CEAA

Review of Eastern Newfoundland Exploration Drilling Project

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Preamble

Evaluations of this nature benefit from considerations of historical context. The reasons for this are many, not the least of which is that past performances are a robust indicator of future performances.

Hydrocarbon operations have been on going on the Grand Banks of eastern Canada for more than 20 years. Given that seabirds are the key global indicators of marine oil pollution, it would be expected, as was committed to at Public Hearings, that a robust systematic monitoring program for marine birds would have been established and executed. Moreover, it would be expected that there would be a comprehensive record of systematic observations of birds at platforms and along support vessel routes. That there have been no such long-term comprehensive programs and that there are no scientifically justifiable seabird occurrence or mortality data stands in the face of opportunity and environmental due-diligence from the outset of operations is deplorable. A1999 report by Montevecchi et al commissioned by the Canadian Association of Petroleum Producer (CAPP) presented a simple but effective monitoring program with which to assess seabird occurrences and mortality by arms-length independent observers. It was never implemented or even attempted. The inadequacy of the situation has been substantiated by offshore weather observers who have come to my office to complain about their minimalist bird observation and rig search requirements which, surprisingly, have been recently cut back even further.

This lack of environmental vigilance which is condoned by the regulator, the C-NLOPB, speaks volumes as to what can be realistically expected from statements in the current EA. As a matter of fact, it is clear that the EA is simply a listing of conjectures without evidence-based follow-up assessment. The absence of tests of predictions precludes evidence-based decision-making that could be used in adaptive management project adjustments. Instead, predictions about project effects are simply cast out with no indications of follow-up or data assessment. There is no credibility in such an approach (Russell & Fifield, 2001).

Leach's Storm-Petrels are the seabird species most vulnerable to light attraction, platform collisions and offshore oiling (e.g. Fraser et al. 2006; Rodriguez, 2012). These nocturnally foraging seabirds and other seabird species are strongly attracted to the brilliant flare and lights of platforms situated in formerly opaque ocean environments on the Grand Banks and continental shelf edge (Wiese et al, 2001). During the 20 years of marine oil operation, 2,700,000 storm-petrels have disappeared from massive breeding colonies in eastern Canada, including the Witless Bay Ecological Seabird Reserve and the species' largest colony on the Baccalieu Island Ecological Seabird Reserve (Sklepkovych & Montevecchi, 1989; Canadian Wildlife Service unpubl. data). The species has an IUCN (International Committee for the Conservation of Nature) ranking of Vulnerable, and the population decrease could represent about 20 % of the species' world population (http://www.iucnredlist.org/details/22698511/0). With regard to the improper treatment of seabirds, reports from a worker on the topside of the Hebron platform in 2017 when being constructed in Bull Arm complained that during a "wreck" of storm-petrels the foreman instructed workers to shovel the birds into buckets to then dump them over the side. Standard operating illegal activity.

The EAs make unprecedented and unjustifiable requests request for a 10 and 12 year approvals. There needs to be considerations about the technical, chemical, environmental and biological changes over that time period that cannot be envisioned at the present moment. A consideration of 3-year environmental assessments might be in order.

In sum what the EAs offer is more of the same. The same hasn't worked for 20 years, it is well past time to ensure comprehensive environmental assessment in the eastern Canadian ocean. To do so will require a new regulatory regime.

Review of Exxonmobil Canada Ltd. Eastern Newfoundland Offshore Exploration Drilling Project (CEAR 80132) Environmental Impact Statement - Summary

Comment Number	Reference to EA (Section and page)	Context and Rationale	Specific Question/ Request for Information
1	**Section 1.0: Introduction and Environmental Assessment Context** "ExxonMobil Canada Ltd. (ExxonMobil; the Operator) and its co-venturers are planning to conduct a program of petroleum exploration/delineation/appraisal	This is an unprecedented request for a 12 year approval. There needs to be considerations about the technical and chemical changes over that time period that might not be envisioned at the present moment.	Request that there be a limit of a 3 year approvals to the project submissions and that an environmental assessment be done after this period before approving the project for any subsequent length of time.

	drilling and associated activities (herein referred to as exploration drilling) in the eastern portion of the Canada-Newfoundland and Labrador (NL) Offshore Area over the period 2018 to 2029 (hereinafter also referred to as the Project)."		
2	**Section 2.2.3: Formation Flow Testing with Flaring** "Produced hydrocarbons and some produced water from the reservoir are flared using high-efficiency burners. Flaring would be continuous and last between 2-5 days"	Fatal light attraction is the main killer of seabirds around oil rig and a 2 to 5 days period of initial flaring will lure, disorient and kill seabirds, notably the nocturnal Leach's Storm-Petrel (Wiese et al. 2000). Flaring is at its the most potent when it first comes on as it instantly attract the attention of the seabirds from as far away as the light projects with largest luminous "catch basins" which occur during foggy and misty conditions. Night flaring will cause the most damage to seabird populations as the birds will be attracted to this bright source of light on the otherwise dark ocean cover. Night time flaring will promote mass seabirds mortality (Wiese et al. 2000).	Request that flaring is restricted to the daytime. Request that flaring is done under the observation of an independent party to record the attraction of seabirds to the rig.
3.1	**Section 2.4.1: Spill Prevention and Response**	Major issue for seabird\ protection is fatal light	Request that it be acknowledged in the environmental assessment of

	"Prevention is the most effective way to avoid environmental effects from accidental spills..."	attraction, not spills (Wiese et al. 2001; Rodriguez, 2012).	Exxon that the prevention of fatal light attraction is the most important environmental goal for the prevention of mass seabirds mortality.
3.2	**Section 2.4.1: Spill Prevention and Response** "There are several control measures that are designed and implemented during drilling to maintain well control and reduce risk of a well blowout. These control measures include mechanical controls and barriers that are implemented as part of well design (e.g., steel casing, blowout preventer), and drilling and monitoring procedures. In the event that this primary barrier fails, secondary barriers such as the BOP system can be used to regain well control."		Are there plans for a back-up blowout preventer as is done in USA?
4	**Section 2.4.3: Spill Risk and Probabilities** "A detailed analysis of the likelihood or probability that a well blowout or batch spill would occur over the life of the Project was conducted to support the EA analysis of potential accidental events. The results of the oil spill probability analyses show that the probability of a well blowout is extremely low (1.5 x 10-7 , or one in 666 667 chance of occurring) or	The chronic effects of spills may override any catastrophic spills (Fraser & Racine, 2016), but note also that the Terra Nova spill of 2006 was >1,000 l. Morandin & O'Hara (2016) have found that sheens around oil platforms induces the death of seabirds.	Request that comprehensive monitoring be undertaken to record ongoing effects of smaller scale spills on the environment and the fauna that comes in contact with it.

	other large release (more than 100 L) is very low (8.5 x 10-3 , or 1 in 118 chance of occurring); that is, blowouts and other large spills from offshore exploration wells are quite rare. The probability of an oil spill is greater for small spills (up to 100 L) as compared to larger spills, including batch and sub-surface releases"		
5	**Section 2.4.4: Spill Fate and Behaviour :** 'Although there was no predicted shoreline oil contact from the 30-day release at EL 1135, oil was predicted to contact the shoreline from the 113-day release at EL 1135, as well as the releases (30- and 113-day) at EL 1137.		There is a lot of talk of when and if oil will reach the shoreline during spillage events however how does that apply to seabirds, marine mammals and fish who spend most of their life at sea?
6	**Section 3.0: Alternative Means of Carrying out the Project** "With respect to water management, the water management system (e.g., intake, storage, distribution, discharge) will be dependent on the configuration of the drilling installation's water system, and alternative systems of water management will not be available. A drilling installation has yet to be selected for the Project, and therefore, alternative water management systems are not available at this time. Likewise, with respect to the location	Discharge of gray water effluent promotes a reefing effect at the platform and as such, facilitates algae growth, leading to fish attraction (Wolfon et al. 1979; Baird, 1990). Burke et al (2005) have documented this phenomenon of nocturnal feeding and taking up residency at the base of the Hibernia platform by gulls because of the abundance of food around the platform. This is in accordance with the findings of Tasker et al. (1986)	Request that SBM discharges are taken back to shore for treatments

	of final effluent discharge points, discharge points on a drilling installation are fixed and cannot be changed or re-configured. A drilling installation has yet to be selected for the Project, and therefore, alternative locations for effluent discharge points are not available at this time. Typically, effluent discharge points are located near or under the water's surface."	Morandin & O'Hara (2016) have found that sheen around oil platforms induces the death of seabirds.	
7	**Table 3.4: Offshore Drilling Installation Lighting** "Spectral Modified Light: Technical Feasibility: NO Not yet considered ready for commercial use Economic Feasibility: NO Not yet considered commercially viable"	Modified green spectral lighting has been found to reduce the attraction of seabirds to the platforms overnight (Poot et al. 2008; Marquenie et al. 2014). The mitigation of light attraction would reduce the mortality of seabirds by curbing their nocturnal attraction to the platform.	What is the detailed reason to refuse to adopt green spectral lighting on the platform at night? What is the analysis that shows its "non-commercial viability"?
8	**Table 3.5: Formation Flow Testing with Flaring at Night Options** "Reduced flaring (no flaring at night or during low-visibility weather) Flaring as required"	Describing flaring at night as having a "potential localized effect on migratory birds" is misleading as it does not clearly portray the inevitable mass mortality these seabirds will suffer through nocturnal flaring (Wiese] et al. 2001)	Flaring as required should not be considered given the mortality rate of seabirds that will occur when ExxonMobil flares at night. Request that reduced flaring be adopted.
9	**Table 4.3: Summary of Engagement Feedback** "Flaring – possible to limit to daylight hours"		Request that the summary include the negative impact of fatal light attraction and how the company will mitigate them.

			Request that reduced flaring only in the daytime be adopted.
10.1	**Table 5.1: Identified VCs and the Rationale for their Selection** "Marine and Migratory Birds: Hunting or marine birds and collection of eggs have been identified as important to Indigenous groups in Atlantic Canada"	Turr hunt is of traditional and food resource importance for coast residents of Newfoundland.	
10.2	**Table 5.1: Identified VCs and the Rationale for their Selection** "Marine and Migratory Birds: Birds are important from an ecological, social, and economic perspective, as they often function near the top of the food chain, and may be ARE vulnerable to certain types of environmental disturbance"	Marine and Migratory Birds are a key global indicator of marine oil pollution (Furness and Greenwood, 1993).	Request that the description of marine and migratory birds be changed to reflect the importance of maintaining sustainable populations of these organisms.
12	**Section 6.1.1 Description of the Baseline** 'Capelin, a small forage fish, has regionally high densities in the Project Area, and is a key prey source for many other marine fish, bird, and marine mammal species. Large migratory pelagics (such as sharks and tuna), are seasonal visitors to the cold waters of the Project Area.'	Capelin is an extremely important food source for many of the larger ocean predators as well as seabirds (DFO, 2011).	How will the capelin be affected by its proximity to the project?
13.1	**Section 6.1.2 Anticipated Changes to the Environment** 'The possible destruction, contamination or alteration of marine habitats and benthic organisms due to	Invasive species may change the environment, having a butterfly effect on other marine species.	What precautions will be taken to prevent the introduction of invasive species?

	the discharge and deposition of drill cuttings and/or fluids, the deployment and use of other Project equipment, and possibly the introduction and spread of aquatic invasive species."		
13.2	**Section 6.1.2: Anticipated Changes to the Environment** "The attraction of marine fish to the drilling installation and vessels, with increased potential for injury, mortality, contamination, or other interactions."	The attraction of marine fish will also attract seabirds (Burke et al. 2005).	Request that SBM discharge be brought back to shore to mitigate discharges from the platform.
14.1	**Section 6.1.3.1: Presence and Operation of Drilling Installation** "The potential environmental effects of presence and operation of the drilling installation are primarily related to underwater noise and vibrations, light emissions and other environmental discharges, interactions with the benthic environment, and aquatic invasive species"	Burke et al. (2005) have found that gulls had established a nocturnal feeding residency at base of the Hibernia platform. Underwater light and water discharge will attract seabirds to the platform.	Request to reduce/change lighting to decrease nocturnal visibility of the platform to seabirds. Request that SBM discharge be brought back to shore to mitigate the water discharge from the platform.
14.2	**Section 6.1.3.1: Presence and Operation of Drilling Installation** "The interactions described above may result in changes to habitat availability and quality, fish mortality / injury risk and fish health, and fish presence and abundance. These changes are predicted to be adverse, low in magnitude, localized and certainly within the Project Area.	Cumulative food web effect is not monitored, and it needs to be (Burke et al. 2012)	Request that independent observers monitor and record changes in fish stock around the platform as well as the presence of seabirds.

	short to medium term duration, occurs regularly and reversible with a high level of confidence."		
14.3	**Section 6.1.3.1 Presence and Operation of Drilling Installation** 'As the Project Area is within an area of low seabed complexity, the introduction of subsea infrastructure may provide opportunities for colonization and increased distribution of benthic species that have pelagic eggs or larvae. This effect would be **temporary** for the length of drill operations, but the combination of increased colonization opportunities and local enrichment may support faster recovery in an otherwise slow recovering environment.'	**Temporary**: to introduce infrastructure that may help colonize the area and then remove it may cause further damage to the distribution of benthic species (Wolfson et al. 1979).	Request that this section be rephrased in terms of the long-term impacts of allowing colonization and, thereafter, removing the habitat will have on the benthic species.
15	**Section 6.1.3.2 Drilling and Associated Marine Discharges** 'The physical and chemical effects of this volume of WBM and SBM drill cuttings over this area are anticipated to only have localized habitat disturbances, if any.'	The chemical effects can spread through ocean habitats through predator-prey interaction, may not just be localized (Wolfson et al. 1979; Templeman, 2010; Burke et al. 2012).	Request that SBM discharge be brought back to shore to mitigate the water discharge from the platform.
16.1	**Section 6.1.3.5: Geophysical/ Geohazard/ Wellsite/ Seabed Surveys and Vertical SEAmic Profiling** "The possible effects from the use of sEAmic sound energy in the marine environment may be behavioural	McCauley et al. (2017) have found that sEAmic survey would kill more than 50% of the plankton within 1 km of the area and that the mortality could be expanded over a period of 2 days for 1 sEAmic survey.	Request that monitoring be done on the amount of plankton killed immediately after the sEAmic survey and 48 hours later to provide data on the impact on fish and their predators.

	(avoidance, other changes in distribution or activities) or involve injury to or mortality of individual fish. However, operations will be short-term and localized, and have reversible, low-magnitude effects."		
16.2	**Section 6.1.3.5: Geophysical/ Geohazard/ Wellsite/ Seabed Surveys and Vertical SEAmic Profiling** "Mobile fish and invertebrate species are predicted to temporarily avoid areas of survey operations, minimizing potential interactions. The geophysical sound source will go through a "ramp up" phase to increase initial fish and invertebrate avoidance to limit potential effects. Eggs, larvae and benthic invertebrates adjacent to the sound source may be affected. However, due to the highly-localized effects and short-term nature of operations, it will not have population effects."		What is the evidence predicting that mobile fish and invertebrate species will temporarily avoid areas of survey operations?
16.3	**Section 6.1.4 Anticipated Effects (Accidental Events)** 'Only fish in the immediate vicinity near the surface at the time of the spill may be exposed, and at the concentrations predicted.'	Contaminants can build up in the tissues of organisms and bioaccumulate through the food chain (Wolfson et al. 1979; Templeman, 2010; Burke et al. 2012).	Request that the risk for bioaccumulation in fish tissues be acknowledged.
16.4	**Section 6.1.4 Anticipated Effects (Accidental Events)**	The dispersion of the slick is still harmful to species that come	Request that the EA reflect the long-term harmful impact of contaminants instead of minimizing

	'While batch diesel spills would affect water quality around the spill site, this would be short-term until the slick naturally disperses through surface wave action in the offshore environment."	in contact with it, even in small amounts. Diving birds that come in contact with oil are likely to die from oil ingestion, loss of insulation (hypothermia) or drowning from loss of buoyancy (Tasker et al. 1986; Briggs et al. 1997; Templeman, 2010)	the consequences of spills. Mortality due to oil presence on the water will occur and should be clearly stated.
16.5	**Section 6.1.4 Anticipated Effects (Accidental Events)** 'In these modelled scenarios, small amounts of oil are predicted to reach shoreline areas of the Avalon Peninsula, the southern coast of Newfoundland, the eastern shores of Nova Scotia, and Sable Island, however the small volumes would be expected to be weathered, patchy and discontinuous.'	Though weathered, patchy and discontinuous, oil sheen and spills are still harmful (Tasker et al. 1986; Briggs et al. 1997). Diving birds that come in contact with oil are likely to die from oil ingestion, loss of insulation (hypothermia) or drowning from loss of buoyancy (Templeman, 2010).	Request that the EA reflecs the long-term harmful impact of contaminants instead of minimizing their consequences. Mortality due to oil presence on the water will occur and should be clearly stated.
16.6	**Section 6.1.4 Anticipated Effects (Accidental Events)** 'However, effects are not expected to alter the long-term viability of local or regional fish populations in the RSA.'	Even short-term viability of local or regional fish populations can affect seabird populations indirectly.	This is stated a lot, where is the evidence for it?
17.2	**Section 6.2.1: Description of the Baseline** "... although Northern Gannets and Leach's Storm-Petrels travel hundreds of km from their breeding colonies over multi-day foraging trips"		Request the references for this claim.

18	**Table 6.2: Listed Bird Species and Their Likelihood of Occurrence in the Vicinity of the Project A**	Leach's Storm-Petrels are nocturnal seabirds that overwinter on the waters of the Grand Banks (Sklepkovych & Montevecchi, 1989). The Grand Banks support the largest worldwide colonies of this species and their populations have declined dramatically in recent years (S. Wilhelm pers. comm.; BirdLife International, 2017). Bermudan White-tailed Tropicbirds have also been found in the project Area (Mejias et al. 2017) during the non-breeding season. They are one of the most endangered species of seabirds with a population of 146 mature individuals (BirdLife International, 2016).	Request that these species be added to the listed bird species that are likely to interact with the platform.
19	**Section 6.2.2: Anticipated Changes to the Environment** "Change in Habitat Availability and Quality"	Concerns over reefing effects as described by Burke et al. (2005) who have found that gulls had established a nocturnal feeding residency at base of the Hibernia platform. Concerns over fatal light attraction attract that will lure, disorient and kill seabirds -either through flare or nocturnal lightning (Wiese et al. 2001)	Request that SBM discharge be brought back to shore to mitigate reefing effects. Request reduced flaring (no nocturnal flaring) and green spectral lights at night to mitigate fatal light attraction. Request independent observers on site able to record data about environmental changes around the platform.

20.1	**Section 6.2.3.1: Presence and Operation of Drilling Installation** "…the creation of new foraging opportunities for predator species (e.g., through prey attraction due to organic waste disposal, creation of new "artificial reef" habitat)."	Concerns over reefing effects as described by Burke et al. (2005) who have found that gulls had established their nocturnal feeding residency at base of the Hibernia platform.	Request for independent observer to monitor the creation of new niches due to oiling operation and the platform.
20.2	**Section 6.2.3.1: Presence and Operation of Drilling Installation** "Some localized and short-term behavioural effects (change in presence and abundance) are also likely to occur from the operation of the drilling installation; however, these effects will be localized, transient, and short-term in nature."	Concerns over fatal light attraction that will lure, disorient and kill seabirds - either through flare or nocturnal lightning (Wiese et al. 2001)	The claim that the effects will be transient and short-term is not demonstrated to be evidence-based information. References are required.
20.3	**Section 6.2.3.1: Presence and Operation of Drilling Installation** "These changes are predicted to be adverse, low in magnitude, localized and certainly within the Project Area, short to medium term, regular in frequency, and reversible, with a moderate level of confidence."	Concerned about disappearance of 2.7 million of the most-vulnerable seabird species [Leach's Storm-Petrel] and the role o light attraction, platform collision and oiling since offshore production came on line (Wiese et al. 2001). This represent 25 to 40 % of the mature species population (Birdlife International, 2017).	Request references that predict a low magnitude, reversible negative effects on the population of Leach storm-petrel given the extent of their decimation.
20.4	**Section 6.2.3.1 Presence and Operation of Drilling Installation** 'The mortality rate is anticipated to be low as most stranded birds encountered on platforms and vessels are released successfully.'	From independent observers, we have learned that hundreds of storm petrels hitting the oil rig decks were shoveled into buckets and thrown overboard on previous installations. Birds	Request to see the evidence backing up the claim that the mortality rate of seabirds around the platforms will be low.

		hitting the decks are disoriented and probably harmed. Their feathers are likely to be coated in dirt, grease and oil from the deck as they struggle on it. They will not be in a suitable condition to be released at sea without the risk of drowning or becoming hypothermic from the loss of feather insulation (Templeman, 2010).	Who will be releasing these birds and how will they be trained to release them successfully? If birds are more seriously injured and require a long rest period or medical attention, how will this be addressed? Request that independent observers be on site to monitor how stranded birds are handled on the platforms.
20.5	**Section 6.2.3.2: Drilling and Associated Marine Discharges** "Discharge of organic wastes (sewage and food scraps) may result in enhancement of the local food supply and attraction of birds to vessels and platforms. However, this potentially positive effect may be offset by increased exposure to risk of collision / strandings or predation as well as energetic costs due to deviation from normal movement / migration patterns."	Discharge of gray water effluent has a reefing effect on the platform and, as such, promotes algae growth leading to fish attraction (Wolfon et al. 1979; Baird, 1990). Burke et al (2005) have documented nocturnal feeding by gulls taking up residency on the base of the Hibernia platform because of the abundance of food around the platform that is illuminated at night. This effect concurs with the findings of Tasker et al. (1986). Attraction of fish around the platform is not a positive effect as it will increase the presence of seabirds around the platform.	Request to adjust the language used in this section to reflect the adverse effects of increased production around the platform to reflect the increase seabird mortality that will result from oiling.
21	**Section 6.2.3.3: Formation Flow Testing with Flaring**	Leach's Storm-Petrels' populations will likely show mass mortality if flaring is	Request to only accept reduced flaring (no nocturnal flaring) to avoid mass mortality of Leach's

	"Therefore, breeding birds are unlikely to be affected by this activity, with the potential exception of the Leach's storm-petrel, which may forage thousands of kilometres from the nest site during the breeding season (Pollet et al. 2014). Although there is some potential for the attraction of migratory landbirds, it is unlikely that large numbers of landbirds will be affected. Any such effects are predicted to be adverse, low in magnitude, localized and certainly within the Project Area, short-term, sporadic in frequency, and reversible, with a moderate level of confidence."	allowed at night (Wiese et al. 2001). 25-40% of the population has already been decimated, any increased mortality in this already vulnerable species will have irreversible effect on their population.	Storm-Petrels. There is no ambiguity about the effect of night flaring on this species..
22	**Section 6.2.3.5: Project-Related Surveys** "Based on vulnerability indices (French-McCay 2009) the mortality rate would range from 35-95 percent for birds that come in contact with the slick in the 0.01-0.1 mm thickness range. Murres and dovekies, which spend most of their time sitting on the water's surface, are most vulnerable (estimated 95 percent mortality), while species that dive or feed at the water's surface for their prey but otherwise spend little time on the water, including Leach's storm-petrels, great shearwaters, and great	Diving birds (or any birds) that come in contact with oil are likely to die from oil ingestion, loss of insulation (hypothermia) or drowning from loss of buoyancy (Templeman, 2010).	This claim is erroneous and minimize the fact that these seabird populations will suffer from the presence of oil in the water. Request for the evidence suggesting 95% mortality?

	skuas, are predicted to have a lower mortality rate of 35 percent."		
23	**Section 6.2.3.6 Supply and Servicing** 'The release of organic wastes by offshore vessels and activities can attract birds, which may increase the potential for interactions including risk of predation, collision and exposure to contaminants. However, this will be reduced with proper waste management practices and adherence to associated MARPOL requirements (e.g., food and sewage waste will not be discharged within 5.5 km (3 nautical miles) of the coast).'	Pelagic seabirds will not be around the shoreline but are likely to be around the shelf edge and oil rigs. They will be further attracted to the oil rig when organic wastes are discharged around it (Burke et al. 2005).	Request that organic wastes be brought back onshore for proper treatment as their release at sea will only increase the presence of seabirds around the rig and will contribute to the bioaccumulation of contaminants in these birds.
24.1	**Section 6.2.4 Anticipated Effects (Accidental Events)** 'Batch spills, if any, resulting from the Project would cause a temporary (likely less than 24 hours) decrease in water quality (and thus habitat quality) around the spill site. This would be short-term in nature, lasting until the slick disperses in the offshore environment.'	Oil stays in the ocean for a long time and, even in small amounts, can have harmful effects on marine species. Diving birds that come in contact with oil are likely to die from oil ingestion, loss of insulation (hypothermia) or drowning from loss of buoyancy (Templeman, 2010). Rehabilitation of oiled birds is ineffective at nthe population level (Anderson et al. 1996; Briggs et al. 1997).	Request that the EA reflects the long-term harmful impact of oil spills and contaminants instead of minimizing their consequences. Regardless of time the oil will be present on the water, it will cause seabirds' deaths. The only way to mitigate seabird mortality from oil is to prevent the plumage contact with oil (Russell & Fifield, 2001).

24.2	**Section 6.2.4 Anticipated Effects (Accidental Events)** 'Black-legged kittiwakes and northern gannets, which do often sit on the water but spend more time in the air than alcids (murres and dovekies), would be expected to have an intermediate mortality rate.'	Their mortality rate would likely be higher than stated because their food source comes from the ocean. Diving birds that come in contact with oil are likely to die from oil ingestion, loss of insulation (hypothermia) or drowning from loss of buoyancy (Templeman, 2010). This claim acknowledges a significant risk of seabird and migratory birds mortality , which contravenes the Migratory Birds Act.	Request to modify claim that seabirds spending more time in the air are less likely to suffer from water contaminants and oil spills. What measures will be put into place to prevent these deaths?
25	**Section 6.3.3.1 Presence and Operation of Drilling Installation** 'The number of individuals affected is expected to be minimal relative to overall population sizes, effects will be of moderate duration (less for transient individuals), and there are no known concentration or critical habitat areas in the RSA.'	This claim ignores the fact that 2,700,000 have disappeared during the 20 years that oil platforms have been working on the Grand Banks. And in this sense alone, it is a bald and flse claim. As well, there are some endangered marine mammals and just one individual affected would be a big loss to the overall population.	This statement is not backed up by evidence. How can it be stated 'there are no known concentration or critical habitat areas in the RSA,' when several of the endangered species mentioned have unknown locations throughout the year.
26	**6.3.2 Anticipated Changes to the Environment**	Burin et al.	
27	**6.3.3.2 Drilling and Associated Marine Discharges** "With the application of mitigation measures, the potential for Project-related changes in health and in food	Concerns over reefing effects as described by Burke et al. (2005) who found that gulls had established their nocturnal feeding residency at base of the	Request that wastes be brought back onshore for treatment to avoid adverse attraction effects of marine fish and birds around the platform.

	availability or quality as a result of drilling and marine discharges is predicted to be adverse but negligible."	Hibernia platform. Underwater light and water discharge will attract seabirds to the platform. This concurs with the findings of Tasker et al. (1986). The effects will extend to species foraging over a large range being suddenly attracted to the increased productivity around the platform.	
28	**Section 6.4.1 Description of the Baseline** "There are no Marine Protected Areas or Areas of Interest near the Project Area and RSA." + **Figure 6-1** Overview of Special Areas that Overlap with the Project Area and Potential Vessel and Aircraft Traffic Routes	There are several special marine areas that fall within or in close proximity to the project area. The location of the project, right at the edge of the continental shelf, is an important upwelling area for a large marine animal diversity, regardless of the current protection status of the area (Templeman, 2010). Seabird activity will increase with increasing productivity, such as seen in the Labrador Current flowing along the eastern edge of the Grand Banks (Brown, 1986). Rao et al. (2009) have identified seven Special Marines areas in the Grand Banks, two of which fall directly into the project area (Appendix I)	Request recognition that, although not currently protected, the project area will still affect a very rich ecosystem and should find ways to mitigate mortality as much as possible.

29	**Table 6.5 Special Areas Overlapping with Project Exploration Licences** "In addition, the Northeast Shelf and Slope EBSA overlaps the Project Area – Southern Section (EL 1135). This EBSA has been noted as having concentrations of cetaceans and pinnipeds (phocids)."	Pelagic seabirds wintering in the waters of Newfoundland will most certainly come in contact with the project as the rigs are positioned at the edge of the continental slope, a known productive environment (Brown, 1986; Rao et al. 2009; Templeman, 2010)	Request that seabirds' attraction to the RSA because of its position on the continental slope be added to the EA.
30.1	**6.4.3 Anticipated Effects (Planned Project Components and Activities)** "Supporting vessels that are involved in Project activities will travel in an essentially straight line between a drilling installation operating within an EL (see Section 2.1) in the Project Area and the established supply facility in Eastern Newfoundland [...]".	This in an excellent protocol to study seabirds using transects.	Request that independent observers travel on these supporting vessels to observe occurrences of and monitor interactions with seabirds.
30.2	**6.4.3 Anticipated Effects (Planned Project Components and Activities)** "As described for the biophysical VCs (Sections 6.1 to 6.3), the Project is not expected to result in significant adverse effects upon marine fish, birds, mammals, sea turtles, species at risk or their habitats."	These is no current evidence that this claim is true. There has never been any independent observations of the interaction between these organisms and oil rigs in the previous 20 years of oil exploration around Newfoundland.	What is the evidence behind this claim? Request that independent observers be on site to monitor interactions between the platform and the marine life.
31	**6.6.1 Description of the Baseline** "Other species such as herring, capelin, sea urchins, scallops, and lobster have landings recorded in waters that encompass the larger RSA around the Project Area."	Herring and capelin are forage species that are extremely important for the structure of the food web. Impact on the population of these fish will impact their predators'	Request that impact on the population of forage fish species such as capelin and herring be considered, especially regarding sEAmic survey and waste discharge.

		population, including the cod populations (DFO, 2011).	
32	**6.6.3.1 Presence and Operation of Drilling Installation (Including Drilling and Associated Discharges)** "However, disturbance to fish or other marine biota will therefore be localized and of short-term duration at any one location."	Discharge of gray water effluent has a reefing effect of the platform and, as such, promotes algae growth leading to fish attraction (Wolfon et al. 1979; Baird, 1990). These are long-term effects.	What is the evidence that the effect of discharge on fish and invertebrates' populations will be localized and short-term? These predictions have not been evaluated in a systematic way.
33.1	**6.8.3 Marine and Migratory Birds (Including Species at Risk)** "Past and on-going projects and activities and their environmental effects are reflected in the existing (baseline) environmental conditions for each VC (see above Sections 6.1 to 6.7)."	Environmental monitoring around oil rigs was never done by an independent party, nor have the observations from monitoring ever released to the public for consideration and assessment.	Request that previous data recorded be made public to be assessed independently.
33.2	**6.8.3 Marine and Migratory Birds (Including Species at Risk)** "The distribution, abundance and health of marine and migratory birds and their populations are often influenced by both natural phenomena such as weather, food availability and oceanographic variation, as well as human activities and their associated disturbances including hunting, fishing activity, vessel traffic, offshore structures and pollution."		Include fatal light attraction to the anthropogenic effects on marine and migratory birds.
33.3	**6.8.3 Marine and Migratory Birds (Including Species at Risk)** "Potential interactions with marine and migratory birds as a result of the Project relate primarily to possible	This claim is contrary to logic and to existing evidence. The fact that seabird most vulnerable to light attraction – the Leach's Storm-Petrel has had its	What are the data recorded during the past 20 years that would serve as evidences for this claim?

	attraction and/or disorientation of the birds around the drilling installation and vessels due to artificial light sources. Because any such interactions are anticipated to be minor and spatially and temporally limited, and given the typically wide variation in marine bird presence and distribution in space and time throughout this very large offshore area, the number of individuals affected by the Project is not expected to have population-level effects, nor to interact cumulatively with similar effects from other projects and activities in the region."	population plummet by 2,700,000 during the 20 years that rigs have been operating on the Grand Banks needs accounting. Flaring, especially nocturnal flaring, illumination of the platform and supply vessels and waste discharges will all attract and induce episodic mass mortality in migratory birds and seabirds. Illumination from nocturnal flaring will transmit light beyond the RSA and attract all the birds that see it. Describing the effects on migratory birds and seabirds as spatially and temporally limited is not accurate as birds will be attracted from well outside of the RSA and a single nocturnal flaring event could kill a significant number of birds (Reed et al. 1985; Wiese et al. 2001; Rodríguez, 2012; Rodríguez et al. 2017a, 2017b) This is especially worrisome for birds that are already threatened and count only a few individuals in the remaining population such as the Bermuda White-Tailed Petrel (Mejias et al. 2017). They are one of the most endangered species of seabirds with a	

		population left of only 146 mature individuals (BirdLife International, 2016).	
34	**6.8.8 Cumulative Effects Summary** "The Project is not likely to result in significant adverse cumulative environmental effects to either VC in combination with other projects and activities that have been or will be carried out."	There has been no independent observers recording data during the previous 20 years at oil rigs. 2.7 million Leach's Storm-Petrels have disappeared. There have been severe environmental effects from oil exploration in the water of Newfoundland but no comprehensive monitoring schemes have been undertaken to quantify the extent of the damage to seabirds and other organisms.	On what evidence is this claim made? Request data and references used to make this claim.
35.1	**Table 7.1 Summary of Mitigation and Commitments** No. 2 "In addition, the Operator will provide an EA update to the C-NLOPB each year that offshore operations are planned "	To date, there has never been an independent observer allowed to observe and monitor the interactions between seabirds and oil rigs.	Request that independent observers be in charge of observing and monitoring seabirds at platforms in order to record credible and robust data to be incorporated in the yearly EA update
35.2	**Table 7.1 Summary of Mitigation and Commitments** No. 4 "Use of existing and common travel routes for vessels and helicopters will be used where possible and practicable."	Excellent protocol for establishing systematic transects for independent observers	
35.3	**Table 7.1 Summary of Mitigation and Commitments** No. 6 "Operational discharges will be treated prior to release, in accordance	Discharge of gray water effluent has a reefing effect on the platform and, as such, promotes algae growth leading to fish attraction (Wolfon et al. 1979;	Request that discharges be returned to shore for treatment to avoid injury and attraction of seabirds to platforms.

	with the OWTG (2016) and other applicable regulations and standards."	Baird, 1990). Burke et al. 2005) have documented this phenomenon of nocturnal feeding and taking up residency by gulls at the base of the Hibernia platform due to the abundance of food around the platform. This concurs with the findings of Tasker et al. (1986)	
35.4	**Table 7.1 Summary of Mitigation and Commitments** No. 10 "Shoreline clean-up measures, if in the event oil contacts shoreline • Measures to be implemented for the rehabilitation and recovery of oiled seabirds • Overview of monitoring that could be conducted in relation to various spill events"		Request that CWS be notified and respond immediately to any spill.
35.5	**Table 7.1 Summary of Mitigation and Commitments** No. 18 "The Operator will avoid, where possible, established bird colonies. Helicopters will avoid known coastal seabird colonies per requirements of the NL Seabird Ecological Reserve Regulations, 2015."	Witless Bay is an important colony sites for thousands of seabirds. It is home to the second largest colony of Leach Storm Petrels in the world. Government of Newfoundland and Labrador (1994). The supply depot of Witless Bay should not be used from April to October as it is brilliantly lit and will contribute to fatal light attraction in seabirds.	The supply depot of Witless Bay should not be used from April to October to decrease the mortality associated with fatal light attraction.
35.6	**Table 7.1 Summary of Mitigation and Commitments**	To date, there has never been an independent observer allowed to	Request that independent observers be in charge of observing and

	No. 19 "During drilling operations, routine observations of seabirds, following the CWS protocols will be undertaken from the drilling installation."	observe and monitor the interactions between seabirds and oil rigs. Observers have informed me that they have had their bird observations cut back such they are essentially non-informative.	monitoring seabirds around the platform in order to record credible and robust data.
35.7	**Table 7.1 Summary of Mitigation and Commitments** No. 20 "Routine searches for stranded birds will be conducted on the platform and supply vessels, and appropriate programs and protocols for the collection and release of marine and migratory birds will be implemented for any birds that become stranded."	This commitment rings hollow. In 2017, a worker on the Hebron topside in Bull Arm called VOCM Nightline to report that the foreman had instructed the crew to shovel the storm-petrels that were all over the rig into buckets from which they were dumped over the side. As the birds would be oiled and injured in this circumstance, this activity was illegal.	
35.8	**Table 7.1 Summary of Mitigation and Commitments** No. 21 "The Operator will obtain a Seabird Handling permit from ECCC-CWS	Witless Bay is an important colony sites for thousands of seabirds. It is home to the second largest colony of Leach Storm Petrels in the world. (Government of Newfoundland and Labrador 1994). From workers, we have learned that hundreds of storm petrels hitting the Hebron decks when under construction at Bull Arm were shoveled into buckets and thrown overboard. Birds hitting the deck are likely to be	What precautions will be taken to avoid incidents such as the one described here?

Commented [MOU1]: I am unsure what your comment here was referring to..?

		disoriented and potentially harmed. Their feathers are likely to be coated in dirt and oil from the deck as they struggle on it. They will not be in a suitable condition to be released at sea without the risk of drowning or becoming hypothermic from the loss of feather insulation (Anderson et al. 1996; CCG, 2001; Templeman, 2010)	
35.9	**Table 7.1 Summary of Mitigation and Commitments** No. 23 "Operators are required to notify the C-NLOPB for plans to flare associated with formation flow testing for exploration drilling. The C-NLOPB then consults with ECCCC-CWS to determine a safe timeline to proceed to minimize effects on migrating birds"	Fatal light attraction is a huge mortality driver in birds. Sources of light at night in an usually dark environment like the ocean is a major source of attraction for seabirds, both onshore and pelagic. Flaring at night will induce mass mortality of these birds, particularly vulnerable nocturnal seabirds like Leach Storm-Petrels and shearwaters (Reed et al. 1985; Tasker et al. 1986; Baird et al. 1990; Montevecchi et al. 1999; Wiese et al. 2001; Gaston et al. 2008; Poot et al. 2008; Rodríguez et al. 2012). Flaring in the day when birds are in the vicinity can kill these birds. The Birds Migratory Act makes the killing of these birds illegal	Request that flare be shut down when birds are flying near the platform. Request that nocturnal flaring be forbidden. These requests reflect the Birds Migratory Act.

36.2	**Table 7.1 Summary of Mitigation and Commitments** No. 26 "Shut down of the seismic source array if a marine mammal or sea turtle listed as endangered or threatened on SARA Schedule 1 is sighted within the safety zone."	Non-experts will not be able to identify marine mammals or sea turtles to species and know that it is listed under SARA in time to stop the seismic source before any harm can be done.	Request that aEAmic survey be shut down whenever any marine mammals or marine reptiles are in the vicinity of the project.
37	**8.0 SIGNIFICANCE OF RESIDUAL EFFECTS** "With the implementation of proposed mitigation measures (refer to Table 7.1), residual adverse environmental effects of routine Project activities and components are predicted to be not significant for all VCs."	Such claim should be evidenced on the basis of the data recorded during the previous 20 years of oil exploration in the waters of Newfoundland. Without such data, this claim disregards the 2.7 million missing Leach Storm Petrels and the mass mortality rate of seabirds attracted to light from flaring and from the platform. This claim hinders the precautionary approach and violates the Migratory Birds Act that aims to prevent harm to the seabirds.	Request that the evidence backing this claim be brought forward as well as the seabirds data recorded during the previous 20 years of oil exploration.
38.1	**Table 8.1 Summary of Residual Effects for Planned Project Components and Activities** "Marine and Migratory Birds Residual effect Magnitude: Presence and Operation of Drilling Installation (including lights, noise, air emissions, anchoring: Low; Drilling and Associated Marine Discharges: Low; Formation Flow Testing with Flaring. Low)"	As discussed, the presence of light and the flaring will induce mortality in marine and migratory seabirds. There is extensive literature on fatal light attraction (Reed et al. 1985; Tasker et al. 1986; Baird et al. 1990; Montevecchi et al. 1999; Wiese et al. 2001; Gaston et al. 2008; Poot et al. 2008; Rodriguez et al. 2012) and there	Request that the magnitude of residual effect be changed from Low to High, especially for flaring, as existing evidence contradicts the current EA conclusions.

		has been studies on the use of green spectral light demonstrating their effectiveness against attracting seabirds to the platform (Poot et al. 2008; Marquenie et al. 2014; Rodriguez et al. 2017a, 2017b). Studies have also demonstrated the adverse effect of marine discharges on seabirds as it increases the productivity around the platform and becomes a food source reservoir for these birds. Their proximity to the platform is linked to their increased mortality rate (Baird, 1990; Burke et al. 2005, 2012).	
38.2	**Table 8.1 Summary of Residual Effects for Planned Project Components and Activities "Special Areas** Supply and Servicing: N"	The supply depot in Witless Bay should not be used from April to October as it is brilliantly lit and will contribute to fatal light attraction of seabirds. The Witless Bay Ecological Reserve is an important colony sites for thousands of seabirds. It is home to the second largest colony of Leach Storm-Petrels in the world. (Government of Newfoundland and Labrador 1994).	Request that Witless Bay's supply depot be only used fromNovember through March.
38.3	**Table 8.1 Summary of Residual Effects for Planned Project Components and Activities**	Against the Migratory Birds Convention Act (1994), the current project needs to be rated	Request for the revision of the current project to comply under the Migratory Birds Convention Act

	'Environmental Effects under CEAA, 2012: (iii) migratory birds as defined in subsection 2(1) of the Migratory Birds Convention Act, 1994'	as A (adverse), H (high magnitude of residual effect) and extend to RSA and beyond.	(1994), especially for flaring, lights on the platform/vessels and water waste discharge.
39	**Section 9.1 Follow-Up Program 'Under CEAA 2012, a follow-up program is defined as a program for "verifying the accuracy of the environmental assessment of a designated project" and "determining the effectiveness of any mitigation measures."**	Current lack of scrutiny during 20 years of oil exploration in the Newfoundland waters have resulted in too little data on the seabirds health around the platforms.	Request that ongoing monitoring and data collection of seabirds interacting with the platforms be incorporated as part of the follow up program by an independent observer.
40.1	**Table 9.1 Summary of Monitoring Programs for Routine Project Activities: Migratory Bird Observations 'Survey is for data gathering purposes.'**	The environmental observer needs to be independent of the project, as is the case of observers on fishing boats.	Request to have an independent observer on the platforms to gather data about the interaction between seabirds and the operations. Request that data gathered during the previous projects be released to the general public for transparency.
40.2	**Table 9.1 Summary of Monitoring Programs for Routine Project Activities: Migratory Bird Observations 'Seabird observations report will be submitted to the C-NLOPB within 90 days of well suspension and/or decommissioning.'**	For 20 years, the oil industry has not had to publicly share the data it gathered about marine life by the platform. ExxonMobil is asking for a very long project and needs to be held accountable every step of the way should it infringe on the survival of seabirds.	Request a monthly report made available publicly for transparent scrutiny.
40.3	**References**	Much of the highly relevant literature pertaining to seabirds	Request that peer-reviewed literature on fatal light attraction in seabirds be included in the assessment as

		is absent from the references section. Fatal light attraction due to flaring and lighted platforms are known inducers of bird mortality at sea (Reed et al. 1985; Tasker et al. 1986; Baird et al. 1990; Montevecchi et al. 1999; Wiese et al. 2001; Gaston et al. 2008; Poot et al. 2008; Rodríguez et al. 2012, 2017a, 2017b; Marquenie et al. 2014;). This is a well understood fact and should have been referenced in this EA.	well as the effect of sEAmic survey on plankton.

Review of Flemish Pass Exploration Drilling Program: Environmental Impact Statement - Summary

Comment Number	Reference to EA (Section and page)	Context and Rationale	Specific Question/ Request for Information
1.1	**Section 1.0: Introduction and Environmental Assessment Context** "…proposing to undertake an exploration/delineation/appraisal drilling program and associated activities (herein referred to as exploration drilling) in the eastern	This and the ExxonMobil EA seek an unprecedented request for 10 year approval. There needs to be considerations about the technical and chemical changes over that time period that cannot be envisioned at present, e.g., technological	Request that these projects only be considered for 3 year approvals and that an environmental assessment be done after this period before reassessing the project for any subsequent length of time.

	portion of the Canada-Newfoundland and Labrador (NL) Offshore Area between 2018 and 2027"	innovations, ocean climate change, species status changes, etc.	
1.3	**Section 1.0: Introduction and Environmental Assessment Context** "…it is the Operator's understanding that the Ministerial EA decision will be limited to the "designated Project" defined as exploration drilling and associated activity in ELs 1139, 1140, 1141 and 1142 (denoted as "Statoil EL-CEAA 2012 in Figure 2-1). Environmental assessment for licences that are not 'designated Projects' are considered under a separate regulatory process through the Accord Acts, administered by the C-NLOPB"		What is the Section of Accord Acts that allows this?
	Section 2.0: Project Overview "The planned temporal scope of the Project covers a period of 10 years (from 2018 to 2027).	This is an excessive and unjustifiable request that does not take into account how the oil exploration technology will change during this time lapse nor the environmental consequences of running such a	Request that only a 3 year approval be considered and that an environmental assessment be done after this period before approving the project for any subsequent length of time.

		long project in a biodiversity hotspot (Rao et al. 2009)	
	Section 2.2.1: Drilling Installations and Activities "Once an appropriate wellsite has been identified and the permits and regulatory approvals have been granted for a drilling campaign, the drilling installation will be mobilized to the wellsite location, after which the drilling of a well will be implemented in a number of stages. A safety zone is established around the drilling installation for the protection of the drilling installation and other equipment and for the safety of other ocean users.		Recommend independent bird observers and systemic monitoring on drill rigs which will be working in a new environment
	Section 2.2.1: Frilling Installations and Activities "When top section drilling has been completed to the desired depth a steel casing is run and cemented in place to prevent the wall of the wellbore from caving in and to prevent muds and other fluids seeping out of the hole. At this stage, the wellhead is also		Recommend that back-up BOPs be installed as in U.S. installations

	installed on top of the casing and the riser and blow-out preventer (BOP) are then installed onto the wellhead..."		
	Section 2.2.2: Geophysical, Environmental and Geotechnical Surveys "A pre-drill coral survey will also be undertaken, using similar equipment listed above, to confirm the presence or absence of sensitive marine habitat (e.g., corals, sponges)."		Specify actions will be implemented if sensitive marine benthic habitat are detected?
	Section 2.2.2: Geophysical, Environmental and Geotechnical Surveys "Environmental Surveys: may also be conducted to collect samples to analyze the physical, chemical, and biological aspects of the selected drilling area.	ECSAS distant sampling protocol and procedures should always be included.	Request to see those protocols and procedures.
2	**Section 2.2.3: Formation Flow Testing with Flaring** "Produced hydrocarbons and some produced water from the reservoir are flared using high-efficiency burners.	Fatal light attraction is the main killer of seabirds around oil rig and a 2 to 5 days period of initial flaring will lure, disorient and kill seabirds, notably the Leach's Storm-Petrel (Wiese et al. 2001).	Request that flaring is restricted to the daytime. Request that flaring is done under the observation of independent party to record the attraction of seabirds to the rig.

	Flaring would be continuous and last between 2-5 days"	The effects of flaring are most intense when it starts in a new area (communication W. Montevecchi, February 6, 2017). Night flaring will cause the most damage to the seabird populations as the birds will unequivocally be attracted to this bright light source on the otherwise dark ocean cover. Night time flaring will promote mass seabirds mortality (Wiese et al. 2000).	
	Section 2.2.5: Supply and Servicing "Supply vessels will make regular trips to the drilling installation throughout the drilling program"	Standardized distance sampling on supply vessels (e.g. Burke et al. 2015)	Recommend independent bird observers on vessels to monitor seabird distribution and the rig's effect on seabirds.
	Section 2.2.5: Supply and Servicing "It is anticipated that with a single operating drilling installation there will be 8 to 10 return transits per month by the supply vessels during the course of the Project. Supporting vessels that are involved in Project activities will travel in an essentially	Useful to gather comprehensive data set on seabird distribution. Having independent observers on this project would improve the credibility of the C-NLOPB in monitoring the environmental impacts of the oil rigs and would provide valuable information	Recommend independent bird observers implement distance sampling protocols on vessels to monitor seabird distribution and the rig's effect on seabird attraction.

	straight line between the drilling installation in the Project Area and an established port facility in Eastern Newfoundland,"	about the movement of pelagic and migratory birds,	
	Figure 2-4: Existing Vessel Traffic Routes	Good basis for seabird surveys for the duration of the project.	Recommend independent bird observers implement distance sampling protocols on vessels to monitor seabird distribution and the rig's effect on seabird attraction. .
	Section 2.3: Project Schedule "The planned Project duration is for a period of 10 years (2018 to 2027), providing an adequate and conservative timeframe within which Project activities may occur."	This is a high risk time frame. There needs to be consideration about the technical, chemical, environmental and biological changes over that time period that cannot be envisioned at present.	Request that 3 year approval limits be applied to the projects and that an environmental assessment be done after this period before approving the project for any subsequent activity.
4.2	**Section 2.4.4: Spill Fate and Behaviour :** "The severity of an operational spill depends on the volume and type of spilled material. For the purpose of this assessment, spill scenarios of a batch diesel spill (100 litres and 1,000 litres) and subsurface blowouts have been considered to represent a credible worst case scenario."	What is the basis for the 1,000 liter scenario? The Terra Nova (2004) spill was of 40,000 l, and in 2014 Hibernia leaked 6,000 l. So it would be more realistic to replace a batch spill of 1,000 l with a batch spill of 10,000 l. Note also that the chronic effects of spills may override any	Replace a batch spill of 1,000 l with a batch spill of 10,000 l.

		catastrophic spills (Fraser & Racine, 2016).	
	Section 3.0: Alternative Means of Carrying out the Project "Consistent with CEAA 2012, the EA Guidelines require consideration of alternative means for the following Project aspects…"	Morandin & O'Hara (2016) have found that sheen around oil platforms induces the death of seabirds by disrupting plumage and hence insulation integrity..	Request the inclusion of a systematic monitoring of seabirds by independent observers as seabirds will be affected adversely by the rig and need to be protected under the Migratory Birds Act.
5	**Section 3.0: Alternative Means of Carrying out the Project** "Authorization from the C-NLOPB, to confirm that the effluent discharge and water management system =comply with relevant legislation."	Discharge of gray water effluent has a reefing effect at the platform and, as such, promotes algae growth leading to fish attraction (Wolfon et al. 1979; Baird, 1990). Burke et al (2015) have documented this phenomenon of nocturnal feeding by gulls taking up residency at the base of the Hibernia platform because of the abundance of food around the platform.	Request that SBM discharges are taken back to shore for treatments

	Table 3.3 Drilling Waste Management - Comparison of Drilling Waste Disposal Options "WBM & SBM: Disposal at Sea: Localized effects on seafloor"	Misleading statement to say that the effects will be local. Discharge of gray water effluent has a reefing effect of the platform and, as such, promotes algae growth leading to fish attraction (Wolfon et al. 1979; Baird, 1990). Burke et al (2015) have documented this phenomenon of nocturnal feeding by gulls that taking up residency at the base of the Hibernia platform because of the abundance of food around the platform. The effects will extend to species foraging over a large range being suddenly attracted to the increase productivity around the platform.	Request that the language be changed to reflect the aggregation phenomenon induced by waste disposal at sea from species outside of the immediate project area.
	Table 3.4: Offshore Drilling Installation Lighting "Potential localized effect on migratory birds"	The light projects considerable distances on the dark ocean and will attract and kill seabirds, including very susceptible species such as the Storm-Petrels (Reed et al. 1985; Wiese et al. 2001; Rodríguez, 2012; Rodríguez et al. 2017a, 2017b)	How will the lighting on the platform be modified to reduce the attraction of seabirds?

6	**Table 3.4: Offshore Drilling Installation Lighting** "Spectral modified lighting [..] Not yet considered ready for commercial use"	Modified green spectral lighting are available and have been found to reduce the attraction of seabirds to the platforms overnight (Poot et al. 2008; Marquenie et al. 2014). Other light reduction methods need to consider, e.g. shading windows, sky-ward projection, etc. to mitigate the attraction of seabirds to the platform.	What is the detailed reason to refuse to adopt green spectral lighting on the platform at night? What is the analysis that shows the "non-commercial viability"?
7	**Table 3.5: Formation Flow Testing with Flaring at Night Options** "Reduced flaring (no flaring at night or during low-visibility weather)"	Nocturnal flaring will induce a mass mortality in seabirds (Wiesel et al. 2001)	Consider the better option of no flaring as is done in US.
	Table 3.5: Formation Flow Testing with Flaring at Night Options "Flaring as required [...] potential localized effects on migratory birds; C-NLOPB will consult with ECCC-CWS to determine safe timeline for flaring"	Nocturnal flaring will induce a mass mortality in seabirds (Wiesel et al. 2001)	Request for the monitoring protocol Request to have independent observers on site to ensure enforcement of no "as required flaring".
9.1	**Table 5.1: Identified VCs and the Rationale for their Selection**	40 million seabirds annum on Grand Banks. Seabirds are key indicators of the state of the	Request that description of marine and migratory birds be changed to reflect the importance of

	"Marine and Migratory Birds"	marine ecosystem as they are the most vulnerable to pollution and adverse anthropogenic activities (Furness & Greenwood, 1993)	maintaining sustainable populations of these organisms.
9.2	**Table 5.1: Identified VCs and the Rationale for their Selection** "Special Areas"	Refer to special area map (Rao et al. 2009) in vicinity of the project (Appendix)	Request recognition that Special Marine Areas are within or in close proximity to the project.
	Table 5.1: Identified VCs and the Rationale for their Selection "Species at Risk (SAR) designated under federal and/or provincial legislation are included under the respective VCs for Marine Fish and Fish Habitat, Marine and Migratory Birds, and Marine Mammals and Sea Turtles."	Leach Storm-Petrel Bermuda Storm-Petrel	Addition of these species to the seabirds at risk in vicinity of the project.
10	**Section 5.4: Spatial and Temporal Boundaries** "In addition to planned Project- and disturbance-related factors, from an ecological and socioeconomic perspective the environmental effects assessments also recognize and	Oil spills from vessels and nocturnal vessels movement will also negatively attract and impact the populations of seabirds on the water (Rodriguez et al. 2017)	Request that the LSA includes a much larger sphere of influence than the RSA (Regional Study Area). RSA should include vessel and tanker movements from the platforms to NL and return

	consider the characteristics, distributions, and movements of the individual VCs under consideration, including the larger regional areas within which they occur and function."		
	Figure 5-1: Environmental Assessment Study Area		LSA for seabirds is necessary At least longer LSA for marine mammals and turtles and should include coastal seabird ecological reserves (e.g. Baccalieu, Funk Island, Cape St. Mary's, Witless Bay)
	Table 6.1: Listed Marine Fish Species that are Known to or May Occur within the Project Area "American Eel (Global Population)" "Lanternfish (Global Population)"		Request for the Atlantic population information on American Eel? Lanternfish are likely to be found in the deepwater areas of the project (Rao et al. 2009).
11.1	**6.1.2 Anticipated Changes to the Environment**	The attraction of marine fish will also attract seabirds.	This statement should also be made in the context of the attraction of larger predators (marine mammals

	'The attraction of marine fish to the drilling installation and vessels, with increased potential for injury, mortality, contamination, or other interactions'	Important statement.	and birds) to the platform due to the increased presence of fish.
12.1	**Section 6.1.3.1: Presence and Operation of Drilling Installation** "The potential environmental effects of presence and operation of the drilling installation are primarily related to underwater noise and vibrations, light emissions and other environmental discharges, interactions with the benthic environment, and aquatic invasive species"	Burke et al. (2015) have found that gulls had established their nocturnal feeding residency at base of the Hibernia platform. Underwater light and water discharge will attract seabirds to the platform.	Request to reduce/change lighting to decrease nocturnal visibility of the platform to seabirds. Request that SBM discharge be brought back to shore to mitigate the water discharge from the platform.
13.1	**Section 6.1.3.5: Geophysical/ Geohazard/ Wellsite/ Seabed Surveys and Vertical SEAmic Profiling** "While there may be some short-term behavioural effects to individual fish in the immediate vicinity of the survey activity, it is unlikely that fish will be displaced from key habitats or disrupted during key activities over	McCauley et al. (2017) have found that sEAmic survey would kill more than 50% of the plankton within 1 km of the area and that the mortality could be expanded over a period of 2 days for 1 sEAmic survey.	Request to reanalyze the data in the lights of McCauley et al. (2017) findings.

	extended areas or periods, or be otherwise affected in a manner that causes negative and detectable effects to fish populations in the region"		
13.3	**6.2.1 Description of the Baseline** 'There are over 90 species of marine and migratory birds that may occur within the RSA including seabirds, waterfowl, and shorebirds. […]The Flemish Pass is outside the of the reported foraging range of most species breeding at the major seabird colonies in coastal Newfoundland, although northern gannets and Leach's storm-petrels travel hundreds of kilometres from their breeding colonies over multi-day foraging trips.'	Pelagic seabirds wintering in the waters of Newfoundland will most certainly come in contact with the project as the rig stands right at the edge of the continental slope, a known productive environment (Brown, 1986; Rao et al. 2009; Templeman, 2010)	Request that the risk for bioaccumulation in fish tissues be acknowledged in the EA.
13.4	**6.2.2 Anticipated Changes to the Environment** 'Potential attraction of birds to offshore drilling installations and vessels, including their lights, flares or other light emissions, and waste discharges, resulting in possible injury or	Flaring and lights, especially at night WILL attract seabirds and will harm these population, especially the birds most vulnerable to fatal light attraction and already endangered -- Leach Storm-Petrel and Bermuda Petrel	Request that the language used in this section be changed to avoid misleading the reader into thinking that seabirds death may not happen even with flaring/lighting.

	mortality (strikes, strandings, incineration, disorientation, increased energy expenditure) action in the offshore environment."	(Wiese et al. 2001; Rodriguez et al. 2017a; Mejias et al. 2017)	
13.6	**Section 6.1.4 Anticipated Effects (Accidental Events)** 'However, effects are not expected to alter the long-term viability of local or regional fish populations in the RSA.'	Even short-term viability of local or regional fish populations can affect seabird populations directly.	This is stated a lot, where is the evidence behind it?
16	**Section 6.2.2: Anticipated Changes to the Environment** "Change in Habitat Availability and Quality"	Concerns over reefing effects as described by Burke et al. (2015) who found that gulls had established a nocturnal feeding residency at base of the Hibernia platform. Concerns over fatal light attraction that will lure, disorient and kill seabirds -either through flare or nocturnal lightning (Wiese et al. 2001)	Request that SBM discharge be brought back to shore to mitigate reefing effects. Request reduced flaring (no nocturnal flaring) and green spectral lights at night to mitigate fatal light attraction. Request an independent observer on site able to record data about environmental changes around the platform.
17.1	**Section 6.2.3.1: Presence and Operation of Drilling Installation**	Concerns over reefing effects as described by Burke et al. (2015) who have found that gulls had established their nocturnal	Request for independent observer to monitor the creation of new niches

	"…the creation of new foraging opportunities for predator species (e.g., through prey attraction due to organic waste disposal, creation of new "artificial reef" habitat)."	feeding residency at base of the Hibernia platform.	due to oiling operation or the platform.
17.2	**Section 6.2.3.1: Presence and Operation of Drilling Installation** "Some localized and short-term behavioural effects (change in presence and abundance) are also likely to occur from the operation of the drilling installation; however, these effects will be localized, transient, and short-term in nature."	Concerns over fatal light attraction will lure, disorient and kill seabirds -either through flare or nocturnal lightning (Wiese et al. 2001)	The claim that the effects will be transient and short-term is not demonstrated to be evidence-based. References are required.
17.3	**Section 6.2.3.1: Presence and Operation of Drilling Installation** "These changes are predicted to be adverse, low in magnitude, localized and certainly within the Project Area, short to medium term, regular in frequency, and reversible, with a moderate level of confidence."	Disappearance of 2.7 million of most-vulnerable seabird species [Leach's Storm-Petrel] to light attraction, platform collision and oiling since offshore production came on line (Wiese et al. 2001). Could represent 20% of species population – IUCN status = Vulnerable	Request references that predict a low magnitude, reversible negative effects on the population of Leach Storm-Petrel given the extent of their decimation.
17.4	**Section 6.2.3.1 Presence and Operation of Drilling Installation**	From independent observers, we have learned that hundreds of storm-petrels hitting the Hebron	Request to see the evidence backing up the claim that the mortality rate

	'The mortality rate is anticipated to be low as most stranded birds encountered on platforms and vessels are released successfully.'	topside in 2017 were shoveled into buckets and thrown overboard. Birds hitting the decks are likely to be disoriented and potentially harmed. Their feathers are likely to be coated in dirt and oil from the deck as they struggle on it. They will not be in a suitable condition to be released at sea without the risk of drowning or becoming hypothermic from the loss of feather insulation.	of seabirds around the platforms will be low. Who will be the employees releasing these birds and how will they be trained to release them successfully? If birds are more seriously injured and require a long rest period or medical attention, how will this be addressed? Request that independent observers be on site to monitor how stranded birds are handled on the platforms.
18	**Section 6.2.3.2: Drilling and Associated Marine Discharges** "Discharge of organic wastes (sewage and food scraps) may result in enhancement of the local food supply and attraction of birds to vessels and platforms. However, this potentially positive effect may be offset by increased exposure to risk of collision / strandings or predation as well as	Discharge of gray water effluent has a reefing effect of the platform and, as such, promotes algae growth leading to fish attraction (Wolfon et al. 1979; Baird, 1990). Burke et al (2015) have documented this phenomenon of nocturnal feeding by gulls and taking up residency at the base of the Hibernia platform because of the	Request to adjust the language used in this section to reflect the adverse effects of increased biological production around the platform to reflect the increase mortality that will result in seabirds.

	energetic costs due to deviation from normal movement / migration patterns."	abundance of food around the platform. Attraction of fish around the platform is not a positive effect as it will increase the presence of seabirds around the platform.	
19	**Section 6.2.3.3: Formation Flow Testing with Flaring** "Therefore, breeding birds are unlikely to be affected by this activity, with the potential exception of the Leach's storm-petrel, which may forage thousands of kilometres from the nest site during the breeding season (Pollet et al. 2014). Although there is some potential for the attraction of migratory landbirds, it is unlikely that large numbers of landbirds will be affected. Any such effects are predicted to be adverse, low in magnitude, localized and certainly within the Project Area, short-term, sporadic in frequency, and reversible, with a moderate level of confidence."	Leach's Storm-Petrel will show a mass mortality if flaring is allowed at night (Wiese et al. 2001). 20% of the population has already been decimated, any increased mortality in this already Vulnerable species will have irreversible effect on their population.	Request to only accept reduced flaring (no nocturnal flaring) to avoid mass mortality of Leach Storm-Petrels. There is no ambiguity about the effect of night flaring on this migratory birds species protected under the Migratory Birds Act. Any attempt to flare at night directly infringe on this act.

21	**Section 6.2.3.6 Supply and Servicing** 'The release of organic wastes by offshore vessels and activities can attract birds, which may increase the potential for interactions including risk of predation, collision and exposure to contaminants. However, this will be reduced with proper waste management practices and adherence to associated MARPOL requirements (e.g., food and sewage waste will not be discharged within 5.5 km (3 nautical miles) of the coast).'	Pelagic seabirds will not be around the shore line but are likely to be around the oil rig. They will be further attracted to the oil rig when organic wastes are discharged around it.	Request that organic wastes be brought back on shore for proper treatment as their release at sea will only increase the presence of seabirds around the rig and will contribute to the bioaccumulation of contaminants in these birds.
24	**Section 6.4.1 Description of the Baseline** 'There are no Marine Protected Areas or Areas of Interest near the Project Area and RSA.' + **Figure 6-1** Overview of Special Areas that Overlap with the Project Area and Potential Vessel and Aircraft Traffic Routes	There are several special marine areas that fall within or in close proximity to the project area. The location of the project, right at the edge of the continental shelf, is an important upwelling area for a large biodiversity, regardless of the current protection status of the area (Templeman, 2010). Seabirds activity will increase with increasing productivity, such as seen in the cold water current	Request recognition that, although not currently protected, the project area will still affect a very rich ecosystem and should find ways to mitigate mortality as much as possible.

		flowing in front of the Grand Banks (Brown, 1986). Rao et al. (2009) have identified 7 Special Marines areas in the Grand Banks , 2 of which fall directly into the project area (see appendix).	
	6.8.3	Storm-petrel decline = decimation n	Qualify significance of population demise
	6.8.3	Why are interactions considered minor	Give evidence for considering minor effects on marine birds
	Table 7.1 mitigation seabirds (19)	"routine observation of seabirds" "search and release of stranded birds" "safe timeline flaring" - no flaring at night	- Specify who will be responsible for these activities.
	Table 7.1 mitigation seabirds (19)	Don't need "routine observations of seabirds that have proved inadequate over past 20 years. Need rigorous systematic protocols	Establish rigorous protocols which will be used assess seabird occurreences.

	Table 7.1 mitigation seabirds (18)	"will avoid … bird colonies	Keep support vessels and rigs out of Bay Bulls Harbour from April through Ocober
	Table 7.1 mitigation seabirds (20)	Observers informed me that in 2017 they were no longer required to conduct any observations or searches	Implement a credible, transparent and independent program of seabird monitoring. Clearly the companies don' do it, and the CNLOPB doesn't require such.
	Table 8.1 Residual Effects	Flaring given L(ow) ranking contradicts Storm-Petrel demise	Give evidence for L, L-M AND N-L rankingS

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