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Mr. Kemraj Parsram
Executive Director
Environmental Protection Agency Sophia
Georgetown
Guyana
epa@epaguyana.org

Uaru EIA Comments

In reading the Uaru Development Project Environmental Impact Assessment (EIA), which was prepared by Acorn International purportedly for Exxon Mobil, it is apparent that the consultants put more effort into their assessment than Environmental Resources Management (ERM) had done in the previous Yellowtail Project EIA study. This is encouraging.

However, Acorn's Uaru EIA, like all previous EIAs conducted for Exxon Mobil, fell short of the research necessary to identify and geographically map and assess valuable and sensitive marine environmental receptors relative to the locations of various project activities and other projects in the study area. This fatal gap is also present in the Cumulative Impact Assessment that ERM has recently submitted on offshore activities for public comment. Therefore, that ERM study cannot be relied on to support the Uaru application.

In its current form, the Uaru EIA it is not a reliable source of information for decision making on several relevant matters related to a decision to grant an Environmental Permit for the proposed project. The whole point of the impact assessment process is to identify and protect sensitive environmental receptors and natural resources by avoiding or reducing impacts on these receptors. It is not possible to do this if one does not know where they are located relative to project activities and, therefore, how they might be affected, or how project activities might be managed to avoid or reduce impacts.

I shall expand on this point, as concerns about this fatal gap in previous EIAs has been brought repeatedly to the EPA's attention, especially in the past 18 months. The implication then and now is that, without the necessary information, the Government of Guyana is not able to protect and sustainably manage the marine environment. Handing out further environmental permits for offshore activities without gathering the necessary information would be counter to the national interest and requirements of the Environmental Protection Act, especially as each additional Floating Production Storage and Offloading (FPSO) vessel significantly multiples the risks to the marine environment and natural resources.

However, before addressing this central matter, I would like to note a few other deficiencies and unsupported conclusions in the study.

SOME OTHER DEFICIENCIES IN THE STUDY

1. **The study also does not contain adequate and relevant information on the fisheries sector to support conclusions that the impacts on the nation's natural resource of marine fish, the artisanal and offshore fisheries sectors, and downstream economic chains are not already significantly adversely affected and will not be further adversely affected above negligible levels.**

   There is a troubling conclusion that the level of artisanal fishing in certain areas affected was not high and therefore the impacts are negligible. This is not acceptable. One cannot average the experience of socio-economic impacts across the population. This is unjust and falls short of professional assessment standards. Such impacts must be properly understood and characterised within the subpopulation reliant on artisanal fishing and downstream economic activities.

   The severity of impact must be rated according to the changes in fortune that this subpopulation has experienced. Such changes are current and ongoing, requiring monitoring to fully characterize their effect now and in the future as more and more FPSOs come onstream. Adverse effects are abundantly clear when it comes to dispossession of fisherfolk of fishing grounds in and around the Demerara River estuary due to vessel traffic, dredging of the channel, and damage to fishing areas due to significant dredging to facilitate shore-based construction. Since dredging will always have to be conducted because Guyana's coast is subject to the constant migration of large mud banks, this activity is likely to cause permanent damage to fish populations and livelihoods to families reliant on fish in this area.

   Disruption of fishing livelihoods can occur due to supply vessel movement near shore and offshore, alienation of fish and mammals from habitat areas due to well drilling, pollution, noise and seismic activity, the long-term decline of habitats due to alienation of fish and other marine animals, and damage to food chains as a result of seismic gun activities, which can damage swim bladders and plankton food supply and contribute to fish decline. These effects have not been studied and cannot be dismissed as negligible now or in the future.

   The fish and fisheries surveys to which the EIA refers did not collect relevant information to support the conclusions drawn. A change in fish population cannot be determined by examining changes in total fish catch year by year or season by season, as this factor is affected by effort, numbers of people fishing etc. The change in fish availability and population structure can only be determined by quality-controlled Catch Per Unit Effort studies, which five years into oil production have not been undertaken and are not ongoing to monitor changes. This is another regulatory failure that must be rectified if Guyana is to move towards bring capable of sustainable marine area management.

   The EIA also did not present such information as is found in MARAD notices published over time showing the cumulative scale and degree of time exclusion from fishing areas or any data from the Ministry of Agriculture on fishing grounds. The study does not map exclusion zones against fishing grounds and does not provide any participatory resource use mapping data to fill information gaps. No baseline data was collected before the start of Liza 1 operations and no effort has been made to characterize the state of play

monitor the situation since then. The Uaru study did not fill the critical information gaps and therefore its conclusions on impacts on fisheries are not reliable.

The EPA cannot use these conclusions to rationalize granting an environmental permit and must instead clearly define the parameters of assessment needed to understand and monitor impacts. The failure to do these things five years into oil production is unjust. It violates the rights of fisherfolk and undermines the protection and sustainable management of Guyana's fisheries resources.

2. **There are issues of inadequately assessed risks associated with offshore toxic waste brought to shore for treatment and disposal. There are several conclusions that impacts would be negligible that are not supported by information contained in the EIA.** For example, there is no identification of the chemical components of toxic waste before and after treatment and no effort was made to present any monitoring data collected to date that establish the safety of the materials that are being disposed of in the Hoggs Bausch landfill or the effluent being discharged from such facilities as Tiger Rentals, directly into the Demerara River. As you are ware, the communities adjacent to Tiger Rentals have never had the benefit of participating in an Environmental Impact Assessment to understand the risk that they face living next to this facility. In fact, there is no record of any Public Notice justifying a waiver of an EIA for this facility or any evidence in the public domain that the facility ever received authorization to handle hazardous waste according to the requirements of Environmental Protection Act. Without the relevant information, it is entirely unproven that the impacts of these facilities are benign, both in terms of the toxicity of their operations and end products and their psychological impact on neighbouring communities.

3. **There is a failure to substantiate claims that reinjecting produced water would adversely affect the economic viability of the project. No comparative economic analysis of options against operating costs and profit margins was presented.** You are aware that Exxon Mobil posted a record 56 billion USD profit for the single year of 2022, paying out generous dividends to its shareholders. This was a whopping $6.3 million USD in profit every hour. Yet, for an investment that is reportedly in the range of 300 million USD, claims are being made that the company cannot outfit its FPSOs, which are projected to earn handsomely for 20 years, with equipment to meet international best practice and protect Guyana's marine environment and natural resources.

   Produced water is the most toxic offshore oil production waste with potential for the greatest adverse impact on the marine environment. Heavy metals, hydrocarbons, and other dangerous chemicals can bioaccumulate in the food chain. Produced water also contains radioactive nuclides, which are dangerous when they occur in concentrations well above background sea water concentrations. International best practice has shifted away from treatment and discharge of produced water into the offshore marine environment towards a zero-discharge goal. You would note that other jurisdictions, such as the United Kingdom and European Union, have been pursuing this goal and have been tracking and reporting their progress.

   Guyana with a relatively pristine marine environment has every reason to preserve the quality of its environment from any form of degradation by ensuring that it does not approve any further FPSO without a zero discharge provision. You are no doubt aware

that the Environmental Protection Act compels the EPA to apply the Precautionary Principle, particularly in the face of inadequate information on marine resources that currently obtains. The Act also compels the EPA to seek the best available technology. Both provisions indicate that Guyana should be opting for a zero-discharge policy going forward.

Further, even though Exxon Mobil+ has been discharging produced water for some five years, no data was presented in the EIA on the composition of the water from the Liza wells in the Stabroek Block to give some indication as to the chemical risk factors that must be managed. No monitoring data was presented to show that the company was capable and has in fact been sticking to treatment to remove dispersed oil to the safe maximum concentration levels in its discharges.

Best practice involves assessing the chemical composition of produced water in specific geological areas to characterize the chemical risks posed by the discharge of such water to guide specific treatment options. The failure to date to conduct and/or make available this information along with monitoring information, which demonstrates that the applicant can fulfil the terms of existing permits, reflects poorly yet again on the Government of Guyana's capacity to regulate the oil industry, and competently manage the country's marine environment and natural resources. The generalities in the Uaru EIA are not acceptable at this stage of oil production. The EIA should be revised with verified chemical composition and discharge monitoring data.

4. **The study concludes that there will not likely be any irreversible damage to the environment due to the project. However, Climate Science contradicts this.** The project will result in the emissions of greenhouse gases from energy consumption activities and flaring of gas at various points as well as the injection of additional fossil fuels into global markets. The emissions will contribute to irreversible damage related to climate change, an impact that should be honestly recognised, especially as Guyana is vulnerable to the effects if climate change and there are some Guyanese stakeholders that are organized and opposed to Guyana contributing to the rapid increase of greenhouse gases - as is evidenced by an existing case in court challenging oil and gas production on human rights grounds.

FAILURE TO LOCATE AND ASSESS IMPACT ON SENSITIVE MARINE ENVIRONMENTAL RECEPTORS

1. Impact Assessment Prescriptions of the Environmental Protection Act
2. The Offshore Marine Environment and Sensitive Environmental Receptors
3. The Failure to Assess Marine Impacts and Danger to Sustainable Management

1. Impact Assessment Prescriptions of the Environmental Protection Act

(4) Every environmental impact assessment shall be carried out by an independent and suitably qualified person approved by the Agency and shall—

(a) identify, describe and evaluate the direct and indirect effects of the proposed project on the environment including—

(i) human beings;
(ii) flora and fauna and species habitats;
(iii) soil;
(iv) water;
(v) air and climatic factors;

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(vi) material assets, the cultural heritage and the landscape;
(vii) natural resources, including how much of a particular resource is degraded or eliminated, and how quickly the natural system may deteriorate;
(viii) the ecological balance and ecosystems;
(ix) the interaction between the factors listed above;
(x) any other environmental factor which needs to be taken into account or which the Agency may reasonably require to be included; and

2. The Offshore Marine Environment and Sensitive Environmental Receptors

The areas of direct and indirect Uaru project influence as well as areas where other offshore exploration, production, and vessel transport activities contribute to stress on environmental receptors covers Guyana's near shore, continental shelf, and deep-sea environments as well as areas outside of Guyana Exclusive Economic Zone.

The continental shelf and near shore environment where artisanal fisheries and fish nurseries are found are not the only sensitive environmental receptors of concern. Exxon's oil and gas offshore production fields, seismic research and exploration drilling activities, and service vessel activities broadly overlap with vulnerable deep-sea ecosystems of high biological and ecological relevance, including cold-water corals, submarine canyons and slope sediment communities. Studies elsewhere in the Guiana Shield and offshore Brazil have proven that the margin of our continental slopes have deep-sea ecosystems that are patchily distributed, often have high levels of endemism, and support a high biodiversity.

Such areas exhibit marked habitat heterogeneity due to canyons and support spectacular and biodiverse cold-water coral reefs that are characterized by strong and vulnerable vertical environmental gradients including temperature and particulate organic carbon influx. These are fragile deep-sea ecosystems with unique biodiversity, and they provide valuable ecological services. Continental margins are also important sources of valuable biological and mineral resources, the value of which is growing in importance as land-based minerals are depleted and new challenges intensify research for new materials and medicines.

3. The Failure to Assess Relevant Marine Impacts

Despite provisions in the Environmental Act for the Government of Guyana to independently collect baseline information to competently manage the marine environment and marine natural resources, the Government has to date not done so, instead relying on piecemeal studies conducted by the Exxon Mobil in relation to its various exploration and development projects.

To date Exxon Mobil has conducted several studies collecting "baseline data", and the company has completed five environmental impact assessments (Liza 1, Liza 2, Payara, Yellowtail, Uaru). It is extraordinary that none of these studies have managed to collect baseline or ongoing monitoring data relevant to assessing offshore production and exploration on Guyana's sensitive marine habitats, valuable biodiversity areas, and commercial fish resources. The relevant locations have simply never been identified.

After all these years and the many studies there can be found nowhere in any document a discussion based on an elementary map showing the geographical locations of sensitive high value habitat areas, areas of high biodiversity and research value, marine life corridors, artisanal fishing grounds, fish nurseries, deep water fishing grounds, oil production and exploration well installations, seismic study areas of influence, marine supply vessel transit routes, oil tanker haulage routes, modelled dispersion plume for the thousands of barrels of toxic wastes and chemicals discharged daily, and modelled oil spill dispersion.

These things must be brought into analytical association with each other if one is to draw conclusions on whether and how significantly sensitive environmental receptors and the fisheries sectors are impacted. There can be no logical impact assessment

without this elementary analytical step. The Uaru EIA, like all other EIAs is fatally deficient in this regard and fails to meet the requirements of the Environmental Protection Act.

There is no other jurisdiction that would accept an EIA deficient in this basic analysis. The provision of this information is a standard part of Environmental Impact Assessments. Annex 1 provides some visual examples of how such information is presented in EIAs in other jurisdictions. It should be noted that such visual and georeferenced data is provided for all sponge and reef habitat locations, life cycle use areas for marine mammals, and per each species of fish of commercial and cultural value etc.

The existing marine baseline studies and related information exhibited in all of Exxon Mobil's EIAs to date all fail to provide information that can be used to manage the impacts of oil and gas production on environmental receptors of high biodiversity, those with high value ecosystem functions, and those of economic value for Guyana.

The studies presented to date read like an inventory of wares in kitchen cupboards: ten cups, fifteen forks, twelve spoons; but the inventory does not ever contain information on which cups are made of fine China or which ones are plastic, and in which cupboards the different types of cups might be found. The studies don't say which spoons are golden and in which drawers they are located. If one were to take an axe and hack away at some drawers and cupboards, one would not know whether valuable or less valuable contents were being destroyed. One could not say, go ahead and chop away the impacts will all be negligible and irreversible.

Yet all of Exxon Mobil's EIAs to date have done exactly this. They have failed to say where the features of ecological value and vulnerability exist while claiming that the impacts of all the activities taking place offshore would be negligible or moderate with reversible outcomes. How do the consultants know this? They don't. They have relied on deficient information and inadequate analyses based on generalities which by nature will always lead to inherently biased conclusions.

In fairness to Acorn International, even though they have completed the mission of claiming that impacts will be negligible or moderate with no irreversible outcomes, they have disclosed in several places that the information required to make such conclusions was not available. For example, at pg. 7-42 the EIA states that there is no survey data to confirm the locations of cold-water coral habitats. Page 7-35 states that marine benthic habitats are poorly studied and generally unknown. We know that fishing grounds are not mapped anywhere nor are fishing nurseries, despite calls going on two years now to the EPA to ensure that information relevant to the assessment of marine impacts is collected and available for impact assessment processes.

The simplistic presentation in EIAs that marine mammals and fish would swim away from hazards is unacceptable. The effects of unrelenting seismic testing over vast areas, hot water discharge, toxic produced water and other chemical discharges, noise from operation and service vessels all combine to affect marine mammals, plankton, and fish in way that can permanently damage habitats and ecosystem areas from which animals and fish would stay away in the long term. Seismic air gun pulses emitted every 10-15 seconds that go on most of everyday for weeks at a time can damage plankton, fish swim bladders, can disrupt food supply and directly damage habitats.

The Uaru and all previous EIAs, as well as the current cumulative impacts EIA, which ERM has submitted fail to meet the basic standard of the law for the environmental impact assessment by omitting information which is relevant to determining critical areas of impact

regarding marine habitats and fisheries resources. The fact that this has been brought to the EPA's attention repeatedly leaves no room for excuse for why at this stage of the 5th EIA and permitting process for Exxon Mobil's offshore oil and gas production platform the relevant information and analyses are not forthcoming.

The absence of this information renders the current EIA fatally deficient and throws into the question the commitment of both Exxon Mobil and the Government of Guyana to the rule of law and protection and sustainable management of the Guyana's environment and natural resources. If the EPA moves forward with granting the environmental permit without addressing fatal deficiencies it will expose the applicant to liabilities.

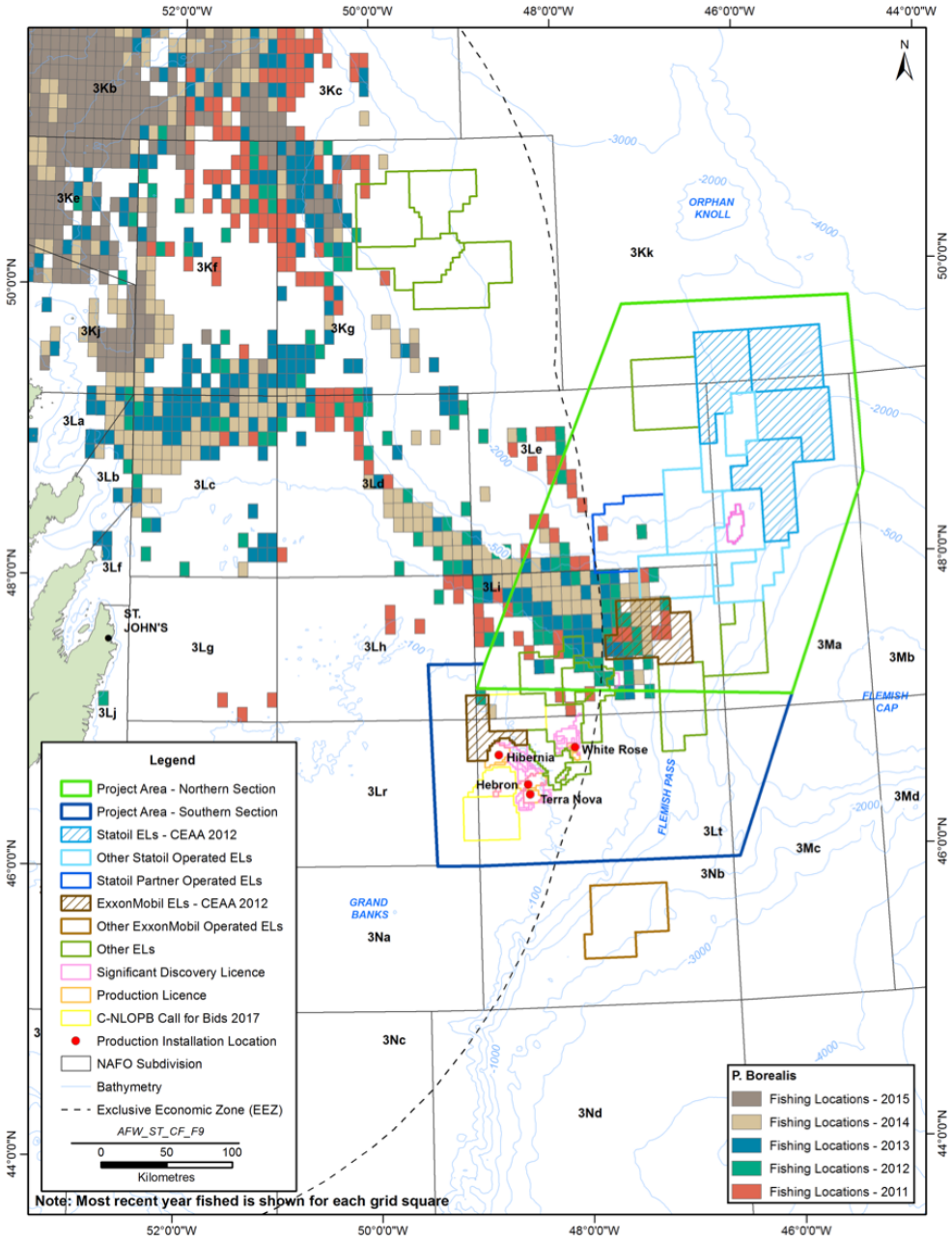
Yours sincerely,

Simone Mangal-Joly

Annex 1 – Example of standard geospatial analytical efforts in EIAs in other jurisdictions (source on images).

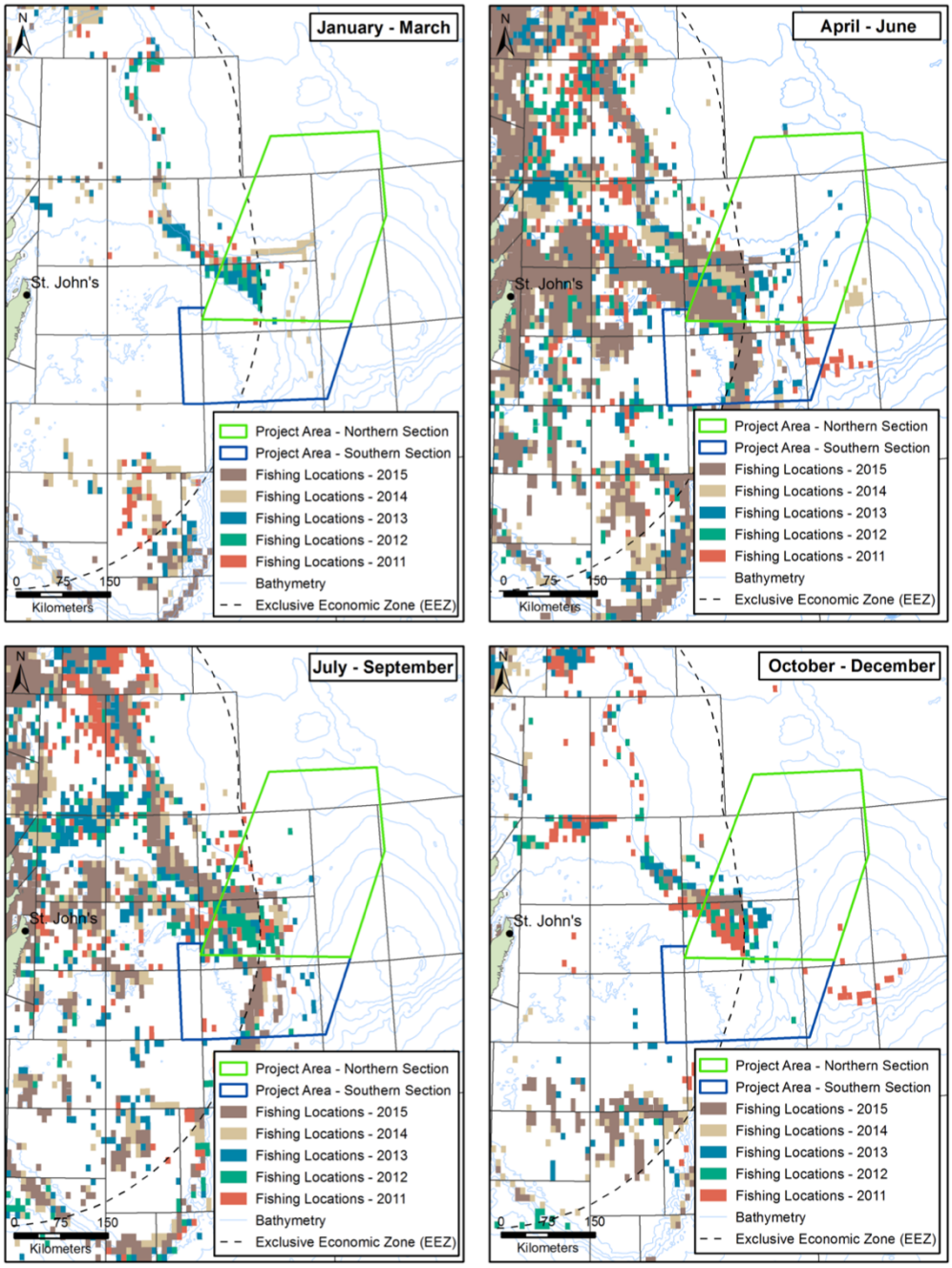
Flemish Pass Exploration Drilling Program – Environmental Impact Statement

Existing Human Environment
December 2017



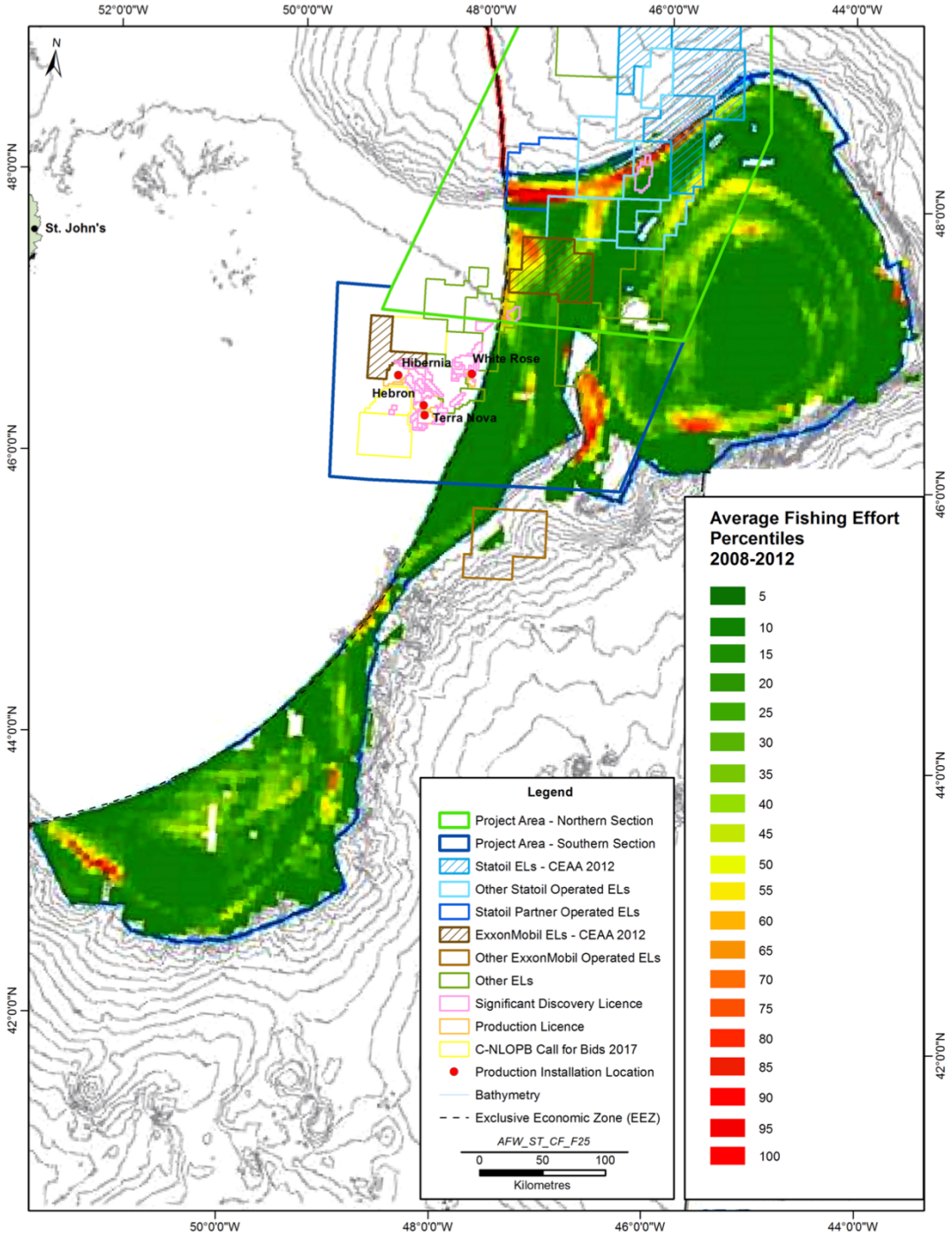
Source: DFO (2016a)

Figure 7-14 Domestic Harvesting Locations, Northern Shrimp, 2011 – 2015



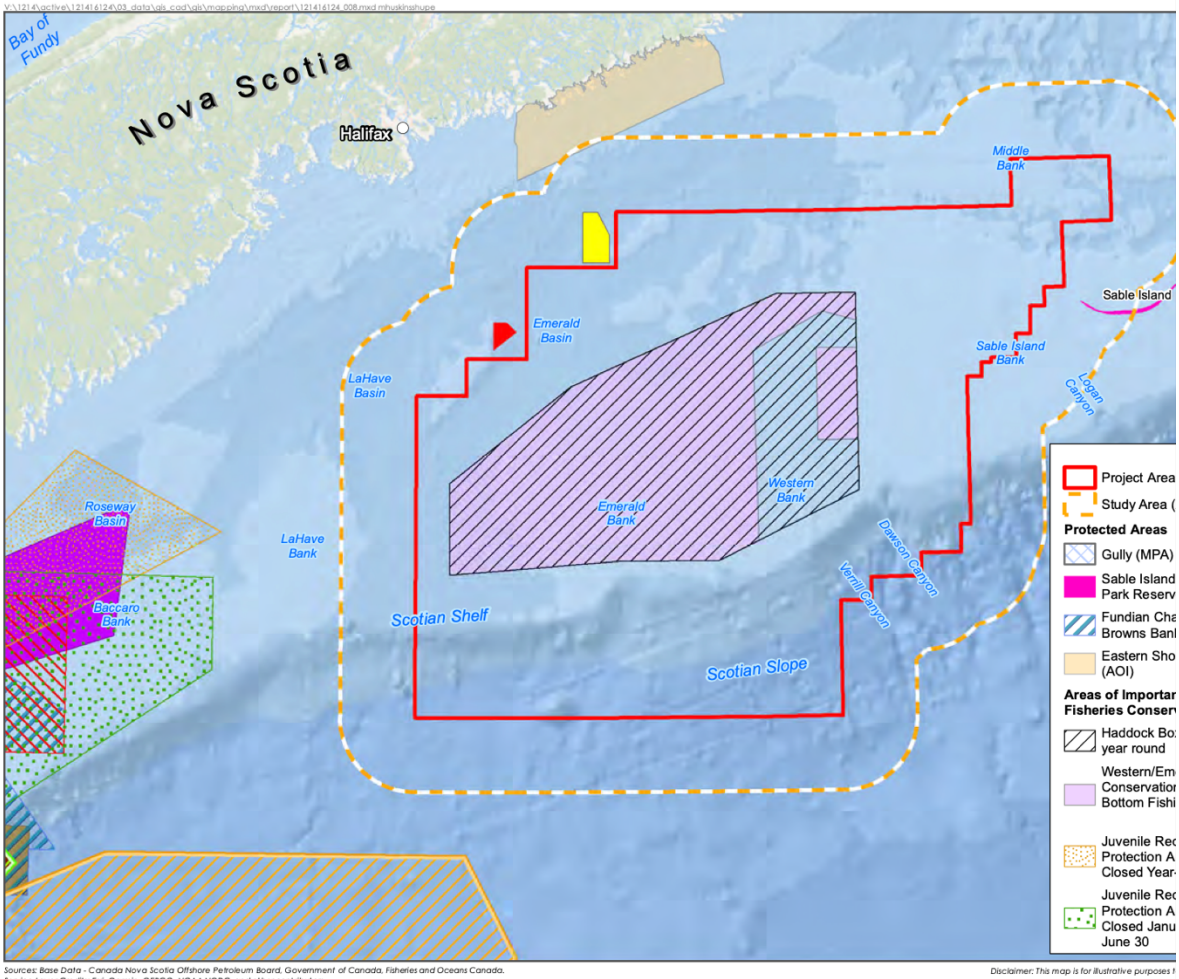
Source: DFO (2016a)

Figure 7-8 Domestic (Canadian) Harvesting Locations, All Species, Quarterly, 2011 to 2015



Source: NAFO (2014)

Figure 7-12 Intensity of Bottom Fishing Activities in the NAFO Fishing Footprint between 2008 and 2012


Bay of Fundy
Nova Scotia
Halifax
Middle Bank
Sable Island
Emerald Basin
Sable Island Bank
LaHave Basin
Logan Canyon
Western Bank
Roseway Basin
Emerald Bank
LaHave Bank
Dawson Canyon
Baccaro Bank
Verrill Canyon
Scotian Shelf
Scotian Slope
Project Area
Study Area (
Protected Areas
Gully (MPA)
Sable Island
Park Reserv
Fundian Cha
Browns Banl
Eastern Sho
(AOI)
Areas of Importar
Fisheries Conser
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year round
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Bottom Fishi
Juvenile Rec
Protection A
Closed Year
Juvenile Rec
Protection A
Closed Janu
June 30
Sources: Base Data - Canada Nova Scotia Offshore Petroleum Board, Government of Canada, Fisheries and Oceans Canada.
Service Layer Credits: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
NAD 1983 UTM Zone 20N
0 25 50 75
Kilometres
Disclaimer: This map is for illustrative purposes
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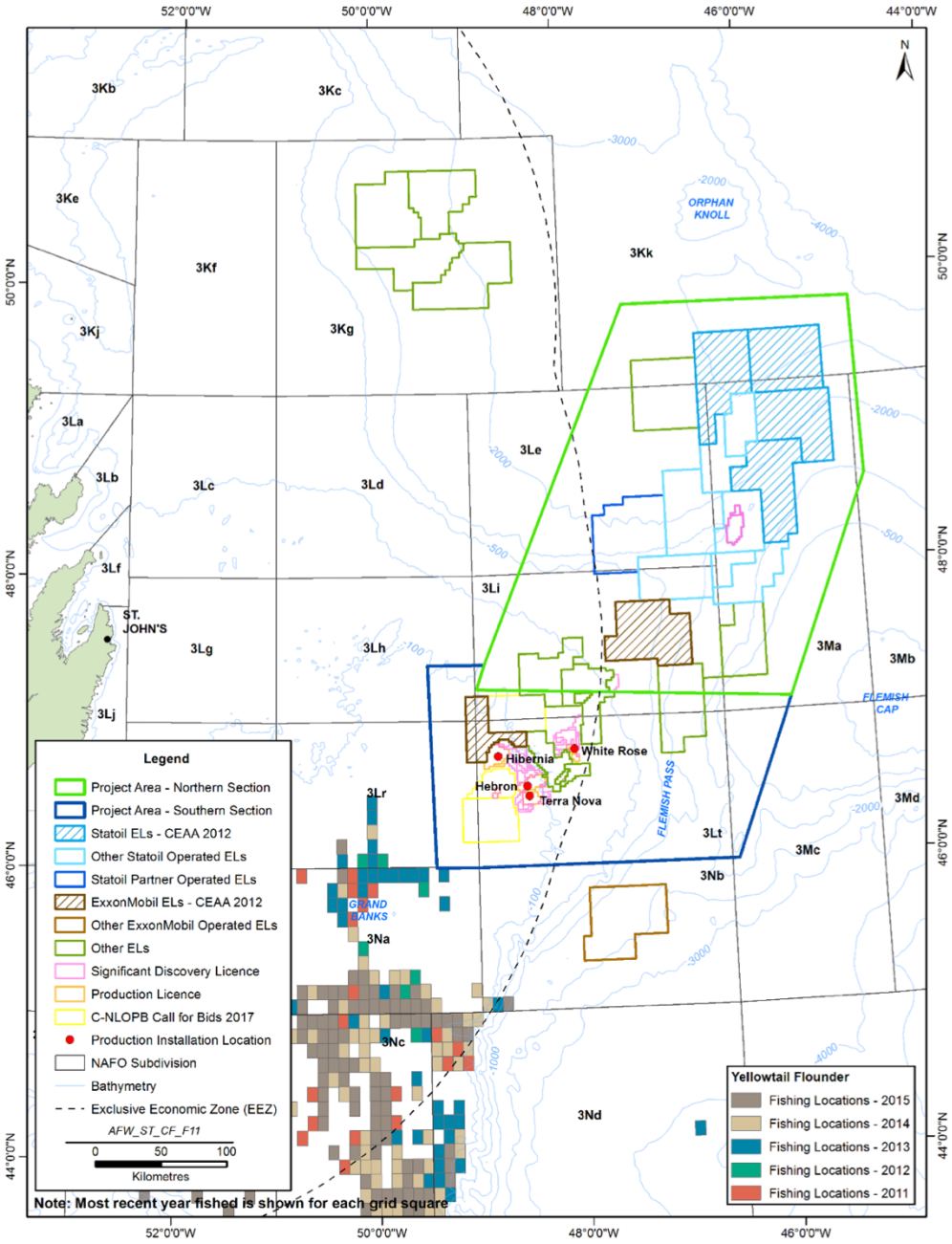

Source: DFO (2016a)

Figure 7-19 Domestic Harvesting Locations, Yellowtail Flounder, 2011 – 2015

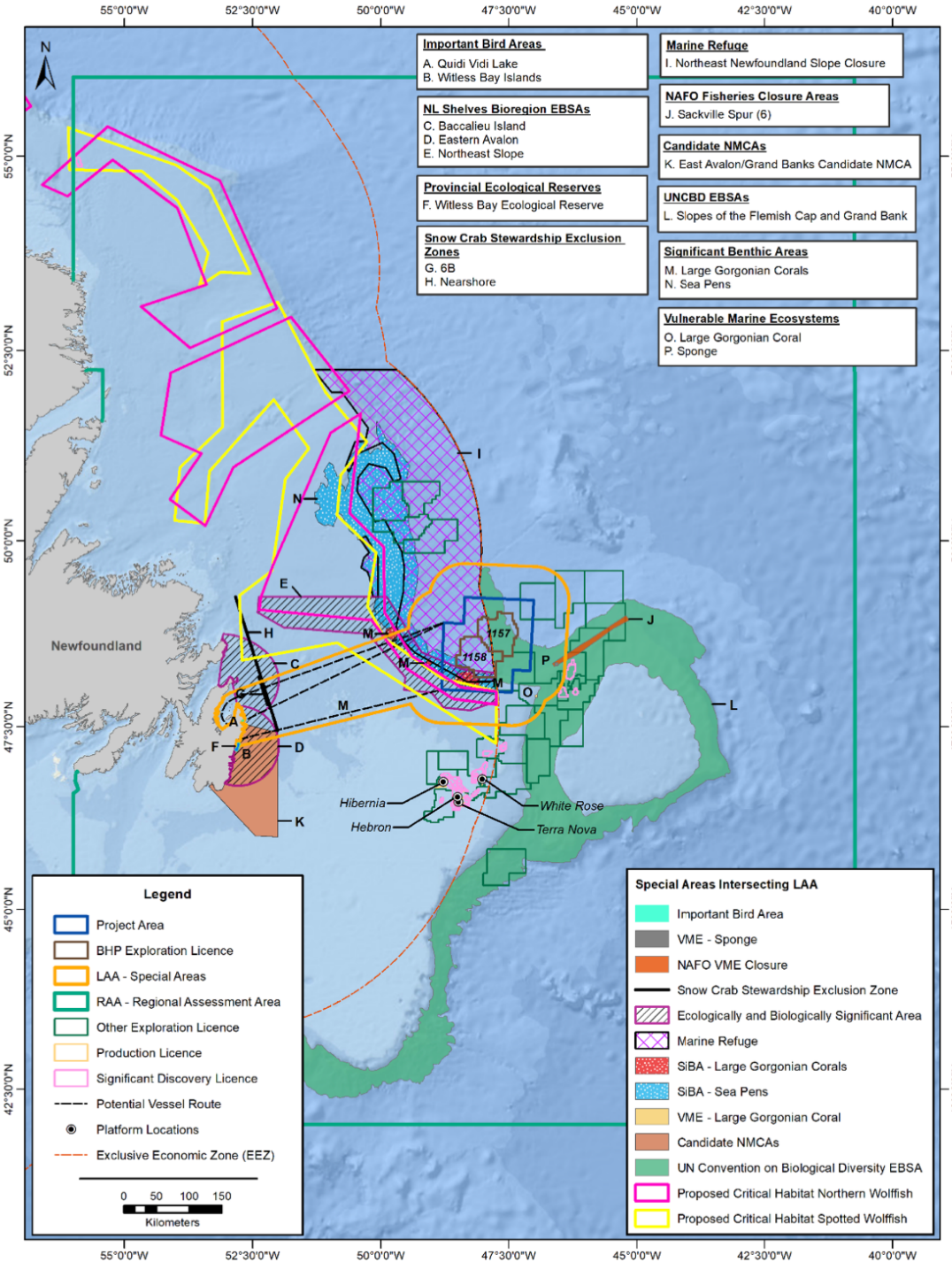

Figure 6-1 Special Areas in the LAA and RAA