Husky Energy

REPORT

REPORT TITLE

[redacted]

Husky Energy Atlantic Region
Newfoundland and Labrador Offshore Area
Environmental Assessment Review for 2013

SUBMITTED TO

Ms. E. Young
Canada-Newfoundland and Labrador Offshore Petroleum Board
5th Floor, TD Place
140 Water Street
St. John's, NL A1C 6H6

SUBMITTED BY

Husky Energy
235 Water Street, Suite 901
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Additional Comments

Signature:	[redacted]	[redacted]	[redacted]
Date:			
Name	David Pinsent,	Steve Bettles,	SueAnn Thistle,
Title	Sr. Environmental Advisor	Environment Lead	Manager; Health, Safety, Environment and Quality
	Reviewed By	Reviewed By	Approved By Department Manager

Date:	May 2013	Report No.:	AR-HSE-RP-0175	Version No:	2

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1.0 Introduction

Offshore oil and gas exploration and production programs generally encompass long periods of time and multiple, successive, operational steps. As a consequence, environmental assessments of these programs address a variety of activities undertaken over a number of years.

This document is the sixth annual review of the status and ongoing validity of the environmental assessments currently in place for Husky Energy's activities in the Newfoundland and Labrador Offshore Area. These reviews are to assist the C-NLOPB in fulfilling its responsibilities under the *Canadian Environmental Assessment Act* by ensuring that the scope of the assessment(s) and the mitigations committed to therein remain technically valid.

The following lists Husky Energy's environmental assessments that have been approved by the C-NLOPB under which Husky may be conducting offshore operations during 2013.

Table 1 – Current Environmental Assessment Approvals for Husky Energy

Screening Determination Reference[1]	EA Report Title	Husky Document Number
CEAR No. 06-01-7410	Husky White Rose Development Project: New Drill Centre Construction and Operations Program Environmental Assessment & Addendum	WR-HSE-RP-4003 & WR-HSE-RP-0167
CEAR No. 07-01-28877	Husky Delineation/Exploration Drilling Program for Jeanne d'Arc Basin Area, 2008-2017	ED-HSE-RP-0016
CEAR No. 11-01-65302	Jeanne d'Arc Basin Flemish Pass Regional Seismic Program 2012-2020	AR-HSE-RP-0110

The following sections organized by specific, individual environmental assessments provide the necessary information to confirm the ongoing validity of the assessment in question or note any changes that need to be addressed.

[1] Follow the links to C-NLOPB public registry to view the environmental assessments, amendments and regulatory determinations.

2.0 Husky White Rose Development Project: New Drill Centre Construction and Operations Program Environmental Assessment

2.1 Project Description and Scope

2.1.1 Activities Covered

This project involves the construction of up to five (5) glory holes during a construction phase that will continue through 2015. Construction will also include installation of drilling templates and other subsea equipment in the glory holes to support eventual production operations. In addition, subsea flow lines will also be installed to connect new glory holes with existing ones that connect to the *SeaRose FPSO*.

Husky Energy proposed to develop up to five new drill centres within the White Rose field. Two of the five has been excavated to date, the North Amethyst Drill Centre and the South White Rose Extension. Additional drill centres contemplated were the North White Rose Extension (NWRX) and the West White Rose Extension (WWRX) with up to two new drill centres. There are a total of 54 wells proposed for these five drill centres.

The Project includes the use of mobile operating drilling units, construction and diving vessels, marine support vessels, helicopter support and existing shore based facilities in St. John's Harbour. The new drill centres will either be tied-back to the SeaRose FPSO through new production flowlines or directly to the SeaRose FPSO.

Geohazard/well site surveys and vertical seismic profiling (VSP) using an airgun array may be required on an as-needed basis at any time of the year. Geotechnical surveys (i.e. core drilling) may also occur year round. Production operations associated with these five new drill centres would occur between 2009 and 2020.

2.1.2 Geographic Scope

The geographic scope of the Drill Centre assessment is portrayed in the inset map in Figure 2-1. Planned activities for 2013 will occur throughout the Project Area.

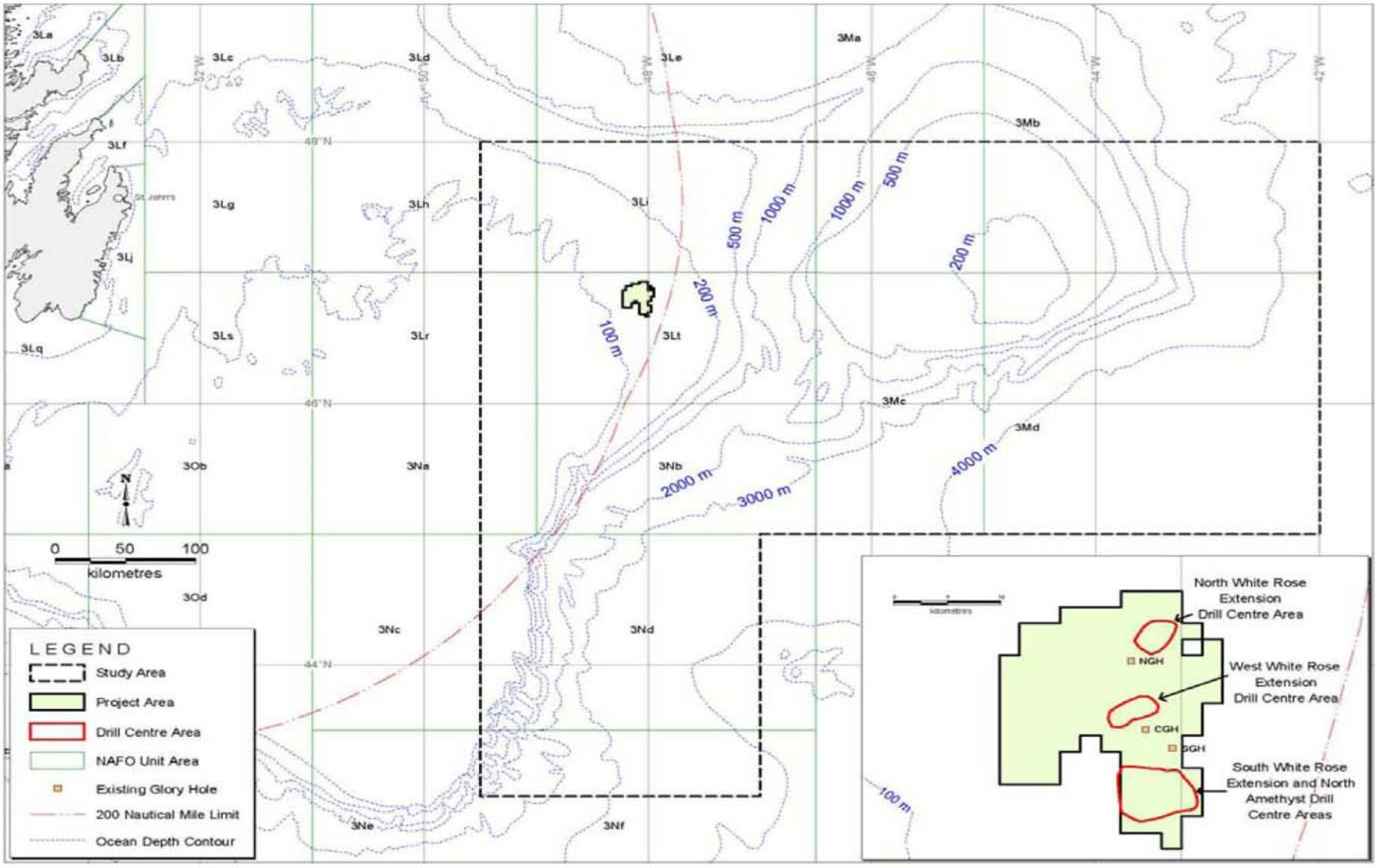


Figure 2-1 - Geographic Scope of Project Area for CEAR No. 06-01-7410

2.1.3 Temporal Scope

The temporal scope of New Drill Centre construction and operation activities is from 2007 to 2015.

Annually, glory hole dredging activities are scheduled for May through mid-September each year. The South White Rose Extension (SWRX) drill centre was excavated during the summer of 2012. Drilling and construction related activities are scoped for year round operations, however placement of subsea equipment to support drilling and production operations and installation of flow lines in glory holes will most likely occur during the summer and fall weather windows.

To date, development drilling activities carried out under the scope of this environmental assessment involved drilling at the North Amethyst Drill Center. A total of 7 of the 54 wells estimated for up to five potential glory holes scoped under this environmental assessment have been started or completed.

2.1.4 Planned Activities for 2013

The SWRX Drill Center will be tied back to the existing production, water injection and gas lift flowlines from the North Amethyst Drill Centre (NADC) and the Southern Drill Centre (SDC). A gas injection flowline from the Northern Drill Centre will tie-in directly to the SWRX Drill Centre. The final connection location will be either midline or at the end of the drill centers pending final routing reviews. The nominal locations of the flowlines are illustrated in Figure 2-2.

The umbilical and flowlines utilized for SWRX will be of similar design and specifications as those installed for the White Rose and North Amethyst drill centres. It is expected that one or two oil production flowlines, one water injection flow line and one gas lift line will be routed approximately 3 km from SWRX to the existing flowlines between NADC and SDC. Flowlines will be laid on the seafloor and will be insulated as required for temperature and flow assurance purposes. The umbilical between SDC and SWRX will be a maximum of 5 km in length.

The gas injection flowline will be a combination of rigid (12 km length) and flexible (4 km length) pipe with three inline structures: an NDC flowline isolation module, a midline module to allow future tie-in of a wellhead platform or subsea development in the West White Rose area and an SWRX flowline isolation module. Although flexible pipe would also provide an adequate technical solution, the combination of rigid and flexible has been deemed the best solution for the project taking into consideration schedule and cost.

Some modifications will be required to the NDC to allow connection of the gas injection line to SWRX. The NDC manifold will be modified to allow for GI flowline connection and tie-in of control jumpers. Modifications required will be finalized during detailed design. The subsea equipment installation is scheduled during Q2 and Q3 of 2013.

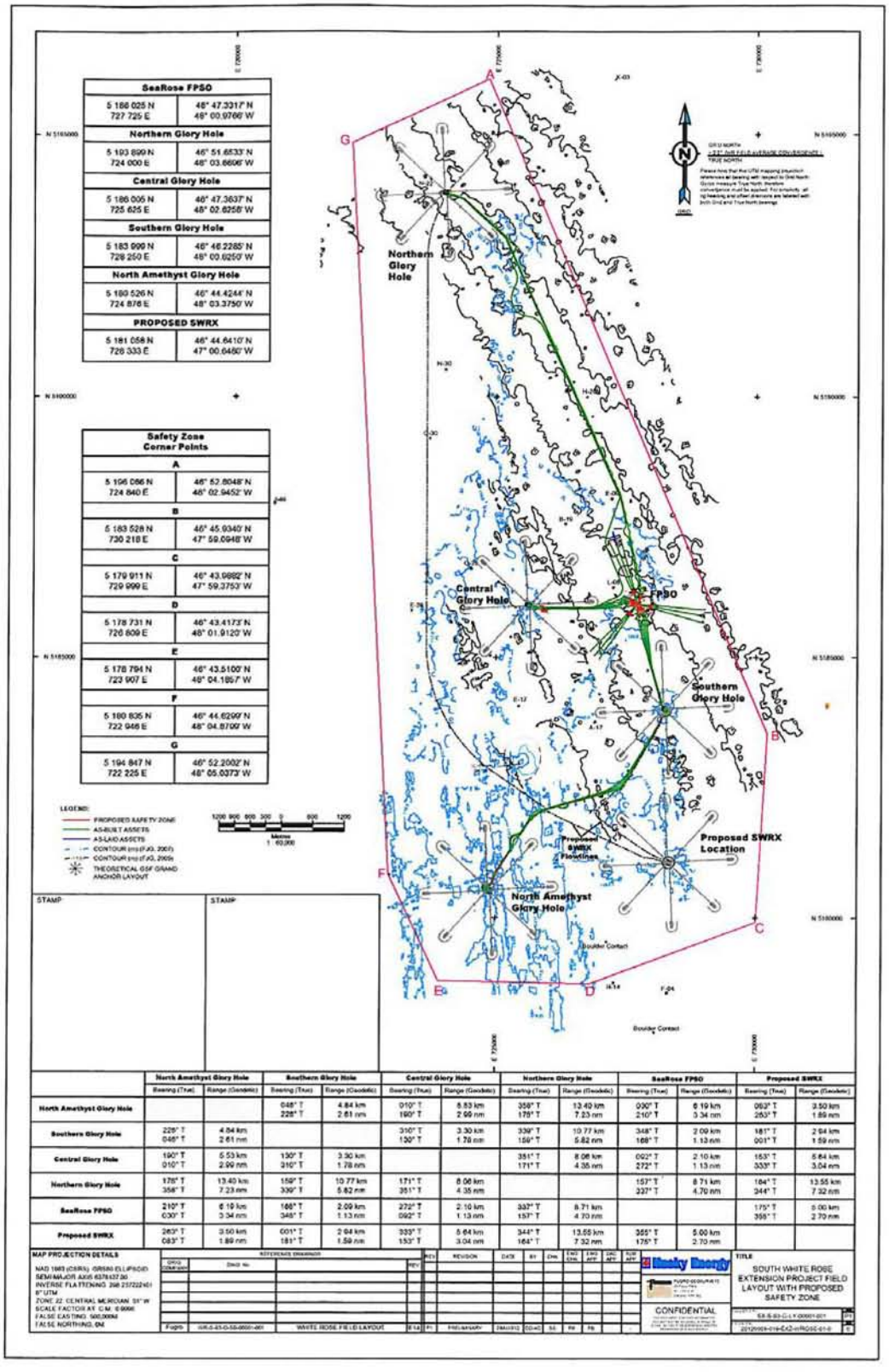
Iceberg protection measures applied to the current White Rose and North Amethyst developments will also be applied to the SWRX development including placement of wellheads, Xmas trees and manifolds in glory holes, with the top of the critical equipment below the seabed level and use of flowline and umbilical weak link technology.

A gas injection well is scheduled to begin at the SWRX drill centre on December 24, 2012. The approximate duration of the well for drilling and completion is 90-100 days. The White Rose safety zone will therefore have to be amended to accommodate the drilling activity at the SWRX drill centre (Figure 2-3).

Drilling and completion operations programs for the SWRX well designs will be based on experience from the White Rose and North Amethyst developments, and will use existing processes and systems. SWRX will utilize well templates and wellhead systems similar to those used on the White Rose and North Amethyst developments, with the exception that a larger conductor string may be used in future wells.

White Rose and North Amethyst drilling practices employed to drill conductor and surface hole sections will be applied to SWRX wells to mitigate the impact of drill cuttings and cement spillage into the glory hole. Specifically, Guar gum sweeps, cuttings transport systems and reduced excess cement will be used. Synthetic-based muds will be used to drill the intermediate and production hole sections. Best available technology will continue to be used to minimize synthetic drill mud on cuttings. Advanced directional drilling tools and systems will continue to be used to drill the deviated and horizontal wells required to develop this region of the field. Existing White Rose and North Amethyst cementing practices will also be applied to SWRX. Conductor and surface casing strings will be cemented to the seafloor, and subsequent strings will be cemented in such a manner to ensure that the movement of formation fluids in the casing annulus is prevented and the reservoir zone is isolated.

SWRX well completions will be designed to maximize well productivity while maintaining the necessary standard of risk and well integrity. Detailed design of the drilling and completions program for the SWRX wells will be addressed in the individual Approval to Drill a Well (ADW) applications.



	North Amethyst Glory Hole		Southern Glory Hole		Central Glory Hole		Northern Glory Hole		SeaRose FPSO		Proposed SWRX	
	Bearing (True)	Range (Geodetic)	Bearing (True)	Range (Geodetic)	Bearing (True)	Range (Geodetic)	Bearing (True)	Range (Geodetic)	Bearing (True)	Range (Geodetic)	Bearing (True)	Range (Geodetic)
North Amethyst Glory Hole			048° T 228° T	4.84 km 2.61 nm	010° T 190° T	5.83 km 2.99 nm	358° T 178° T	13.40 km 7.23 nm	030° T 210° T	6.19 km 3.34 nm	063° T 253° T	3.50 km 1.89 nm
Southern Glory Hole	225° T 046° T	4.84 km 2.61 nm			310° T 130° T	3.30 km 1.78 nm	339° T 159° T	10.77 km 5.82 nm	348° T 168° T	2.09 km 1.13 nm	181° T 001° T	2.94 km 1.59 nm
Central Glory Hole	190° T 010° T	5.53 km 2.99 nm	130° T 310° T	3.30 km 1.78 nm			351° T 171° T	8.06 km 4.35 nm	092° T 272° T	2.10 km 1.13 nm	153° T 333° T	5.64 km 3.04 nm
Northern Glory Hole	178° T 358° T	13.40 km 7.23 nm	159° T 339° T	10.77 km 5.82 nm	171° T 351° T	8.06 km 4.35 nm			157° T 337° T	8.71 km 4.70 nm	164° T 344° T	13.55 km 7.32 nm
SeaRose FPSO	210° T 030° T	6.19 km 3.34 nm	166° T 346° T	2.09 km 1.13 nm	272° T 092° T	2.10 km 1.13 nm	332° T 152° T	8.71 km 4.70 nm			175° T 355° T	5.00 km 2.70 nm
Proposed SWRX	243° T 063° T	3.50 km 1.89 nm	001° T 181° T	2.94 km 1.59 nm	333° T 153° T	5.64 km 3.04 nm	344° T 164° T	13.55 km 7.32 nm	355° T 175° T	5.00 km 2.70 nm		

MAP PROJECTION DETAILS
NAD 1983 (CSRS) (ORIG ELLIPSOID)
SEMI-MAJOR AXIS 6378137.00
INVERSE FLATTENING 298.25722101
6° UTM
ZONE 22 CENTRAL MERIDIAN 51° W
SCALE FACTOR AT C.M. 0.9996
FALSE EASTING 500,000M
FALSE NORTHING 0M

REFERENCE DRAWINGS

REV	REVISION	DATE	BY	CHK	ENG CHK	ENG APP	CNL APP	SUB APP

Husky Energy

CONFIDENTIAL

TITLE: SOUTH WHITE ROSE EXTENSION PROJECT FIELD LAYOUT WITH PROPOSED SAFETY ZONE

Fugro	WHITE ROSE FIELD LAYOUT	8 1:4	P1	

Figure 2-2 - SWRX Tie-in and Safety Zone

2.2 Environmental Aspects

2.2.1 Fisheries

Consultations specific to this EA update were held on November 20, 2012 with Fish Food and Allied Workers Union and One Ocean to discuss new activities planned for 2013. There is also ongoing liaison with the fishing industry through the regular meetings of the One Ocean Technical Working Group that involves representatives from the various operating oil and gas companies and fishing interests.

Fishing activities in the study area have not changed significantly since the initial environmental assessment and there are no foreseen changes for 2013.

Figure 2-3 below provides a map of recently compiled fishing activity information that depicts an overall patterning of fishing activities that is consistent with that documented in the original environmental assessment. This compilation is derived from Fisheries and Oceans Canada (DFO) databases including research vessel and underutilized species information.

While the general pattern of fishing near White Rose is seen to be generally the same between years, the following paragraphs note some points relevant to the interaction between the oil and gas and fishing industry within the scope of this environmental assessment.

As noted in previous updates, a directed fishery for American Plaice has not existed for some time and this has not changed as of 2013. If in the future a directed fishery is authorized then previous fishing patterns for that species may be re-established in areas in and near the Jeanne d'Arc basin.

Husky understands that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by DFO data. Hence this requires that Husky continue to consult with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year.

With regard to the conduct of its operations, Husky will continue to keep fishing interests informed of these activities during the operational planning phases. This will be done through the established One Ocean and FFAW contacts and others as deemed necessary or as advised.

Since the approval of the aforementioned environmental assessment, the fishing and oil and gas industries, through One Ocean, have completed two initiatives to help enhance communication and collaboration between the two industries. The first is a communication protocol that has been distributed to fishers and members of the petroleum industry. The protocol recommends communication procedures between fish harvesters and offshore installations and petroleum-related vessels during operational activities. The second is a risk-based decision matrix that defines the conditions under which oil and gas operators could employ either or both a Fisheries Liaison Officer or a guide vessel in support of certain oil and gas operations that have a potential to affect fisheries activities offshore.

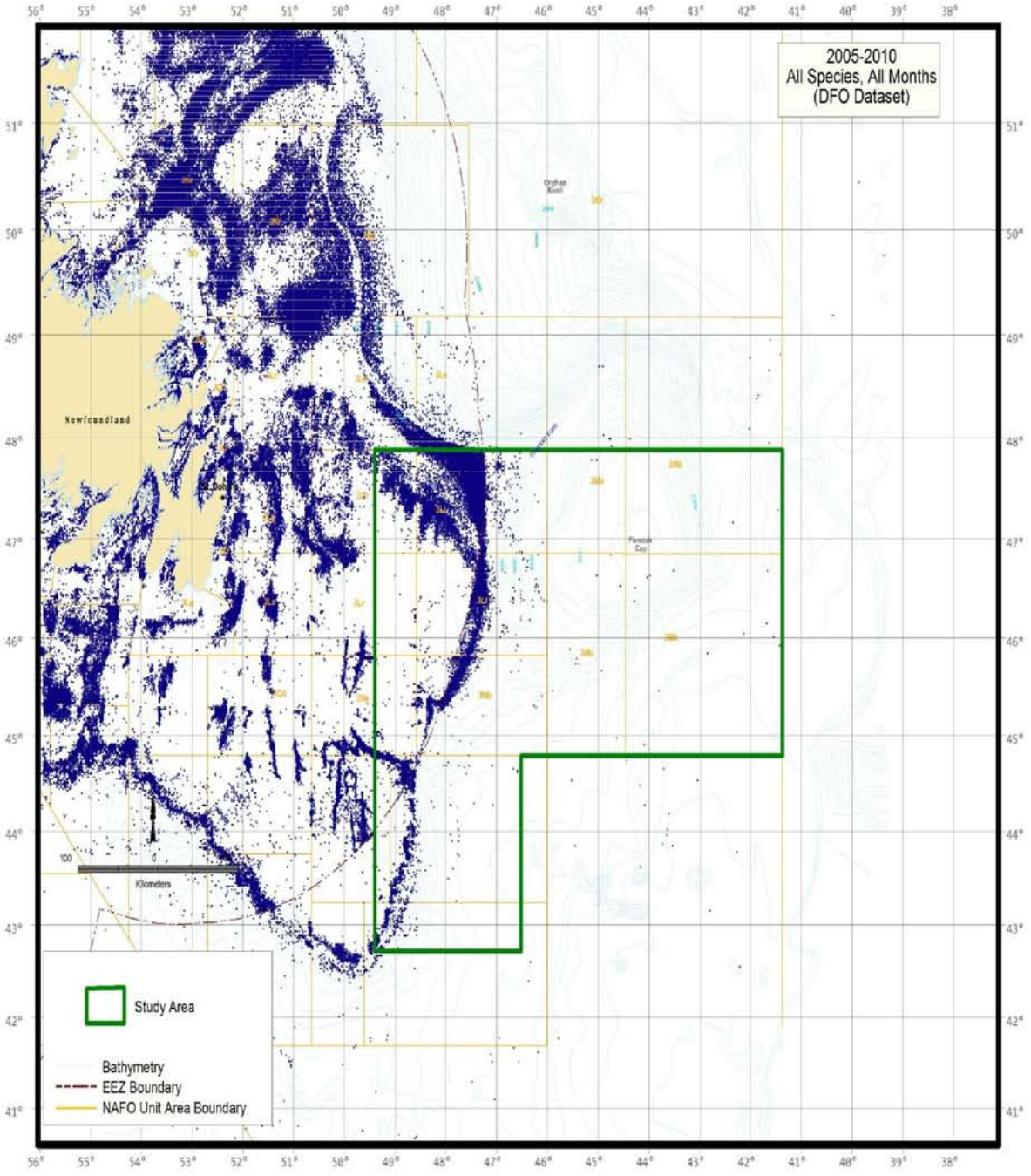


Figure 2-3 - Cumulative pattern of Fishing Activity from 2005 - 2010 in the Jeanne d'Arc Basin in relation to the EA Study Area

2.2.2 Species at Risk

An updated listing of SARA and COSEWIC[2] species for the Grand Banks area of relevance to this assessment is provided in Appendix 1. SARA listed species with final recovery strategies in place are noted. None of the SARA listed species relevant to the scope of this assessment have an associated critical habitat description or an action or management plan in place. It is noted however that the North Atlantic Right Whale does have a critical habitat statement pursuant to SARA however it is rare in the Study Area considered under this environmental assessment (see Appendix 1 – footnotes). Appendix 1 also provides the COSEWIC candidate species under consideration.

There are two cetacean species (blue whale, and North Atlantic right whale), one sea turtle species (leatherback), one seabird species (Ivory Gull), and three fish species (white shark, northern and spotted wolffish) that are legally protected under SARA and have potential to occur in the Study Area. Atlantic wolfish, the Atlantic population of fin whales and Sowerby's beaked whale are designated as special concern on Schedule 1 of SARA.

Final recovery strategies have been prepared for five species currently designated as either endangered or threatened under Schedule 1 and potentially occurring in the Study Area: the leatherback sea turtle, the spotted wolffish, the northern wolffish, the blue whale, and the North Atlantic right whale. A management plan has also been prepared for the Atlantic wolffish, currently designated as special concern on Schedule 1.

In May 2012, COSEWIC designated the smooth skate (*Malacoraja senta, Funk Island Deep population)* as endangered and the thorny skate (Amblyraja *radiata*) as special concern.

None of the recovery plans for SARA listed species in place materially change the mitigation measures currently committed by Husky for the scope of the operations addressed by the environmental assessment.

2.2.3 Mitigations

Husky regards the environmental predictions and consequent mitigations cited in the environmental assessment and subsequent significance determination that relates to CEAR No. 06-01-7410 as still valid and re-commits to implementing these mitigation measures for the activities to be carried out under the scope of this assessment this year.

The potential environmental effects of subsea equipment installation and drilling activities potentially undertaken as described in Section 2.1.4 are assessed to be *not significant* when evaluated against the assessment definitions and criteria applied to the valued ecosystem components addressed in the original assessment.

[2] SARA: *Species At Risk Act*. COSEWIC: Committee on the Status of Endangered Wildlife in Canada

3.0 Husky Delineation/Exploration Drilling Program for Jeanne d'Arc Basin Area, 2008-2017

3.1 Project Description and Scope

3.1.1 Activities Covered

This environmental assessment addressed Husky Energy's proposal for drilling 18 delineation and/or exploration wells from semi-submersible or jack-up mobile drilling units or drill ships within any current or future Husky land holdings in the Jeanne d'Arc Basin area during 2008 to 2017. To date 5 of these 18 wells have been drilled as follows:

- White Rose K-03 - Delineation (Spud 21 Nov 2007 to Jan 2008)
- North Amethyst E-17 - Delineation (Spud 9 Aug, 2008)
- White Rose E-28 - Delineation (Spud 13 Oct 2008)
- Glenwood H-69 - Exploration (Spud 25 Jan 2010)
- North Amethyst H-14 - Delineation (Spud 21 Mar 2010)

3.1.2 Geographic Scope

The geographic scope of the drilling program is depicted in Figure 3-1. The project area is depicted by the red rectangle. The coordinates of the project area are as follows:

48° North and 49.5° West;

48° North and 47° West;

46° North and 49.5° West; and,

46° North and 47° West.

3.1.3 Temporal Scope

Exploration and delineation drilling activities including vertical seismic profiles associated with the drilling program as outlined above may be carried out year round from 2008 through 2017.

3.1.4 Planned Activities for 2013

For 2013, a single deliniation well is planned at SDL 1026, northwest of White Rose. A single exploration well is scheduled for EL 1110, in the Flemish Pass. Both wells are scheduled for Q3 to Q4 2013, and are subject to rig availablity. Please see Figure 4-3 for map of Husky licences.

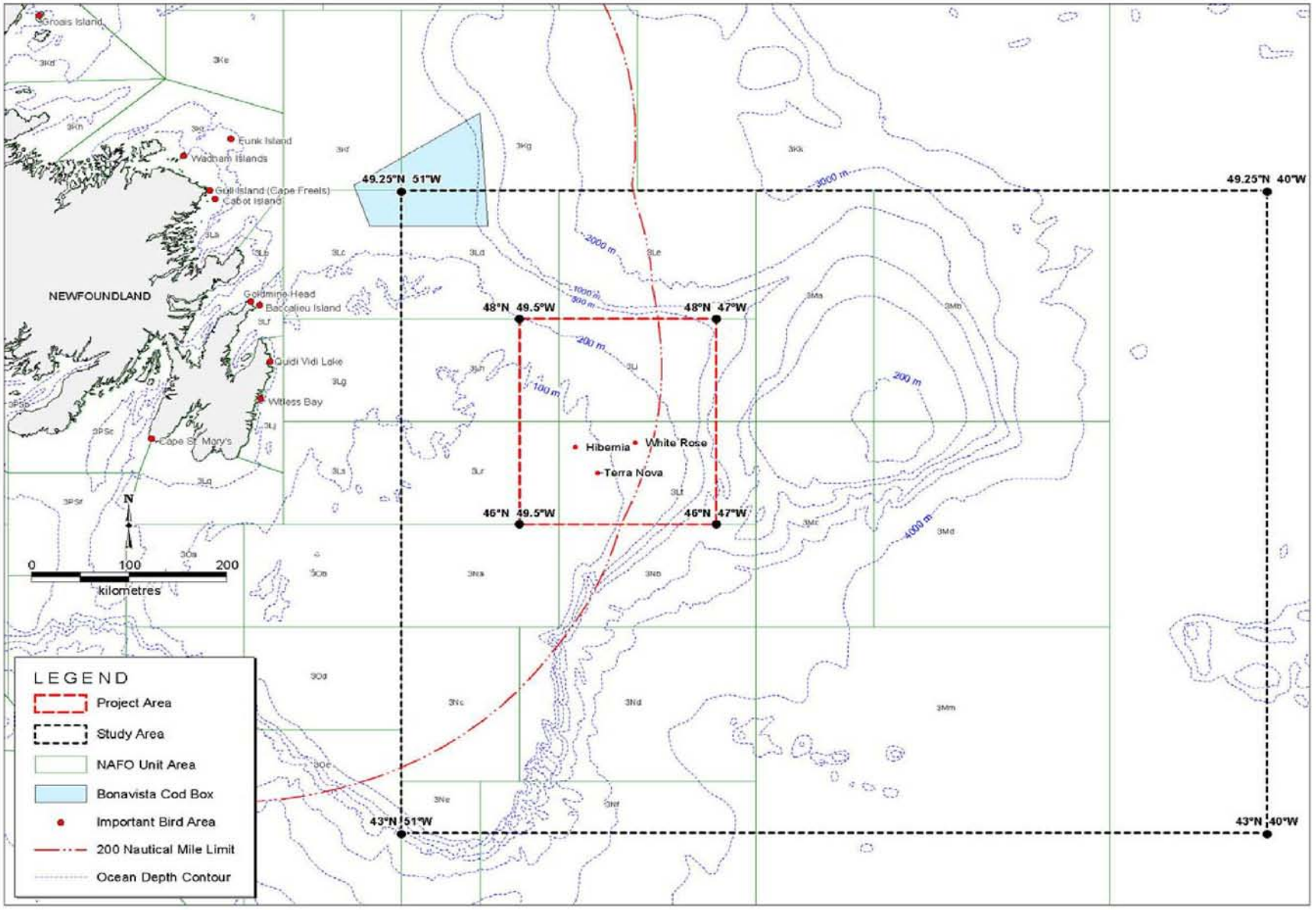


Figure 3-1 - Geographic Scope of Project Area CEAR No. 07-01-28877

3.2 Environmental Aspects

3.2.1 Fisheries

Fishing activities in the study area have not changed significantly since the initial environmental assessment was accepted and the program approved. Figure 3-2 below provides a map of recently compiled fishing activity information that depicts an overall patterning of fishing activities that is consistent with that documented in the original environmental assessment. This compilation is derived from Fisheries and Oceans Canada (DFO) databases including research vessel and underutilized species information.

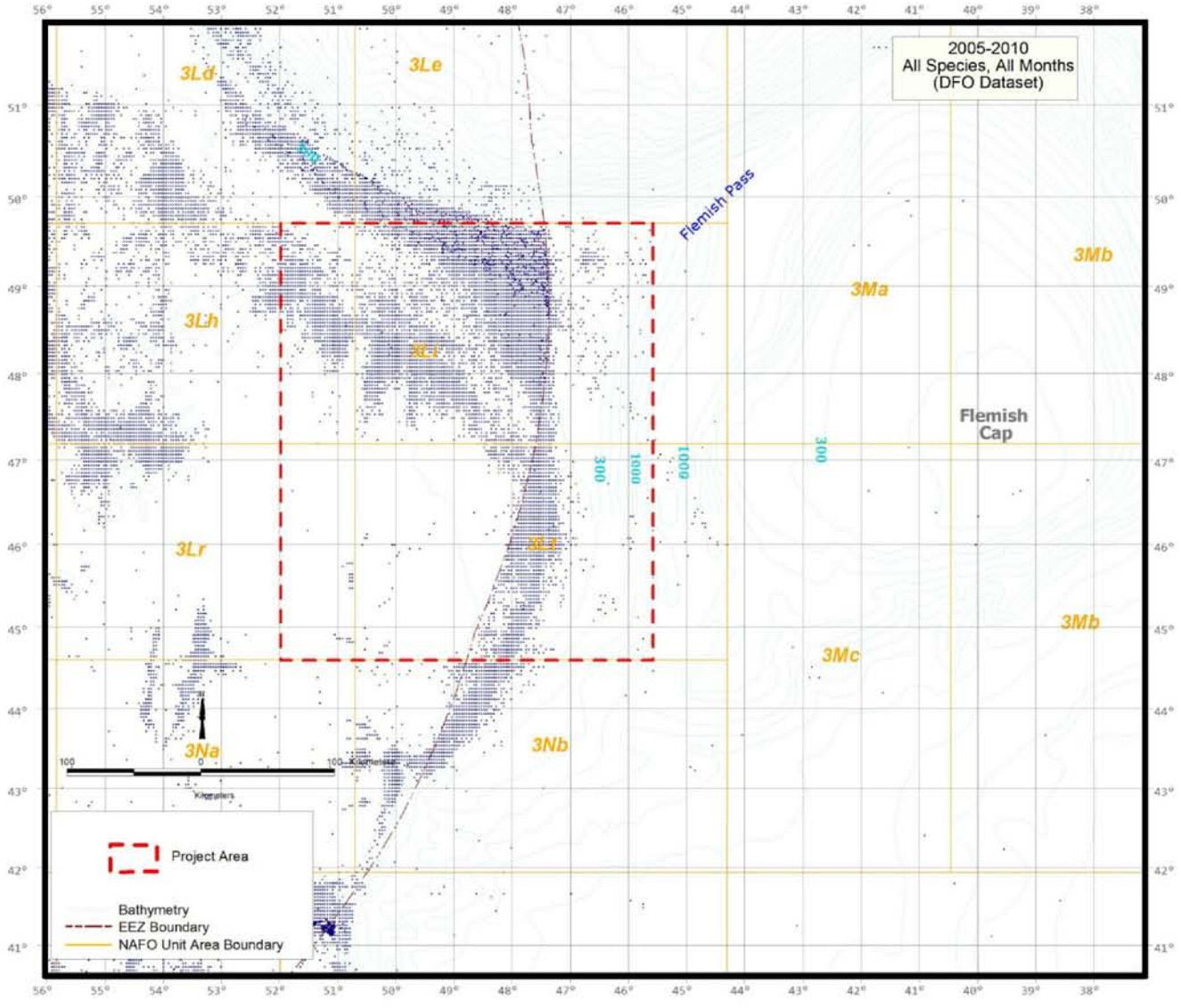


Figure 3-2 - Cumulative pattern of Fishing Activity to 2005 - 2010 in Jeanne d'Arc Basin in relation the EA Project Area

Consultations specific to this EA update were undertaken on November 20, 2012 with Fish Food and Allied Workers Union and One Ocean to discuss new activities planned for 2013.

While the general patterning of fishing relevant to this assessment is seen to be generally the same between years, the following paragraphs note some points relevant to the interaction between the oil and gas and fishing industry within the scope of this environmental assessment.

Preliminary decisions have been taken by Northwest Atlantic Fisheries Organization (NAFO) in the event that there is a resumption of a cod fishery in NAFO area 2J3JKL in the future (FFAW, pers. comm. & NAFO, 2010). Pursuit of such a fishery is however contingent on both Canadian and NAFO future decision making.

As noted in previous updates, a directed fishery for American Plaice has not existed for some time and there is no indication of a fishery in 2013. If in the future a directed fishery is authorized then previous fishing patterns for that species may be re-established in areas in and near the Jeanne d'Arc basin.

Husky understands that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by DFO data. Hence this requires that Husky continue to consult with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year.

With regard to the conduct of its operations Husky will continue to keep fishing interests informed of these activities during the operational planning phases. This will be done through the established One Ocean and FFAW contacts and others as deemed necessary or as advised.

Since the approval of the aforementioned environmental assessment, the fishing and oil and gas industries, through One Ocean, have completed two initiatives to help enhance communication and collaboration between the two industries. The first is a communication protocol that has been distributed to fishers and members of the petroleum industry. The protocol recommends communication procedures between fish harvesters and offshore installations and petroleum-related vessels during operational activities. The second is a risk-based decision matrix that defines the conditions under which oil and gas operators could employ either or both a Fisheries Liaison Officer or a guide vessel in support of certain oil and gas operations that have a potential to affect fisheries activities offshore.

3.2.2 Species at Risk

An updated listing of SARA and COSEWIC[3] species for the Grand Banks area of relevance to this assessment is provided in Appendix 1. SARA listed species with final recovery strategies in place are noted. None of the SARA listed species relevant to the scope of this assessment have an associated critical habitat description or an action or management plan in place. It is noted however that the North Atlantic Right Whale does

[3] SARA: *Species At Risk Act*. COSEWIC: Committee on the Status of Endangered Wildlife in Canada

have a critical habitat statement pursuant to SARA however it is rare in the study area considered under this environmental assessment (see Appendix 1 – footnotes). Appendix 1 also provides the COSEWIC candidate species under consideration.

There are two cetacean species (blue whale, and North Atlantic right whale), one sea turtle species (leatherback), one seabird species (Ivory Gull), and three fish species (white shark, northern and spotted wolffish) that are legally protected under SARA and have potential to occur in the Study Area. Atlantic wolfish, the Atlantic population of fin whales and Sowerby's beaked whale are designated as special concern on Schedule 1.

Final recovery strategies have been prepared for five species currently designated as either endangered or threatened under Schedule 1 and potentially occurring in the Study Area: the leatherback sea turtle; the spotted wolffish, the northern wolffish, the blue whale, and the North Atlantic right whale. A management plan has also been prepared for the Atlantic wolffish, currently designated as special concern on Schedule 1.

In May 2012, COSEWIC designated the smooth skate (*Malacoraja senta, Funk Island Deep population)* as endangered and the thorny skate (*Amblyraja radiata*) as special concern.

None of the recovery plans for SARA listed species in place materially change the mitigation measures currently committed by Husky for the scope of the operations addressed by the environmental assessment.

3.2.3 Mitigations

Husky regards the environmental predictions and consequent mitigations cited in the environmental assessment and subsequent significance determination that relates to CEAR No. 07-01-28877 as still valid and re-commits to implementing these mitigation measures for the activities to be carried out under the scope of this assessment this year.

The potential environmental effects of drilling activities potentially undertaken as described in Section 2.1.4 are assessed to be *not significant* when evaluated against the assessment definitions and criteria applied to the valued ecosystem components addressed in the original assessment.

4.0 Environmental Assessment of Husky's Jeanne d'Arc Basin/Flemish Pass Regional Seismic Program, 2012-2020

4.1 Project Description and Scope

4.1.1 Activities Covered

Husky Energy is proposing to conduct seismic surveys offshore Newfoundland in the region of the Jeanne d'Arc Basin and Flemish Pass (Figure 4-1). Husky may conduct 2-D, 3-D or 4-D seismic surveys, well site geohazard surveys, and vertical seismic profiling (VSP) surveys in one or more years within a 2012-2020 timeframe.

Husky may conduct one or more 2-D and/or 3-D seismic surveys during the spring through fall months, starting as early as 1 May and concluding as late as 30 November. The timing of the survey is subject to the Proponent's priorities and circumstances, weather and ice conditions, contractor availability and regulatory approvals.

4.1.2 Geographic Scope

In terms of spatial boundaries, the Project Area (Figure 4-1) includes areas of interest plus a 10-km buffer area to accommodate the ships' turning radii. The Study Area includes the Project Area plus a 20-km buffer area around the Project Area (Figure 4-1) to account for the propagation of seismic survey sound that could potentially affect marine biota. The coordinates of the project area are as follows:

47°40' North and 49°15' West;

47°40' North and 46°30' West;

46° 10' North and 49°15' West; and,

46° 10' North and 46°30' West.

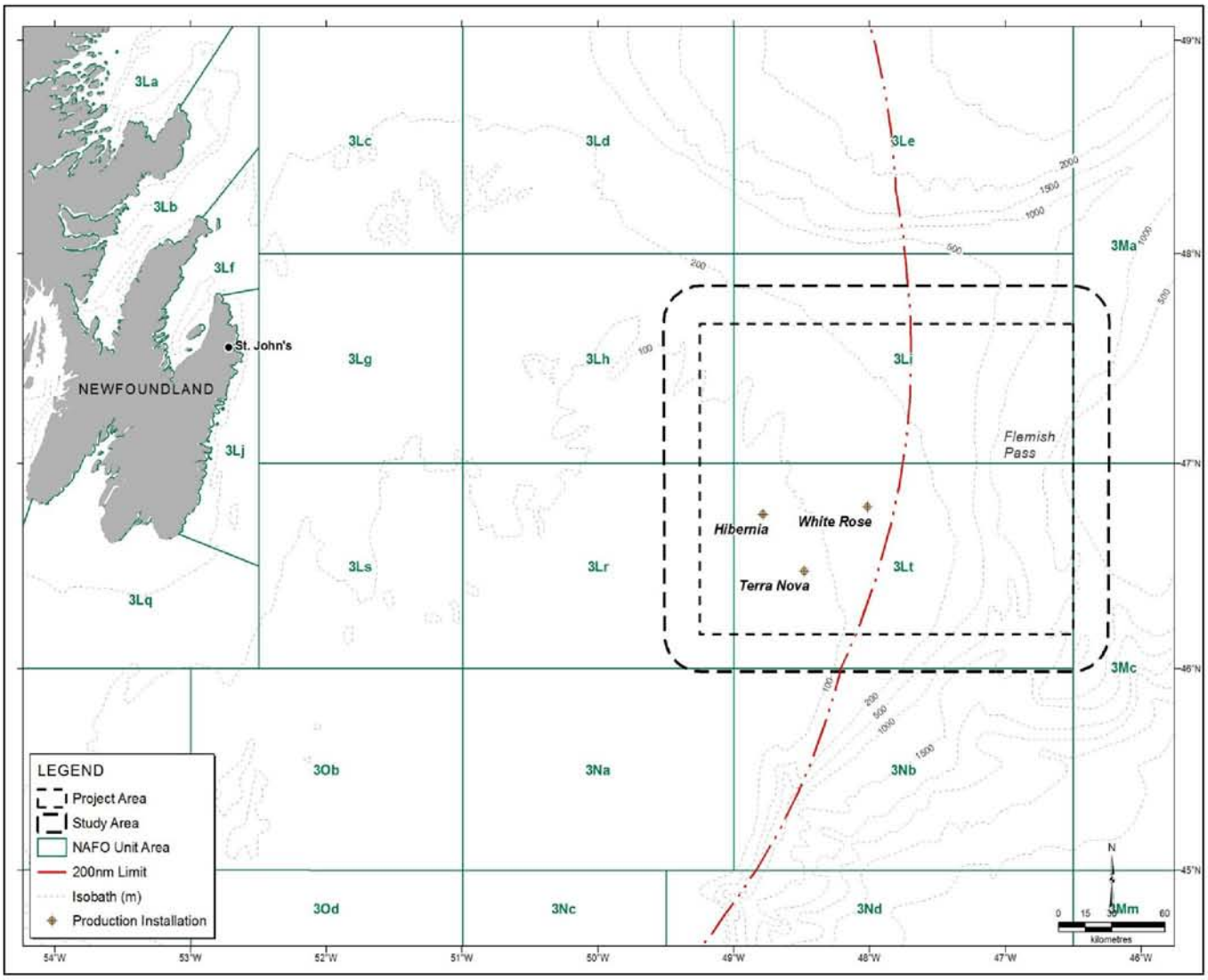


Figure 4-1 - Jeanne d'Arc Basin/Flemish Pass Regional Seismic Project Area and Study Area

4.1.3 Temporal Scope

Seismic surveying during 2012-2020 may occur anytime between 1 May and 30 November while well site geohazard surveys during that same period may occur anytime between 1 March and 30 November. Vertical seismic profiling surveys may be conducted at any time of the year during 2012-2020.

4.1.4 Planned Activities for 2013

In 2013, priority will be to conduct seismic surveys within and near the White Rose Field. The maximum extent of the survey area, including the area required for vessel turning, is indicated in Figure 4-2. The duration of the 2013 seismic surveying will be 20 to 60 days of data acquisition.

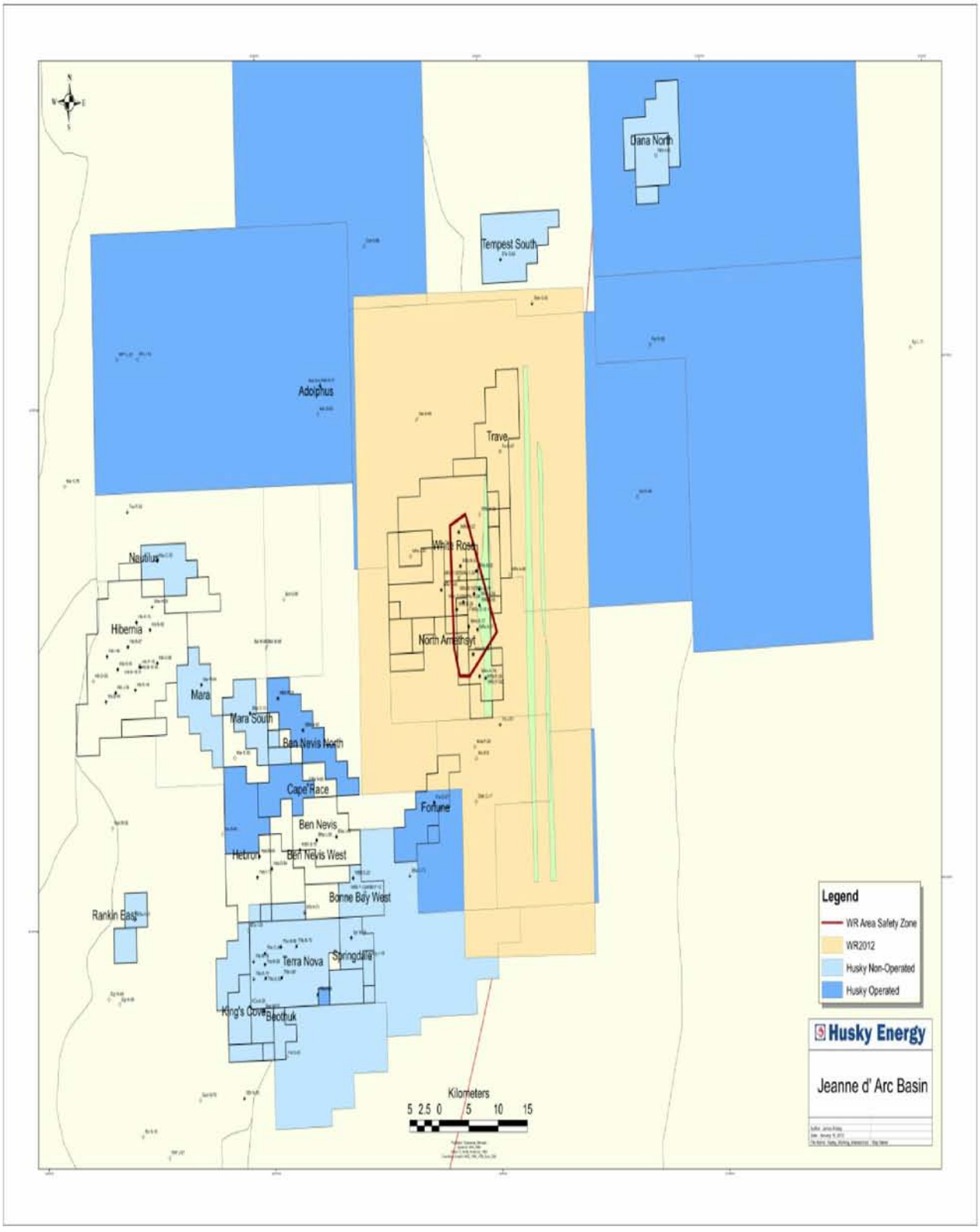


Figure 4-2 - 2013 Seismic Area of Interest

Also in 2013, well site surveys may involve the acquisition of high resolution 2D seismic, side-scan sonar, sub-bottom profiler, multi-beam bathymetric and ground truth data (i.e., camera/grab samples). Well site surveys are planned for Glenwood – EL 1090R, with a possible second well site survey at North Hebron – SDL 1046 to follow.

The survey locations can be found on Figure 4-3. The well site survey at each location will take approximately 5 to 7 days to complete, depending on weather. Surveys are planned for July 2013.

The C-NLOPB's Geophysical, Geological, Environmental and Geotechnical Program Guidelines (C NLOPB 2011) will be used as the basis for the marine mammal monitoring and mitigation program for the seismic surveys. Dedicated marine mammal observers (MMOs) will monitor for marine mammals (and sea turtles if present) and implement mitigation measures as appropriate. The airgun array will be ramped up, and ramp ups will be delayed if a marine mammal is detected within the appropriate safety zone (minimum of 500 m as noted in Fisheries and Oceans Canada Statement of Canadian Practice). The airgun array will be shut down any time an Endangered or Threatened (as listed on Schedule 1 of SARA) marine mammal (or sea turtle) is detected within the safety zone. These measures are designed to minimize disturbance to marine life, particularly marine mammals and species considered at risk under the SARA. In addition, the MMOs will conduct a monitoring and release program for seabirds which may strand on board the seismic vessel. A fisheries liaison officer (FLO) will be on board, as required, to ensure implementation of communication procedures intended to minimize conflict with the commercial fishery.

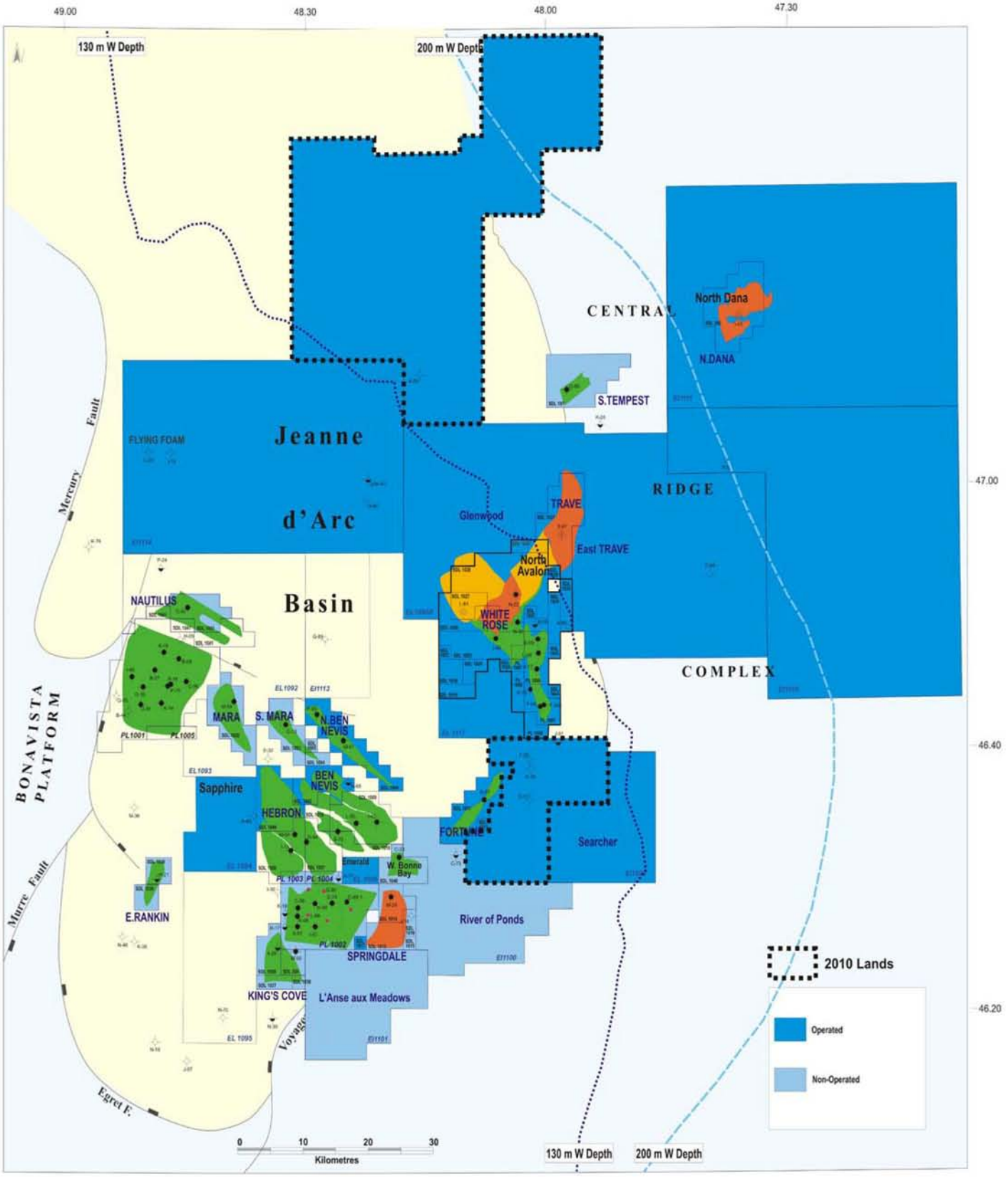


Figure 4-3 - Potential Well Site Survey Locations in 2013

4.2 Environmental Aspects

4.2.1 Fisheries

Fishing activities in the study area have not changed significantly since the initial environmental assessment was accepted and the program approved. Figure 4-4 below provides a map of recently compiled fishing activity information that depicts an overall patterning of fishing activities that is consistent with that documented in the original environmental assessment. This compilation is derived from Fisheries and Oceans Canada (DFO) databases including research vessel and underutilized species information.

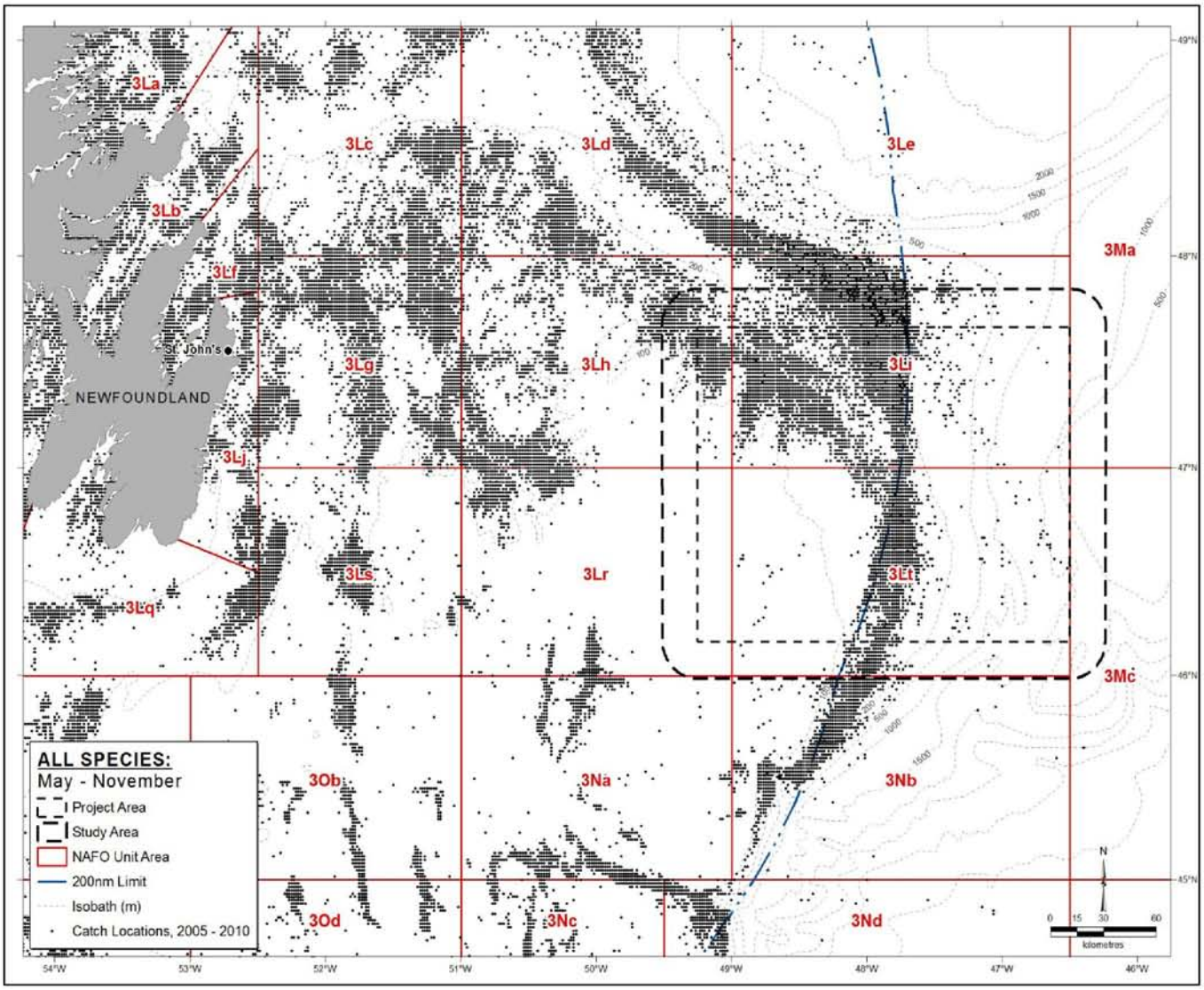


Figure 4-4 - Cumulative pattern of Fishing Activity to 2005 - 2010 in Jeanne d'Arc Basin in relation the EA Project Area

Even though plans for seismic surveys were uncertain at the time, consultations specific to this EA update were undertaken on November 20, 2012 with Fish Food and Allied Workers Union and One Ocean to discuss possible activities planned for 2013. Consultations on similar workscopes were held during the initial Environmental Assessment of Husky's Jeanne d'Arc Basin/Flemish Pass Regional Seismic Program, 2012-2020 (LGL 2012) and for Husky's 2012 EA update.

While the general patterning of fishing relevant to this assessment is seen to be generally the same between years, the following paragraphs note some points relevant to the interaction between the oil and gas and fishing industry within the scope of this environmental assessment.

Preliminary decisions have been taken by Northwest Atlantic Fisheries Organization (NAFO) in the event that there is a resumption of a cod fishery in NAFO area 2J3JKL in the future (FFAW, pers. comm. & NAFO, 2010). Pursuit of such a fishery is however contingent on both Canadian and NAFO future decision making.

As noted in previous updates, a directed fishery for American Plaice has not existed for some time and there is no indication of a fishery in 2013. If in the future a directed fishery is authorized then previous fishing patterns for that species may be re-established in areas in and near the Jeanne d'Arc basin.

Husky understands that it is important to recognize that harvesters fish a resource, and not fixed points from year to year. Licenses are issued for large areas (e.g. NAFO subdivisions 3K or 3L) and fishing activity could take place anywhere within these areas and not just at the pattern of locations fished in recent years indicated by DFO data. Hence this requires that Husky continue to consult with the fishing industry on a regular basis to keep up to date with trends in fishing from year to year.

With regard to the conduct of its operations Husky will continue to keep fishing interests informed of these activities during the operational planning phases. This will be done through the established One Ocean and FFAW contacts and others as deemed necessary or as advised.

Since the approval of the aforementioned environmental assessment, the fishing and oil and gas industries, through One Ocean, have completed two initiatives to help enhance communication and collaboration between the two industries. The first is a communication protocol that has been distributed to fishers and members of the petroleum industry. The protocol recommends communication procedures between fish harvesters and offshore installations and petroleum-related vessels during operational activities. The second is a risk-based decision matrix that defines the conditions under which oil and gas operators could employ either or both a Fisheries Liaison Officer or a guide vessel in support of certain oil and gas operations that have a potential to affect fisheries activities offshore.

4.2.2 Species at Risk

An updated listing of SARA and COSEWIC[4] species for the Grand Banks area of relevance to this assessment is provided in Appendix 1. SARA listed species with final

[4] SARA: *Species At Risk Act*. COSEWIC: Committee on the Status of Endangered Wildlife in Canada

recovery strategies in place are noted. None of the SARA listed species relevant to the scope of this assessment have an associated critical habitat description or an action or management plan in place. It is noted however that the North Atlantic Right Whale does have a critical habitat statement pursuant to SARA however it is rare in the study area considered under this environmental assessment (see Appendix 1 – footnotes). Appendix 1 also provides the COSEWIC candidate species under consideration.

There are two cetacean species (blue whale, and North Atlantic right whale), one sea turtle species (leatherback), one seabird species (Ivory Gull), and three fish species (white shark, northern and spotted wolffish) that are legally protected under SARA and have potential to occur in the Study Area. Atlantic wolfish, the Atlantic population of fin whales and Sowerby's beaked whale are designated as special concern on Schedule 1.

Final recovery strategies have been prepared for five species currently designated as either endangered or threatened under Schedule 1 and potentially occurring in the Study Area: the leatherback sea turtle; the spotted wolffish, the northern wolffish, the blue whale, and the North Atlantic right whale. A management plan has also been prepared for the Atlantic wolffish, currently designated as special concern on Schedule 1.

In May 2012, COSEWIC designated the smooth skate (*Malacoraja senta, Funk Island Deep population)* as endangered and the thorny skate (*Amblyraja radiata*) as special concern.

None of the recovery plans for SARA listed species in place materially change the mitigation measures currently committed by Husky for the scope of the operations addressed by the environmental assessment.

4.2.3 Mitigations

Husky regards the environmental predictions and consequent mitigations cited in the environmental assessment and subsequent significance determination that relates to CEAR No. 11-01-65302 as still valid and re-commits to implementing these mitigation measures for the activities to be carried out under the scope of this assessment this year.

The potential environmental effects of drilling activities potentially undertaken as described in Section 4.1.4 are assessed to be *not significant* when evaluated against the assessment definitions and criteria applied to the valued ecosystem components addressed in the original assessment.

5.0 Concluding Statement

The activities Husky plans to carry out in 2013 have been reviewed and assessed to be within the spatial and temporal scope of the environmental assessments referenced herein.

The environmental effects predicted in the currently valid assessments are still valid. Husky reaffirms its commitment to implement the mitigation measures proposed in these assessments and in the Screening Decisions made by the C-NLOPB.

6.0 References

6.1 Original Husky Environmental Assessments

1. LGL Limited. 2012. Environmental Assessment of Husky's Jeanne d'Arc Basin/Flemish Pass Regional Seismic Program, 2012-2020. LGL Rep. SA1144. Prepared by LGL Limited in association with Canning & Pitt Associates Inc., St. John's, NL, and Oceans Ltd., St. John's, NL, for Husky Energy, St. John's, NL. 320 p. + appendices.

2. LGL Limited. 2006c. Husky White Rose Development Project: New Drill Centre Construction & Operations Program Environmental Assessment. LGL Rep. SA883. Rep. by LGL Limited, St. John's, NL, for Husky Energy Inc., Calgary, AB. 299 p. + App.

3. LGL Limited. 2007. Husky White Rose Development Project: New Drill Centre Construction & Operations Program Environmental Assessment Addendum. LGL Rep. SA883a. Rep. by LGL Limited, St. John's, NL, for Husky Energy Inc., Calgary, AB. 126 p. + App.

4. LGL Limited. 2007. Husky Delineation/Exploration Drilling Program for Jeanne d'Arc Basin Area, 2008-2017, Environmental Assessment. LGL Rep. SA935. Prepared by LGL, St. John's, NL, in association with Canning & Pitt Associates, Inc., Oceans Ltd., and PAL Environmental Services. Prepared for Husky Energy Inc., Calgary, AB. 231 p. + Appendices.

5. Husky Energy. 2012. Husky Energy East Coast Operations Newfoundland & Labrador Offshore Area Environmental Assessment Review for 2010. Doc. No. WR-HSE-RP-1886.

6.2 Recent & Relevant Environmental Assessments by Others

1. LGL Limited. 2008. Environmental Assessment of StatoilHydro Canada Ltd. Exploration and Appraisal/Delineation Drilling Program for Offshore Newfoundland, 2008-2016. LGL Rep. SA947b. Rep. by LGL Limited, Canning & Pitt Associates Inc., and Oceans Ltd., St. John's, NL, for StatoilHydro Canada Ltd., St. John's, NL. 292 p. + appendices.

2. Christian, John R. 2008. Environmental Assessment of Petro-Canada Jeanne d'Arc Basin Exploration Drilling Program, 2009-2017. LGL Rep. SA993. Prepared by LGL, St. John's, NL prepared for Petro-Canada, St. John's, NL 258 p. + Appendix.

3. Christian, John R. 2009. Environmental Assessment of Petro-Canada Jeanne d'Arc Basin Exploration Drilling Program, 2009-2017 Addendum. LGL Rep. SA993. Prepared by LGL, St. John's, NL prepared for Petro-Canada, St. John's, NL 22 p.

4. Stantec. 2010. Hebron Project Comprehensive Study Report. Prepared by Stantec Ltd. on behalf of ExxonMobil Canada Properties

5. Suncor 2011, Suncor I&O East Coast Operations Newfoundland & Labrador Offshore Area Environmental Assessment Review for 2011. Doc. No. TN-PE-EC15-X00-155.

6. LGL Limited. 2011. Environmental assessment of Statoil's Geophysical Program for Jeanne d'Arc and Central Ridge/Flemish Pass Basins, 2011-2019. LGL Rep. SA1121. Rep. by LGL Limited, in association with Canning & Pitt Associates Inc., and Oceans Ltd., St. John's, NL, for Statoil Canada Ltd., St. John's, NL. 227 p. + appendices.

6.3 Species at Risk Recovery Strategies

- Atlantic Leatherback Turtle Recovery Team 2006. Recovery Strategy for Leatherback Turtle (*Dermochelys coriacea*) in Atlantic Canada. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa, vi + 45 pp.

- Kulka, D., C. Hood and J. Huntington. 2007. Recovery Strategy for Northern Wolffish (*Anarhichas denticulatus*) and Spotted Wolffish (*Anarhichas minor*), and Management Plan for Atlantic Wolffish (*Anarhichas lupus*) in Canada. Fisheries and Oceans Canada: Newfoundland and Labrador Region. St. John's, NL. x + 103 pp.

- DFO (Fisheries and Oceans Canada). 2008. Recovery Strategy for the Atlantic walrus (*Odobenus rosmarus rosmarus*), Northwest Atlantic population, in Canada. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa, ON. x + 11 pp.

- Beauchamp, J., Bouchard, H., de Margerie, P., Otis, N., Savaria, J.-Y., 2009. Recovery Strategy for the blue whale (*Balaenoptera musculus*), Northwest Atlantic population, in Canada [FINAL]. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. 62 pp.

- Brown, M.W., Fenton, D., Smedbol, K., Merriman, C., Robichaud-Leblanc, K., and Conway, J.D. 2009. Recovery Strategy for the North Atlantic Right Whale (*Eubalaena glacialis*) in Atlantic Canadian Waters [Final]. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada. vi + 66p.

7.0 Appendices

Appendix 1 - Current Listing of SARA and COSEWIC Listed Species in the Husky Project Areas.

Appendix 1: Current[5] SARA Listed and COSEWIC Assessed Species in the Husky Project Areas[6]

Species		New Since Last Update			SARA Status noted as Schedules 1,2 or 3			COSEWIC Status			
		Drill Centres	Exp Drilling	Seismic							
Common Name	Scientific Name				Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate[7]
Birds											
Ivory Gull	*Pagophila eburnean*				1			X			
Marine Fish											
Northern wolffish	*Anarhichas denticulatus*					1			X		
Spotted wolffish	*Anarhichas minor*					1			X		
Atlantic wolffish	*Anarhichas lupus*						1			X	
Atlantic cod	*Gadus morhua*						3				
Atlantic cod (NL population)	*Gadus morhua*							X			
Atlantic Salmon (various regional populations)	*Salmo salar*								X		
Porbeagle shark	*Lamna nasus*							X			
White shark	*Carcharodon carcharias*				1			X			
Roundnose Grenadier	*Coryphaenoides rupestris*							X			
Cusk	*Brosme brosme*								X		
American Shad	*Alosa sapidissima*										MPC
Alewife	*Alosa pseudoharengus*										MPC
Capelin	*Mallotus villosus*										MPC
Haddock	*Melanogrammus aeglefinus*										MPC

[5] *March 2012*

[6] *Green Shade means a final Recovery Strategy is in place but no Critical Habitat has been identified nor have Action or Management plans been finalized for these species with the exception of the North Atlantic Right Whale (see footnote 7). Note that two other species that have recovery strategies, the Atlantic Walrus and Grey Whale, have been extirpated from Eastern Canadian waters and therefore are not listed in the above table.*

[7] *Candidate COSEWIC species are classified as High (H), Medium (M) or Low (L) Priority Candidate (PC) species*

Species		New Since Last Update									
		Drill Centres	Exp Drilling	Seismic	SARA Status noted as Schedules 1,2 or 3			COSEWIC Status			
Common Name	Scientific Name				Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate[7]
Shortfin mako shark	*Isurus oxyrinchus*								X		
Blue shark	*Prionace glauca*									X	
American Eel	*Anguilla rostrata*								X		
Roughhead grenadier	*Macrourus bersgla*									X	
Bluefin Tuna	*Thunnus thynnus*							X			
Spiny eel	*Notacanthus chemnitzi*										MPC
Pollock	*Pollachius virens*										MPC
Spinytail Skate	*Bathyraja spinicauda*										MPC
Smooth Skate	*Malacoraja senta*	x	x	x				X			
Thorny Skate	*Amblyraja radiata*	x	x	x						X	
Ocean pout	*Zoarces americanus*										MPC
American Plaice (NL pop.)	*Hippoglossoides platessoides*								X		
Acadian Redfish *(Atlantic pop.)*	*Sebastes fasciatus*								X		
Deepwater Redfish *(Northern*	*Sebastes mentella*								X		
Spiny Dogfish	*Squalus acanthias*									X	
Basking Shark	*Cetorihinus maximus*									X	
Marine Mammals											
Blue whale	*Balaenoptera musculus*				1			X			
Humpbacked whale	*Megaptea movaeanglia*						3				
North Atlantic right whale[8]	*Eubalaena glacialis*				1			X			
Fin whale (Atlantic pop.)	*Balaenoptera physalus*						1			X	

[8] *A critical habitat statement exists for this species however it is rare in the study area considered in this assessment with one sighting of two individuals recorded in the DFO cetacean database.*

Species		New Since Last Update									
		Drill Centres	Exp Drilling	Seismic	SARA Status noted as Schedules 1,2 or 3			COSEWIC Status			
Common Name	Scientific Name				Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate[7]
Killer Whale (NW Atl./East Arctic population)	*Orcinus orca*									X	
Sperm whale	*Physeter macrocephalus*										LPC
Cuvier's Beaked Whale	*Ziphius cavirostris*										MPC
Northern Bottlenose whale[6] (Davis Strait/Baffin Bay/Labrador Sea)	*Hyperoodon ampullatus*									X	
Sowerby's beaked whale	*Mesoplodon bidens*						3			X	
Harbour porpoise	*Phocoena phocoena*					2				X	
Hooded seal	*Cystophora cristata*										LPC
Harp seal	*Phoca groenlandica*										LPC
Ringed Seal	*Pusa hispida*										LPC
Reptiles											
Leatherback sea turtle	Dermochelys coriacea				1			X			
Loggerhead sea turtle	*Caretta caretta*							X			