meet this aim. They are the following:

- 8.1 A process is implemented to assess the risks and potential impacts to the environment associated with our operations. Such assessments are subject to periodic review and, where appropriate, a Life Cycle Value Assessment is carried out.
- 8.2 Management systems are established, and specific measures are implemented to eliminate, minimize, prevent, detect, control, and mitigate environmental threats. Our first priority is prevention.
- 8.3 Environmental impact is monitored and reported to demonstrate compliance with relevant local, national, and international regulations and to ensure that any commitments are honored. Local sites metrics and targets are set to drive continual improvement in managing waste, emissions, discharges, and energy efficiency.
- 8.4 A process is implemented to evaluate and manage the specific risks and liabilities associated with decommissioning and reclamation.

Environmental management of Husky Atlantic Region's operations is achieved using a compilation of tools to manage the environmental risk. Systems, plans and procedures are in place to manage Husky's environmental commitments, regulatory obligations, and stakeholder expectations. All plans and procedures are responsive to applicable legislation and undergo periodic reviews and audits to ensure compliance with legislation.

As a key part of these expectations, all of Husky Atlantic Region's environmental assessments undergo annual reviews. These reviews are to assist Husky in fulfilling its responsibilities under the Accord Acts and CEAA 2012 by ensuring that the scope of the assessment(s) and the mitigations committed to therein remain valid.



### 2.7.2 Environmental Compliance Monitoring

Husky is committed to an active environmental compliance monitoring program to meet and where possible exceed compliance with all relevant regulatory and corporate requirements. This is achieved through the implementation of Husky's EPCMP which:

- acts as an environmental roadmap for the management of drilling and completions operations, in particular offshore waste treatment;
- describes the environmental protection measures, processes, and compliance monitoring requirements applicable to drilling and completions operations;
- is developed in compliance with applicable legislation and regulations;
- details all the major waste streams and describes the environmental protection measures and/or compliance monitoring requirements associated with each; and
- provides reporting guidance in the event that any unintentional or unauthorized discharge of a substance to air, soil or water were to occur.

Management of compliance focuses on the effluent streams that are regulated under the *Canada Oil and Gas Drilling and Production Regulations* and the *Newfoundland Offshore Petroleum Drilling and Production Regulations* (the Drilling and Production Regulations) and any other applicable provincial or federal legislation that may be applicable. The requirements for the Drilling and Production Regulations are further defined in the OWTG, which are used to develop facility-specific environmental protection and compliance monitoring plans.

All monitoring results are reviewed, and trending of the respective effluent streams is completed to ensure that compliance limits are met, and environmental exceedances are avoided or reported.

### 2.7.3 Environmental Protection Planning

Husky manages its interactions with and impacts to the environment through the EPCMP. Environmental protection planning is an important component of overall project planning. Environmental protection plans are often required as part of a project approval following an environmental assessment, before any activity occurs. Environmental protection plans provide a practical way in which a proponent can demonstrate its understanding of environmental regulations, practices and procedures required to reduce or eliminate the potential environmental effects of a project. An environmental protection plan is a working document for use in the field for project personnel and contractors, as well as at the corporate level for ensuring commitments made in policy statements are implemented and monitored. Environmental protection plans provide a quick reference for project personnel and regulators to monitor compliance and to make suggestions for improvements.

The *Newfoundland Offshore Petroleum Drilling and Production Regulations* (SOR/2009-316) (sections 6(d) and 9) require an environmental protection plan be developed for drilling and production activities; the *Environmental Protection Plan Guidelines* (NEB et al. 2011) provide

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guidance on the details that should be included in environmental protection planning. Husky Energy has committed to the development and implementation of a comprehensive environmental protection plan to help ensure a high level of environmental protection during exploration drilling activities. The environmental protection plan provides the general protection procedures for the routine activities and will identify applicable permits, authorizations, and approvals.

The specific purposes of the environmental protection plan are to:

- Provide a reference document to ensure that commitments to avoid or reduce environmental effects will be met;
- Document environmental concerns and appropriate protection measures;
- Provide concise and clear instructions to project personnel regarding procedures for protecting the environment and minimizing environmental effects;
- Provide a reference document for personnel when planning and/or conducting specific activities and working in specific areas;
- Provide a training aid during implementation efforts;
- Communicate changes in the program through the revision process; and
- Provide a reference to applicable legislative requirements and guidelines.

#### **2.7.4 Environment-related Training**

Providing targeted assistance to employees and contractors is essential to ensuring that they understand how to work in a safe and environmentally responsible manner. To that end, both Husky and its contractors provide appropriately targeted orientation and training programs and materials to assist personnel with fulfilling their responsibility to work in a safe and environmentally responsible manner consistent with Husky's policies.

As appropriate, Husky and its contractors provide job-specific technical, health, safety and environment training and orientations. Husky's formal in-house training programs consider the level of training required for the position and responsibilities of the personnel involved. The aim of the training programs is to provide an understanding of the procedures, equipment, risks, and potential hazards that may occur. Details respecting the competency and training process are outlined in Husky's Training and Competency Program. Husky audits pertinent training matrices against the Canadian Association of Petroleum Producers' Training and Qualifications Requirements to ensure that all personnel are suitably qualified and trained.

In addition to the above, Husky has developed an environmental awareness training course that is required to be completed by all personnel and an environmental responsibilities course that is required to be completed by management, supervisors, and personnel in environmentally-critical roles.

### 2.7.5 Environmental Effects Monitoring

To date, Husky has conducted seven post-baseline environmental effects monitoring (EEM) programs since 2004 (2004, 2005, 2006, 2008, 2010, 2012, and 2014), with results compared to baseline data collected in 2000 and 2001. The EEM program includes the following components:

- Sediment component (analyzing physical and chemical characteristics, toxicity (to bacteria and a marine amphipod), and benthic invertebrate communities);
- Water component (analyzing chemical parameters) (note, the water component was not conducted in 2004 as produced water was not yet being discharged); and
- Commercial fish survey (sampling American plaice and snow crab body burden and taste, as well as morphometric and life history characteristics, and health indices of American plaice).

A summary of the results is included in fish and fish habitat (Section 4.2.2.1) and commercial fisheries (Section 6.3.10.3) components of the EA. As Husky's EEM program analyzes the effects of several wells on the receiving environment, DFO suggested (during consultation on the Project Description) the EEM results most comparable to exploration drilling (one well) are from the 2004 EEM program (first year after drilling began) (Husky 2005). The results of the most recent (2014) EEM Program (Husky Energy 2017) are also summarized as they illustrate that after 10 years and many wells, the effects of routine Project activities are still within that predicted by the 2000 EIS (Husky Oil Operations Limited 2000).

## 2.8 Project Schedule

Project planning is currently ongoing. Stakeholder and regulator engagement has been initiated and will continue throughout the life of the Project. Regulatory approvals will be obtained as necessary for each well drilled in the Project Area. Exploration drilling could occur any time within the term of the licences (2019 to 2027); well testing could also occur at any time (dependent upon drilling results). Wells could be decommissioned and abandoned at any time during the temporal scope of the EA and applicable permits.

It is currently anticipated that exploration drilling activities would commence in 2019, and potentially continue intermittently until 2027. Drilling activities will not be continuous over the eight years and will be in part determined by rig availability and previous years' results. Drilling may occur year-round if conducted using a semi-submersible or drill-ship and during the ice-free season only if using a jack-up rig.

Abandonment or suspension activities will be conducted either following drilling and/or well testing activities.

## 2.9 Alternative Means of Carrying Out the Project

As required under section 19(1)(g) of CEEA 2012, every environmental assessment of a designated project must consider the alternative means of carrying out the project that are technically and economically feasible and consider the environmental effects of any such alternative means. Consideration of alternative means of carrying out the Project was undertaken with reference to the *Operational Policy Statement: Addressing "Purpose of" and "Alternative Means" under the Canadian Environmental Assessment Act, 2012* (CEA Agency 2015b).

### 2.9.1 Identification of Alternatives

As per the EIS Guidelines, the analysis of alternative means considers the following alternative means of carrying out the Project:

- Drilling unit selection
- Drilling fluid selection (i.e., WBM or SBM)
- Drilling waste management
- Water management
- Platform lighting and flaring options

A consideration of legal compliance, technical feasibility, and economic feasibility, as well as the environmental effects (where applicable) of each alternative means is described in the following sections. More detailed assessment follows in the Value Component chapters for the preferred options (e.g., WBM/SBM use, flaring).

#### 2.9.1.1 Drilling Unit

The specific MODU to be used for the Project has not yet been selected and will depend on suitability and availability. The options being considered (semi-submersible, drill ship and jack-up rig) are described in Section 2.4.1. As the discharges are the same from each type of MODU, all three alternatives are being considered and are assessed in this EA.

#### 2.9.1.2 Drilling Fluid

WBM and SBM are two drilling fluid options for offshore Newfoundland. A summary of the comparison between WBM and SBM is presented in Table 2.21. While WBM is technically and economically feasible for most wells, a combination of both WBM and SBM is preferred depending on different segments of the drilling sequence. If WBM were used for the entire well, borehole stability would be an issue with added downtime. Additional chemical and various compositions would be required for the riser portion of the drill (Shell 2014). In the area of the Shelburne Basin Exploration Drilling Project, four wells were drilled using WBM only and all four incurred hole instability and stuck pipe (Shell 2014).

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Environmental effects comparison between WBM and SBM does not clearly identify a preferred option. WBM cuttings can disperse further into the water column and remain suspended longer and therefore have a greater potential to affect filter feeding organisms (Cranford et al. 2005, in Shell 2014). SBM does not generally disperse as widely and accumulates closer to the wellsite, but they do have hydrocarbon content. Given WBM is less stable than SBM, it is not uncommon for WBM to become unusable, requiring disposal and dilution and greater waste generation than SBM. Additional detail on the potential effects of drilling muds on VCs is provided in Section 6.

In offshore Newfoundland, all exploration (and production) drilling uses PureDrill IA35-LV as the base for the SBM. PureDrill IA35-LV (a Suncor Energy product) is a synthetic iso-alkane (hydro-isomerized and hydrogenated) composed of aliphatic carbon compounds and contains no aromatic hydrocarbon compounds. PureDrill IA35-LV is readily biodegradable, has low toxicity, and is not highly bioavailable (PureDrill IA-35LV Fact Sheet; Petro-Canada no date). The product meets the United Kingdom's Centre for Environment, Fisheries and Aquaculture Science offshore "E" classification criteria, representing a chemical with the least potential for environmental harm.

Based on technical, economic, and environmental considerations discussed above and in Table 2.21, the preferred option is to use a combination of both WBM and SBM.

**Table 2.21 Summary of Drilling Fluid Alternatives**

Option	Legally acceptable?	Technically feasible?	Economically feasible?	Environmental Issues	Preferred option?
WBM only	Yes	Not technically preferred for certain areas or segments of the drilling sequence	Yes; however, increased costs from potential operation delays if problems with drill fluids encountered	No substantive difference in environmental effects between WBM and WBM/SBM assuming OWTG are followed with respect to SBM discharges. All exploration (and production) drilling offshore NL uses PureDrill IA35-LV as the base for the SBM as it is readily biodegradable, has low toxicity, and is not highly bioavailable.	No
SBM/WBM	Yes	Yes	Yes		Yes

### 2.9.1.3 Drill Waste Management

Offshore disposal treatment and management is described in Section 2.6.1. Alternatives to offshore disposal include ship-to-shore and offshore reinjection. A summary of the comparison between the alternatives is presented in Table 2.22.

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**Table 2.22 Summary of Drilling Waste Management Alternatives**

Option	Legally acceptable?	Technically feasible?	Economically feasible?	Environmental Issues	Preferred option?
Offshore disposal (following treatment)	Yes	Yes	Yes	Some localized effects are expected on the seafloor from discharge of cuttings	Yes
Ship-to-shore	Yes	Yes	Significant additional costs plus risk to personnel and equipment	Onshore disposal would have less environmental effect on marine environment; however, an increase in GHG emission from increased transportation, and some onshore effects from treatment and onshore disposal of waste	No
Offshore reinjection	Yes	No	No	N/A (not technically or economically feasible)	No

Reinjection, the grinding or slurrifying of cuttings and injecting them into designated reinjection well, is not considered technically or economically feasible for this Project.

Onshore disposal is technically and economically feasible and reduces offshore effects associated with drilling waste discharge; however, transport of drill wastes to shore results in additional transit emissions and safety exposure along with the potential effects of onshore waste disposal and waste water from treatment.

Discharge to the water column, following treatment to OWTG standards, is the preferred option for management of cuttings generated as part of the Project and has been assessed as part of the Project (refer to Section 6).

### 2.9.1.4 Water Management

Bilge and ballast water/deck drainage/cooling water/fire control system test water will be tested to meet OWTG and discharged over board.

### 2.9.1.5 MODU Lighting and Flaring

Specific levels of lighting on the MODU are required by the C-NLOPB for safe 24-hour operation. A summary of the comparison between the alternatives is presented in Table 2.23.

**Table 2.23 Summary of Lighting and Flaring Alternatives**

Option	Technically feasible?	Economically feasible?	Environmental Issues	Preferred option?
Standard lighting	Yes	Yes	Some localized effects as lighting may attract migratory birds causing strandings and/or harm from flaring	Yes
Spectral modified lighting	No (not readily available for commercial use at this time)	No	N/A (not technically or economically feasible)	No
Timing restrictions on flaring	Yes; regulations prohibit flaring to be initiated at night.	Yes; as per regulations.	Flaring during a well test can last for two days, so will occur over one night, causing localized light and atmospheric emissions. Could be an additional attractant to birds if carried out at night and in low visibility conditions.	Yes, as per regulations
Flaring as required for safety	Yes	Yes	Some localized light and atmospheric emissions. Could be an additional attractant to birds if carried out in low visibility conditions.	Yes

As described in Section 2.5.4, well testing may be required by the C-NLOPB to gather additional details on potential reservoirs and to assess the associated commercial potential of a discovery. When well flow testing is carried out, which is conducted for 20% to 25% of wells (i.e., approximately two wells for this Project, flaring is required to safely dispose of hydrocarbons that may come to surface. Restricting the initiation of flaring activity to daylight hours does reduce night-time flaring.

### 2.9.2 Chemical Selection

Husky's chemical management system and associated chemical screening procedure describes the procedure to minimize the potential risks to the health and safety of personnel and harm to the environment from the identification, procurement, transport, use, storage and disposal of chemical products and substances on all drilling-related chemicals on drilling rigs under contract to Husky. All drilling- and production-related chemicals undergo a thorough health, safety and environmental screening based in part on the OCSG (NEB et al. 2009).

Husky's chemical management system is in place so that:

- Chemicals are managed in compliance with all applicable statutory requirements, codes, and industry practices;

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- The identification, purchase, use, storage, transport, and eventual disposal of chemical substances is carried out in a responsible manner that prevents harm to people and the environment;
- All chemicals on the *SeaRose FPSO* and all drilling-related chemicals (does not apply to domestic chemicals) on drilling rigs under contract to Husky undergo a health, safety, and environmental screening prior to being accepted for use; and
- All personnel who encounter chemicals in the workplace are adequately trained, Material Safety Data Sheets are provided and accessible, and the risks associated with chemical use are appropriately communicated.

Husky has an Offshore Chemical Management System process developed for production operations as well as drilling and completions. Husky's Chemical Management System (EC-M-99-X-PO-00007-001) is fundamentally an at-source contaminant control program. Its objective is to ensure that the bulk drilling and completion chemicals transported offshore for use, in this case to support drilling and completions operations, have been chosen to minimize their potential short- and long-term effects on the marine environment while achieving technical requirements. Screening of chemicals for drilling and completions is done onshore by Husky's chemical supply contractors in conjunction with Husky's Health, Safety, Environment and Quality department and in accordance with Husky's Chemical Screening Procedure (EC-M-99-X-PR-00118-001).

Table 2.24 identifies the quantity and type of chemicals (or constituents) that may be used in support of the Project that are:

- included on the *Canadian Environmental Protection Act's* List of Toxic Substances;
- not included on the OSPAR PLONOR list of chemicals and have a PARCOM Offshore Chemical Notification Scheme Hazard Rating (or equivalent) of A, B or purple, orange, blue, or white; or
- not included on the PLONOR list of chemicals and have not been assigned a PARCOM Offshore Chemical Notification Scheme Hazard Rating.

**Table 2.24 Chemicals with Components on the CEPA List of Toxic Substances**

Product	Amount	Components on List of Toxic Substances?	Components	OCNS Rating	OCNS equivalency Rating Used
DEEPCLEAN	4160 – 6240 l	Yes	2-butoxyethanol	CHARM Gold	Yes
EXTENDER Express D226	75 l	Yes	2-butoxyethanol	CHARM Gold	No



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There are two products used in exploration drilling that contain 2-butoxyethanol (2BE), which is listed on CEPA's List of Toxic Substances. CEPA's 2-BE regulation is intended to protect the health of Canadians by setting limits for the concentration of 2-BE in products designed for indoor use. 2-BE is a common component of cleaning, painting, and coating products and poses a risk to human health if inhaled. 2-BE was placed on the List of Toxic Substances after CEPA's 2003 assessment report found that 2-BE may be harmful to human health but is not harmful to the environment. As per the OCSGs for chemicals on the List of Toxic Substances, the chemical hazard assessment and risk management tool was used and both products containing 2-BE were deemed to be used in accordance with the CEPA Risk Management Strategy. Both products were given an OCNS CHARM rating of Gold, the lowest potential hazard rating.

## **3.0 CONSULTATION AND ENGAGEMENT**

This section of the EIS describes the ongoing and proposed engagement activities with public, stakeholders, and Indigenous communities that may have an interest in the Project. This section provides a summary of questions, comments, and key issues raised in relation to the Project.

### **3.1 Consultation and Engagement Objectives**

Husky recognizes the importance of public consultation and Indigenous engagement and has developed a plan to engage the public, stakeholders, and Indigenous communities in its environmental and socio-economic assessments of the Project. Husky also recognizes the importance of consultations with federal, provincial, and municipal regulatory agencies. The focus of Husky's consultation program was the geographic regions most likely to be affected by the Project. Husky has met and will continue to meet with various stakeholders to provide information on the Project and solicit feedback from stakeholders.

As describe in the EIS Guidelines, opportunities for meaningful public participation and Indigenous peoples engagement is a key objective identified in CEAA 2012. This includes providing a clear understanding of the proposed project, early in the review.

### **3.2 Stakeholder Consultation**

#### **3.2.1 Organizations for Consultation and Engagement and Engagement Activities**

Husky's consultation program included meetings with:

- the C-NLOPB;
- federal government departments (with invitations to meet extended to provincial government departments);
- commercial fisher groups; and
- invitations to meet extended to environmental non-governmental organizations.

Each of these stakeholder groups and engagement activities that have occurred to-date is described below.

##### **3.2.1.1 Canada-Newfoundland and Labrador Offshore Petroleum Board**

Husky met with the C-NLOPB on March 11, 2016, to discuss the Project and the C-NLOPB's role in the CEAA 2012 process.

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## 3.2.1.2 Federal and Provincial Government

Federal and provincial government departments and agencies identified to-date during the Project planning and EIS preparation stages include those that:

- have a regulatory mandate concerning the authorization of Project activities;
- have technical knowledge concerning the assessment or mitigation of environmental effects; and/or
- are involved in Crown consultation.

Specific departments and agencies are listed in Table 3.1.

**Table 3.1 Government Departments and Agencies Consulted**

Level of Government	Specific Department or Agency
Federal	Canadian Environmental Assessment Agency (CEA Agency)
	Fisheries and Oceans Canada (DFO)
	Environment and Climate Change Canada (ECCC)
Federal/Provincial	Canada Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB)
Provincial	Newfoundland and Labrador Department of Fisheries and Aquaculture
	Newfoundland and Labrador Department of Environment and Climate Change
	Newfoundland and Labrador Department of Natural Resources

Regulators and agencies have been engaged through face-to-face meetings, written correspondence, and project presentation meetings. Husky will continue to engage with these stakeholders through to Project completion. Input and feedback was also requested from regulators during the review of the Project Description and the draft EIS Guidelines.

## 3.2.1.3 Commercial Fisher Groups

Husky has met with Ocean Choice International (OCI) and One Ocean (March 16, 2016) and with FFAW-Unifor (January 13, 2017). OCI represents offshore trawling companies and FFAW-Unifor represents inshore fishers. The OCI participant also represented the Canadian Association of Prawn Producers. A summary of the Project was also provided to the Atlantic Seafood Producers (ASP) and Groundfish Enterprise Allocation Council (GEAC), who did not see the need to meet. One Ocean is “the liaison organization established by and for the fishing and petroleum industries of Newfoundland and Labrador”.

## 3.2.1.4 Non-Government Stakeholders

Non-governmental stakeholders include: environmental non-government organizations (ENGOs) particularly those with an interest in environmental and social issues within the area; industry and

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business associations; chambers of commerce; the media; and academic institutions. ENGO's engaged for this Project include:

- Nature Newfoundland and Labrador
- NL Environment Network
- World Wildlife Fund
- Sierra Club Canada Foundation
- Canadian Parks and Wilderness Society (CPAWS)-NL

These organizations have been engaged previously offshore environmental assessment in Newfoundland and Labrador.

#### 3.2.1.5 Public

The public has been and will continue to be primarily consulted through the public participation opportunities as required under CEAA 2012. In addition to the Project Description (20-day public comment period starting September 13, 2016) and draft EIS Guidelines (30-day public comment period starting October 28, 2016), the EIS and other documents related to public participation opportunities will be posted on the CEA Agency's Registry website for the Project (<https://ceaa-acee.gc.ca/050/evaluations/document/exploration/80130?type=1&culture=en-CA>). The same documents are also available through the C-NLOPB website (<https://www.cnlopb.ca/assessments/huskyeddrill/>).

#### 3.2.2 Summary of Engagement Activities

Table 3.2 provides a summary of Husky's stakeholder engagement efforts on the Project since March 2016.

**Table 3.2 Summary of Stakeholder Engagement Conducted for the Project**

Organization	Date	Topic Discussed
<b>Government Agencies</b>		
DFO	March 24, 2016	Project overview and WREP modelling review
	January 24, 2017	Project update and EIS overview
ECCC	April 7, 2016	Project overview and WREP modelling review
Newfoundland and Labrador Department of Fisheries and Aquaculture	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
Newfoundland and Labrador Department of Environment and Climate Change	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet

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Organization	Date	Topic Discussed
Newfoundland and Labrador Department of Natural Resources	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
CEA Agency, DFO, ECCC, Health Canada, Natural Resources Canada, C-NLOPB	March 2, 2017	Update on EIS approach, key findings, and spill modelling
CEA Agency, DFO, ECCC, Health Canada, Natural Resources Canada, C-NLOPB	March 24, 2017	Details on oil spill models to be used in the EIS
CEA Agency, DFO, Environment and Climate Change Canada, Health Canada, Natural Resources Canada, C-NLOPB	June 13, 2018	Husky Drilling EIS update to regulators, including presentation on modelling approach
<b>Fisheries Organizations</b>		
Fish, Food & Allied Workers Union (FFAW-Unifor)	January 13, 2017	Project overview and spill modelling review
One Ocean	March 16, 2016	Project overview and spill modelling review
OCI (also representing Canadian Association of Prawn Producers)	March 16, 2016	Project overview and spill modelling review
ASP	March 16, 2016	Presentation provided to representative
GEAC	January 19, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
<b>Non-Government Organizations</b>		
Nature Newfoundland and Labrador	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
	March 7, 2017	Meeting to discuss EIS approach, key findings, and spill modelling
NL Environment Network	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
World Wildlife Fund	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
Sierra Club Canada Foundation	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet
CPAWS-NL	January 17, 2017	Notification of Project (including relevant figures) and CEAA 2012 process with invitation to meet

### 3.2.3 Questions and Comments Raised During Public Consultation

No public comments specific to the Husky Project were received during the Project Description review period or the Draft Guidelines review period. As Statoil Canada Limited is also assessing an exploration drilling project (exclusively in the Flemish Pass), the CEA Agency provided comments they had received from the public on the Statoil project for Husky to consider in the preparation of their assessment. A summary of key issues that have been raised during the Statoil public comment period under CEAA 2012 and how they have been addressed by Husky is described below.

#### Historic Cod Fishery Locations

Concern was expressed regarding historical cod fishery locations in relation to the Project, as the potential exists for a commercial cod fishery to begin again during the lifetime of the Project. As described in Section 4.3, the historical cod fishery was conducted in the offshore areas of the eastern Grand Bank (3LMN). It should be noted that before the moratorium (e.g., 1984 to 1990), Unit Area 3Lt (Project Area) usually accounted for just over 2% of the NAFO 3L groundfish harvest, including cod (Husky Energy 2012).

#### Regional Predictive Current Modelling

Husky will look into the applicability of regional predictive current modelling for future applications.

## 3.3 Indigenous Engagement

### 3.3.1 Indigenous Organizations

#### Newfoundland and Labrador

There are five Indigenous communities and/or governing bodies within Newfoundland and Labrador, including:

- Miawpukek First Nation;
- Qalipu Mi'kmaq First Nation;
- Nunatukavut Community Council;
- Labrador Innu (Innu Nation); and
- Labrador Inuit (Nunatsiavut Government).

Miawpukek First Nation and Qalipu First Nation are located on the Island of Newfoundland; Nunatukavut Community Council, Innu Nation, and Nunatsiavut Government are in Labrador.

The Miawpukek Mi'kamaway Mawi'omi First Nation Reserve is located at the mouth of the Conne River on the south coast of the island of Newfoundland (Miawpukek First Nation 2017; <http://www.mfngov.ca/>). Miawpukek Reserve was established according to traditional oral history in 1870 and was officially designated as Samiajij Miawpukek Indian Reserve under the *Indian Act* in 1987 (Miawpukek First Nation website). Miawpukek First Nation has a self-governing

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agreement which gives them the opportunity to govern their internal affairs and assume greater responsibility and control over decisions that affects their community (Indigenous and Northern Affairs Canada 2014). The Agreement-in-Principle is not a treaty or a land claims agreement within the meaning of sections 25 and 35 of the *Constitution Act*, 1982 and does not create, recognize, or affirm any right under s.35 of the *Constitution Act*, 1982.

Qalipu Mi'kmaq First Nation was established in 2011 as an Indigenous Band under the *Indian Act* (specifically, the *Qalipu Mi'kmaq First Nation Act*); however, is not treaty or a land claims agreement within the meaning of sections 25 and 35 of the *Constitution Act*, 1982 and does not create, recognize or affirm any right under s.35 of the *Constitution Act*, 1982. There are approximately 24,000 members spread across many communities both on the Island and abroad; they are one of the largest First Nation groups in Canada. Although Qalipu has no reserve land, it is made up of 66 traditional Mi'kmaq communities, spread out over nine Electoral Wards. Qalipu has three satellite offices located in Glenwood, Grand Falls-Windsor, and St. George's and its central administrative office is in Corner Brook (Qalipu First Nation 2016; <http://qalipu.ca/about/background/>).

NunatuKavut is the territory of the Inuit of NunatuKavut, the Southern Inuit, who reside primarily in southern and central Labrador, with many living in the Upper Lake Melville area and western Labrador, and along the south coast from Cartwright to L'Anse au Clair (Nalcor Energy 2011). The NunatuKavut Community Council is the representative governing body for approximately 6,000 Inuit of south and central Labrador, collectively known as the Southern Inuit of NunatuKavut (NunatuKavut Community Council 2013; [http://www.nunatukavut.ca/home/who\\_we\\_are.htm](http://www.nunatukavut.ca/home/who_we_are.htm)). Their asserted Inuit land claim, covering most of Labrador, has not been accepted for negotiation by the federal or provincial governments; the Labrador and Aboriginal Affairs Office has advocated for a decision from the Federal Government on the NunatuKavut Community Council land claim (Labrador and Aboriginal Affairs Office 2015).

The Innu Nation is the organization that formally represents the Innu of Labrador, approximately 2,200 persons, most of whom live in the two Innu communities of Natuashish and Sheshatshiu (Innu nation website; <http://www.innu.ca/>). The two Innu First Nations in Labrador include the Mushuau Innu First Nation located in Natuashish (northern coast of Labrador) and the Sheshatshiu Innu First Nation located in Sheshatshiu (40 km northeast of Happy Valley-Goose Bay). While most Labrador Innu reside in the communities of Natuashish and Sheshatshiu, small numbers of Innu also reside in Happy Valley-Goose Bay (Nalcor Energy 2011). As indicated in Table 3.3, the population of the Mushuau Innu First Nation is 819 and the Sheshatshiu Innu First Nation is 1,399 (Indigenous and Northern Affairs Canada 2010; <https://www.aadnc-aandc.gc.ca/eng/1100100018914/1100100018915>). The Labrador Innu claim Aboriginal rights and title to much of Labrador. The *Tshash Petapen / New Dawn Agreement* was signed on November 18, 2011; negotiations are ongoing between Innu Nation and the Governments of Newfoundland and of Labrador and Canada (Labrador and Aboriginal Affairs Office 2017 ([http://www.laa.gov.nl.ca/laa/land\\_claims/](http://www.laa.gov.nl.ca/laa/land_claims/))).

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The community level of Nunatsiavut Government is comprised of five Inuit Community Governments representing the Inuit communities of Nain, Hopedale, Postville, Makkovik and Rigolet (Nunatsiavut Government 2017; <http://www.nunatsiavut.com/government/about-nunatsiavut-government/>). The Labrador Inuit Land Claims Agreement sets out the details of land ownership, resource-sharing and self-government within the established Labrador Inuit Settlement Area (LISA). The LISA is comprised of approximately 72,500 km<sup>2</sup> of land in northern Labrador and 48,690 km<sup>2</sup> of the Labrador Sea, within which, Labrador Inuit-owned land (Labrador Inuit Lands) comprises 15,800 km<sup>2</sup> (Nalcor Energy 2011). Population estimates for the five communities are provided in Table 3.3. Some Inuit are resident in other communities in Labrador (Happy Valley-Goose Bay, North West River, and Mud Lake) (Nalcor Energy 2011).

**Table 3.3 Newfoundland and Labrador Indigenous Groups**

Community	Location	Population		
		Total	On Reserve	Off Reserve
Miawpukek Band	Conne River, NL	2,877	849	2,028
Qalipu Mi'kmaq First Nation Band	NL	24,000	N/A	N/A
Nunatukavut Community Council	Southern and central Labrador	6,000	N/A	N/A
Mushuau Innu First Nation	Natuashish, NL	819	760	58
Sheshatshiu Innu First Nation	North West River, NL	1,399	1,261	136
Hopedale Inuit Community Government	Hopedale, NL	556	N/A	N/A
Makkovik Inuit Community Government	Makkovik, NL	361	N/A	N/A
Nain Inuit Community Government	Nain, NL	1,188	N/A	N/A
Postville Inuit Community Government	Postville, Newfoundland & Labrador	206	N/A	N/A
Rigolet Inuit Community Government	Rigolet, Newfoundland & Labrador	306	N/A	N/A

Source: Indigenous and Northern Affairs Canada 2012; <https://www.aadnc-aandc.gc.ca/eng/1100100017048/1100100017053>  
 NunatuKavut Community Council 2013; [http://www.nunatukavut.ca/home/who\\_we\\_are.htm](http://www.nunatukavut.ca/home/who_we_are.htm)  
 Statistic Canada n.d.

In addition to the Indigenous groups within Newfoundland and Labrador, correspondence from the CEA Agency on April 27, 2017 identified Indigenous groups in Nova Scotia, New Brunswick, Prince Edward Island, and Quebec that may be affected by the Project. The letter noted potential adverse impacts of the Project on potential or established rights of Aboriginal people under section 35 of the *Constitution Act, 1982*, and potential effects of changes to the environment on Aboriginal peoples pursuant to paragraph 5(1)(c) of CEEA 2012 related to the migration of



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Atlantic salmon between the Project Area and areas where Indigenous groups have potential or established section 35 rights, and commercial communal licences held by Indigenous groups. These include:

#### **Nova Scotia**

- 11 Mi'kmaq First Nation represented for the purposes of consultation and engagement by the Assembly of Nova Scotia Mi'kmaq Chiefs (ANSMC) supported by the Kwilmu'kw Mawklusuaqn Negotiation Office (KMKNO):
  - Acadia First Nation
  - Annapolis Valley First Nation
  - Bear River First Nation
  - Eskasoni First Nation
  - Glooscap First Nation
  - Membertou First Nation
  - Paq'tnkek Mi'kmaw Nation
  - Pictou Landing First Nation
  - Potlotek First Nation
  - Wagmatcook First Nation
  - We'koqma'q First Nation
- Millbrook First Nation
- Sipekne'katik First Nation

#### **New Brunswick**

- Eight Mi'gmaq First Nations represented by Mi'gmawe'l Tplu'taqnn Inc. (MTI):
  - Fort Folly First Nation
  - Eel Ground First Nation
  - Pabineau First Nation
  - Esgenoôpetitj First Nation
  - Buctouche First Nation
  - Indian Island First Nation
  - Eel River Bar First Nation
  - Metepnagiag Mi'kmaq First Nation
- Elsipogtog First Nation
- Five Maliseet First Nation groups represented by Wolastoqey Nation in New Brunswick (WNNB):
  - Kingsclear First Nation
  - Madawaska Maliseet First Nation
  - Oromocto First Nation
  - St. Mary's First Nation
  - Tobique First Nation
- Woodstock First Nation
- Peskotomuhkati Nation at Skutik (Passamaquoddy)

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#### Prince Edward Island

- Two Mi'kmaq First Nation groups represented in consultation by Mi'kmaq Confederacy of PEI (MCPEI):
  - Abegweit First Nation
  - Lennox Island First Nation

#### Quebec

- Three Mi'gmaq First Nation groups represented by Mi'gmawei Mawiomi Secretariat (MMS):
  - Micmas of Gesgapegiag
  - La Nation Micmac de Gespeg
  - Listuguj Mi'gmaq Government
- Les Innus de Ekuanitshit
- Première Nation des Innus de Nutashkuan

### 3.3.2 Engagement Activities

Letters were sent to the five Indigenous groups in Newfoundland and Labrador on June 3, 2016, to initiate engagement in the assessment of the Project by providing an overview of the Project and inviting contact with questions and concerns; no comments or concerns were received from these letters. The CEA Agency also solicited engagement from the five groups and received response from all but the Miawpukek First Nation. Engagement was also solicited during the review period for the Project Description (no comments were received from Indigenous groups) and during the review period for the draft Guidelines (comments were received from Qalipu Mi'kmaq First Nation and the Nunatsiavut Government).

Upon receipt of the final Guidelines, Husky sent letters on January 6, 2017, updating the five Indigenous groups on the status of the Project, including information collected on traditional use species that could be affected by an unlikely spill. Nunatsiavut Government provided a response indicating their intent to continue engagement as the Project progresses through the CEAA 2012 review.

In April 2017 the CEA Agency identified an additional 36 Indigenous groups to be engaged by Husky. Letters introducing the Project and including the Project Description and the CEAA Guidelines were sent to the additional Indigenous groups identified by the CEA Agency on April 27, 2017.

Husky is also part of a five-company committee of oil and gas exploration companies that are all pursuing exploration opportunities in the same geographic area offshore eastern Newfoundland and Labrador. In April 2018, the group held three workshop-style engagement meetings, organized, and sponsored by the CEA Agency in Moncton (April 13), Quebec City (April 18) and St. John's (April 20). There were 38 of 41 Indigenous communities represented at those workshops. In addition, Husky continues to engage with Indigenous groups to ensure all information is provided, and that Indigenous groups have an opportunity to express their concerns and interests

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directly. Follow-up workshops are planned in October 2018 to discuss various concerns and interests related to oil spill modelling, emergency preparedness and response, communications and well abandonment.

Engagement to date is summarized in Table 3.4.

**Table 3.4 Summary on Indigenous People Engagement (to date as of August 31, 2018))**

Date	Means of Engagement	Purpose
<b>Miawpukek First Nation</b>		
June 3, 2016	Letter	Initiation of engagement and overview of the Project
January 6, 2017	Letter	Project update
January 10, 2017	Phone call	Confirming letter was received
January 17, 2017 February 6, 2017 February 9, 2017 February 20, 2017 March 1, 2017	Email Voicemail	Follow-up
July 27, 2017	Letter (MFN)	Letter from MFN outlining concerns
September 20, 2017	Email	Notification of the preparation of EIS, inviting input, and referring funding requests to CEAA.
November 30, 2017	Letter	Summary of potential effects for review and comment
January 16, 2017 January 16, 2017	Email Email (SVS/MFN)	Follow-up Follow-up – MFN to participate in CEAA process.
February 7, 2018	Letter (MFN)	Outlining concerns/interests, request for funding.
April 5 – July 3, 2018	Letters/Emails	Series of correspondence requesting a meeting on behalf of Husky (and 4 other operators)
April 20, 2018	Workshop	CEAA-sponsored workshop on offshore exploration projects (5)
April 28, 2018	Email	Follow-up from workshop
June 5, 2018	Email	Draft EIS community profile sent for comment
June 11, 2018	Email	Unable to comment on community profile - capacity
June 5, 2018	Email	Update on status of all offshore exploration projects in NL/Labrador
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.

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Date	Means of Engagement	Purpose
July 17, 2018	Meeting in Conne River	Meeting to provide overview and discuss initial concerns (with 4 other operators)
<b>Qalipu Mi'kmaq First Nation</b>		
June 3, 2016	Letter	Initiation of engagement and overview of the Project.
January 6, 2017	Letter	Project update
January 10, 2017	Phone call	Confirming letter was received
January 17, 2017 February 6, 2017 February 20, 2017 March 1, 2017	Email Voicemail	Follow-up
April 20, 2018	Workshop	CEAA-sponsored workshop on offshore exploration projects (5)
April 28, 2018	Email	Follow-up from workshop
June 5, 2018	Email	Draft EIS community profile sent for comment. Feedback on community profile received.
June 13, 2018	Email (Qalipu)	
June 5, 2018	Email	Update on status of all offshore exploration projects in NL/Labrador
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>NunatuKavut Community Council</b>		
June 3, 2016	Letter	Initiation of engagement and overview of the Project
January 6, 2017	Letter	Project update
January 10, 2017	Phone call	Confirming letter was received
January 17, 2017 January 27, 2017 February 6, 2017 February 20, 2017 March 1, 2017	Email Voicemail	Follow-up
April 20, 2018	Workshop	CEAA-sponsored workshop on offshore exploration projects (5)
April 28, 2018	Email	Follow-up from workshop
June 5, 2018	Email	Draft EIS community profile sent for comment.
June 5, 2018	Email	Update on status of all offshore exploration projects in NL/Labrador

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Date	Means of Engagement	Purpose
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Nunatsiavut Government</b>		
June 3, 2016	Letter	Initiation of engagement and overview of the Project
January 6, 2017	Letter	Project update
January 10, 2017	Phone call	Confirming letter was received
January 17, 2017 January 19, 2017 January 27, 2017 February 6, 2017 February 7, 2017	Email Voicemail Phone Call  Received email response from NG	Follow-up  NG stated that our letter of 01/06 was reviewed and requested the information be included in the EIS
June 5, 2018	Email	Draft EIS community profile sent for comment. Feedback on community profile received.
July 10, 2018	Email (NG)	
June 5, 2018	Email	Update on status of all offshore exploration projects in NL/Labrador
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Innu Nation</b>		
June 3, 2016	Letter	Initiation of engagement and overview of the Project
January 6, 2017	Letter	Project update
January 10, 2017	Phone call	Confirming letter was received
January 17, 2017 January 11, 2017 January 16, 2017 January 19, 2017 January 27, 2017 February 6, 2017 February 12, 2017 February 20, 2017 March 1, 2017	Email Voicemail Phone Call	Follow-up
April 20, 2018	Workshop	CEAA-sponsored workshop on offshore exploration projects (5)
April 28, 2018	Email	Follow-up from workshop
June 5, 2018	Email	Draft EIS community profile sent for comment.
June 5, 2018	Email	Update on status of all offshore exploration projects in NL/Labrador

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Date	Means of Engagement	Purpose
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Nova Scotia: Assembly of Nova Scotia Mi'kmaq Chiefs/KMKNO (Representing: Acadia, Annapolis Valley, Bear River, Glooscap, Membertou, Potlotek, Paq'n'kek, Pictou Landing, Waycobah, Wagmatcook and Eskasoni First Nations)</b>		
October 25, 2017	Phone call (KMKNO)	KMKNO Inquiring about proposed Project, and whether or not Husky will be engaging First Nations in NS.
November 17, 2017	Letter to KMKNO and 11 Chiefs/Councils	Provided overview of potential effects to salmon and swordfish.
January 12 – 26, 2017	Emails/phone calls	Inquiring whether KMKNO had feedback on overview.
January 31, 2018	Phone call	KMKNO confirmed they will be participating through the CEAA process once their consultants have reviewed the draft EIS.
April 12, 2018 April 28, 2018	Workshop Email	CEAA-sponsored workshop on offshore exploration projects (5) Follow-up from workshop
June 5, 2018	Email	Draft EIS community profile sent for comment.
June 5, 2018	Email	Update on status of all offshore exploration projects in NL/Labrador
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Nova Scotia: Sipekne'katik First Nation</b>		
November 11, 2017 December 1 and 12, 2017	Letter Phone call	Overview of potential effects on salmon and swordfish. Confirming receipt of letter / re-sent
December 20, 2017	Letter (Sipekne'katik)	Response from Chief Sack requesting a meeting.
January 17, 2018	Email	Offer to meet to provide overview of Project and background on potential effects to salmon and swordfish.
June 11 – July 26, 2018	Emails	Offer to meet to provide Project overview and discuss potential effects of Project.
June 5, 2018	Email	Provide update on EA status for all offshore Eastern NL/Labradore projects (5)
June 5, 2018	Email	Provided draft EIS community profile for feedback/comment.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.

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Date	Means of Engagement	Purpose
<b>Nova Scotia: Millbrook First Nation</b>		
November 11, 2017 December 12, 2017	Letter Phone call	Overview of potential effects on salmon and swordfish. Confirmed receipt of letter. Millbrook will be participating through the CEAA process.
April 20, 2018 April 28, 2018	Workshop (St. John's) Email	CEAA-sponsored workshop on offshore exploration projects (5) Follow-up from workshop
June 5, 2018	Email	Provide update on EA status for all offshore Eastern NL/Labrador projects (5)
June 5, 2018	Email	Provided draft EIS community profile for feedback/comment.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<p>New Brunswick: Mi'gmawe'l Tplu'taqnn Incorporated (MTI)                      Representing: Amlamgog (Fort Folly), Natoaganeg (Eel Ground), Oinpegitjoig (Pabineau), Esgenoôpetitj (Burnt Church), Tjipôgtôtjg (Boucouché), L'nui Menikuk (Indian Island), Ugpi'ganjig (Eel River Bar), Metepenagiag (Red Bank) Mi'kmaw First Nations</p>		
August 11, 2017	Letter (MTI)	Outlined potential impacts of the Project on MTI member communities, and requested capacity funding to study further.
September 20, 2017  October 12, 2017	Email  Conference call	Advised that Husky is preparing an overview of potential effects on salmon and swordfish. Referred funding requests to CEAA. Informed Husky that MTI communities are also concerned about potential effects on the North Atlantic right whale and American eel.
November 11, 2017	Email (MTI)	Provided rationale for community engagement and Indigenous Knowledge Study.
November 17, 2017	Letter	Overview of potential effects on salmon and swordfish for review/comment.
November 28, 2017 – January 8, 2018	Series of emails/phone calls	Exchange of emails on overview of effects on salmon and swordfish.
April 12, 2018 April 28, 2018	Workshop: Moncton Email	CEAA-sponsored workshop on offshore exploration projects (5) Follow-up from workshop
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 5, 2018 June 28, 2018	Email Email (MTI)	Provided draft EIS community profile for comment/feedback. Unable to comment due to capacity issues.

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June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>New Brunswick: Elsipogtog Mi'kmaq First Nation</b>		
November 17, 2017	Letter	Overview of potential effects of Project on salmon and swordfish.
December 1, 2017 – January 19, 2017	Emails/phone call	Requesting additional time and resources to review overview and provide comments.
March 28, 2018	Email	Offer to meet in community with four other companies undertaking exploration (BP, ExxonMobil, Nexen, and Equinor)
March 29 – April 10, 2018	Series of emails	Attempts to arrange a meeting between Elsipogtog First Nation and Husky (together with four other exploration proponents).
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 5, 2018	Email	Provided draft EIS community profile for review and comment.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
June 26 – July 4, 2018	Email/Letters (to CEAA)	Clarification of attempts to meet with Elsipogtog First Nation in 2018.
<b>New Brunswick: Wolastoqey Nation in New Brunswick (WNNB) (Representing: Kingsclear, Madawaska, St. Mary's, Tobique and Oromocto Maliseet First Nations)</b>		
November 17, 2017	Letter to all WNNB member communities	Overview of potential effects of the Project on salmon and swordfish.
December 1, 2017	Email	Requesting confirmation of receipt of overview.
April 12, 2018	Workshop: Moncton	CEAA-sponsored workshop on offshore exploration projects (5)
April 28, 2018	Email	Follow-up from workshop
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 5, 2018	Email	Provided draft EIS community profiles for review and comment.
July 13, 2018	Email	Received comments on draft EIS community profiles.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.



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Date	Means of Engagement	Purpose
<b>New Brunswick: Woodstock Wolastoqey First Nation</b>		
November 11, 2017	Letter	Provided overview of potential effects of the Project on salmon and swordfish.
December 1, 2017 – January 8, 2018	Series of emails	Confirmed receipt of overview and commented that Woodstock would participate through CEAA process and review of draft EIS.
June 5, 2018	Email	Provided draft EIS community profile for review and comment.
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>New Brunswick: Peskotomuhkati Nation at Skufik (Passamaquoddy)</b>		
November 17, 2017	Letter	Overview of potential effects of the Project on salmon and swordfish.
December 1, 2017 – January 29, 2018	Series of emails/phone calls	Reached out to verify if they received the overview; Passamaquoddy requested meeting.
January 29, 2018	Phone call	Call with Bronte Thomas to discuss initial concerns: concern for groundfish, especially cod; noise effects on cetaceans. Intend to respond to the EIS once submitted.
April 12, 2018 April 28, 2018	Workshop: Moncton Email	CEAA-sponsored workshop on offshore exploration projects (5) Follow-up from workshop
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 5, 2018	Email	Provided draft EIS community profile for review and comment.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Prince Edward Island: Mi'kmaq Confederacy of Prince Edward Island (MCPEI) (Representing: Lennox Island and Abegweit Mi'kmaw First Nations)</b>		
November 17, 2017	Letter	Overview of potential effects to salmon and swordfish from the Project.
December 1, 2017	Phone call	Confirmed receipt of overview.
December 4, 2017	Letter	Expressing general concern the Project may have on salmon migration; and citing distance between PEI and the Project, specific concerns were deferred to Indigenous Peoples of NL.
April 12, 2018	Workshop: (Moncton)	CEAA-sponsored workshop on offshore exploration projects (5)

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Date	Means of Engagement	Purpose
April 28, 2018	Email	Follow-up from workshop.
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 5, 2018	Email	Provided draft EIS community profile for review and comment.
June 13, 2018	Email	Received comments on community profile from MCPEI.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Quebec: Mi'gmawei Mawiomni Secretariat (MMS) (Representing: Listiguj, Gespeg and Gesgapegiag Mi'kmaw First Nations)</b>		
November 21, 2017	Letter	Overview of potential effects to salmon and swordfish from the Project.
December 5, 2017 – January 26, 2018	Emails / phone calls	Husky inquired about feedback on overview of potential effects to salmon and swordfish.
April 18, 2018 April 28, 2018	Workshop: Quebec City Email	CEAA-sponsored workshop on offshore exploration projects (5) Follow-up from workshop.
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)
June 5, 2018	Email	Provided draft EIS community profile for review and comment.
June 19, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
July 23, 2018	Phone call	General update on the status of all NL offshore projects (5).
<b>Quebec: La Première Nation des Innus de Nutashkuan</b>		
November 21, 2017	Letter	Overview of potential effects of Project on salmon and swordfish.
December 5, 2017 – January 31, 2018	Emails/phone calls	Husky confirmed with Nutashkuan First Nation that they received the overview and will participate in the CEAA process after reviewing the draft EIS.
April 18, 2018 April 28, 2018	Workshop: Quebec City Email	CEAA-sponsored workshop on offshore exploration projects (5) Follow-up from workshop.
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky)

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Date	Means of Engagement	Purpose
June 5, 2018 June 11, 2018	Email Email	Provided draft EIS community profile for review and comment. Response provided by Nutashkuan First Nation on draft community profile.
June 21, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.
<b>Quebec: La Premiere Nation des Innus de Ekuanitshit</b>		
November 21, 2017	Letter	Provided overview of potential effects on salmon and swordfish.
December 12, 2017 – January 29, 2018	Emails / phone calls	Attempts to confirm receipt of overview, and when comments might be received.
February 5, 2018	Phone call (Ekuanitshit)	Confirming overview received. Letter sent to Husky on January 21, 2018 was resent (original not received).
April 18, 2018 April 28, 2018	Workshop: Quebec City Email	CEAA-sponsored workshop on five offshore exploration projects. Follow-up to workshop.
June 5, 2018	Email	Provided draft EIS community profile for review and comment.
July 4, 2018	Email	Received comments on community profile.
June 5, 2018	Email	Provided update on EA status for all offshore Eastern NL/Labrador projects (Husky).
June 21, 2018	Email	Provided information regarding amendment to include EL 1155 in Project Description / ELs 1121 and 1134 removed.

### 3.3.3 Comments Raised During Engagement

A summary of key issues raised during engagement with Indigenous groups and how they have been addressed is provided in Table 3.5. Issues/concerns were raised either: directly during engagement with Husky Energy or the CEA Agency; through previous submissions to EIS review on similar offshore NL exploration drilling projects; and, at recent workshops held by Husky and others in April 2018 in St. John's, Moncton, and Quebec City.

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**Table 3.5 Comments Raised During Indigenous Engagement and Where they are Addressed in the Environmental Assessment**

Comment	Husky Response	EIS Section Reference
<p>Noted use of fishing boats on the northeast coast of Newfoundland. Concern raised regarding movement of vessels and the potential effects to commercial fishing</p>	<p>Husky will implement its Vessel Traffic Management Standard (AR-M-99-R-PR-00003-001), which includes procedures for management and communication relevant to the movement of OSVs, survey vessels, and MODU during Project-related activities. All communications between Husky, operators, and fishers will adhere to this standard.</p> <p>Any Project-related damage to fishing gear will be compensated in accordance with the Compensation Guidelines Respecting Damages Relating to Offshore Petroleum Activity (C-NLOPB and CNSOPB 2017), any Husky internal practices and policies.</p>	<p>Section 4.3.1 (Commercial Fishing) Section 6.6 (Indigenous People and Community Values)</p>
<p>Would like to remain informed about Project activities</p>	<p>Husky will develop an Indigenous Fisheries Communications Plan with Indigenous groups to provide continued information-sharing throughout the lifecycle of the Project.</p>	<p>Section 6.6 (Indigenous People and Community Values)</p>
<p>Interested in information about spill modelling</p>	<p>Section 7.2 of this EIS provides a description of the potential accidental events to be assessed within the Study Area, including an oil spill (both operational batch and blowout). Given the geographic and environmental consistencies, the WREP EA (Husky Energy 2012a) and the SL Ross Modelling Report (SL Ross 2012) have been referenced extensively in this analysis.</p> <p>Husky and other offshore NL proponents will be holding a series of technical workshops in October 2018 to provide opportunity for Indigenous groups to receive more information about oil spill modelling and provide comments and feedback.</p>	<p>Section 7.2 (Identification of Accidental Event Scenarios)</p>
<p>Would like to understand what are the potential impacts to Treaty rights</p>	<p>Husky has studied the possibilities and have not identified any Indigenous group whose potential or established Aboriginal or Treaty rights may be adversely affected by the Project.</p> <p>Husky continues to engage with Indigenous groups to further understand if there are any potential adverse impacts to Aboriginal and/or Treaty rights.</p>	<p>Section 6.6 (Indigenous People and Community Values)</p>

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Comment	Husky Response	EIS Section Reference
Concern for harvestable species that pass through the Project Area and reach the near shore which could be impacted	Information regarding species of interest that may be present in the Project Area and Study Area, including migratory species, are provided in Section 4.2. Potential effects to these species from routine Project activities are provided in Section 6.1 (Fish and Fish Habitat), Section 6.3 (Marine Mammals and Sea Turtles), and Section 6.4 (Migratory Birds). Potential effects of routine Project activities on traditionally hunted species by Indigenous communities are provided in Section 6.6 (Indigenous People and Community Values).	Section 4.2 (Marine Biological Environment) Section 6.1 (Fish and Fish Habitat) Section 6.3 (Marine Mammals and Sea Turtles) Section 6.4 (Migratory Birds) Section 6.6 (Indigenous People and Community Values)
Concerns regarding potential cumulative effects of having numerous proposed exploration wells within geographic proximity of one another, layered on top of other current oceans uses, such as fishing and transportation.	Chapter 9 provides an assessment on cumulative effects. As discussed in Section 9.2.4, in consideration of the various physical activities that have been, are being, and will be carried out in the Study Area, the Project is expected to result in a relatively small, incremental increase in cumulative residual environmental effects on commercial fisheries in comparison with the future scenario without the Project. Standard practices for at-sea communication among marine users, including the issuance of Notices to Mariners and Notices to Shipping (as appropriate), is expected to mitigate potential conflicts with fisheries as well as other ocean users.	Section 9.2.4 (Assessment of Cumulative Environmental Effects on Commercial Fisheries)
Concerns that emergency preparedness and response is not robust enough; and, that options such as capping stacks should be located in NL.	Husky's spill prevention and response measures are detailed in Section 7.1 of the EIS. Husky is prepared to effectively respond to an oil spill in offshore Newfoundland and Labrador in the event that one should occur and is equipped with various response tools and strategies. Contingency plans are in place to detail the associated practices and procedures for responding to different emergency scenarios. All plans surrounding response to accidental events such as an oil spill are submitted for review and approval by the C-NLOPB as part of regulatory authorizations to conduct drilling activities.	Section 7.1 (Spill Prevention and Response)
Concerns regarding potential impacts on commercial communal fisheries.	Potential effects to commercial communal fisheries is assessed in Section 6.6 (routine activities) and Section 7.3.6 (accidental events) of the EIS. It was concluded in the Section 6.6.11 that, with the application of proposed mitigation and environmental protection measures, the residual environmental effects commercial communal fisheries is predicted to be not significant. Given the extensive nature of the worst-case, unmitigated blowout event, a significant effect is conservatively predicted for commercial communal fisheries; however, this significant effect occurring is considered low, given the very low potential for a blowout to occur.	Section 6.6 (Indigenous People and Community Values) Section 7.3.6 (Indigenous People and Community Values – Accidental Events)

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Comment	Husky Response	EIS Section Reference
<p>Concerns were expressed regarding the inclusion, level, frequency of monitoring and follow-up programs for marine mammals, fish and fish habitat and migratory birds.</p>	<p>Given the nature of the Project (i.e., exploration drilling) and the existing knowledge of potential environmental effects related to this type of activity gained through existing EEM and existing literature, monitoring and follow-up requirements for the proposed Project, including cumulative effects, is limited. Monitoring programs for various VCs recommended during certain activities associated with the Project are discussed in the relevant VC sections (see Section 6). In summary, these include the following:</p> <ul style="list-style-type: none"> <li>• MMOs will be employed to monitor and report on sightings of marine mammals and sea turtles as required in the Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C-NLOPB 2017a) (see Section 6.3.10.2).</li> <li>• Routine checks for stranded birds on the MODU and OSVs (with handling as per the Environment Canada (2015) and Williams and Chardine (1999) protocol) and compliance with the requirements for documenting and reporting any stranded birds (or bird mortalities) to the Canadian Wildlife Service during the drilling program.</li> </ul>	<p>Section 11.4 (Monitoring and Follow-up)</p>