Environmental Assessment Update Hibernia Drill Centres Construction and Operations Program (2015) – Hibernia Southern Extension

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Final Report

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ACRONYMS

COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Fisheries and Oceans Canada
EDC	Excavated Drill Centre
HMDC	Hibernia Management and Development Company Limited
HSE	Hibernia Southern Extension
MODU	mobile offshore drilling unit
NAFO	Northwest Atlantic Fisheries Organization
NW Wedge	Northwest Wedge (potential appraisal well)
RV	Research Vessel
SARA	*Species at Risk Act*
Unit BNA	Unit Ben Nevis Avalon
VSP	vertical seismic profile

1.0 INTRODUCTION

Activity occurring at the Hibernia Oil Field in 2015 includes:

- acquire 3D seismic data at the Hibernia field in the May to September timeframe; there is a separate environmental assessment (LGL 2013) for this activity;
- subsea equipment installation within the existing Hibernia Southern Extension (HSE) Excavated Drill Centre (EDC) site for the Unit Ben Nevis Avalon (Unit BNA) project;
- sediment and fish sampling associated with the second operational year environmental effects monitoring program around HSE.

Normal operations will occur as usual and an environmental effects monitoring program for the HSE area will be conducted in 2015. All activities will be conducted within the original Hibernia Drill Centres Project Area (see Figure 1-1, which depicts the full Study Area).

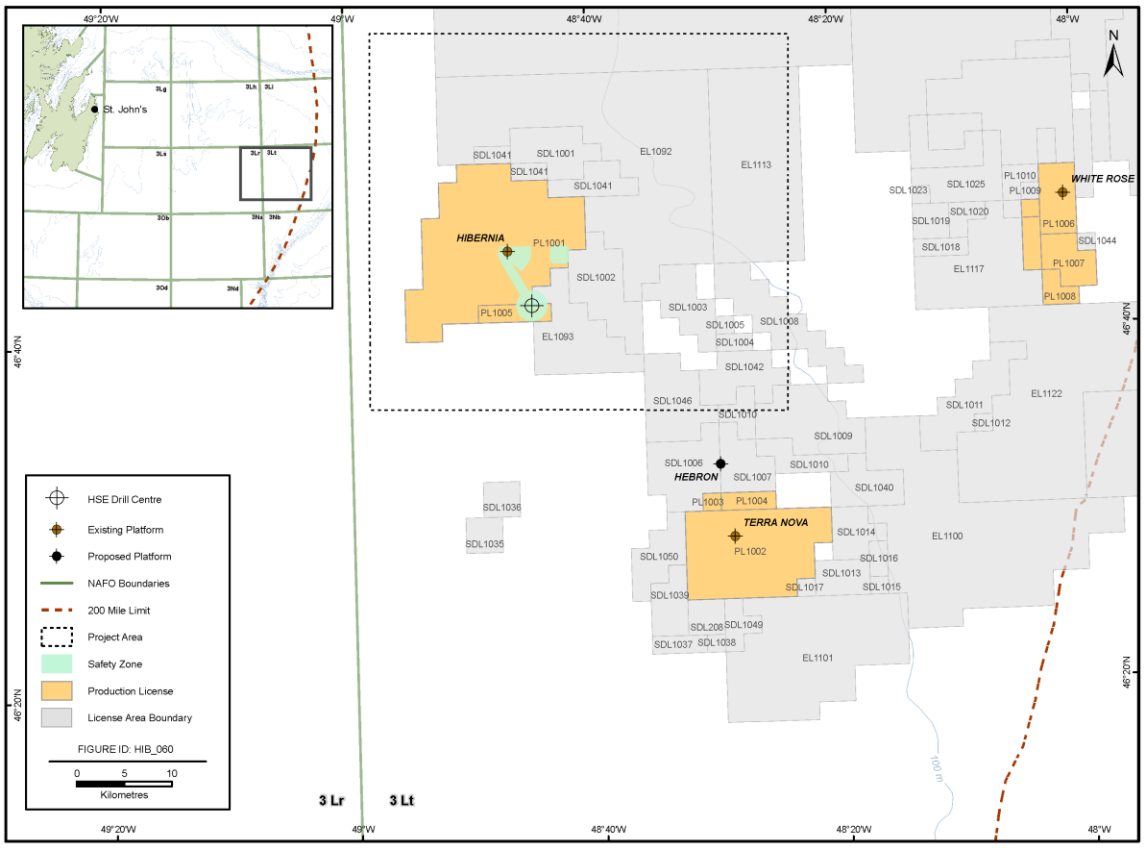


Figure 1-1 2015 Activities Project Area and Study Area

1.1 Background

This is an environmental assessment update for construction and operation activities proposed for 2015 and is intended to reflect an update to Section 2.1.2 (drilling) of the Hibernia Drill Centres Construction and Operations Program, Hibernia Management and Development Company (HMDC) (Jacques Whitford 2009; Stantec 2011, 2013, 2014). These activities were generally described in the Hibernia Drill Centres Construction and Operations Environmental Assessment (CEAR No. 08-01-42279).

In addition to updating the project description and verifying that the scope and assessment predictions of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment are still accurate and valid, the information on the Valued Environmental Components commercial fisheries and species at risk has also been updated (information current to January 30, 2015).

1.2 2015 Activities

1.2.1 General Activities

The following general activities will be conducted for the Hibernia projects in 2015:

- acquire 3-D seismic data at the Hibernia field in the May to September timeframe; there is a separate environmental assessment (LGL 2013) for this activity;
- continue to drill (and complete) HSE injectors from the *SeaDrill West Aquarius* mobile offshore drilling unit (MODU);
- potentially drill the Northwest Wedge (NW Wedge) appraisal well from the *Seadrill West Aquarius* MODU in 2015 (see Section 1.2.3);
- installation of additional subsea equipment within the existing HSE EDC;
- execute normal year-round drilling activity on the Hibernia Platform;
- no well site surveys planned for other potential appraisal wells that might be drilled in 2015; and
- conduct EEM sampling at the HSE for second operational year (sediment and biological surveys)

All proposed 2015 activities for the Hibernia offshore drilling and production facility were previously assessed in the original 1985 Environmental Impact Assessment, the 2009 environmental assessment, or subsequent (2011, 2013 and 2014) environmental assessment updates.

1.2.2 Vertical Seismic Profile

No vertical seismic profiles (VSPs) are anticipated for 2015. One VSP was planned for the HSE development and it was successfully acquired in 2014.

1.2.3 Drilling

By the end of 2014, the *SeaDrill West Aquarius* has drilled and completed the P-02 01z well and has drilled the riserless sections (1,067 mm and 660 m) of the P-02 02 and P-02 03 wells. Additionally, the 1,067 mm section was drilled at Temporary Guide Base 1. During 2015, HMDC plans to finish the remaining sections of the P-02 02 and P-02 03 wells and drill the remaining three wells of the HSE project and potentially drill an appraisal well. The activity will include a total of five riserless sections, two 1,067 mm and three 660 mm sections. Riser-connected drilling will use non-aqueous drilling fluid.

The *West Aquarius* will potentially drill the NW Wedge appraisal well in 2015. The proposed location is N 46°48'33.05"; W 48°50'02.24". This well will consist of two riserless sections drilled with water-based fluids (1,067 mm and 660 mm) and two sections drilled with non-aqueous fluids. There will be no EDC at the NW Wedge location, and drill cuttings from the riserless sections will be deposited in the immediate vicinity of the wellbore. After evaluation, the well will be plugged and abandoned and all wellhead equipment recovered from the seafloor.

1.2.4 Drill Cuttings Discharge

The cuttings discharge location information from the 2014 Update (Stantec 2014) reflects what was done in the EDC during 2014; this will continue in 2015. One change from 2014 is that HMDC will drill all of the riser-connected sections with non-aqueous drilling fluid.

1.2.5 Subsea Equipment Installation within the Existing HSE EDC Site for the Unit BNA Project

Development of the Unit BNA fault blocks will be completed using four oil production wells, located on the existing Hibernia Platform, supported by four subsea water injection wells. The subsea water injection wells will be located in the existing HSE EDC and will be drilled by a MODU. The Unit BNA project is an extension of the HSE subsea architecture and will use the HSE EDC, flexible water injection flowline and umbilical[1]. The Unit BNA Project will use the existing Hibernia Platform production and water injection facilities with no capacity expansion required.

The construction work will be executed using diverless operations from the Technip *Siem Daya 1* installation vessel. The *Siem Daya 1* is a DP2 offshore subsea construction vessel designed and equipped specifically for subsea operations. Following transit to Newfoundland, work will commence mid-August 2015 and last for two to four weeks, depending on weather. The mobilization of subsea equipment to the HSE EDC is planned to be conducted in two trips, with equipment being mobilized from the support base in Bay Bulls, NL. To manage simultaneous

[1] the HSE EDC was constructed under OA No. 22520-020-001 issued by the C-NLOPB (June 2012) and the HSE flowline, subsea equipment, and rock berm was installed/constructed under OA No. 22020-020-OA05 issued by the C-NLOPB (August 2013)

operations in the HSE area, equipment could potentially be wet stored on the sea floor between trips approximately 500 m from the EDC (i.e., at the edge of the safety zone, likely east of the EDC, but potentially north or south of the EDC, depending on requirements).

1.3 Consultations

Consultations are conducted as activities arise and occur throughout the year as appropriate. HMDC engages and informs the fishing industry (fishers and processors) through the One Ocean forum. The overview of planned activities is provided early in the year to One Ocean and activity updates are provided during subsequent meetings during the year. The fishing industry is notified of VSP and well site surveys prior to them being conducted, although none are planned in 2015.

1.4 Mitigation

These activities were previously assessed under the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009). The removal of cuttings from the EDC was assessed in the 2014 Update (Stantec 2014). Mitigation measures proposed in the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) to reduce the potential for residual adverse environmental effects remain unchanged.

2.0 BIOLOGICAL ENVIRONMENT UPDATES

As noted in Section 1.0, in addition to updates to Section 2.1.3 of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009), the commercial fisheries and species at risk information has been updated to reflect the most current information (as of January 30, 2015).

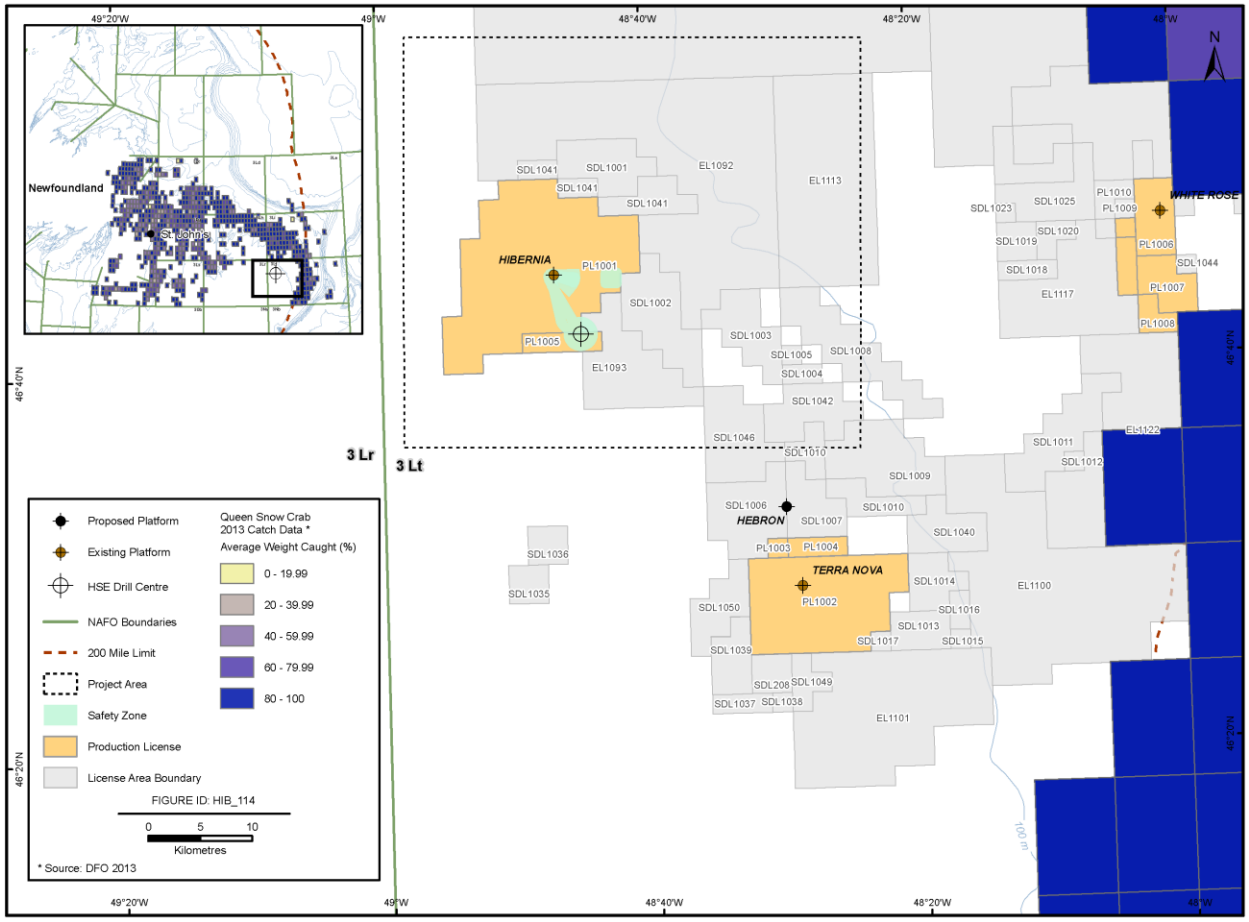
2.1 Commercial Fisheries Update

Fisheries activities within the Study Area identified in Hibernia Drill Centres Construction and Operations Program, Hibernia Management and Development Company (Jacques Whitford 2009) are little changed since this environmental assessment report was accepted in 2009, or the environmental assessment updates submitted in 2011, 2013 and 2014. The key fishery for the Northwest Atlantic Fisheries Organization (NAFO) Unit area 3Lt remains snow crab (*Chionoecetes opilio*). However, it should be noted that for 2014, there were no snow crab (Figure 2.1) or northern shrimp (*Pandalus borealis*) (Figures 2.2) catches in the northern section of the Project Area. Fisheries activities within the Study Area were reported and graphically depicted for 2005 to 2007 in the original environmental assessment (Jacques Whitford 2009), graphically depicted 2008 to 2010 in the 2011 update (Stantec 2011), graphically depicted 2011 in the 2013 update (Stantec 2013) and graphically depicted 2012 in the 2014 update (Stantec 2014).

Fisheries and Oceans Canada (DFO) Ottawa Statistical Division has a policy prohibiting the wholesale release of fisheries data in order to maintain privacy of individuals that could potentially be identified through detailed microdata. Spatial data are released at an aggregated 1/10th degree cell level only. No absolute values of weight and value are provided; the actual weight and value of a catch within each box are provided as a range. Therefore, the figures for 2013 data for snow crab (Figure 2-1) and northern shrimp (Figures 2-2) illustrate an average of the weight percentage data provided by DFO.

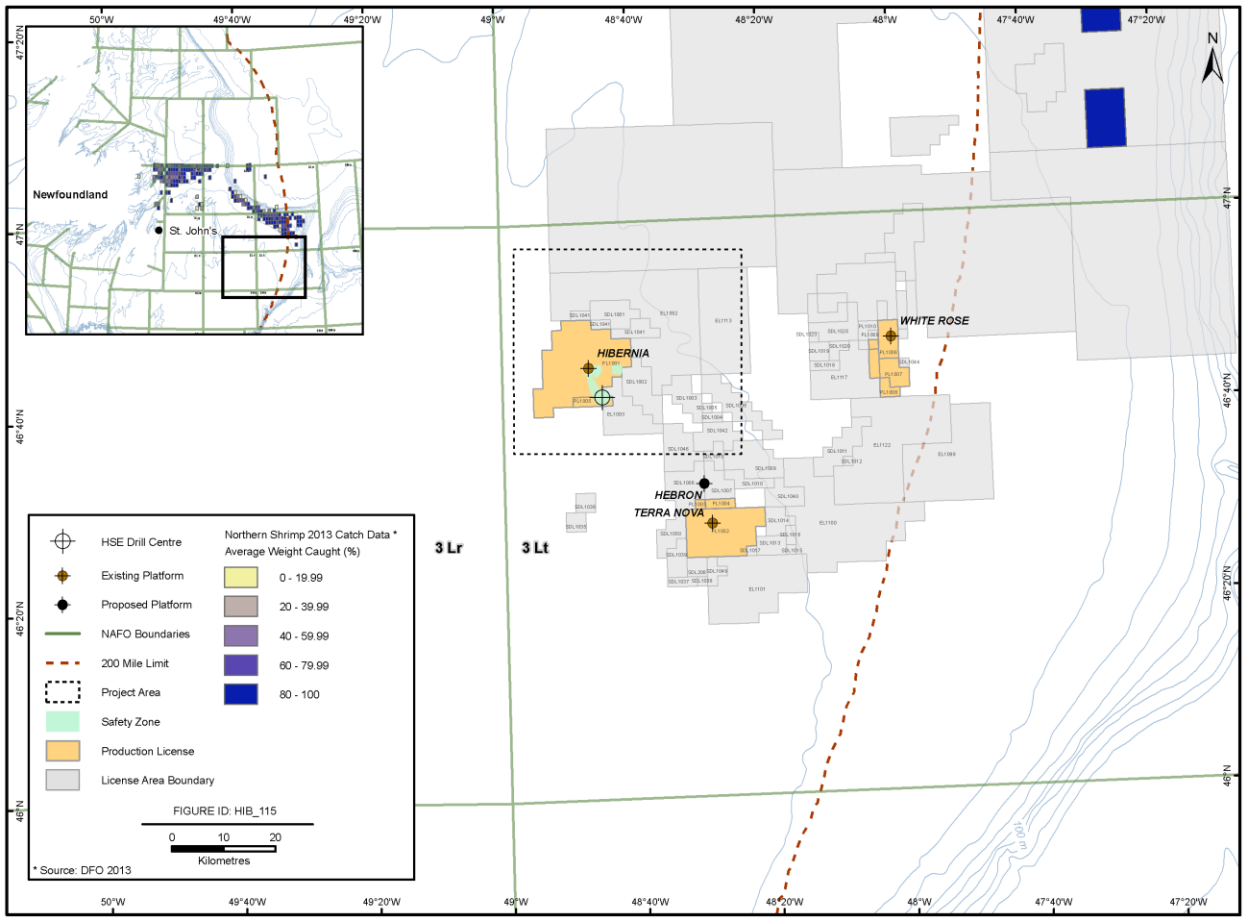
Validated commercial fisheries data for 2014 for NAFO Division 3L are not available at this time.

DFO research vessel locations in 2014 are illustrated in Figure 2-3.



Note: This figure illustrates an average percentage of the weight percentage data provided by DFO, due to a change in the way DFO provides commercial fish data. The weight percent for a specific cell has been summed and divided by the number of months that specific cell was fished (i.e., when the cell was fished, x% of species was caught in the boundaries))

Figure 2-1 Snow Crab – Percent Average Weight Harvested (2013)



Note: This figure illustrates an average percentage of the weight percentage data provided by DFO, due to a change in the way DFO provides commercial fish data. The weight percent for a specific cell has been summed and divided by the number of months that specific cell was fished (i.e., when the cell was fished, x% of species was caught in the boundaries))

Figure 2-2 Northern Shrimp – Percent Average Weight Harvested (2013)

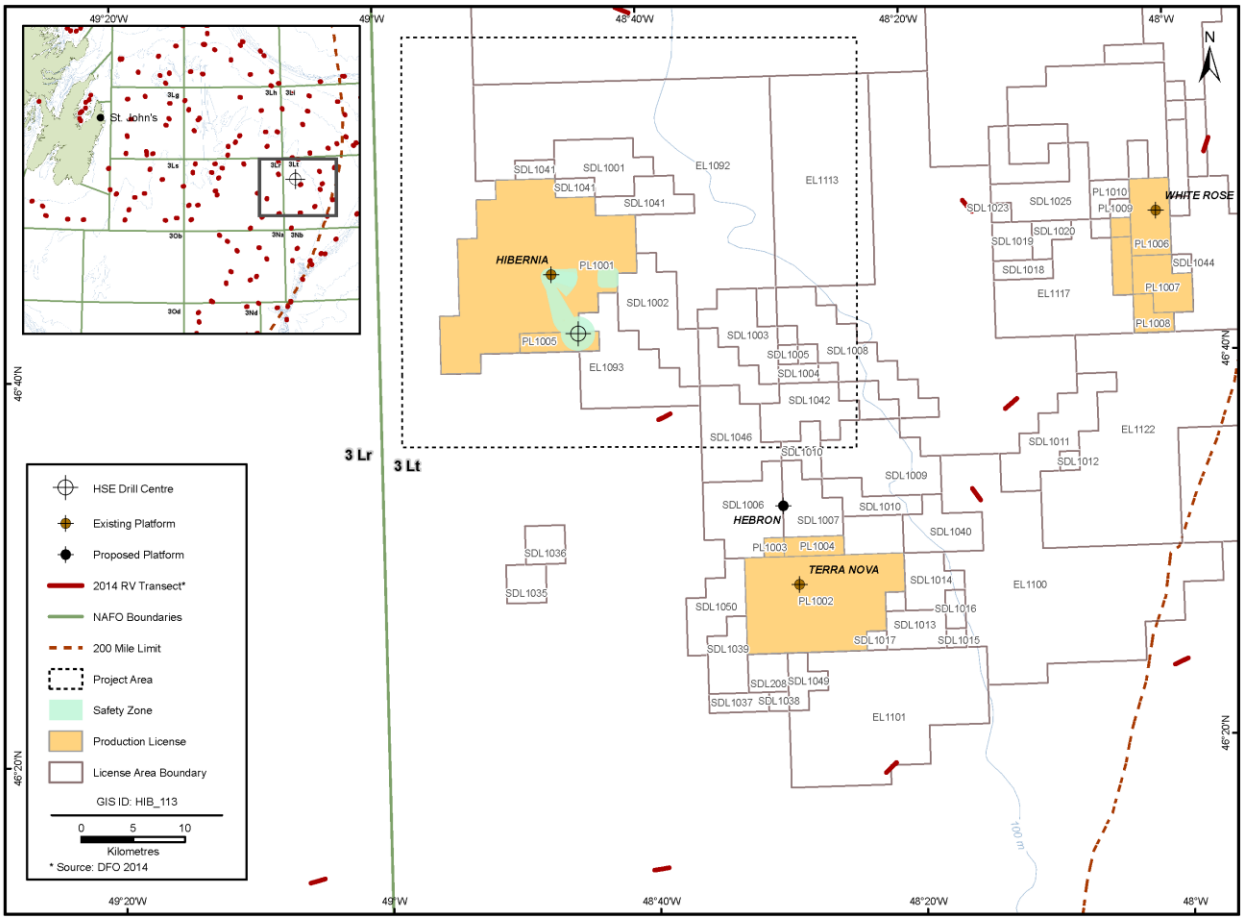
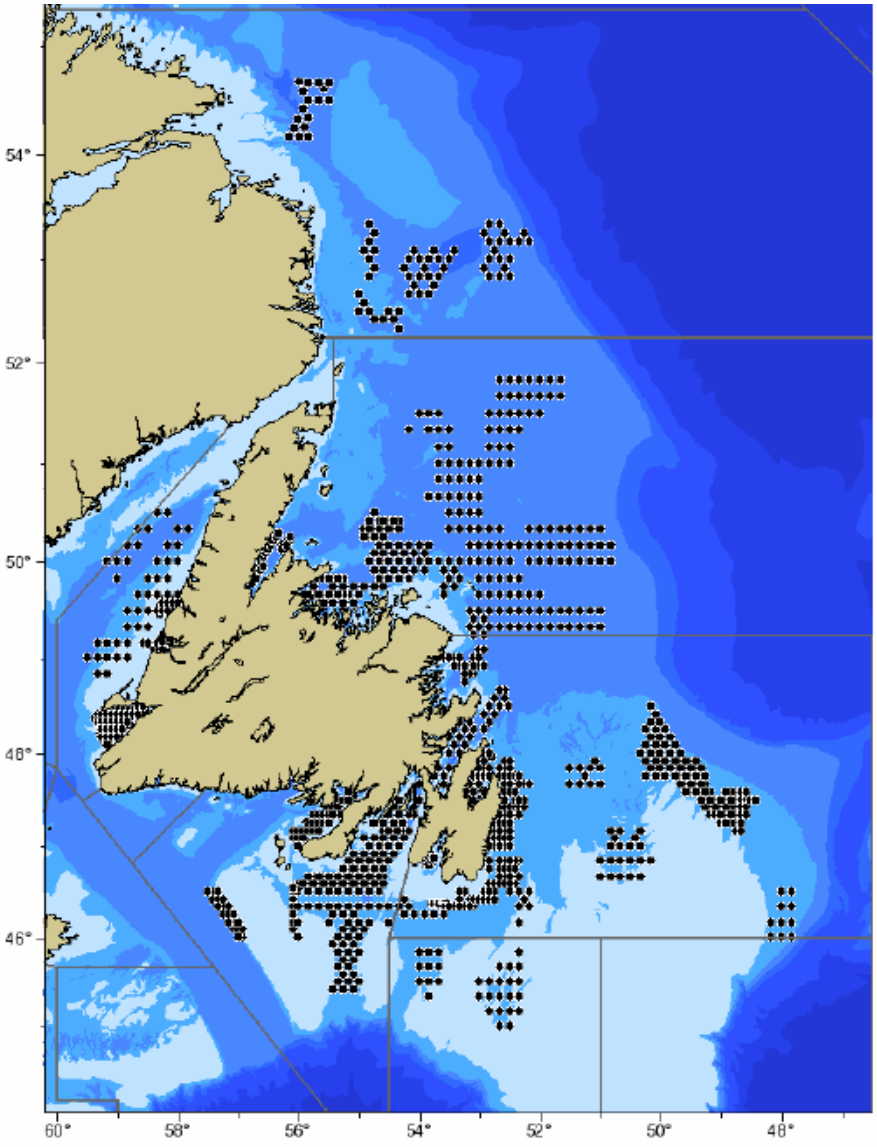


Figure 2-3 DFO Research Vessel Transects (2014)

DFO will be conducting surveys in NAFO Division 3L from the *Research Vessels* (*RVs*) *Needler* and *Teleost* (G. Sheppard, pers. comm.). The *RV Teleost* will be conducting the Newfoundland and Labrador Spring Atlantic Zone Monitoring Program from April 7 to 28, 2015 in NAFO Divisions 3P + 3KLMNO. The *RV Teleost* will also be conducting a comparative redfish survey from April 29 to May 6, 2015, in NAFO 3L and a capelin survey from May 12 to 26, 2015, in NAFO 3KL. The *RV Teleost* will be conducting a Newfoundland and Labrador Fall Survey from November 24 to December 8, 2015 in NAFO 3K + 3L Deep.

The *RV Needler* will be conducting the Newfoundland and Labrador spring survey from May 12 to 26, 2015, in NAFO 3O + 3N and from May 27 to June 13, 2015, in NAFO 3L + 3N. The *RV Needler* will be conducting the Newfoundland and Labrador fall survey from September 29 to October 13, 2015, in NAFO 3O + 3N, from October 14 to 27, 2015, in NAFO 3N + 3L, from October 28 to November 10, 2015, in NAFO 3L and from November 11 to 24, 2015, in NAFO 3K + 3L.

The DFO-Industry Post-Season Crab Survey is conducted annually (usually starting in September) and extends from 3O north to 2J. The 2014 Post-season Crab Survey collected samples from the same locations as the 2013 survey (Figure 2-4) and the locations and timelines for the 2015 survey will be the same as previous years (D. Power, pers. comm.). The catch rate for new shell crab in NAFO 3L offshore steadily increased from 2007 to the highest observed level in 2012, but declined in 2013. The catch rate for old shell crab showed an increase from 2008 to 2011, but declined in 2012, with an observable increase again in 2013 (Stansbury et al. 2014).



Source: Stansbury et al. 2014

Figure 2-4 Stations for DFO-Industry Post-Season Crab Survey

2.2 Species at Risk Update

Since the submission of the environmental assessment for the Hibernia Drill Centres Construction and Operations Program (Jacques Whitford 2009) and the 2011, 2013 and 2014 updates (Stantec 2011, 2013, 2014), there has been one addition (Red-necked Phalarope (*Phalaropus lobatus*)) to the list of species included under the *Species at Risk Act* (SARA) or assessed as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (SARA 2015) (Table 2.1). None of the species previously described since the last update (Stantec 2014) have had a designation change.

Table 2.1 Occurrence of Species at Risk within the Study Area

SPECIES		SARA Status	COSEWIC Status	Occurrence in the Study Area
Common Name	**Scientific Name**			
Birds				
Ivory Gull [A]	*Pagophila eburnea*	Schedule 1 – Endangered	Endangered	May occur but area is not known to be critical habitat for the species
Red-necked Phalarope	***Phalaropus lobatus***	**No Schedule – No status**	**Special Concern**	**May occur but area is not known to be critical habitat for the species**
Marine Mammals				
Blue Whale (Atlantic pop)	*Balenoptera musculus*	Schedule 1 - Endangered	Endangered	Occurs but area is not known to be critical habitat for the species
North Atlantic Right Whale [A]	*Eubalaena glacialis*	Schedule 1 - Endangered	Endangered	Occurs but area is not known to be critical habitat for the species
Fin Whale (Atlantic pop)	*Balenoptera physalus*	Schedule 1 – Special Concern	Special Concern	Occurs but area is not known to be critical habitat for the species
Sowerby's Beaked Whale	*Mesoplodon bidens*	Schedule 1 – Special Concern	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Harbour Porpoise (Northwest Atlantic pop)	*Phocoena phocoena*	Schedule 2 – Threatened	Special Concern	Occurs but area is not known to be critical habitat for the species
Killer Whale (Northwest Atlantic / Eastern Arctic pop)	*Orcinus orca*	No Schedule – No Status	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species

SPECIES		SARA Status	COSEWIC Status	Occurrence in the Study Area
Common Name	**Scientific Name**			
Northern Bottlenose Whale (Davis Strait-Baffin Bay-Labrador Sea pop)	*Hyperoodon ampullatus*	No Schedule – No Status	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Fish				
White Shark (Atlantic pop)	*Carcharodon carcharias*	Schedule 1 - Endangered	Endangered	Not likely to occur
Northern Wolffish [A]	*Anarhichas denticulatus*	Schedule 1 - Threatened	Threatened	Occurs but area is not known to be critical habitat for the species
Spotted Wolffish [A]	*Anarhichas minor*	Schedule 1 - Threatened	Threatened	Occurs but area is not known to be critical habitat for the species
Atlantic Wolffish [B]	*Anarhichas lupus*	Schedule 1 – Special Concern	Special Concern	Occurs but area is not known to be critical habitat for the species
Atlantic Bluefin Tuna	*Thunnus thynnus*	No Schedule – No Status	Endangered	May occur in small numbers but area is not known to be critical habitat for the species
Atlantic Cod (NL Pop)	*Gadus morhua*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Cusk	*Brosme brosme*	No Schedule – No Status	Endangered	Not likely to occur
Porbeagle Shark	*Lamna nasus*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Roundnose Grenadier	*Coryphaenoides rupestris*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Smooth Skate (Funk Island Deep pop)	*Malacoraja senta*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species
Acadian Redfish (Atlantic pop)	*Sebastes fasciatus*	No Schedule – No Status	Threatened	May occur in small numbers but area is not known to be critical habitat for the species
American Eel	*Anguilla rostrata*	No Schedule – No Status	Threatened	Occurs but area is not known to be critical habitat for the species

SPECIES		SARA Status	COSEWIC Status	Occurrence in the Study Area
Common Name	**Scientific Name**			
American Plaice (NL Pop)	*Hippoglossoides platessoides*	No Schedule – No Status	Threatened	Occurs but area is not known to be critical habitat for the species
Atlantic Salmon (South NL pop)	*Salmo salar*	No Schedule – No Status	Threatened	Not likely to occur
Deepwater Redfish (Northern pop)	*Sebastes mentella*	No Schedule – No Status	Threatened	Occurs but area is not known to be critical habitat for the species
Shortfin Mako (Atlantic pop)	*Isurus oxyrinchus*	No Schedule – No Status	Threatened	Not likely to occur
White Hake (Atlantic and Northern Gulf of St. Lawrence pop)	*Urophycis tenuis*	No Schedule – No Status	Threatened	Uncommon on the Grand Banks
Basking Shark (Atlantic pop)	*Cetorhinus maximus*	No Schedule – No Status	Special Concern	May occur in small numbers but area is not known to be critical habitat for the species
Blue Shark (Atlantic pop)	*Prionace glauca*	No Schedule – No Status	Special Concern	Not likely to occur
Roughhead Grenadier	*Macrourus berglax*	No Schedule – No Status	Special Concern	Occurs but area is not known to be critical habitat for the species
Spiny Dogfish (Atlantic pop)	*Squalus acanthias*	No Schedule – No Status	Special Concern	Occurs but area is not known to be critical habitat for the species
Thorny Skate	*Amblyraja radiata*	No Schedule – No Status	Special Concern	Occurs but area is not known to be critical habitat for the species
Reptiles				
Leatherback Sea Turtle (Atlantic pop) [A]	*Dermochelys coriacea*	Schedule 1 - Endangered	Endangered	Occurs but area is not known to be critical habitat for the species
Loggerhead Sea Turtle	*Caretta caretta*	No Schedule – No Status	Endangered	Occurs but area is not known to be critical habitat for the species

Update to Table 2.1 (Stantec 2014)
Bolded species are new to the table
A – Recovery Strategy in place
B – Management Plan in place

Red-necked Phalarope was not previously described in either Jacques Whitford (2009) or Stantec (2011, 2013, 2014). As of November 2014, COSEWIC has assessed the Red-necked Phalarope as special concern.

This species does not have status under SARA. Nor does it have final recovery strategies, action plans or associated critical habitat identified. None of the recovery or action plans available for the SARA species affect the mitigation measures committed to by HMDC in Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009).

The following updates Section 4.4 of the Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) and the 2011, 2013 and 2014 Environmental Assessment Review updates (Stantec 2011, 2013, 2014), as Red-necked Phalarope was not previously described in any of the cited reports.

Red-necked Phalarope

Red-necked Phalarope are shorebirds that are considered pelagic because they spend most of the non-breeding season at sea. They regularly occur in the Atlantic Ocean as they migrate at sea from south of the equator wintering areas to Arctic breeding grounds. Red-necked Phalarope feeds on surface zooplankton by swimming and rapidly picking at the surface of the water.

Incidental observations of small numbers of Red-necked Phalarope have been recorded during seismic surveys in the Jeanne d'Arc Basin and Orphan Basin from mid-May to October (Husky Energy 2012). They may occur in the offshore area from May to September/October, but in low numbers (Jacques Whitford 2009).

3.0 ENVIRONMENTAL EFFECTS ASSESSMENT

The environmental effects predictions and significance determinations cited in Jacques Whitford (2009) and the 2011, 2013 and 2014 updates (Stantec 2011, 2013, 2014) are valid for the planned 2015 project activities, including work associated with subsea tiebacks to the Hibernia Platform. The short-term (one vessel trip duration to Bay Bulls and return to the HSE EDC) possible wet storage of the equipment at the edge of the existing 500 m safety zone does not change any of the predictions in the Environmental Assessment (Jacques Whitford 2009).

The mitigation measures for activities included in the scope assessed in the original Hibernia Drill Centres Construction and Operations Program Environmental Assessment (Jacques Whitford 2009) are still appropriate. HMDC reaffirms its commitment to the mitigation measures cited in the original assessment and the associated Screening Report (Canada-Newfoundland and Labrador Offshore Petroleum Board 2009).

Further work was undertaken at both the Hibernia Platform and the HSE EDC to improve the understanding of drill cuttings deposition effects on fish habitat. A remotely operated vehicle video recording of the affected areas was conducted in the summer of 2014. Analysis of the data is ongoing and a separate report will be prepared and issued. The survey approach will be adjusted if required for adequacy and effectiveness.

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