Husky

REPORT

REPORT TITLE

New Drill Centre Construction and Operations
Environmental Assessment (EA) Review for 2019

SUBMITTED TO

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VERSION RECORD

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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 (EAs) of these programs address a variety of activities undertaken over a number of years.

Annual EA reviews are conducted 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.

This EA review will address the Husky New Drill Centre Construction and Operations Program Environmental Assessment (CEAR No. 06-01-17410) only.

EA reviews for other activities will be provided separately as schedules are confirmed.

2.0 Husky's New Drill Centre Construction and Operations Program

2.1 Project Description and Scope

2.1.1 Activities Covered

The environmental assessment of Husky's New Drill Centre Construction and Operations Program addressed Husky's proposal for all activities associated with development of up to five new drill centres with a total of up to 54 wells. Drill centres will be excavated to a maximum of 11 m below existing seabed level. Approximately 225,500 m^3 of seabed sediment per glory hole will moved and dumped at a previously used dumpsite. Project activities also include use of mobile operated drilling units, construction and diving vessels, marine and helicopter support and existing shore-based facilities in St. John's Harbour.

To date, two of the five proposed new drill centres have been excavated and developed into production, North Amethyst and South White Rose Extension.

2.1.2 Geographic Scope

The geographic (spatial) scope of the environmental assessment is depicted in Figure 2-1.

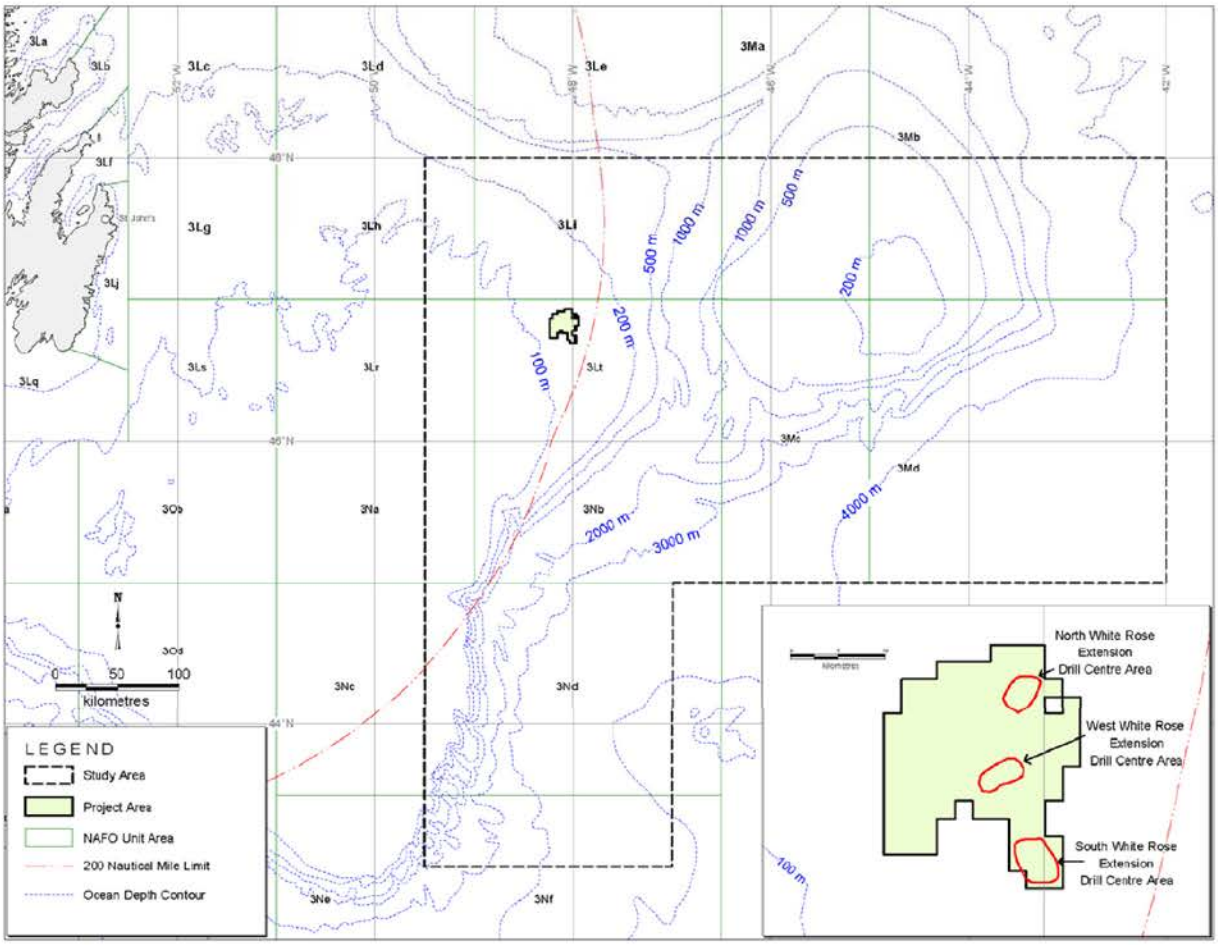


Figure 2-1 - Location of Study Area and Project Area

2.1.3 Temporal Scope

The temporal scope for the development of the new drill centres is to the end of 2020.

2.1.4 Planned Activities for 2019

The activity planned for 2019 and the subject of this EA Review is a planned trial to determine potential for application of an offshore excavation technology that can provide a solution to excavation in the complex geotechnical conditions found on the Grand Banks. The estimated time to complete the in-field testing offshore is 12 days. The program is currently scheduled to be begin September 15, 2019.

The equipment will be evaluated for a range of soil conditions, essentially proving and potentially leading to modifications of equipment based on results analysis.

The following equipment will be tested:

- The ScanROV and 10 m^3 HD Grab Bucket is illustrated in Figure 2-2. The bucket has been modified through the installation of "teeth" on the cutting edge of the bucket jaws to increase pressure on the cutting edge. The teeth have not been evaluated for subsea soil excavation to date and this is what will be tested offshore. The modified bucket design also includes increased durability and grab profile which is expected to make the bucket perform well with relocation of small to medium sized boulders. The left photo shows the grab bucket before modification and the right photo shows the configuration that will be tested offshore.



Figure 2-2 - ScanROV and 10 m^3 HD Grab Bucket

- A trenching test will also be conducted offshore. The equipment that will be used for this test is the Scanmachine 05 (controlled by ScanROV) (Figure 2-3). The weight of the unit (including the ScanROV) ranges from 34 to 41 Te depending on configuration and is remotely controlled from a container on the vessel deck. The Scanmachine 05 will be outfitted with various tooling options to evaluate performance including a suction ejector, clay cutter and high flow jetting. Two trench depths will be tested: 1 m and 1.5 m with a base width of 0.75 m.



Figure 2-3 - Scanmachine 05

Figure 2-4 depicts the planned trenching trial.

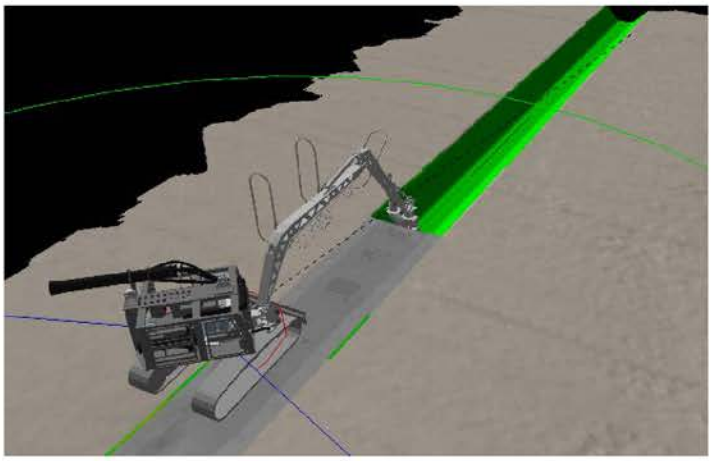


Figure 2-4 - Trenching Trial

Figure 2-5 shows the planned dimensions for the trial dredging and Table 1 indicates the dimensions at various stages of the trial and the estimated volumes of material to be excavated.

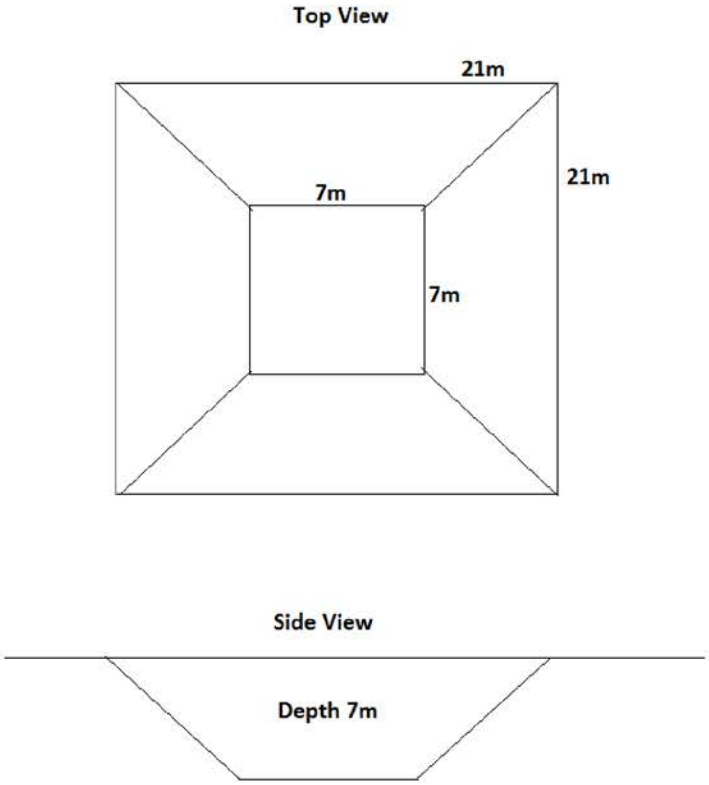


Figure 2-5 - Dimensions of Trenching Trial

Table 1 - Trenching Dimensions and Excavated Volumes

Type	1	2	3	4
Excavation Depth	2.5m	4m	7m	7m
Base Dimension	7m x 7m	7m x 7m	7m x 7m	7m x 14m
Slope	1:1	1:1	1:1	1:1
Mudline Dimension	12m x 12m	15m x 15m	21m x 21m	21m x 28m
Volume	~ 225 m^3	~ 500 m^3	~ 1,500 m^3	~ 2,200 m^3

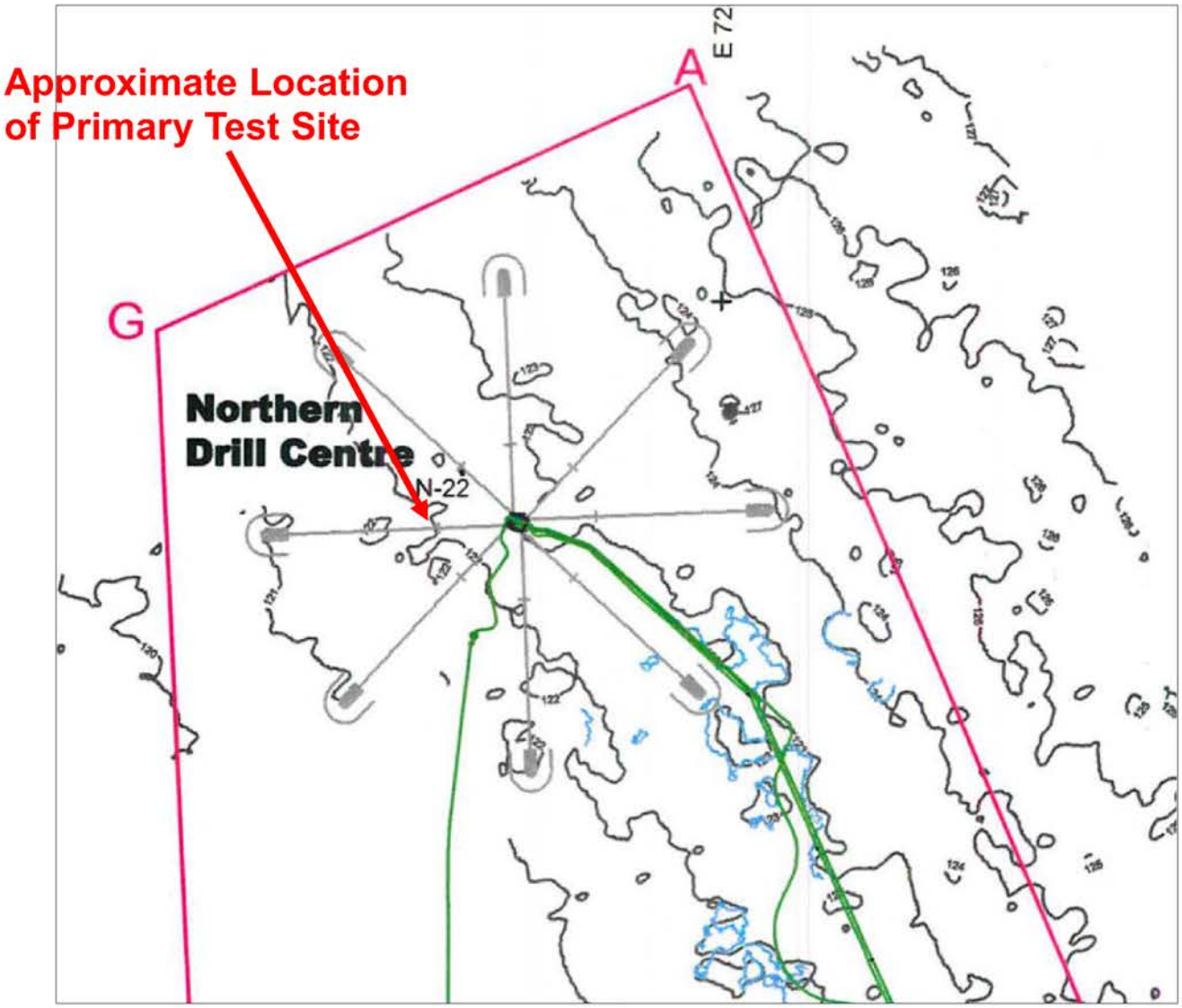


Figure 2-6 - Approximate Location of Primary Test Site

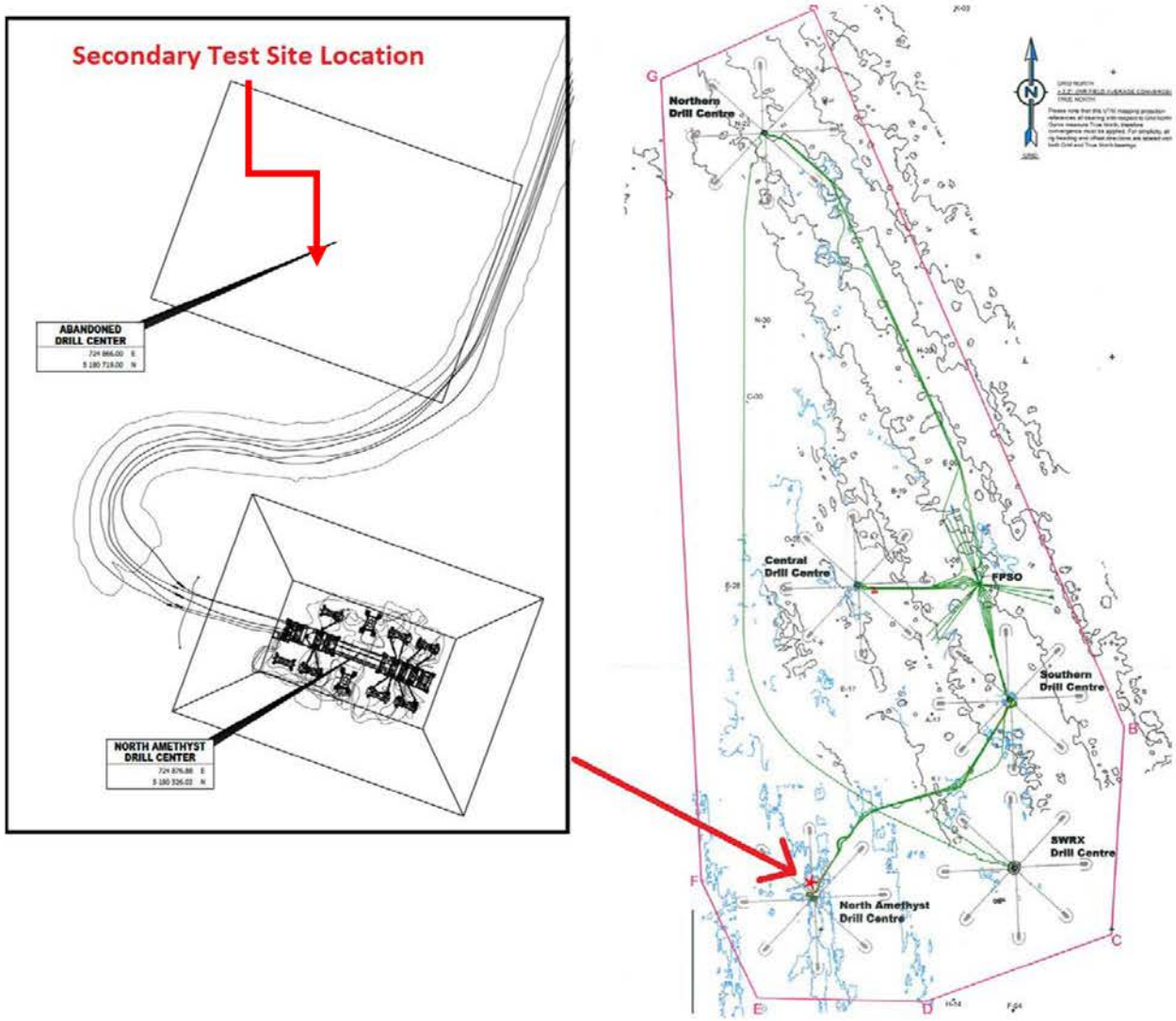


Figure 2-7 - Secondary Test Site Location (Initial Location of NADC Drill Centre)

2.2 Environmental Aspects

2.2.1 Fisheries

The planned activity will take place within Husky's safety zone where fishing does not currently take place. The activity will be of short duration and is not expected to have any impacts on the commercial fishery in the study area. There are no marine protected areas (MPAs), areas of interest (AOIs) or marine refugia within the Project Area (DFO 2018 a and b; MCI 2019; Protected Planet 2019).

2.2.2 Species at Risk

An updated listing of SARA and COSEWIC species for the Grand Banks area relevant to this EA Update is provided in Appendix 1 (Table 2). SARA-listed species with final recovery strategies and the updated COSEWIC candidate species under consideration are noted. Proposed critical habitat for SARA-listed northern and spotted wolffishes, occurs to the north of the Project Area.

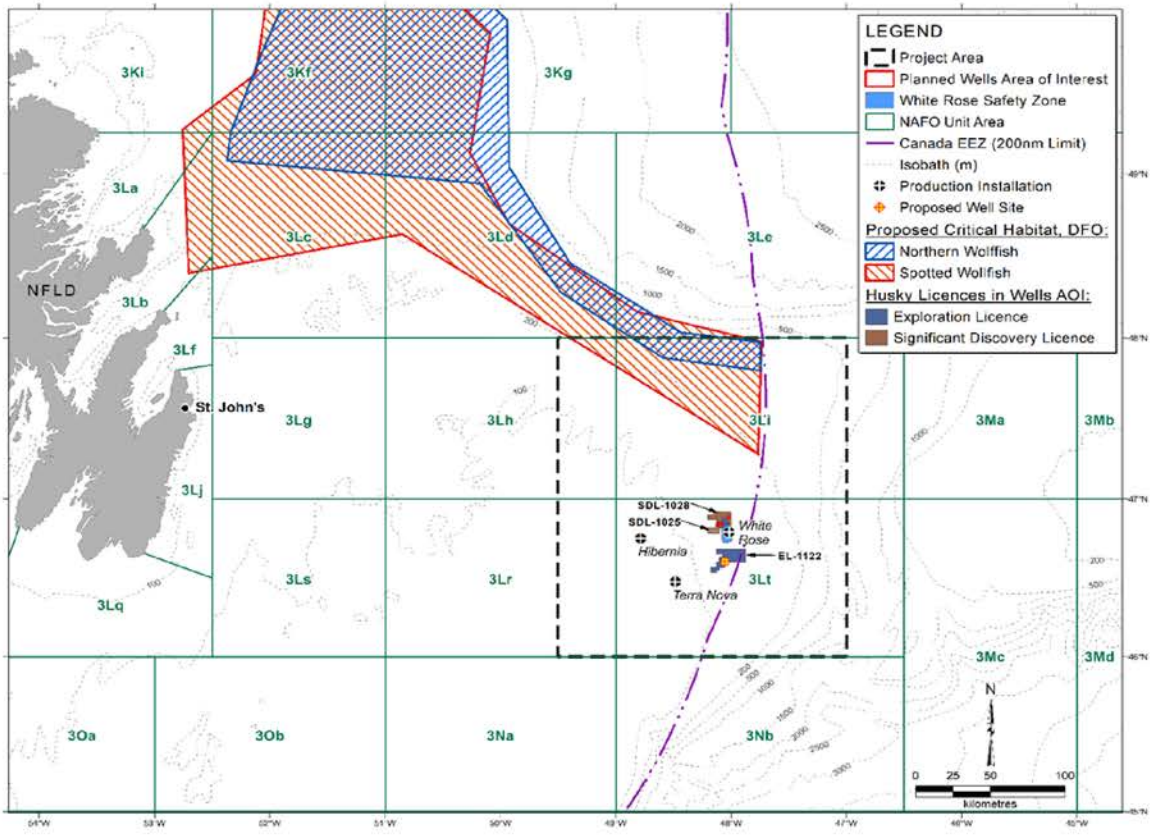


Figure 2-8 - Critical habitat relative to the EA Project Area

The Scotian Shelf population of northern bottlenose whale was added to Appendix 1 (Table 2), as the potential exists for members of this population to be present within the Project Area. Roughhead grenadier have been removed (indicated by double strikethrough text in Appendix 1 (Table 2), as they are no longer under consideration by COSEWIC and have no status under SARA. Yellowtail flounder, hooded seal and sperm whale are candidate species for assessment under COSEWIC. There are two cetacean species (blue and North Atlantic right whales), two sea turtle species (leatherback and loggerhead), two bird species (Ivory Gull and Red Knot), and three fish species (white shark, northern wolffish and spotted wolffish) that are legally protected under Schedule 1 of SARA and have potential to occur in the Project Area. Atlantic wolffish, the Atlantic population of fin whales and Sowerby's beaked whales are designated as special concern on Schedule 1 of SARA.

Action Plans have been proposed for leatherback sea turtle, the Northwest Atlantic population of blue whale, and northern and spotted wolffishes. A Recovery Strategy for northern and spotted wolffishes and Management Plan for Atlantic wolffish has been updated (from 2007 to 2018). A finalized Action Plan and Recovery Strategy are in place for the Scotian Shelf population of northern bottlenose whale. A list of species-relevant Action Plans, Recovery Strategies and Management Plans is provided in Section 4.3.

None of the Recovery Plans in place for SARA-listed species change the mitigation measures committed to 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. 06-01-17410 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 dredging activities 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. Note that the material that will be moved as part of the trial will not be brought to the surface so there is no requirement for a Disposal at Sea Permit.

3.0 Concluding Statement

The activity Husky plans to carry out in 2019 has been reviewed and assessed to be within the spatial and temporal scope of the environmental assessment referenced herein.

The environmental effects predicted within the New Drill Centre Construction and Operations Program Environmental Assessment (CEAR No. 06-01-17410) and

Addendum are unchanged. Husky reaffirms its commitment to implement the mitigation measures proposed in the New Drill Centre Construction and Operations Program Environmental Assessment (CEAR No. 06-01-17410) and Addendum, as well as the associated Screening Decisions made by the C-NLOPB.

4.0 References

4.1 Husky Environmental Assessments

Husky Energy. 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.

Husky Energy. 2012. Environmental Assessment of Husky's Jeanne d'Arc Basin/Flemish Pass Regional Seismic Program, 2012-2020 Addendum. 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. 14 p. + appendices.

Husky Energy. 2006. 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.

Husky Energy. 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.

Husky Energy. 2007. Husky Delineation/Exploration Drilling Program for Jeanne d'Arc Basin Area, 2008-2017 [Amended to 2020, Feb 2018], 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.

4.2 References

CBD (Convention on Biological Diversity). 2019. Ecologically or biologically significant marine areas. Available at https://www.cbd.int/ebsa/.

DFO (Fisheries and Oceans Canada). 2018a. Marine protected areas (MPAs), areas of interest (AOIs) and other measures. Fisheries and Oceans Canada, Government of Canada. Available at http://www.dfo-mpo.gc.ca/oceans/mpa-zpm-aoi-si-eng.html.

DFO (Fisheries and Oceans Canada). 2018b. Other effective area-based conservation measures. Fisheries and Oceans Canada, Government of Canada. Available at http://www.dfo-mpo.gc.ca/oceans/oeabcm-amcepz/index-eng.html.

MCI (Marine Conservation Institute). 2019. Atlas of marine protection. Available at http://mpatlas.org/map/mpas/#

Protected Planet. 2019. Explore the world's marine protected areas. Available at https://www.protectedplanet.net/marine

4.3 Plans and Strategies

4.3.1 Action Plans

DFO. 2016. Action plan for the North Atlantic right whale (*Eubalaena glacialis*) in Canada: Fishery Interactions [Proposed]. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa. v + 35 p.

DFO. 2017. Action plan for the northern bottlenose whale (*Hyperoodon ampullatus*), Scotian Shelf population, in Atlantic Canadian waters. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 37 p.

DFO. 2018. Action plan for the leatherback sea turtle (*Dermochelys coriacea*) in Atlantic Canada [Proposed]. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa. v + 29 p.

DFO. 2018. Action plan for blue whale (*Balanoptera musculus*), Northwest Atlantic population, in Canada [Proposed]. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 21 p.

DFO. 2018. Action plan for the northern wolffish (*Anarhichas denticulatus*) and spotted wolffish (*Anarhichas minor*) in Canada [Proposed]. Species at Risk Act Action Plan Series. Fisheries and Oceans Canada, Ottawa. v + 23 p.

Parks Canada Agency. 2016. Multi-species action plan for Gros Morne National Park of Canada. Species at Risk Act Action Plan Series. Parks Canada Agency, Ottawa. iv + 19 p.

4.3.2 Management Plans

DFO. 2017. Management plan for the fin whale (*Balaenoptera physalus*), Atlantic population in Canada. Species at Risk Act Management Plan Series, DFO, Ottawa. iv + 37 p.

DFO. 2017. Management plan for the Sowerby's beaked whale (*Mesoplodon bidens*) in Canada. Species at Risk Act Management Plan Series. Fisheries and Oceans Canada, Ottawa. iv + 48 p.

4.3.3 Recovery Strategies

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

Environment Canada. 2014. Recovery strategy for the Ivory Gull (*Pagophila eburnea*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. iv + 21 p.

Environment and Climate Change Canada. 2017. Recovery strategy and management plan for the Red Knot (*Calidris canutus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. ix + 67 p.

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

DFO. 2007. Recovery strategy for the grey whale (Atlantic population) (*Eschrichtius robustus*) in Canada. Species at Risk Act Recovery Strategy Series. Department of Fisheries and Oceans, Ottawa. iv + 8 p.

DFO. 2012. Assessment of Leatherback turtle (*Dermochelys coriacea*) fishery and non-fishery interactions in Atlantic Canadian waters. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2012/041.

DFO. 2013. Report on the progress of implementation of the recovery strategy for northern wolffish (*Anarhichas denticulatus*) and spotted wolffish (*Anarhichas minor*), and management plan for Atlantic wolffish (*Anarhichas lupus*) in Canada for the period 2008-2013. Species at Risk Act Recovery Strategy Report Series. Fisheries and Oceans Canada, Ottawa. vi + 16 p.

DFO. 2013. Report on the progress of recovery strategy implementation for the leatherback sea turtle (*Dermochelys coriacea*) in Canada for the period 2007-2012. Species at Risk Act Recovery Strategy Report Series. Fisheries and Oceans Canada, Ottawa. iv + 15 p.

DFO. 2014. 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, Ottawa. vii + 68 p.

DFO. 2016. Report on the progress of recovery strategy implementation for the blue whale (*Balaenoptera musculus*), Northwest Atlantic population, in Canada for the period 2009-

2014. Species at Risk Act Recovery Strategy Report Series. Fisheries and Oceans Canada, Ottawa. ii + 14 p.

DFO. 2016. Recovery strategy for the northern bottlenose whale (*Hyperoodon ampullatus*), Scotian Shelf population, in Atlantic Canadian Waters [Final]. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vii + 70 p.

DFO. 2016. Report on the progress of recovery strategy implementation for the northern bottlenose whale (*Hyperoodon ampullatus*), Scotian Shelf population, in Atlantic Canadian Waters for the period 2010-2015. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. iii + 47 p.

DFO. 2018. Recovery strategy for northern wolffish (*Anarhichas denticulatus*) and spotted wolffish (*Anarhichas minor*), and management plan for Atlantic wolffish (*Anarhichas lupus*) in Canada [proposed]. Fisheries and Oceans Canada, Ottawa. vii + 82 p.

5.0 Appendices

Appendix 1 - Current SARA Listed and COSEWIC Assessed Species in the Husky Project Area

Appendix 1: Current SARA[1] Listed and COSEWIC Assessed Species in the Husky Project Area[2]

Table 2 - Current SARA Listed and COSEWIC Assessed Species in the Husky Project Area

Species		New Since Last Update			*SARA* Status noted as Schedules 1, 2 or 3			COSEWIC Status			
Common Name	Scientific Name	Drill Centres	Exp. Drilling	Seismic	Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate[3]
Birds											
Ivory Gull	*Pagophila eburnea*				1			X			
Red Knot rufa subspecies	*Calidris canutus rufa*				1			X			
Marine Fishes											
White Shark (Atlantic population)	*Carcharodon carcharias*				1			X			
Northern Wolffish[4]	*Anarhichas denticulatus*					1			X		
Spotted Wolffish[4]	*Anarhichas minor*					1			X		
Atlantic Wolffish[4]	*Anarhichas lupus*						1			X	
Atlantic Cod	*Gadus morhua*						3				
Atlantic Cod (NL population)	*Gadus morhua*							X			
Atlantic Bluefin Tuna	*Thunnus thynnus*							X			
Porbeagle Shark	*Lamna nasus*							X			
Roundnose Grenadier	*Coryphaenoides rupestris*							X			
Cusk	*Brosme brosme*							X			
Smooth Skate (Funk Island Deep population)	*Malacoraja senta*							X			
Winter Skate (Eastern Scotian Shelf-Newfoundland population)	*Leucoraja ocellata*							X			
Lumpfish	*Cyclopterus lumpus*								X		
Atlantic Salmon (South NL population)	*Salmo salar*								X		
American Eel	*Anguilla rostrata*								X		
American Plaice (NL population)	*Hippoglossoides platesoides*								X		
Acadian Redfish (Atlantic population)	*Sebastes fasciatus*								X		
Deepwater Redfish (Northern population)	*Sebastes fasciatus*								X		
White Hake (Atlantic and Northern Gulf of St. Lawrence population)	*Urophycis tenuis*								X		
Shortfin Mako Shark (Atlantic population)	*Isurus oxyrinchus*	X 05/19						X		~~X~~	
~~Roughhead Grenadier~~	~~*Macrourus berglax*~~		~~X~~							~~X~~	
Smooth Skate (Laurentian-Scotian population)	*Malacoraja senta*									X	
Thorny Skate	*Amblyraja radiata*									X	
Spiny Dogfish (Atlantic population)	*Squalus acanthias*									X	
Basking Shark (Atlantic population)	*Cetorhinus maximus*									X	
Pollock	*Pollachius virens*										MPC
Atlantic Mackerel	*Scomber scombrus*	X									~~MPC~~
Greenland Shark	*Somniosus microcephalus*	X									~~MPC~~

Species		New Since Last Update			*SARA* Status noted as Schedules 1, 2 or 3			COSEWIC Status			
Common Name	Scientific Name	Drill Centres	Exp. Drilling	Seismic	Endangered	Threatened	Special Concern	Endangered	Threatened	Special Concern	Candidate[3]
Yellowtail Flounder	*Limanda ferruginea*										MPC
American Shad	*Alosa sapidissima*										MPC
Alewife	*Alosa pseudoharengus*										MPC
Marine Mammals											
Blue Whale (Atlantic population)	*Balaenoptera musculus*				1			X			
North Atlantic Right Whale[4]	*Eubalaena glacialis*				1			X			
Northern Bottlenose Whale (Scotian Shelf population)	*Hyperoodon ampullatus*				1			X			
Sowerby's Beaked Whale	*Mesoplodon bidens*						1			X	
Fin Whale (Atlantic population)	*Balaenoptera physalus*						1			X	
Harbour Porpoise (Northwest Atlantic population)	*Phocoena phocoena*					2				X	
Humpback Whale (Western North Atlantic population)	*Megaptera novaeangliae*						3			X	
Killer Whale (NW Atlantic / Eastern Arctic population)	*Orcinus orca*									X	
Northern Bottlenose Whale (Davis Strait-Baffin Bay-Labrador Sea population)	*Hyperoodon ampullatus*									X	
Cuvier's Beaked Whale	*Ziphius cavirostris*										HPC
Hooded Seal	*Cystophora cristata*										MPC
Sperm Whale	*Physeter macrocephalus*										MPC
Harp Seal	*Phoca groenlandica*										LPC
Sea Turtles											
Leatherback Sea Turtle (Atlantic population)	*Dermochelys coriacea*				1			X			
Loggerhead Sea Turtle	*Caretta caretta*				1			X			
Green Sea Turtle	*Chelonia mydas*										LPC

[1] Current as of 25 July 2019. Sources: SARA website (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html) and COSEWIC website (https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife/candidate-wildlife-species.html).

[2] Green shade means a final Recovery Strategy is in place, but no Critical Habitat has been identified with the exception of northern and spotted wolffishes, North Atlantic right whale, northern bottlenose whale (Scotian Shelf population) and leatherback sea turtle (see footnote 4). Note that two other species that have recovery strategies, Atlantic walrus and gray whale, have been extirpated from Eastern Canadian waters and therefore are not listed in the above table.

[3] Candidate COSEWIC species are classified as High (H), Mid (M), or Low (L) Priority Candidate (PC) species.

[4] A critical habitat statement exists for North Atlantic right whale; however, the critical habitats are near Nova Scotia and extend south into the U.S., well outside of the Project Area. Critical habitat has been identified for northern bottlenose whale (Scotian Shelf population); however, it is located along the Scotian Shelf (i.e., The Gully, Shortland Canyon and Haldimand Canyon). Critical habitat will be identified for leatherback sea turtle in an amended recovery strategy currently in development; it is anticipated that critical habitat will be located in Placentia Bay and the Cabot Strait/Gulf of St. Lawrence, far west of the Project Area. Critical habitat has been proposed for northern and spotted wolffishes in Newfoundland and Labrador waters, including within the northern portion of the Project Area.