REGIONAL ASSESSMENT OF OFFSHORE WIND DEVELOPMENT IN NOVA SCOTIA

INTERIM REPORT

Acknowledgements

We would like to begin by acknowledging that our lives, our work and this Regional Assessment take place in Mi'kma'ki, the ancestral and unceded territory including land, water and air, of the Mi'kmaw people. As visitors, multi-generational settlers and Indigenous people on these territories, we acknowledge that we are all Treaty people and our relationship to this land and L'nu Mi'kmaw people is based on the historic Peace and Friendship Treaties that were created in the 18th century between the British Crown and the Mi'kmaq.

Showing respect for, and honouring, our relationship with Mi'kmaw peoples is an essential part of our work and an important step that we are taking toward reconciliation. The Regional Assessment for offshore wind development in Nova Scotia is one step in a regulatory process to inform and improve future planning, licensing and impact assessment processes for future offshore wind activities. In the event the industry proceeds, it is our hope that the planning and development of this renewable energy resource will address the energy needs of all Nova Scotians, will support economic development throughout the province in a responsible manner and bring positive, meaningful and sustainable economic development opportunities to Indigenous communities in Mi'kma'ki for generations to come.

The first twelve months of the Nova Scotia Offshore Wind Regional Assessment have involved a significant amount of activity, the details of which are contained in this report. The Regional Assessment is primarily focused on meeting with people, hearing their concerns, exchanging information and taking feedback received into consideration in the context of the Committee's mandate. The Committee would like to acknowledge and extend thanks to those that have taken the time to help us in our work: meeting with us in person, providing information, agreeing to serve on Advisory Groups and generally facilitating the kinds of conversations that are required as we collectively consider the potential arrival and impacts of a new industry. This Interim Working Paper represents an important milestone in the Regional Assessment, with more engagement to follow. The Committee looks forward to the next phase of the work and to continuing the conversations.

Acronyms and Abbreviations

CER	Canada Energy Regulator
CNSOER	Canada-Nova Scotia Offshore Energy Regulator
CNSOPB	Canada-Nova Scotia Offshore Petroleum Board
DFO	Department of Fisheries and Oceans
EBSA	Ecologically and Biologically Significant Area
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
ESRF	Canadian Environmental Studies Research Fund
GIS	Geographic Information Systems
IAA	Impact Assessment Act
IAAC	Impact Assessment Agency of Canada
IBA	Important Bird Area
KMKNO	Kwilmu'kw Maw-klusuaqn Negotiation Office
MBS	Migratory Bird Sanctuary
MPA	Marine Protected Area
MRC	Marine Renewables Canada
MSP	Marine Spatial Planning
MW	Megawatt
NL	Newfoundland and Labrador
NGO	Non-governmental organization
NRCan	Natural Resources Canada
NRR	Nova Scotia Provincial Department of Natural Resources and Renewables
NS	Nova Scotia
NSFAEE	Nova Scotia Fisheries Alliance for Energy Engagement
NYSERDA	New York State Energy Research and Development Authority
NZA	Net-Zero Atlantic
OCAP	First Nations' principles of ownership, control, access, and possession
OECM	Other Effective Area-Based Conservation Measure
OSW	Offshore Wind
PEI	Prince Edward Island
PFDA	Potential Future Development Area
RA	Regional Assessment
ScotMER	Scottish government's Marine Renewable Energy Program
SA	Study Area
SBA	Significant Benthic Area
The Initiative	Nova Scotia Offshore Wind Collaborative Research Initiative
TOR	Terms of Reference

Executive Summary

On March 23, 2023, the Minister of Environment and Climate Change announced the appointment of a five-person independent Committee to conduct a Regional Assessment of Offshore Wind Development in Nova Scotia. The Committee is mandated by its Terms of Reference to provide two deliverables to the Minister of Environment and Climate Change Canada, Minister of Energy and Natural Resources Canada, and Nova Scotia's Minister of Natural Resources and Renewables. This Interim Working Paper is intended to satisfy the requirements of the first deliverable. It includes a summary of the research conducted to date, a description of the engagement undertaken, maps showing proposed potential future development areas, the process used to identify and select these areas and preliminary non-spatial recommendations for governments to consider in advance of the completion of the Final Report.

The Committee, supported by the Secretariat, has drawn on expertise and research undertaken by government departments and agencies, fishing groups, Indigenous leadership and communities, non-governmental organizations, and offshore wind developers to inform their work. Several key studies and initiatives commissioned by federal and provincial government departments have been reviewed in depth in our assessment of potential future offshore wind development areas within the Regional Assessment Study Area. Engagement with the public, fisheries organizations and Indigenous communities was conducted through open house events and meetings beginning in the fall of 2023 and extending into February 2024. The input and feedback resulting from this engagement process has been invaluable, closely considered and forms the basis of some of the recommendations and statements herein.

The potential future development areas identified in this Interim Working Paper provide context for the Committee's ongoing engagement effort and for the federal and provincial governments as they continue to assess the potential for offshore wind development in the Study Area. The six potential future development areas include portions of *Sydney Bight, Canso Bank, Middle Bank, Sable Island Bank, Emerald Bank* and the *Eastern Shor*e — places that the Committee believes warrant closer consideration and evaluation. No offshore wind development is being recommended within 25 km of the coast. In addition to location, the Committee is making additional preliminary recommendations including the urgent need for a better mechanism to help coordinate, prioritize and execute the research agenda associated with offshore wind development, and a focused multi-jurisdictional review on the topics of fisheries co-existence and compensation. In addition, the Committee believes it would be inappropriate for governments to exempt any offshore wind projects from an Impact Assessment process until the effects of offshore wind development on these marine ecosystems and the fishing industry are better understood.

The next step for the Regional Assessment involves a spring engagement program which will commence in April 2024. This will be a combination of open house sessions in communities and meetings with individual participant groups including the Regional Assessment Advisory Groups. In addition to receiving feedback on the potential future development areas, the Committee will focus its attention on the potential environmental and socio-economic effects (positive and adverse, including cumulative effects) of offshore wind activities and appropriate mitigation measures. Information gathered in the coming

weeks and months will be considered in the draft Final Report, which will be posted to the Registry in September 2024, for a 60-day public comment period. The Committee will consider all comments received and revise the Final Report before submission to the Ministers in January 2025.

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1.0 Introduction

Many studies and reports have identified the richness of the wind resource off Nova Scotian shores and the need to capitalize upon that resource to decarbonize sources of energy. The federal and provincial governments have acted on that. Pursuant to an Agreement[1] reached between the Government of Canada and the Province of Nova Scotia on 23 March 2023, a Terms of Reference[2] was established to guide a Regional Assessment[3] (the RA) focused on examining the potential for offshore wind (OSW) development in the waters off Nova Scotia. A five-person independent committee (the Committee)[4] was appointed to undertake the RA and the Committee commenced work in April 2023. The Study Area, shown in Figure 1, is approximately 300,000 km^2 and includes the continental shelf and slope off Nova Scotia.

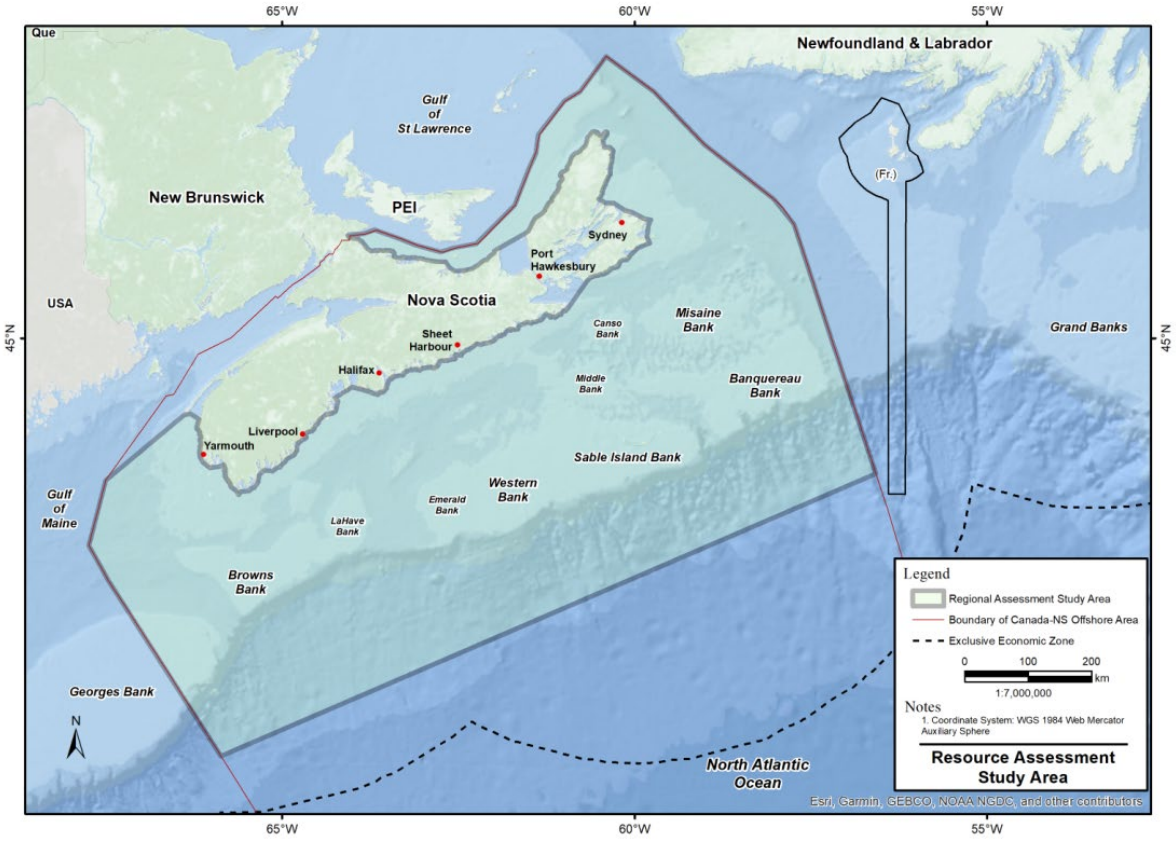

Figure 1. Regional Assessment Study Area

[1] Agreement to Conduct a Regional Assessment of Offshore Wind in Nova Scotia 147038E.pdf (iaac-aeic.gc.ca).
[2] Agreement to Conduct a Regional Assessment of Offshore Wind in Nova Scotia 147038E.pdf (iaac-aeic.gc.ca).
[3] Regional Assessments are governed by sections 92-103 of the federal *Impact Assessment Act*, SC 2019, c.28.
[4] Backgrounder: Committee Member Biographies for the Regional Assessment of Offshore Wind Development in Nova Scotia (iaac-aeic.gc.ca).

1.1 Regional Context

The Study Area is a complex and extensive coastal area that is highly productive, influenced by the neighbouring land, major ocean currents, i.e., the Gulf Stream and Labrador Current, and by continental weather systems that are increasing in intensity and frequency. Its features have been changing steadily over the last 6,000-10,000 years, but in recent decades the rate of change in many aspects has accelerated in response to human-induced climate change.

The area includes a variety of bottom types including shallow banks, deep channels, and areas of outcropping bedrock. Associated with these different habitats are a number of biophysical systems that support a wide diversity of wildlife. Some species are resident within the Study Area, but many are transboundary, and some migrate annually between the Study Area and distant parts of the Atlantic Ocean. Although fished and studied for centuries, the area is still only partially characterized, in part because of the extensive resources required to study such a large and complex system. While considerable knowledge is held by various groups, including Indigenous communities, fishers and fishing companies, government agencies, universities and some non-government organizations, the information has not always been shared, or adequately supported by systematic, independent surveys. Consequently, the rapid changes associated with global warming render assessments of any new development in these waters very difficult.

Improvements in survey technologies using remote sensors and drones are increasing the capacity for a more complete understanding of the ecosystem, including the behaviour of fish, birds and marine mammals in the vicinity of human activities and construction in important marine areas. Development of OSW in the waters off Nova Scotia will require that the present limited understanding of the Study Area be improved.

1.2 Interim Report

Throughout summer and fall of 2023, it became apparent to the Committee that the timelines specified in the Terms of Reference were unachievable. Engaging effectively with fish harvesters, Indigenous participants, the public and experts is critical to its quality and credibility. Therefore, on 25 October 2023,[5] the Committee sought clarification on the nature of the expected submissions and the timeline for delivery. The Minister's reply dated 25 January 2024,[6] and the attached memorandum modifying the Terms of Reference have offered clarity and enabled the Committee to prepare this Interim Working Paper which includes:

- a summary of the RA governance structure;
- a description of the engagement undertaken up to February 2024;

[5] From the Committee to the Minister of Environment and Climate Change re Clarification and approach of TOR (iaac-aeic.gc.ca)

[6] Ministerial Response to Conducting the Regional Assessment of Offshore Wind Development in Nova Scotia (iaac-aeic.gc.ca)

- a map of areas that are considered potential future development areas (PFDAs) warranting closer consideration and evaluation for OSW (Figure 3);
- an accounting of the process that led to the identification and selection of these development areas; and
- initial recommendations to the Ministers.

The term 'Interim Working Paper' comes from the letter of clarification that the Committee submitted to the Minister and is meant to suggest a work in progress as opposed to a Final Report. The other term which has been used by the Committee during the engagement process to describe this deliverable is 'Interim Report'. The two terms are interchangeable. For the sake of consistency 'Interim Report' will be used in the balance of this document.

The intention is for this Interim Report to become a key tool in the ongoing engagement process and to inform governments in their assessment of the potential for OSW development in the Study Area. It will be posted on the Canadian Impact Assessment Registry site (the Registry) where all documents relevant to the RA are posted for public access. The Interim Report will also be distributed to participants via email and will be made available at future public meetings held by the Committee. Additional information and input received until the submission of the Committee's Final Report (discussed in Section 3.0) will have the potential to alter the Interim Report recommendations. Similarly, for areas not included in the PFDA recommendations shown in Figure 3, the Committee is not suggesting that they should never again be considered for OSW development. There are too many variables related to future changes in the environment, technology and societal needs to be able to recommend categorically the permanent disqualification of areas. The objective is to focus attention on the limited number of identified areas presently considered worthy of further examination, based on what is currently known, and to solicit further input from all participants as the Committee works towards fulfilling its mandate and issuing its Final Report.

2.0 Offshore Wind Development

The OSW industry began in Denmark in 1991 and has been expanding exponentially in recent years as countries seek greener alternatives to carbon generated sources of energy. OSW development involves the generation of electricity by the capture of wind energy in the marine environment where wind speeds are generally higher and more consistent than those on land. Higher wind speeds and greater consistency effectively mean more electricity is produced per equivalent unit of generating capacity, which often translates into more favorable development economics. The wind speeds in Nova Scotia's offshore are among the best in the world[7], between 9-11 meters per second (m/s) and have attracted attention from many prospective developers.

In selecting specific sites for OSW, developers typically start with areas that are considered technically and economically feasible. This requires consideration of such factors as wind speed, water depth,

[7] Data obtained from the Global Wind Atlas version 3.3. For additional information: https://globalwindatlas.info.

substrate (bottom) type, proximity to shore for grid connection and port access. Areas that are technically and economically attractive are then re-evaluated considering ecological and socio-economic factors such as the presence of sensitive marine habitats and species, commercial and/or recreational fishing, shipping lanes and other ocean uses before final decisions are made on preferred sites.

Because of the emerging scale of the OSW industry, the limited capacity of the international supply chain to keep up with accelerating demand, and the move toward larger and increasingly standardized sizes for certain key components, both the size of individual turbines (rated capacity) and size of wind farm developments (overall rated capacity) are getting larger. Wind farms in the early 2000s may have been economic in the 100s of megawatt (MW) scale, whereas more recently installed OSW wind farms frequently exceed 1 gigawatt (GW). Due to rising costs of installing and operating a wind farm – in part due to competition for the required specialized equipment – an economic development on the smallest scale may now be more than 500 MW. A detailed description of OSW farm components and activities associated with the various phases of development are not detailed in this Interim Report and the reader is referred to other sources for more information.[8]

Based on information gathered to date, the Committee has adopted the following general assumptions to guide its work:

- Economics will dictate that OSW developments in the Study Area would likely be 1 GW or larger;
- An initial smaller scale OSW farm (between 600-800 MW) may be advanced as a project targeted to Nova Scotia consumers via the existing electrical grid and to initiate the gradual development of domestic supply chains;
- Developments could consist of fixed turbines or floating turbines. Previously, fixed turbines have generally been installed in water depths up to 60 m, but technology is advancing to make OSW development feasible in deeper water. As such, the Committee has chosen up to 70 m as a feasible water depth for fixed turbines given the expected Nova Scotia development timeframe (Figure 2) while recognizing that developers may also choose to advance a floating technology solution in less than 70 m of water. Beyond 70 m, the deployment of floating wind turbine technology is assumed;
- That OSW development will not take place in:
    - Marine Protected Areas (MPAs) established pursuant to the *Oceans Act* and in areas defined as Critical Habitat pursuant to the *Species at Risk Act*.
    - National Park Reserve, such as the Sable Island National Park Reserve, pursuant to the *National Parks Act* or a National Marine Conservation Area (NMCA) pursuant to the *National Marine Conservation Areas Act*. Both are administered by Parks Canada.
    - Marine Bird Sanctuaries (MBSs) established pursuant to the *Migratory Birds Convention Act* and Important Bird Areas (IBAs).

[8] Regional Assessment of Offshore Wind Development in Nova Scotia Briefing Note: Offshore Wind 101 (iaac-aeic.gc.ca)

- OSW activities could potentially be developed in a number of areas designated for protection under the *Fisheries Act*. In Marine Refuges and Fisheries Closure Areas, DFO protects biological productivity through restrictions, or prohibitions, on fishing activity. DFO has specified that development in a Marine Refuge could be allowed provided it does not compromise the conservations objectives of that area. In addition, Ecologically and Biologically Significant Areas (EBSAs) and Significant Benthic Areas (SBAs) are also identified by DFO as locations that play an important role in marine habitat protection and conservation. OSW development proposed in these DFO administered areas would be evaluated through the Impact Assessment process or subsequent regulatory permitting. DFO would consider the importance of the area, its ecological characteristics, and would seek the mitigation measures deemed necessary to protect the ecological significance of the area; this may include conditions that could effectively limit or restrict OSW development;
- Turbines are expected to be a minimum of 15 MW each and are more than likely to be 20+ MW within the expected development timeframe;
- The limited capacity of the existing Nova Scotia electrical grid means that development of offshore renewable energy at any large scale will depend on development of alternate markets for the energy. Such markets could be through direct electricity export and/or conversion of electricity to hydrogen and other green energy forms;
- Electricity generated by a wind farm would be transmitted to shore via subsea cables at locations near appropriate grid connections or proposed green energy conversion facilities; and
- Shared infrastructure, i.e., transmission cables and substations, would be desirable from an economic and environmental impact perspective.

3.0 The Regional Assessment

3.1 Governance

The federal Minister of the Environment mandated this RA pursuant to authority granted under the *Impact Assessment Act*.[9] The ensuing Agreement between Canada and the province of Nova Scotia produced the Terms of Reference under which the appointed Committee operates. The Committee is supported by a Secretariat[10] and three Advisory Groups.[11] The Committee's initial work included training on the Principles of Administrative Justice and the establishment of Operational Procedures[12] and a Confidentiality Procedure.[13]

[9] Impact Assessment Act (justice.gc.ca)
[10] The Committee is supported by a secretariat that was established to provide administrative and technical support to the Committee during the conduct of the Regional Assessment. The Secretariat is comprised of staff assigned from IAAC and the CNSOPB.
[11] The Fisheries Advisory Group, the Indigenous Knowledge Advisory Group and the Scientific Information and Community Knowledge Advisory Group. Discussed further in Section 4.4.
[12] Operational Procedures (iaac-aeic.gc.ca)
[13] Confidentiality Procedure (iaac-aeic.gc.ca)

3.2 Committee Mandate and Operating Methodology

The mandate and responsibilities of the Committee were established by the federal Minister of Environment and Climate Change (ECCC), in partnership with the federal Minister of Natural Resources Canada (NRCan) and the provincial Minister of Natural Resources and Renewables (NRR), in accordance with subsection 93(3) of the *Impact Assessment Act*. The full mandate is outlined in the Terms of Reference,[14] but key objectives include: identification of locations within the Study Area that might accommodate OSW development; analysis of potential positive and adverse effects; and recommendations for mitigation and monitoring measures.

There are no OSW farms currently under development in the waters off Nova Scotia. The Committee has not been asked to review a particular project, but rather to undertake an assessment of an OSW industry that is evolving rapidly in other parts of the world and that many consider has the potential to bring a variety of benefits to Nova Scotia and Canada as both levels of government work to reduce greenhouse gas emissions. The Committee has not undertaken any primary research in support of this Interim Report; rather it has relied on the diverse expertise, knowledge and experience of its individual members to review, question and deliberate upon the research and input of others, including, but not limited to, that undertaken by government departments and agencies, the fishing community, Indigenous peoples, academic researchers, non-governmental organizations (NGOs) and industry. The following guiding principles have informed the approach taken by the Committee:

i) to be open and transparent with respect to the challenges and limitations involved in meeting the Terms of Reference and to maintain this perspective throughout;
ii) to be receptive to the research and expertise of the many people in Nova Scotia, Canada and beyond who can contribute to the RA process; and
iii) to ensure that the collective experience of the Committee is used to examine the data, studies and concerns that are provided and expressed to us in an equitable manner.

More specifically, the Committee has relied upon:

- subject matter briefings from government departments, agencies and third parties on a wide range of specific topics;
- engagement with the Assembly of First Nations of Nova Scotia (the 'Assembly'), Indigenous communities and community leaders, and Indigenous organizations;
- an extensive and inclusive public engagement program; and

[14] Agreement to Conduct a Regional Assessment of Offshore Wind in Nova Scotia 147038E.pdf (iaac-aeic.gc.ca)

- feedback received from fishers, fishing associations/organizations and fishing companies[15], NGOs[16] and potential developers.

Several studies conducted in recent years merit specific reference as being useful and directly relevant to the Committee's identification of PFDAs. These studies have enabled a comparison of the conclusions reached independently using the same data but have also provided a baseline level of understanding for the Committee to interpret other information gathered and submissions received. These studies are identified and discussed in Section 5.0. The way these materials have been interpreted by the Committee in reaching its first set of recommendations is discussed in Section 6.0.

3.3 Parallel Activities and Timeline

The RA is one of several initiatives that are either underway or planned as the OSW regulatory framework evolves. There are many things that need to fall into place to allow the industry to move ahead in Canada and Nova Scotia, and a delay in one component may impact the timing of others. Certain activities occur consecutively while others occur concurrently. Therefore, Figure 2 should be interpreted solely as the Committee's best effort to depict the related processes and timelines; the intent being to give the reader some context for the anticipated overall development timeframe and the potential deployment of the first OSW turbines in the Study Area.

Currently, the Canada Energy Regulator (CER) is responsible for regulating OSW development in all regions in Canada. The CER has been working to develop regulations that will govern the industry,[17] which are now in the final stages of becoming law (published in the Canada Gazette 1 on 24 February 2024)[18] and expected to be in place by the end of 2024. The federal and provincial governments (in Nova Scotia and Newfoundland and Labrador) have chosen to jointly expand the regulatory role of the Offshore Petroleum Boards to include offshore renewable energy, expressed in Bill C-49, which would rebrand the regulator in Nova Scotia from the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) to the Canada-Nova Scotia Offshore Energy Regulator (CNSOER). The expectation is that on the passage of Bill C-49, the CER Offshore Renewable Energy Regulations would then be amended before being adopted under the federal and provincial Accord Acts[19] and becoming law in Nova Scotia.

As the legislative framework evolves, the RA proceeds with a scheduled completion date of January 2025. One of the important objectives of the Terms of Reference is that the Committee's

[15] Nova Scotia Fisheries Alliance for Energy Engagement (iaac-aeic.gc.ca) and Guysborough County Inshore Fishermen's Association (iaac-aeic.gc.ca)
[16] Advisory Group Feedback - Identification of Potential Future Development Areas Response from East Coast Environmental Law (iaac-aeic.gc.ca) and Advisory Group Feedback - Identification of Potential Future Development Areas Response from Ecology Action Center (iaac-aeic.gc.ca).
[17] Offshore Renewable Energy Regulations Initiative (canada.ca)
[18] Canada Gazette, Part 1, Volume 158, Number 8: Canada Offshore Renewable Energy Regulations
[19] The Accord Acts are the relevant legislation that regulate offshore petroleum resources: *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* and mirror provincial legislation: *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*.

recommendations "inform" future decisions by government regarding where and how the industry will be developed in the region. NRR has expressed an intention to issue the first call for bids for future OSW development in 2025 (Figure 2). The issuance of a call for bids and the evaluation of submissions would potentially result in a successful bidder (or bidders) being issued a submerged land license later in 2025 or early 2026, following which detailed site assessment work would commence.

The information obtained from the site assessment work would lead to the filing of an Environmental Impact Statement pursuant to the Physical Activities Regulations of the *Impact Assessment Act*[20] and preparation of an application for authorization to construct and operate the wind farm pursuant to the Accord Acts. Throughout this effort, the developer would be refining the wind farm's design, obtaining cost estimates and securing funding and planning for the construction phase of activity. Having obtained the necessary development approvals, and assuming the developer decides to proceed, the project would then advance into the installation and construction phase. A two-to-three-year period is anticipated for construction, influenced by factors such as weather, the number of turbines to be installed, the distance from shore, which affects vessel travel time and whether an offshore substation is required, and the availability of installation equipment and skilled labor. It can be reasonably expected that the first turbines may be installed sometime after 2030, but likely closer to 2035. It is the Committee's understanding that there will be multiple opportunities for engagement at various stages of the process outlined in Figure 2.

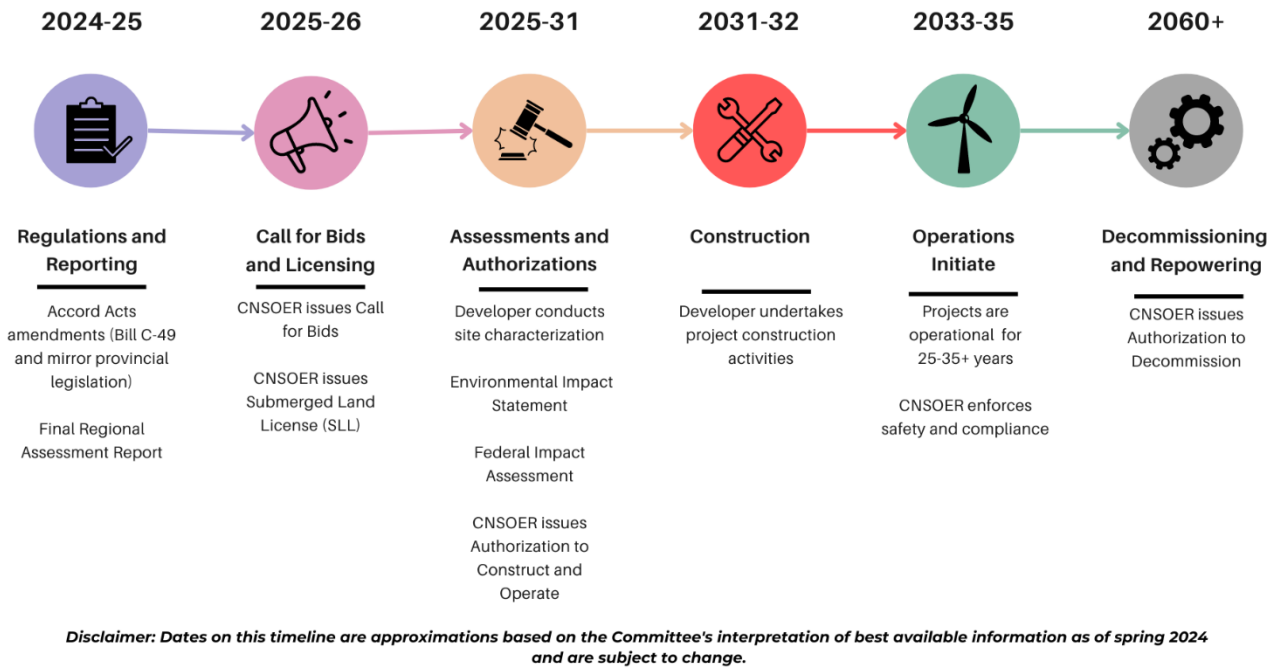

Figure 2. Approximate Timeline for Offshore Wind Development in Nova Scotia

[20] Canada Gazette, Part 2, Volume 153, Number 17: Physical Activities Regulations

Figure 2 does not include any reference to the timelines or processes associated with potential OSW development in "provincial waters", which is discussed in more detail in the provincially authored *Nova Scotia Offshore Wind Roadmap*.[21] The province has indicated that it will not proceed with further consideration of OSW development in provincial waters until after the completion of this RA. Provincial waters are not included in the Study Area for the RA; however, the Committee has been encouraged to consider the potential impact to the Study Area of any future development in these waters, i.e., cumulative effects.

3.4 Final Report

The Committee intends to post the draft of the Final Report to the Registry by the end of September 2024. A 60-day public review and comment period will follow during which the Committee will receive feedback and input to consider in finalizing the report. The Final Report will be submitted to the Ministers by end of January 2025, and will also be posted to the Registry.

4.0 Engagement

4.1 Process Overview

The Committee has undertaken extensive engagement to date knowing it has:

- the authority to seek specialist or expert information or knowledge pertinent to the RA from both federal and provincial authorities; and
- the mandate to ensure that Indigenous peoples, other participants, particularly fishers, and the public are provided with opportunities to participate meaningfully in the RA.

In addition to documents relevant to the RA, the Registry[22] site also offers a means to submit comments directly to the Committee via the Public Comment Tool.[23] Information sharing has been further enhanced through a generic email account which is checked daily (OffshoreWindNS-EolienneExtracotiereNE@iaac-aeic.gc.ca) and a general email distribution list with currently over 660 recipients.

Meetings and briefings have constituted a large part of the RA engagement program. The Committee has met with Indigenous leadership and communities, federal, provincial and municipal government departments, fisheries associations, OSW developers and various other organizations. General outreach has taken place through virtual information sessions and open house events throughout Nova Scotia, and Moncton and Charlottetown. Advisory Groups were established to seek information and advice on specific topics.

[21] offshore-wind-roadmap.pdf (novascotia.ca)
[22] Regional Assessment of Offshore Wind Development in Nova Scotia (iaac-aeic.gc.ca)
[23] Canadian Impact Assessment Registry - Project Submit a comment (iaac-aeic.gc.ca)

The Committee has also prepared the following three Participation Plans, which provide a summary of engagement activities, planned participation approaches and upcoming activities, and a tracking log of activities that have occurred:

- Fisheries Participation Plan;
- Public and Stakeholder Participation Plan; and
- Indigenous Participation Plan.

Draft versions of each Plan were circulated to Indigenous participants, the email distribution list and Advisory Group members and were amended accordingly and posted to the Registry. Engagement tracking logs within each plan are updated on a quarterly basis to track engagement activities.

4.2 Indigenous Engagement

During the RA planning process, i.e., before the Committee was appointed, the Impact Assessment Agency of Canada (IAAC) reached out to Indigenous contacts throughout the Maritime provinces and Quebec (Appendix B). The Committee utilized the same approach for their initial outreach and introductions. Early meetings focused on sharing information about the RA and understanding the level of interest of Indigenous participants to remain engaged. The Indigenous Participation Plan identified the following engagement objectives:

- Establish an open and constructive dialogue;
- Encourage active and early participation, and opportunities for collaboration, in the RA process;
- Consider Indigenous knowledge and Two-Eyed Seeing in accordance with the “ownership, control, access and possession” (OCAP) principles and with reference to existing Indigenous knowledge inclusion protocols;
- Respect the means in which Indigenous knowledge is held and the preferred means of communicating that knowledge;
- Respect the unique nature of each community and, where reasonably possible, adjust the engagement process based on preferences expressed;
- Include diverse perspectives especially those of women and Elders;
- Provide advanced detail of timelines with sufficient notice to enable meaningful participation and opportunities for collaboration;
- Provide participation funding opportunities; and
- Respect the principles inherent in the United Nations Declaration on the Rights of Indigenous Peoples.

Pursuant to advice received from the Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO), an introductory meeting with the Assembly of Nova Scotia Mi’kmaq Chiefs (the ‘Assembly’) was arranged to introduce the Committee and the RA objectives and process and to inquire about the possibility of future meetings with Chiefs and Councils in communities in Nova Scotia. With encouragement from the Assembly, the Committee sought to meet with all communities. Meetings were held with the following Chiefs and Councils:

- Glooscap First Nation
- Sipekne'katik First Nation
- Eskasoni First Nation
- Annapolis Valley First Nation
- Pictou Landing First Nation
- Membertou First Nation
- Wagmatcook First Nation
- Millbrook First Nation
- Potlotek First Nation

The Committee has also met with the Abegweit First Nation (Prince Edward Island) and Mi'gmawe'l Tplu'taqnn Incorporated (New Brunswick).

Additional meetings have taken place with following Indigenous organizations:

- Atlantic Policy Congress of First Nations Chiefs Secretariat
- Confederacy of Mainland Mi'kmaq
- Unama'ki Institute of Natural Resources
- Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) – Archeology
- Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) – Fisheries

Feedback and input from these meetings were documented as part of the *What We Heard Summary*[24] posted to the Registry. Several Chiefs and Councils have indicated an interest in having the Committee arrange follow-on meetings with the objective of providing more detailed information and receiving broader community participation and feedback. The planning for these meetings is underway for April, May and June 2024.

4.3 Government Departments and Agencies

The potential for development of OSW has been contemplated for some time by federal and provincial departments. Their respective subject matter experts have been gathering information and undertaking analyses relevant to OSW over the past several years. Important aspects of that work are discussed in Section 5.0. The Committee has met with representatives of Fisheries and Oceans Canada (DFO), ECCC, IAAC, NRCan, Parks Canada and the provincial departments of NRR and NS Department of Environment and Climate Change. A record of these meetings is documented in the Public and Stakeholder Participation Plan on the Registry.

4.4 Advisory Groups

Three Advisory Groups have been established pursuant to a public call for Expressions of Interest initiated by the IAAC. The Fisheries Advisory Group, the Indigenous Knowledge Advisory Group and the

[24] 2023/2024 Engagement Program - What We Heard Summary (iaac-aeic.gc.ca)

Scientific Information and Community Knowledge Advisory Group are comprised of representative individuals and organizations from within and outside government and Indigenous communities, who have knowledge or experience considered to be relevant to the RA. A list of Advisory Group participants can be found in the relevant Participation Plan, the intention being that these individuals inform the Committee's analyses on various topics throughout the RA. The Committee held initial introductory meetings with the Advisory Groups in July 2023. Thus far, contact with the Advisory Groups has focussed primarily on the identification of PFDAs. It is expected that the focus will advance to consideration of potential OSW impact producing factors including cumulative effects, the identification of data gaps and the nature of necessary mitigation.

4.5 Public Engagement

In July 2023, an early introduction to the Committee and RA process was initiated through four virtual public information sessions. These meetings provided an opportunity for participants to meet the Committee, learn about the RA process and timelines, and provide initial input on topics that included the design of the engagement program and the means in which they wished to be engaged. The slide deck[25] used for the information sessions is posted on the Registry.

Following the introductory online sessions, the Committee opted for an Open House format for its first round of public meetings. These took place from October 2023 through January 2024 and involved a total of 15 communities in Nova Scotia (NS), New Brunswick (NB) and Prince Edward Island (PEI):

- Guysborough, NS
- Sheet Harbour, NS
- Sydney, NS
- Port Hawkesbury, NS
- Inverness, NS
- Digby, NS
- Yarmouth, NS
- Shelburne, NS
- Dartmouth, NS
- Wolfville, NS
- Charlottetown, PEI
- Moncton, NB
- River Bourgeois, NS
- Chéticamp, NS
- New Glasgow, NS

Advertisement of the events included the Registry, IAAC's social media pages, posters at local establishments and announcements on local radio stations. Email invitations were issued via the email

[25] Public & Stakeholder Introductory Session Presentation (iaac-aeic.gc.ca)

distribution list. A series of poster boards and maps were created to share information about OSW, the RA process, existing users of the Study Area space and to solicit input from attendees with a particular focus on potential locations for future OSW development. An *Offshore Wind Technologies 101*[26] video developed by Marine Renewables Canada (MRC) was available. Feedback forms and input boards were employed to facilitate individual feedback.

Electronic versions of the poster boards[27] have been posted to the Registry as well as a *What We Heard Summary*[28] of feedback and input. Questions raised by attendees have been reviewed and are being addressed on an ongoing basis through editions of a *Frequently Asked Questions*[29] document. The next phase of planned public engagement is discussed below in Section 8.0.

4.6 Fisheries

The Committee recognizes the economic and cultural importance of the fishing industry to Nova Scotia and how coastal fishing communities shape the social dynamic of a large portion of the province. It is not surprising that there is substantial concern by this sector as to how a new industry might be accommodated in the Study Area, what the potential impacts could be to the various fisheries and the mitigation and offsetting measures that would need to be in place to protect it.

Of value to the Committee's understanding of the extent and importance of the fishery has been the feedback received from fisheries organizations, as well as individual fishers who took time to attend open houses and, in many cases, provided follow up information to the Committee. Their voice offers a unique perspective, sometimes not fully captured in other regulatory processes, and the Committee wishes to ensure that these perspectives are valued and will continue to be captured and incorporated in the RA. The information received to date has helped to identify information gaps and limitations in publicly available fishing data.

Future OSW development activities have the potential to impact Aboriginal or Treaty rights protected by section 35 of the *Constitution Act*, 1982, including the Section 35 right to fish throughout Mi'kma'ki. This includes Food, Social, Ceremonial, and commercial fishing rights in the area, including those occurring in Lobster Fishing Areas.[30]

The Committee would like to acknowledge the thoughtful representations (oral and written) made by the Nova Scotia Fisheries Alliance for Energy Engagement (NSFAEE), an umbrella organization

[26] Webinar Archive » Marine Renewables Canada
[27] Open House Posters (iaac-aeic.gc.ca)
[28] 2023/2024 Engagement Program - What We Heard Summary (iaac-aeic.gc.ca)
[29] Frequently Asked Questions Edition 1 - Offshore Wind in NS (iaac-aeic.gc.ca)
[30] Section A1 of the Committee's Terms of Reference mandates the Committee to receive information from Indigenous peoples regarding rights protected by section 35 of the Constitution, but in s.1.3 clarifies that the Committee is not mandated or empowered to make any determination as to the nature of any claim or alleged infringement. The Committee is not undertaking 'Consultation' within the context of the Crown's 'Duty to Consult', though information gathered for the report may inform or support the Crown's efforts in that regard.

representing approximately 21 fisheries organizations across Nova Scotia. The NSFAEE information was species and gear type specific and attempted to identify low-conflict areas for siting potential OSW development.

In addition to the NSFAEE, the Committee has also met with the following organizations/individuals:

- Fisheries Advisory Committee (under the Canada Nova Scotia Offshore Petroleum Board)
- Guysborough County Inshore Fishermen's Association
- North Sydney based lobster fishery representatives
- Clearwater Seafoods
- Ocean Pride Fisheries
- Seafood Producers Association of Nova Scotia

4.7 Offshore Wind Developers

The Committee met with the Executive Director of MRC and several of its members to gain their perspective on development potential and related environmental and socio-economic issues associated with OSW. Following the initial meeting, an open invitation was sent offering developers one-on-one sessions with the Committee. The following companies met with the Committee:

- DP Energy and SBM Offshore
- BlueFloat Energy
- Northland Power
- Simply Blue Group
- OX2
- Atlantic Canada Offshore Developments
- Reventus Power Limited

The Committee determined that the most appropriate way to receive coordinated input from prospective developers was through an Information Request issued by provincial and federal governments.[31] The information was solicited in November 2023, and the industry participants responded directly to governments in January 2024. An anonymized, not for public disclosure, summary of the feedback was forwarded to the Committee in February 2023 that included the identification of areas of interest for both fixed and floating installations and the rationale for the choices. The discussion under Section 6.0 includes references to areas identified through this process.

4.8 Other

The Committee has also received briefings from several subject matter experts from academia, specialists working in the private sector and from agencies in the United States and Europe on a variety of relevant topics. These include experiences and lessons learned in other jurisdictions and approaches

[31] From the Committee to NRCan and NRR re Request for Data (iaac-aeic.gc.ca)

being taken related to the coexistence of fisheries and OSW development, mitigation of impacts and financial compensation. A record of the Committee's meetings can be found on the Registry.[32]

4.9 Findings and Questions Arising from Engagement

The full summary of the issues and questions raised during the fall engagement process is provided in the *What We Heard Summary*[33] report. Several matters raised have influenced the recommendations made in this Interim Report. Of primary relevance is the diversity and extent of the fisheries undertaken in the Study Area and their importance to both the socio-economic and cultural character of coastal communities and the economy of Nova Scotia. Many participants, for example, stressed the importance of the extent and significance of the nearshore lobster fishery; others described the ecological relevance of the entire Scotian Shelf to the wellbeing and sustainability of fish stocks. Although the fishing industry has been and continues to accommodate changes in technology, conservation initiatives, and climate change, fishers are deeply concerned about the cumulative effects of displacement and loss of fishing areas due to the designation of marine protected areas, marine refuges, critical habitats for species at risk and aquaculture. OSW development is perceived as another undefined threat to their livelihood. Most fishers are not adamantly opposed to OSW development, but they are understandably concerned about potential impacts to their activities.

Raised consistently throughout the engagement process were questions pertaining to compensation for direct losses, e.g., temporary or permanent displacement from fishing grounds, and for indirect losses, e.g., additional steaming time and cost of travel around wind farms. Indigenous communities stressed the need for fair and equitable agreements referencing a preference for royalty agreements and Impact Benefit Agreements (IBAs) as possible means to address adverse impacts on Indigenous rights and resources. The Committee recognises the importance and complexity of the above, acknowledges that some of the issues are being examined in other jurisdictions, and commits to become better informed on the issues in the months ahead.

Other matters raised that have influenced recommendations in this Interim Report include concerns related to viewsheds and potential issues with sea ice.

Potential impacts to viewsheds are linked to the size and visibility of turbines from the shore, particularly from National and Provincial parks and from other coastal areas important to recreation and tourism. Several developers referenced the importance of obtaining a social licence and the practice adopted in several jurisdictions has been to establish a coastal buffer to address these issues.

Sea ice could be a concern to OSW developments in the Northumberland Strait and along the coasts of Cape Breton. Closely related is the relevance of climate change and the need, in response to the speed at

[32] Regional Assessment of Offshore Wind Development in Nova Scotia (iaac-aeic.gc.ca)
[33] 2023/2024 Engagement Program - What We Heard Summary (iaac-aeic.gc.ca)

which change is occurring, to adopt adaptive management approaches to the development of a new industry, such as OSW development.

Throughout the engagement undertaken, the validity of the data bases used has been questioned and various ecological, physical, and socio-economic information gaps identified.

The many matters raised during the engagement process have been documented. The above noted issues are pertinent to this Interim Report and have influenced the analyses and selection of the PFDAs and the Committee's preliminary recommendations.

5.0 Key Studies and Initiatives

5.1 Introduction

Several federal and provincial government departments and NSFAEE led or commissioned research related to identifying potential locations for OSW development in Atlantic Canada. The reports generated use much of the same data that are publicly available and being considered by the Committee. Each study has its own objectives and analytical approaches that influence the outputs and conclusions. There are also limitations associated with the data and methodology that need to be considered when interpreting the results. These studies represent an important body of work and have been considered in detail by the Committee. Each study is outlined below.

5.2 DFO Marine Spatial Planning Atlas[34]

As part of its Marine Spatial Planning Process, DFO has released and continues to update its Marine Spatial Planning Atlas (the 'Atlas'). The Atlas incorporates and illustrates several important physical, ecological, and socio-economic datasets that have been considered by the Committee and the other studies referenced below. The Committee used these data throughout the engagement process in the form of mapping products that helped characterize existing regional conditions in the Study Area.[35] This Atlas will continue to be updated over time by DFO and used by the Committee throughout the RA.

5.3 Value Mapping Nova Scotia's Offshore Wind Resources – Aegir Insights (2023)[36]

Aegir Insights (Aegir) is an international OSW consultancy based in Copenhagen. Aegir was retained by NRR to identify the relative cost of electricity that could be expected from various potential development locations and scenarios. To determine a Levelized Cost of Energy (LCoE)[37] from each area, the study first evaluated wind speed, water depth, distance to port and distance to grid connection. The

[34] Canada Marine Planning Atlas - Atlantic (dfo-mpo.gc.ca)
[35] Request for Feedback on Areas for Offshore Wind Development
[36] Value Mapping Nova Scotia's Offshore Wind Resources (2023)
[37] Measures lifetime costs of a project, including construction and operation, to understand the present value.

resulting map identified areas that were then analyzed against a series of physical, biological, social, and economic constraints including:

- Sea ice cover
- Surficial geology
- Identified protected areas
- Seabird density and coastal colonies
- Commercial fishing activity
- Marine mammal sightings
- Vessel density and shipping traffic

Once these constraints were applied, the initial results were revised to identify areas that appeared to have less interaction or conflict with OSW development. The areas considered to have lower development costs and lower levels of interactions included portions of the Sydney Bight area of Cape Breton, Canso Bank, Middle Bank, Eastern Shore and Sable Island Bank.

The study acknowledges several limitations in the data used and recommends that the results be used to inform additional work.

5.4 Preliminary Considerations Analysis of Offshore Wind Energy in Atlantic Canada-CanmetENERGY (2023)[38]

CanmetEnergy (Canmet) is a federal laboratory within NRCan dedicated to research and development of the energy sector. Canmet conducted a study that incorporated various publicly available spatial data into a GIS system including:

- Vessel density (2019) and vessel traffic routes
- Subsea cables and pipelines
- Aquaculture locations
- Port locations
- Commercial fishing effort (2005-2019)
- Inshore lobster landings for the Maritimes Region
- Surficial geology
- Sea ice cover
- Water depth
- Wind speed
- Identified ecological areas (e.g., protected and important areas)
- Risk to marine birds based on data from Canadian Wildlife Service

[38] GEOSCAN Search Results: Fastlink (nrcan.gc.ca)

A multi-criteria methodology (weighted overlay) was then used to rank the data inputs and identify areas suitable for OSW development. To facilitate the analysis, six scenarios were developed and modeled to visualize areas that could represent OSW candidate sites. Each scenario was assigned different influence scores for the physical, ecological, or socio-economic inputs to show how the results could change based on the weighting assigned to the individual constraints. For example, a scenario that assigned a higher value to ecological data layers would yield different results from a scenario that assigned a higher value to socio-economic data layers. The results for each individual scenario were shown, as well as results that considered combinations of individual scenarios.

Areas noted to have more favourable scores for OSW development across multiple scenarios were portions of Sable Island Bank, Middle Bank, Banquereau Bank, Northumberland Strait, Browns Bank and George's Bank. The results were presented as candidate OSW development areas to be examined in future work.

5.5 DFO Marxan with Zones Analysis for Potential Locations of Low-Conflict with Offshore Wind Development[39]

As part of its ongoing Marine Spatial Planning process, DFO has also initiated a constraints analysis exercise to identify prospective areas for OSW with less risk of conflict (Nagel et al., 2024, in review). At the time of writing, the DFO Technical Report is being prepared for publication, and it is anticipated that it will be published shortly after the release of this Interim Report. The data used as part of this analysis include those that have been used in both the Canmet and Aegir Insights studies and consider a range of ecological and socioeconomic components to find suitable areas for OSW while avoiding overlap with certain features. That includes, but is not limited to:

- Identified protected and ecologically sensitive areas
- Critical and important habitat for species at risk
- Seabird density and predictive foraging ranges for some species
- Surficial geology
- Distance to shore
- Water depth
- Sea Ice
- Wind speed
- Commercial fishing data[40]
- Vessel density and traffic routes
- Existing oil and gas activity
- Aquaculture leases

[39] Not publicly available at time of posting the Interim Report.
[40] As commercial fishing data in this analysis were not privacy screened, a larger database of commercial fisheries landings was used by DFO in this specific analysis.

The modeling employs an analysis using Marxan with Zones[41] to identify areas that avoid conflict with identified features by developing 18 scenarios that focus on certain objectives. For example, if the objective is to find areas that avoid existing shipping lanes, protected areas, and areas of the highest fishing activity, the analysis will develop multiple solutions for each scenario to find areas that meet those specified avoidance criteria.[42]

Different single-sector (a scenario focussing on one component) and multi-sector, (a scenario considering more than one component) scenarios were simulated by the model (for fixed and floating OSW) to specify a target for constraint avoidance, e.g., avoiding 90% of commercial fishing activity, or excluding legally protected areas. The model then produced multiple solutions (100 runs) for each scenario and identified areas that most often met the target criteria. The summed solution, showing the areas selected most frequently, is what the Committee considered the most appropriate for its analysis. The Committee focused on the baseline multi-sector scenario results, as these incorporated both ecological and socio-economic considerations, as opposed to any of the single sector scenarios. Based on these results, the areas identified as potentially being suitable for fixed-bottom OSW development with less potential for conflict included areas around the Northumberland Strait, Sable Island Bank, Middle Bank, Sydney Bight, Canso Bank and Roseway Bank as well as some nearshore areas. The scenario for floating OSW development yielded similar results, but with some larger areas identified including a section of Middle Bank.

The study results offer another perspective on areas presenting less risk for conflict with ocean users or ecological features. Like other studies referenced in this section, the results are to be considered in future work. Data gaps and limitations have been noted including those related to, marine bird migration pathways and marine mammal movements.

5.6 Nova Scotia Fisheries Alliance for Energy Engagement Report (2024)[43]

The NSFAEE represents the majority of the seafood harvesting and processing sector in Nova Scotia and consulted with its membership to identify areas within the Study Area that could be considered “low conflict” for OSW development. Publicly available fisheries data were supplemented by input received from member organizations and fishers that incorporated local knowledge and fishing experience across multiple industry sectors and species. The report identified areas near Sydney Bight and the Laurentian Channel, Western/Emerald Bank, the edge of Browns Bank and some small portions of Middle and Banquereau Banks as areas of lower conflict between the various fisheries and potential OSW development.

[41] Marxan with Zones is based on the same principles as standard Marxan, but allows for multiple zones, zoning contributions, costs and the spatial relationships between zones to all be considered in spatial optimization. More information at: Marxan with Zones - Marxan (marxansolutions.org).
[42] This study did not assess the potential for co-location. Given that co-location may be possible between offshore wind energy and other activities (such as commercial fishing, vessel traffic, oil & gas, and aquaculture), this tool could be adapted in the future to develop co-location scenarios for use by regulators and decision makers.
[43] Nova Scotia Fisheries Alliance for Energy Engagement (iaac-aeic.gc.ca)

The Committee recognizes that this type of coordinated spatial analysis involving multiple fishing sectors is challenging and seldom undertaken and very much appreciates and commends all those involved for the constructive and helpful approach.

5.7 Identified Data Gaps and Limitations

Many of the above studies have disclosed data limitations and differing methodologies that need to be considered when interpreting results. For example, where there was a lack of data on a component, e.g., fishing activity, one model assumed that a lack of data indicated no conflict and assigned a high compatibility score for OSW development. These limitations may have led to certain areas being identified with which, based on feedback received during the engagement process, the Committee could not agree. The studies cannot be considered in isolation; the Committee has considered them as a group and has augmented this valuable body of research with the results of their own work.

Some of the more important data limitations identified in one or more of the studies are discussed further below.

5.7.1 Geology and Physical Environment

In its response to the Committee's request for information, NRCan[44] noted that there is currently limited information on the depth and thickness of sediments across portions of the Study Area and that the available information is derived from older studies.[45] These data are important to locate fixed-bottom structures that need to be installed into the seabed or located on and secured to the seabed. High resolution seabed mapping and subsurface sample data are required to define suitable development sites within the PFDAs.

5.7.2 Marine Mammals

It is difficult to map marine mammal information and data within the Study Area accurately, due largely to their transient nature and the methods used to help gather information. DFO maintains a marine mammal sightings database that includes data from multiple sources, including opportunistic observations from vessels and platforms and dedicated surveys. While there may be identified clusters of sightings in certain offshore areas, this may simply reflect the presence of more vessels (with wildlife observers) in some areas compared to others or during certain times of the year, e.g., many surveys take place in the summer months. In contrast, for areas where fewer sightings are recorded, it cannot be assumed that no marine mammals are present; it may be that there was simply a lower survey effort in that area. Therefore, the existing data need to be interpreted with a level of caution, and additional site-specific studies over all seasons need to be designed and conducted to gather more information.

In addition to visual survey data, passive acoustic monitoring stations deployed offshore can detect the vocalizations of marine mammals and offer the advantage of year-round, or near year-round, monitoring.

[44] Response to Request for Advice - Natural Resources Canada (iaac-aeic.gc.ca)
[45] Staal, P. & Fader, G. B. J., *Sediment Thickness Study of the eastern Canadian Continental Shelf*, 1987.

However, there are still challenges associated with identifying specific species of mammals and their exact location from a recording station based on detection range and the timing of the animal's vocalization.

5.7.3 Marine and Migratory Birds, Bats, and Insects

One major source of information on the distribution of marine bird species is the East Coast Seabirds at Sea Atlas.[46] Similar to marine mammals, the data are derived from observers on board vessels or platforms. The absence of observations in certain areas does not necessarily mean that species aren't present, as there may not be enough vessels and observers passing through the region to gather statistically relevant data. Other data products, such as those based on satellite/GPS tagging, provide more detail on some species' movements; the sample sizes of such studies are usually small and additional work needs to be undertaken to validate the findings.

While there are more data and information on the presence of marine bird species in coastal areas, there is a lack of understanding of their ranges and, in some cases, foraging areas and migratory paths. The Canadian Wildlife Service is working to fill some of these data gaps and is developing models to predict the potential risk of collision or displacement of sea birds associated with OSW structures. This work is not anticipated to be completed within the RA timeline, but the work will help inform future OSW project design and project-specific Impact Assessments.

There have been recorded sightings of both the Monarch Butterfly and bat species on Sable Island, but little is known of their abundance, frequency, or movement patterns within the Study Area.

5.7.4 Commercial Fisheries

While DFO provides information related to commercial fish landings from the Eastern Canadian Commercial Fishing Dataset, limitations to consider when using these data include:

- Only logbook data from 2012 up to and including the 2021 season are included, meaning that there is a 2-to-3-year lag before recent trends in the fishery are identified. This also applies to other datasets, such as the VMS recordings of vessel activity;
- The data do not include vessels under 35 ft that may be fishing in the region, which means that all data are not being fully captured;
- DFO enforces privacy screening measures on commercial fisheries data to protect harvesters. If there are less than 5 fisher IDs, licence IDs or vessel IDs, the spatial information for those landings is screened out and is not shown on the data published on Open Data and the MSP Atlas; and
- Some data layers lack temporal precision. Landings are shown in a series of 10 km^2 grid cells over a 10-year period, but there is neither an indication of what years certain landings have occurred, nor at what times of year. Grid cells may show high concentrations of landings for a specific

[46] Atlas of Seabirds at Sea in Eastern Canada 2006 - 2020 - Open Government Portal

species, but it may be that this occurred in a 3 to 4-year period only, or in the event of a seasonal fishery such as snow crab, only during a specific time within a year.

These gaps were identified by many fisheries representatives with whom the Committee engaged, and why direct engagement with the fishing industry has been, and will continue to be, critical for the integrity of the RA and all future processes associated with OSW development. The importance of ongoing and timely participation with the fishing industry is acknowledged and promoted by the Committee (Recommendation 3 detailed in Section 7.0).

6.0 Potential Future OSW Development Areas

6.1 Introduction

The intent of the Interim Report was indicated in Section 1.0. Principally, the report aims to:

- Identify potential future areas within the Study Area that the Committee considers possible locations for OSW development;
- Provide information that will facilitate further engagement as part of the RA process; and
- Inform governments as they continue to assess the potential for OSW development in the Study Area.

This section of the report identifies the potential future development areas (PFDAs) based on the Committee's interpretation of the information received to date. Should OSW development eventually take place in the region, there will inevitably be some level of interaction both with the marine environment and with those who use that environment. The Committee has heard this multiple times throughout the engagement process. The RA is the first effort to identify, and thereby avoid or reduce some of the possible interactions on a large scale. Clearly, there is more work to be done and more to learn before any site within a PFDA becomes permitted for an OSW farm. The actual location or configuration of PFDA areas may change over time, either within the timeframe of the Committee's mandate, or at some point beyond the issuance of the Committee's Final Report. Nova Scotia is likely 7 to 10 years away from an operating OSW farm. The principles of adaptive management, i.e., improving management practices over time based on changes in the marine environment and the availability of new data, should be adopted.

Section 2.0 identified some of the general assumptions used by the Committee in undertaking the RA. Given the timeline assumed for the development cycle (see Figure 2) and the likely advancement in technologies for fixed turbines, up to 70 m water depth was used to suggest potential fixed turbine developments and beyond 70 m for floating turbines. The Committee recognizes that the pace of technological development, the individual preferences of developers and the potential impacts each technology might present to a given location will all influence the proposed development strategy for a future project.

6.2 Identified PFDAs

In total, six PFDAs have been identified by the Committee. While each PFDA exhibits its own site-specific characteristics, the following general considerations apply to all:

- The Committee recommends that no OSW activity take place within 25 km from shore at this time. This is intended to reduce the potential for interactions with fisheries, particularly the inshore lobster fishery, marine shipping traffic, bird colonies and migratory bird species. In addition, the Committee is acknowledging the concerns expressed by many relating to visual aesthetics and the protection of viewsheds.
- PFDAs have been selected with reference to NRCan's description of geological conditions and information included in several of the reports mentioned in Section 5.0 (Aegir, 2022; Canmet, 2024). Further site-specific geological investigations are required to validate these selections and to refine specific areas within a PFDA where development could occur. Some of the information gaps related to ecological conditions have been identified in the studies referenced in Section 5.0, others from government departments and academic papers. The baseline conditions within each PFDA require additional characterization. The Committee will continue to evaluate the gaps in the next phase of its work through discussions with the Advisory Groups and further engagement.

Figure 3 identifies the location of the PFDAs which are described in more detail in the following sections.

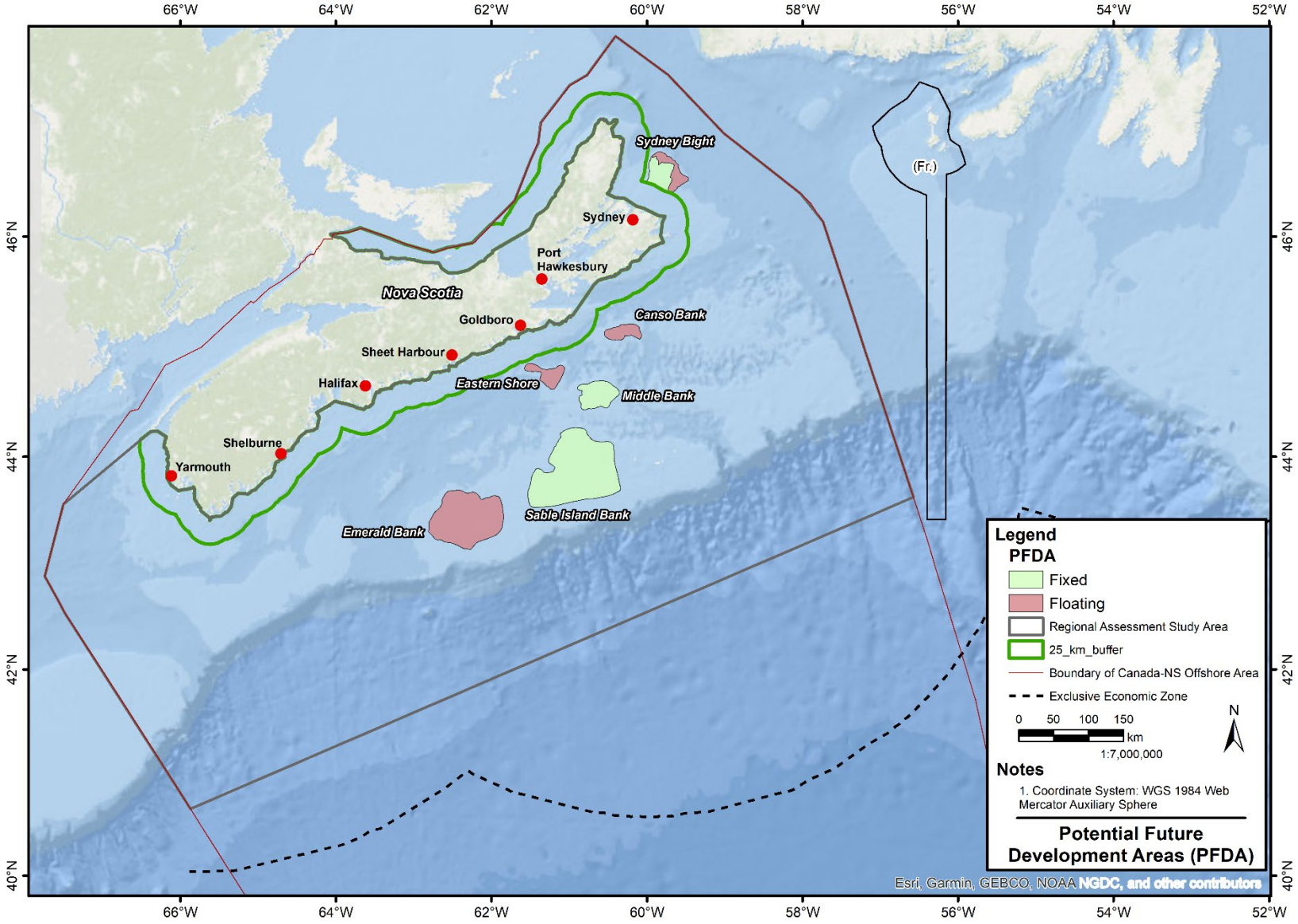

Figure 3 – Potential Future Development Areas

6.2.1 Sydney Bight

This PFDA is approximately 2,150 km^2 in size and offers potential for both fixed and floating foundations as defined by the 50-70 m and 70-100 m depth contours. Figures 4 to 6 show the location of the PFDA and key surrounding features. Table 1 provides a justification for the identification and preliminary delineation of the PFDA and identifies uncertainties that should be addressed by subsequent investigation.

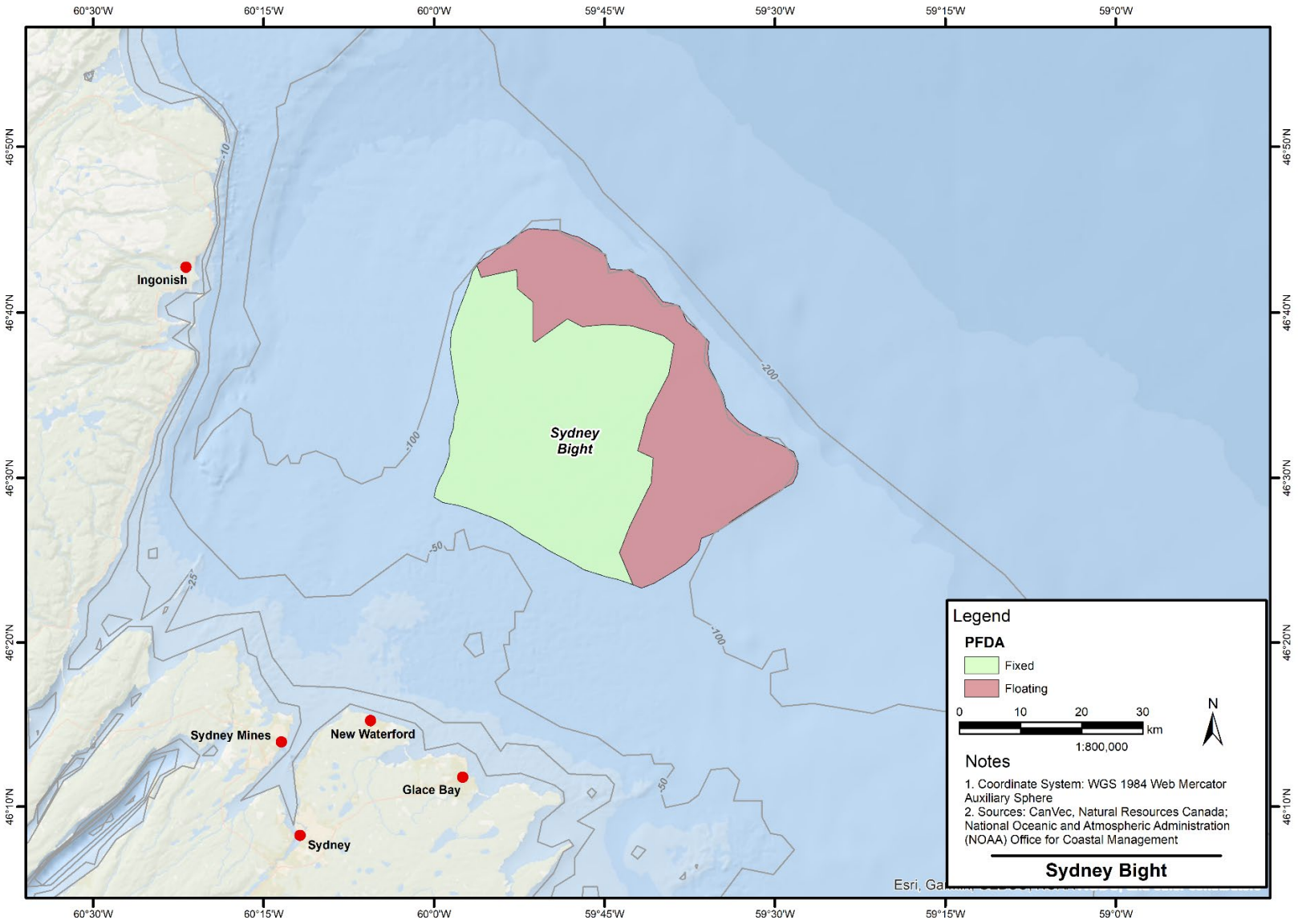

Figure 4: Sydney Bight PFDA Location

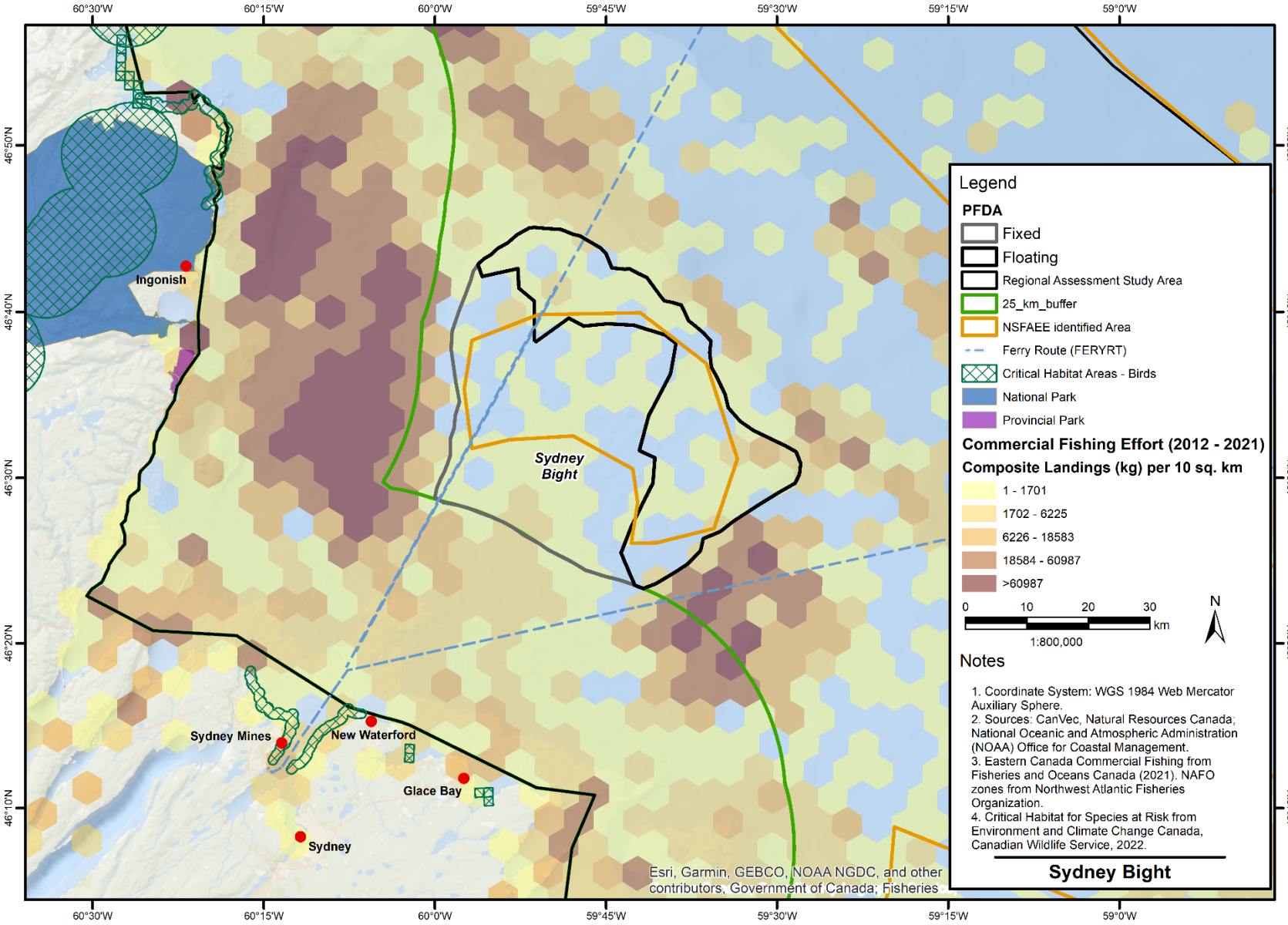

Figure 5: Sydney Bight PFDA and Surrounding Features

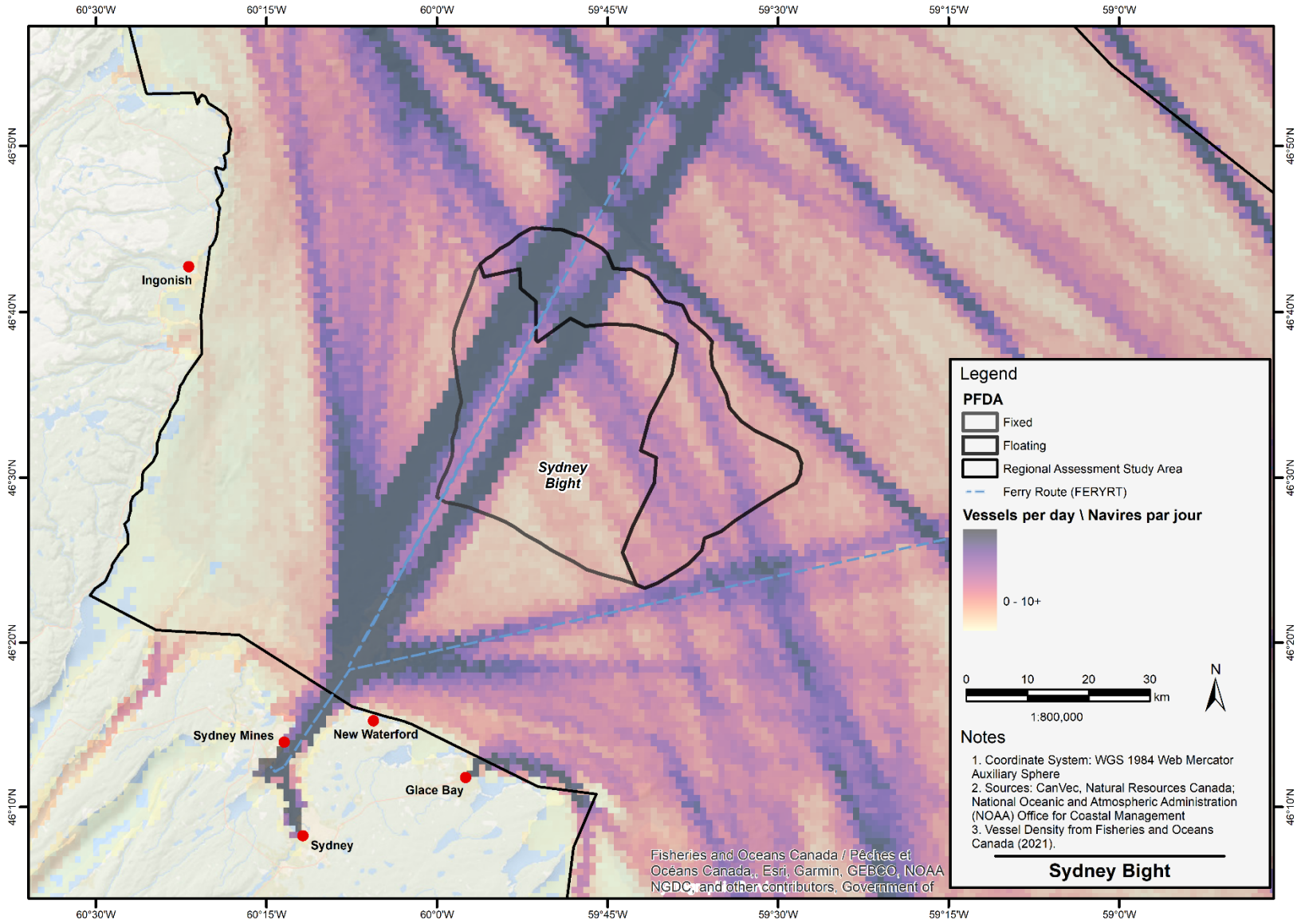

Figure 6: Sydney Bight PFDA and Vessel Density (2019)

Table 1: Summary of Information for Sydney Bight PFDA

Category	Justification	Considerations
Commercial Fishery	• Designed to avoid identified crab fishing zones in the Sydney Area. • Begins at the 50 m depth contour to avoid active lobster fishing grounds (Red Grounds) identified by local fishers. • Portion of the PFDA was identified by the NSFAEE as being of relatively low conflict.	• Other fisheries, e.g., Atlantic Halibut, that exist within the PFDA will need to be considered.
Ecological Sensitivity	• Not currently within a legislated protected area such as an MPA. • No identified Critical Habitat, pursuant to the *Species at Risk Act*, are within the boundaries of this PFDA.	• Located within a migration route for marine mammals (including species at risk) that travel to and from the Gulf of St. Lawrence. • Coastal Areas near Sydney, but outside of the PFDA, have been identified as important for marine bird species (Migratory Bird Sanctuary, Important Bird Area, seabird colonies). • Critical Habitat has been identified for Bank Swallow in Sydney Harbour and for Piping Plover along coastal areas near Sydney. • Other shorebird species may migrate in and out of the area during certain times of the year. An Atlantic Puffin colony has been identified near the coast and individuals may forage in the area. Other species that could be in the area include gannets, murres and gulls. • PFDA occurs within an identified SBA for sea pen based on species distribution modelling. OSW development is not precluded in these areas; however, mitigative measures to protect the ecological values may be imposed. • Partially overlaps with the Western Sydney Bight and St. Anns Bank EBSAs;[47] OSW development is not precluded in these areas; however, mitigative measures to protect the ecological values may be imposed.

[47] Hastings, et al. *Ecologically and biologically significant areas in the Atlantic coastal region of Nova Scotia,* 2014 King et al., *Offshore Ecologically and Biologically Significant Areas in the Scotian Shelf Bioregion*, 2016

Category	Justification	Considerations
Physical Conditions and Human Use	• Located close to the port facilities in Sydney Harbour (~40 km) to and grid connections. • Provides opportunity for fixed bottom structures (50-70 m water depth) and floating bottom structures (70-100 m water depth). • Identified by industry as a potential area of interest. • The geology appears favorable for both fixed-bottom and floating turbine foundations.[48] • Approximately 29 km away from Cape Smokey Provincial Park and Cape Breton Highlands National Park, avoiding potential impacts on viewscapes.	• Marine Traffic routes cross through the northwest portion of the PFDA (including the Marine Atlantic ferry between North Sydney and Port aux Basques, Newfoundland). The addition of OSW activity within these traffic routes would need to be evaluated. • A known sea ice presence will have implications for design, operations, and project cost. • Fishing occurs between this PFDA and the shoreline: project components such as cable routes and service vessels may interact with fisheries.

In summary, the Sydney Bight PFDA provides an opportunity for fixed or floating development. It is relatively close to a potential grid connection and to a port that could provide the support and infrastructure required for development. The PFDA is configured to avoid important lobster fishing areas based on feedback from local harvesters and important fishing areas for snow crab based on commercial fishing data from DFO. This area has been identified by industry stakeholders as a potential area of interest and has been identified by various studies as a candidate area for further consideration of OSW (Aegir, 2022; Canmet, 2024) (see Section 5.0). Some representatives of the fishing industry have also identified a portion of this area as “low conflict,” input which the Committee has taken into account. Considerations requiring further investigation include the presence of sea ice, the ability to co-exist with marine traffic (in particular ferry routes), other fisheries occurring in the area, and the potential that marine mammals (including species at risk) move through the area.

6.2.2 Canso Bank

The Canso Bank PFDA is approximately 870 km^2 in size and situated in water depths ranging from 60-90 m, predominantly in the 60-70 m range making it a favourable location for fixed or floating turbine foundations. Figures 7 to 9 show the location of the PFDA and surrounding features. Table 2 provides a justification for the identification of the PFDA and identifies uncertainties that should be addressed by subsequent investigation.

[48] CanmetENERGY, *Preliminary Considerations Analysis of Offshore Wind Energy in Atlantic Canada,* 2024

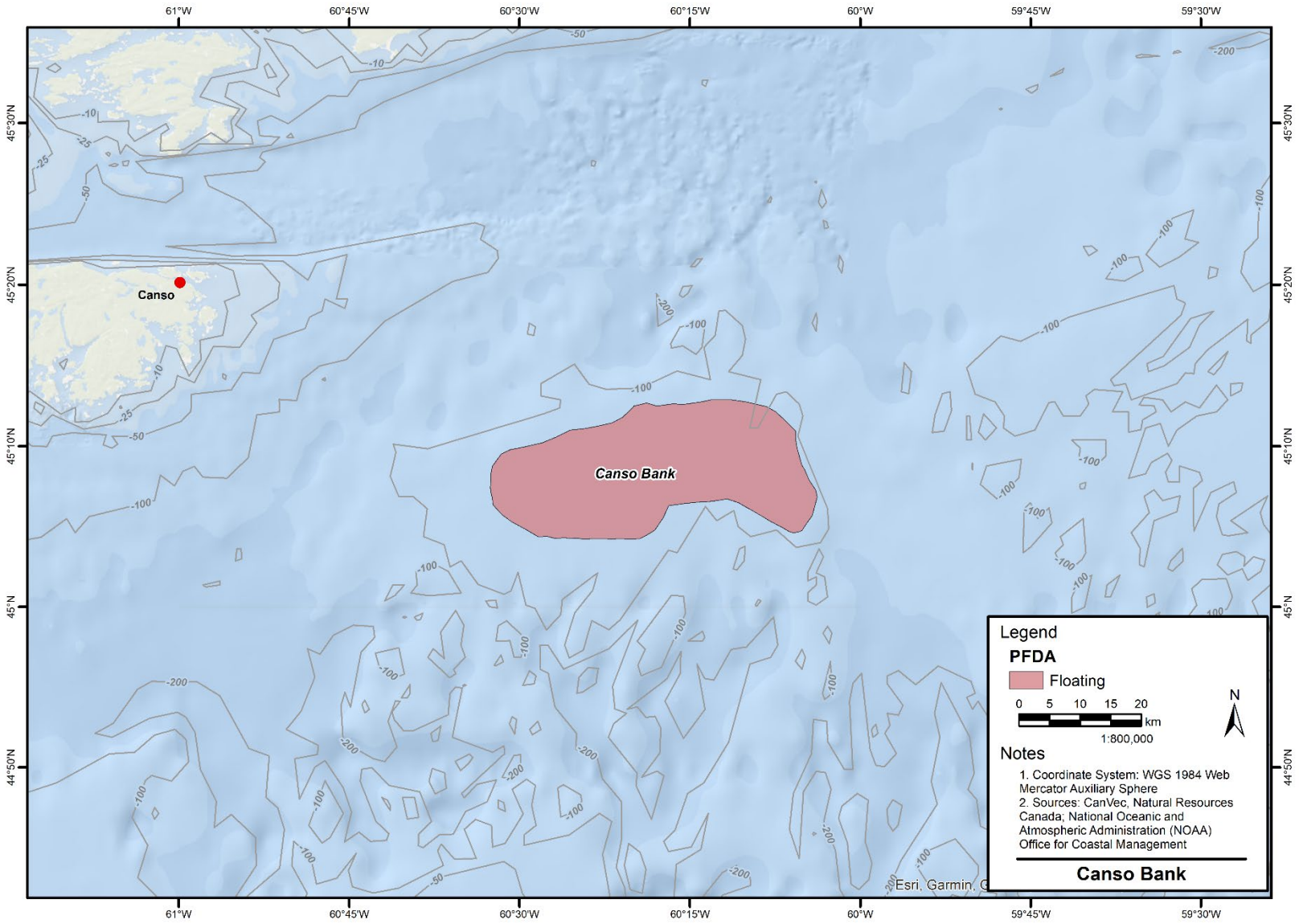

Figure 7: Canso Bank PFDA Location

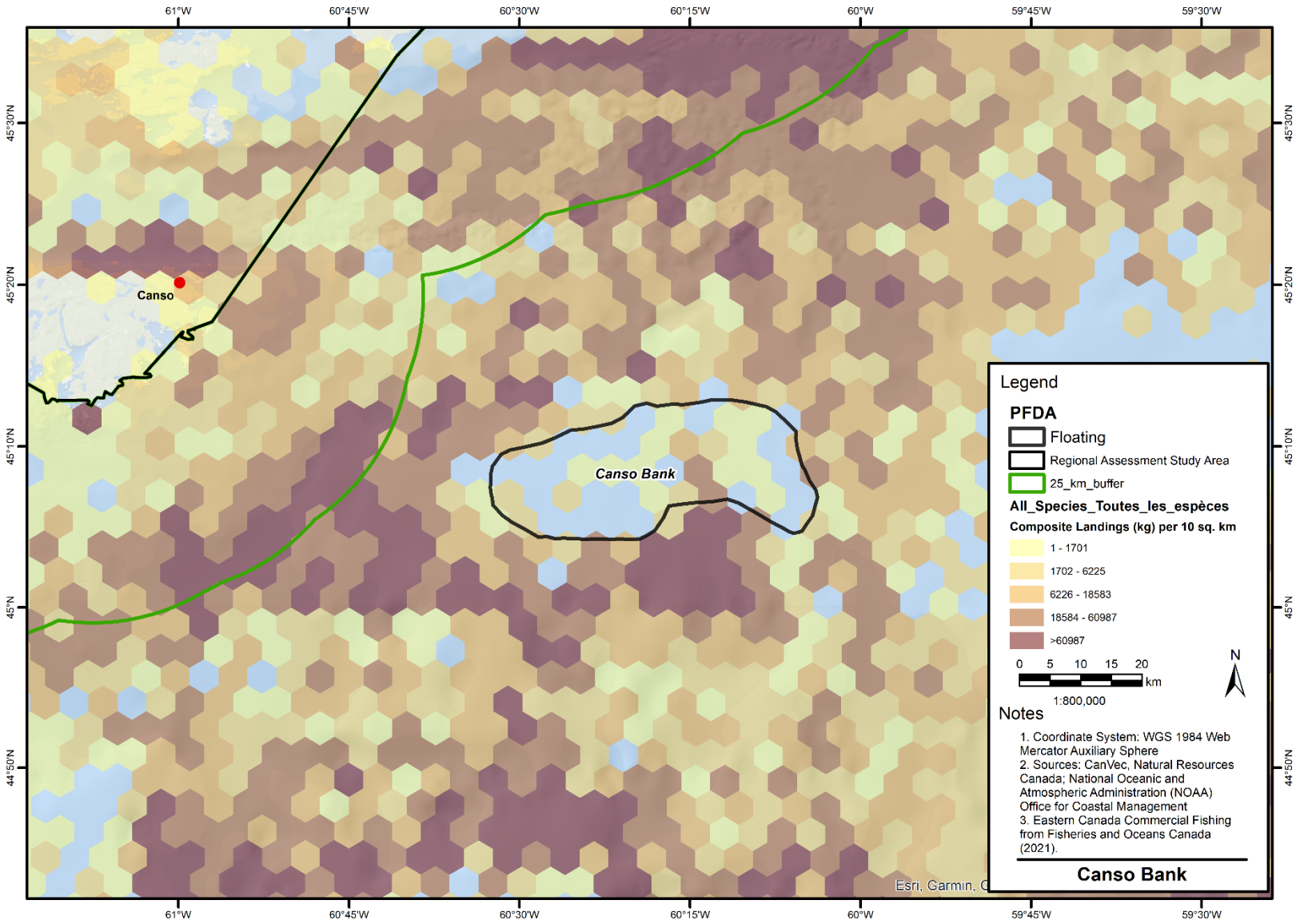

Figure 8: Canso Bank PFDA and Surrounding Features

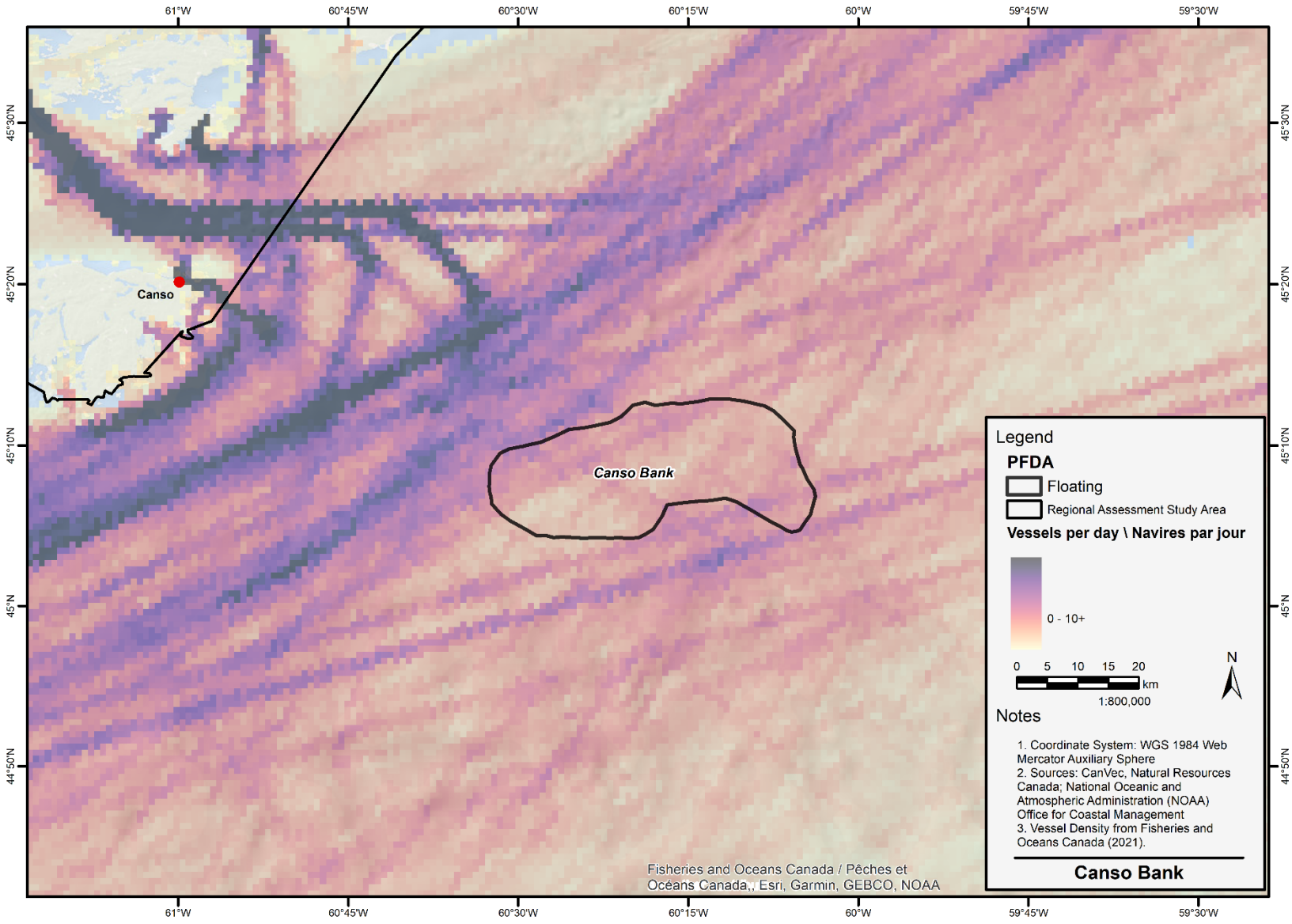

Figure 9: Canso Bank PFDA and Vessel Density (2019)

Table 2: Summary of Information for Canso Bank PFDA

Category	Justification	Considerations
Commercial Fishery	• This PFDA is configured near the top of the bank to avoid direct interference with DFO identified fishing activities.	• There are areas of heavy fishing activity around Canso Bank. • Concern has been expressed by fishers that the tops of the Canso Bank represent an important area as habitat for some species that could be negatively impacted by OSW development. • Fishers have indicated that fisheries for species like herring and tuna do occur over Canso Bank and would be affected by OSW development.
Ecological Sensitivity	• Not currently within a legislated protected area such as an MPA. • No identified Critical Habitat or SBA within the boundaries of the selected area. • No known marine bird or marine mammal migratory pathways.	• Occurs within the Canso Bank and Basin EBSA; OSW development is not precluded in these areas; however, mitigative measures to protect the ecological values may be imposed. however, there are no legal protections for EBSAs. • Based on data from the early 2000s, this area has high levels of invertebrate, fish, and larval aggregations and diversity.[49] • The area includes identified habitat for Northern Shrimp and Snow Crab, as well as sand lance and other groundfish. • There are high densities of some marine bird species recorded in this region during certain times of the year. These include petrels, kittiwakes, shearwaters, gulls, gannets, murres and fulmars.
Physical and Human Use Conditions	• Close to the shoreline with access to port services and a grid connection. • Identified by Canmet (2024) and Aegir (2022) as an area of potential low development cost and low conflict. • Not located within major shipping lanes. • Low potential for large scale ice presence.	• Not identified by industry stakeholders as an area of interest at this time. • Project components like export cable routes, vessel traffic, etc. could interact with fishing areas on the slopes of the bank.

In summary, the Canso Bank PFDA has water depths that may accommodate fixed or floating turbine foundations. This PFDA is situated to avoid the high level of fishing activity that occurs on the slopes of the Canso Bank. It is an area that has been identified as relatively low conflict in several studies. Considerations requiring further investigation include the possible nursery function for species that are harvested in adjacent areas.

[49] King et al., *Offshore Ecologically and Biologically Significant Areas in the Scotian Shelf Bioregion*, 2016

6.2.3 Middle Bank

The Middle Bank PFDA is approximately 1,800 km^2 in size and is situated in water depths ranging from 30-70 m. with most of the area in the 30-50 m depth range making it a favorable location for fixed structures. Figures 10 to 12 show the location of the PFDA and surrounding features. Table 3 provides a justification for the identification of the PFDA and identifies uncertainties that should be addressed by subsequent investigation.

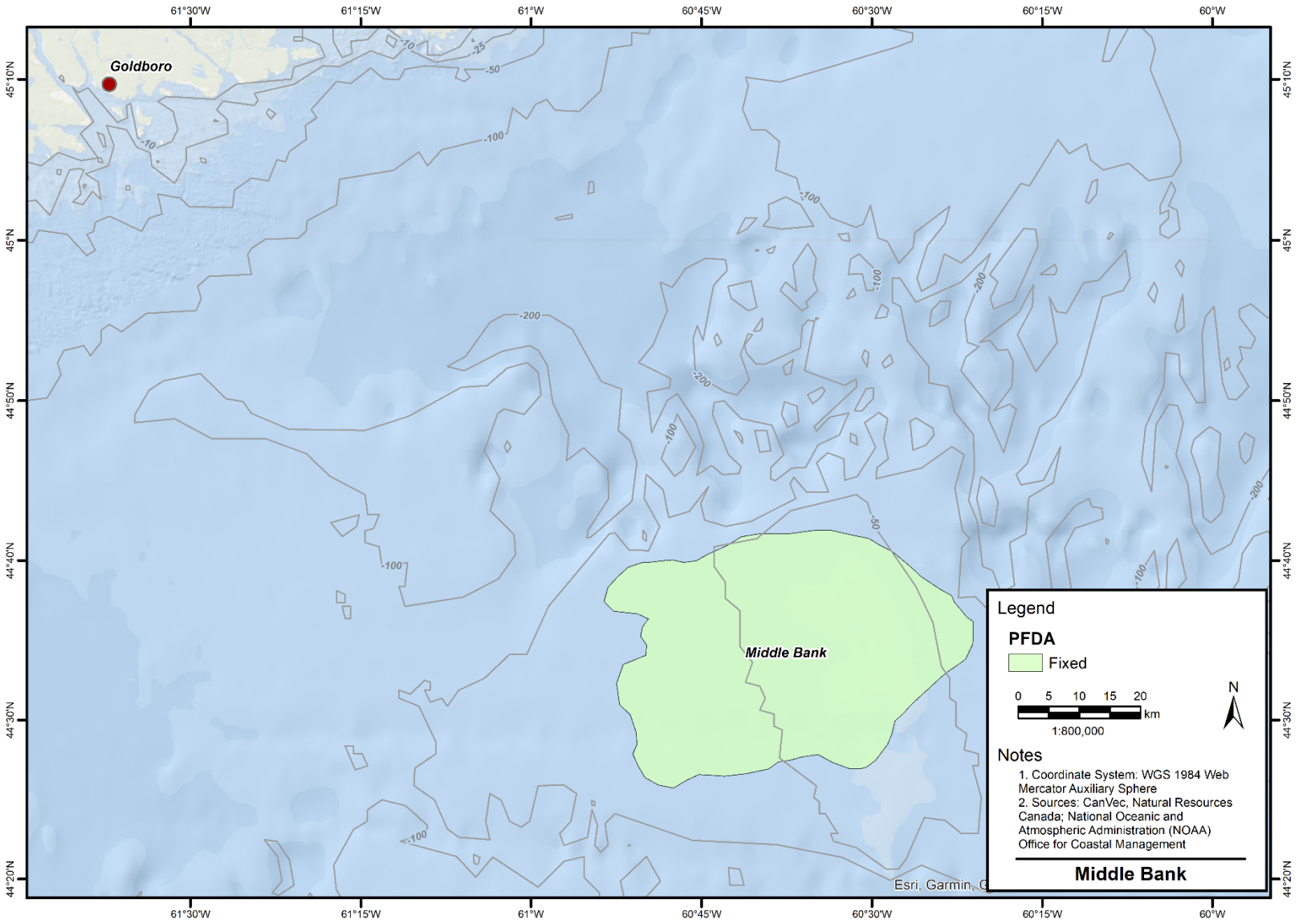

Figure 10: Middle Bank PFDA Location

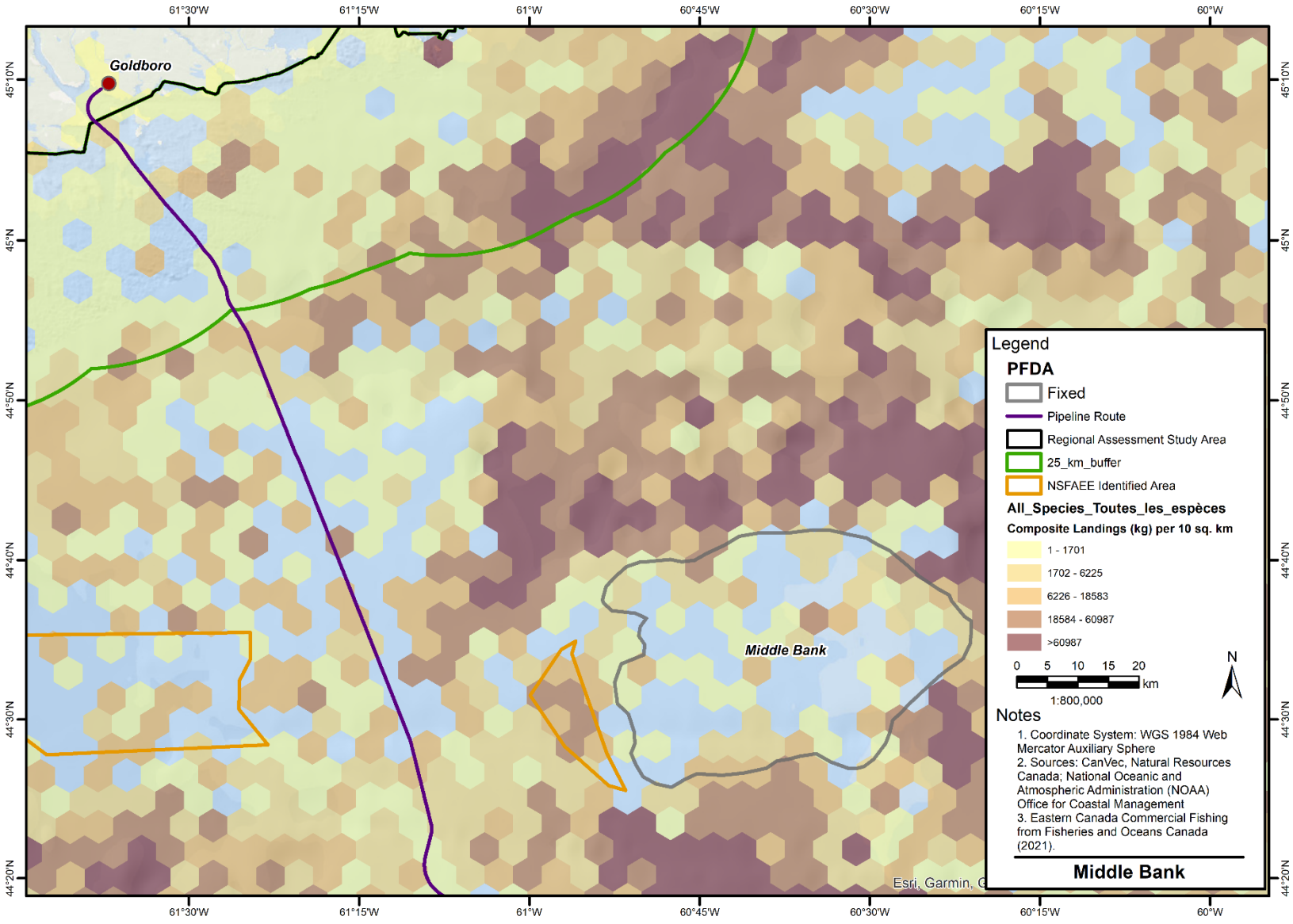

Figure 11: Middle Bank PFDA and Surrounding Features

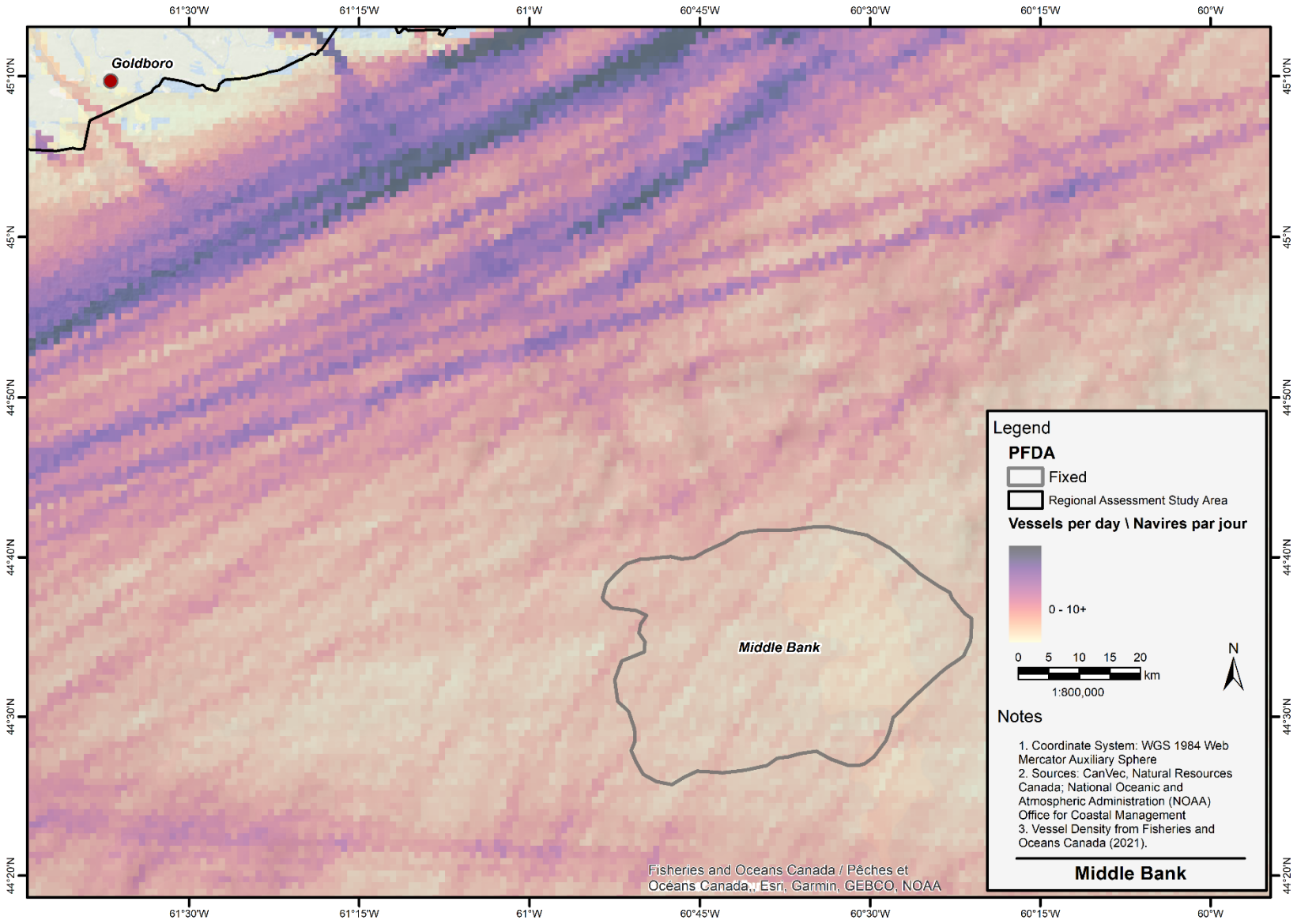

Figure 12: Middle Bank PFDA and Vessel Density (2019)

Table 3: Summary of Information for Middle Bank PFDA

Category	Justification	Considerations
Commercial Fishery	• This PFDA is configured to avoid the slopes of Middle Bank where fishers and commercial fishing data indicate a high level of activity for several species. • Distance from shore avoids the inshore fisheries and inshore fishing vessel traffic.	• Some fisheries may occur here in the future e.g., scallops and sea cucumber; the extent and precise location of these locations require further investigation.
Ecological Sensitivity	• Not within a legislated protected area such as an MPA. • No identified Critical Habitat or SBA within the boundaries of the selected area. • No known marine bird or marine mammal migratory pathways or Critical Habitat.	• Although not legally protected, the selected area occurs within the Middle Bank EBSA. OSW development is not precluded in these areas; however, mitigative measures to protect the ecological values may be imposed. • Identified as accommodating spawning and nursing areas for Atlantic cod and potentially for redfish, hake, yellowtail flounder. • The area noted for high invertebrate biomass and phytoplankton blooms.[50] • Marine bird species that have been identified as being present during certain times of the year include gulls, gannets, shearwaters, petrels, kittiwakes, fulmars and dovekie.
Physical and Human Use Conditions	• Proximity to existing pipeline infrastructure and as an existing corridor for cable routing and connection to grid. • Identified by several industry stakeholders as an area of interest. • Not within identified major shipping lanes. • Low potential for presence of sea ice. • Distance from shore reduces potential visual effects.	• Power cable route(s), vessel traffic and/or indirect effects could interact with active fishing on the slopes.

In summary, the Middle Bank PFDA has water depths and geology that permit fixed turbine development. It has been configured to avoid the slopes of the bank where high levels of fishing activity occur. Its proximity to the existing pipeline corridor (from previous oil and gas activity) offers a potential route for a cable to shore and access to a grid connection. The area has consistently been identified in studies (Aegir, 2022; Canmet, 2024; Nagel et al., 2024, in review) and by industry stakeholders as an area of interest. Considerations requiring further investigation include future fishing activity on top of the Bank.

6.2.4 Sable Island Bank

The Sable Island Bank PFDA is approximately 9,995 km^2 in size and is situated in water depths ranging between 20-70 m making it suitable for fixed structures. A portion of this area overlaps with the

[50] King et al., *Offshore Ecologically and Biologically Significant Areas in the Scotian Shelf Bioregion*, 2016

Western/Emerald Bank Conservation Area. Figures 13 to 15 show the location of the PFDA and surrounding features. Table 4 provides a justification for the identification of the Sable Island Bank PFDA and identifies uncertainties that should be addressed by subsequent investigation.

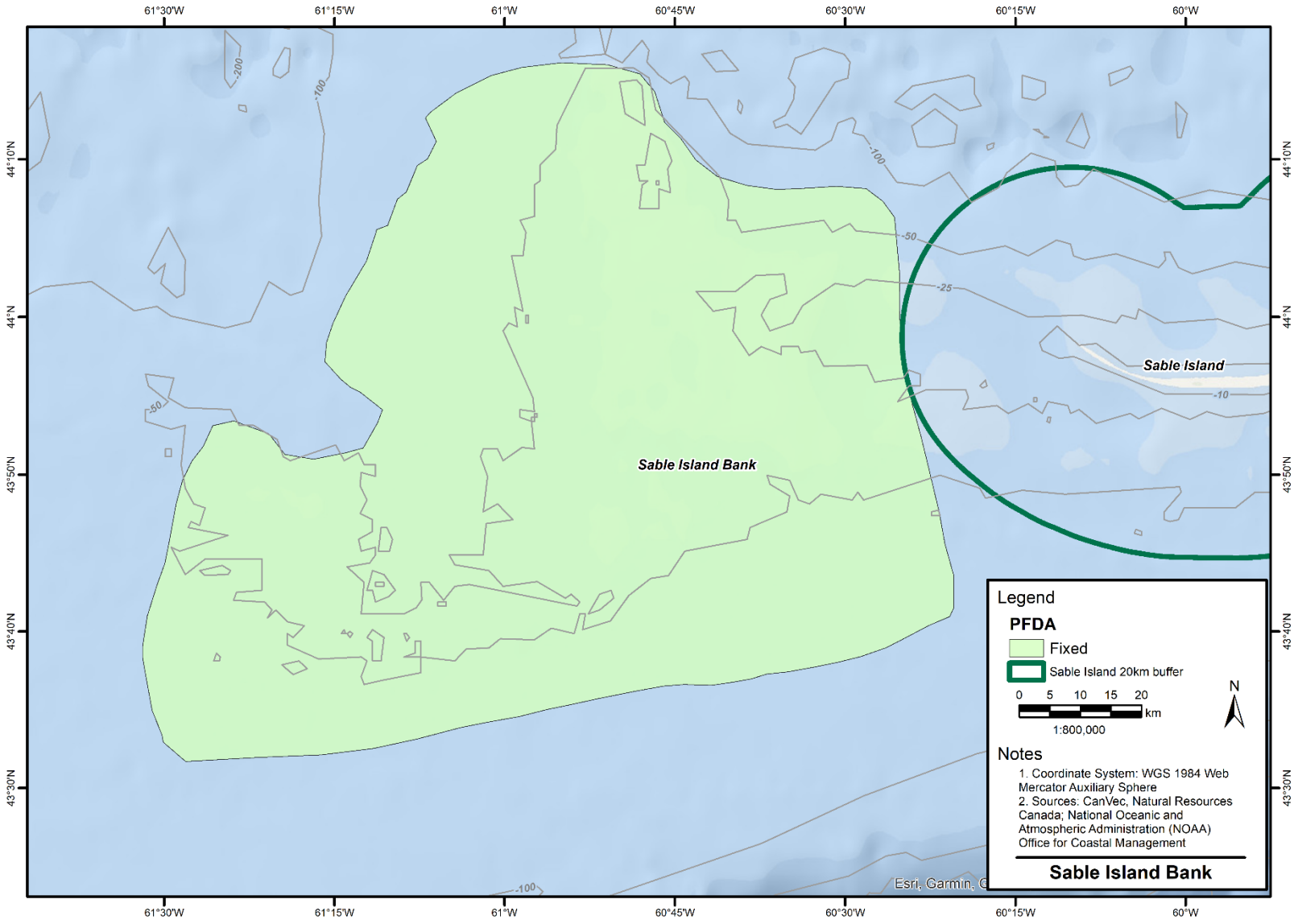

Figure 13: Sable Island Bank PFDA Location

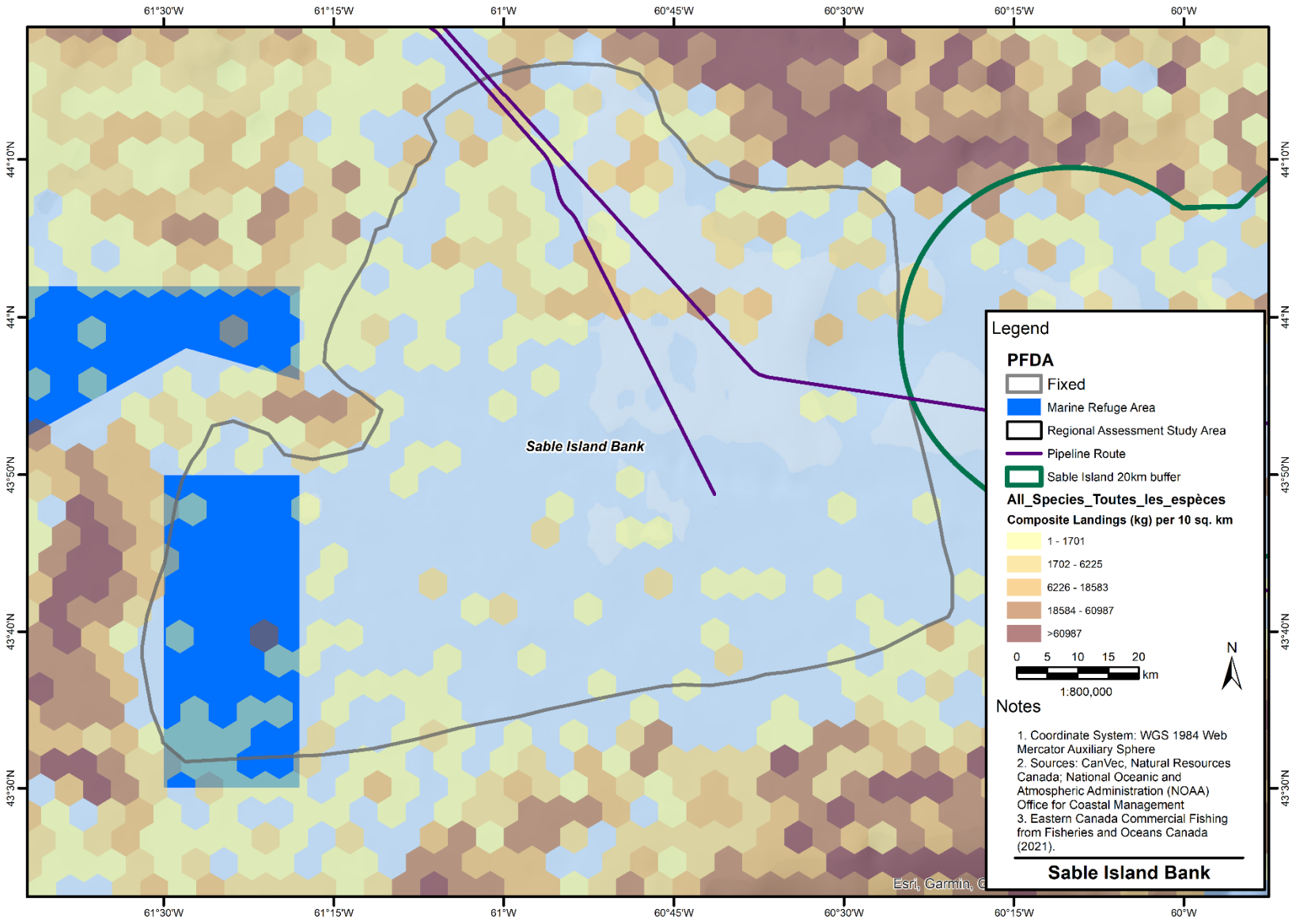

Figure 14: Sable Island Bank PFDA and Surrounding Features

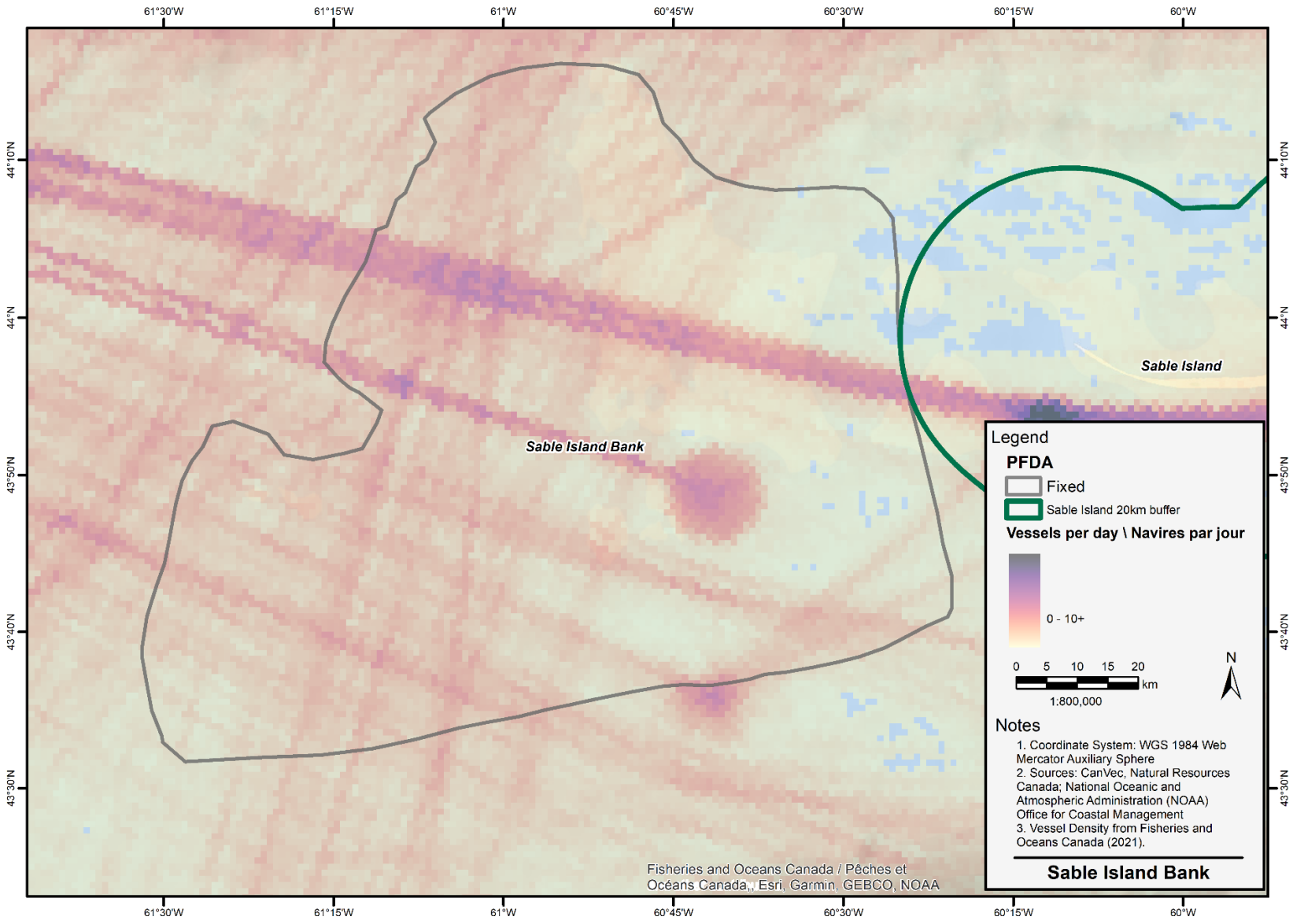

Figure 15. Sable Island PFDA with Vessel Density (2019)

Table 4: Summary of Information for Sable Island Bank

Category	Justification	Uncertainties/Considerations
Commercial Fishery	• This PFDA is configured to avoid slopes of the Sable Island Bank where fishers and commercial fishing data indicate fishing activity is high. • Distance from shore avoids inshore fisheries and the increased marine activity closer to shore.	• Some fishing does occur on the top portions of Sable Island Bank, e.g., scallop and sea cucumber, and potential fisheries e.g., Quahog, could occur in the future. • Potential for interaction with some fishing gear types e.g., pelagic longlines.
Ecological Sensitivity	• Located a minimum of 20 km away from Sable Island to reduce the potential for interactions with marine bird species occupying and/or foraging from the Island. • Distance from shore reduces interactions with coastal bird species. • No known marine mammal migratory pathways or Critical Habitat. • Not within a legally protected area such as an MPA.	• A portion of the area identified falls within the Western/Emerald Banks Conservation Area, an area designated as a Marine Refuge under the *Fisheries Act.* OSW development could occur in a Marine Refuge, provided it does not compromise the conservations objectives. • A part of the area occurs within the Emerald-Western-Sable Island Bank Complex (identified as an important area for several groundfish species)[51] and Sable Island Shoals EBSA.[52] OSW development is not precluded in these areas; however, mitigative measures to protect the ecological values may be imposed. • Located 20 km west of Sable Island National Park Reserve which is Migratory Bird Sanctuary and an ecologically significant area for mammal species, e.g., seals. Sable Island is also identified as Critical Habitat for Roseate Tern. • Marine bird species that have been identified as being present during certain times of the year include gulls, gannets, shearwaters, petrels, and kittiwakes. Other species may be present at times during the year.
Physical and Human Use Conditions	• Consistently identified by scientific studies and industry as a potential location for OSW development. • Proximity to existing pipeline infrastructure corridor for export cable route. • Large potential development area, which provides flexibility and opportunity to develop a larger project (potentially in phases). • No major shipping lanes within the area since oil and gas platforms are now decommissioned. • Low potential for presence of sea ice.	• Further from shoreline and potential port locations compared to other areas. This may be partially offset by the potential for development scale and the opportunity for shared infrastructure for substations/transmission cables and corridors. • Sable Island Bank surficial geology is dynamic, with sediment regimes drifting and changing regularly. • Power cable route(s) and vessel traffic could impact fishing on the slopes.

[51] King et al., *Offshore Ecologically and Biologically Significant Areas in the Scotian Shelf Bioregion*, 2016
[52] King et al., *Offshore Ecologically and Biologically Significant Areas in the Scotian Shelf Bioregion*, 2016

Category	Justification	Uncertainties/Considerations
	• Distance from shore reduces potential visual effects.	

In summary, the Sable Island Bank PFDA has water depths that support fixed turbine development. The PFDA has been configured to avoid the slopes of Sable Island Bank where high levels of fishing activity occur. The area is large, has favourable geology, offers access to existing pipeline infrastructure as a corridor for export cables, and could accommodate one or more large scale projects which could lead to the possibility of shared infrastructure. The distance from shore means relatively less conflict with other ocean users. A 20 km buffer has been maintained around Sable Island based on recommended setbacks from the Canadian Wildlife Service for Roseate Tern colonies, as well as to reduce interaction with other bird species that may forage from the island. Several government and industry studies (Aegir, 2022; Canmet, 2024; Nagel et al., 2024, in review) and industry participants have identified the PFDA as an area of interest.

Considerations requiring further investigation include seabed and sediment mobility along the bank, the presence of seabirds and marine mammals, especially on migration, and the level of fishing current or planned in the area. As noted above, a portion of the area falls within the Western/Emerald Banks Conservation Area which is designated as a Marine Refuge under the *Fisheries Act*[53] due to identified important spawning and nursing areas for haddock and other groundfish (DFO, 2019). The prohibited activities within this area include all commercial and recreational fisheries activities that use bottom-contact gear or that are known to interact with groundfish. While OSW development is not precluded within this area, the Committee accepts that development in this section of the PFDA would require a determination that the conservation objectives that gave rise to the designations would not be substantially compromised by the co-location of a wind farm. Some fisheries industry feedback supports this type of proposed co-location as limiting the cumulative effect of multiple initiatives that already restrict or reduce their fishing areas (various government designations and industrial activities). As with the PFDA proposed in the next section, the possibility of co-locating an OSW development within an area with a protection designation requires a better understanding net habitat benefit(s), potential impact(s) to existing conservation objectives, and the value of placing OSW development in an area already restricted for fishing activity.

6.2.5 Emerald Bank

The Emerald Bank PFDA is approximately 6,570 km^2 in area with water depths ranging from 70-100 m making it suitable primarily for floating turbines. Like the portion of the Sable Bank PFDA discussed above, this PFDA is located within the Western/Emerald Bank Conservation Area. Figures 16 to 18 show the location of the PFDA and surrounding features. Table 5 provides a justification for the identification

[53] Fisheries Act (justice.gc.ca)

of the Emerald Bank PFDA and identifies uncertainties that should be addressed by subsequent investigation.

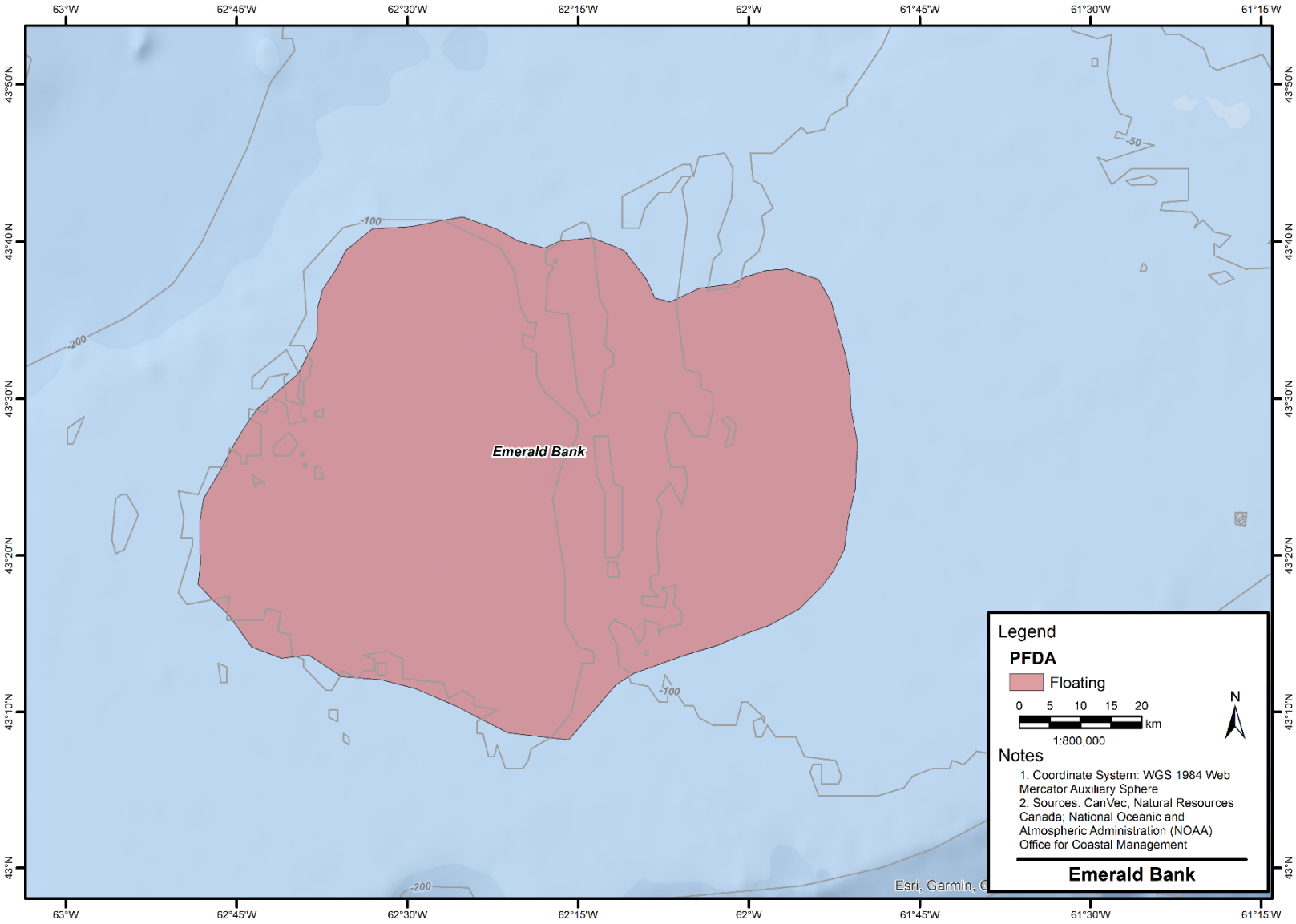

Figure 16: Emerald Bank PFDA Location

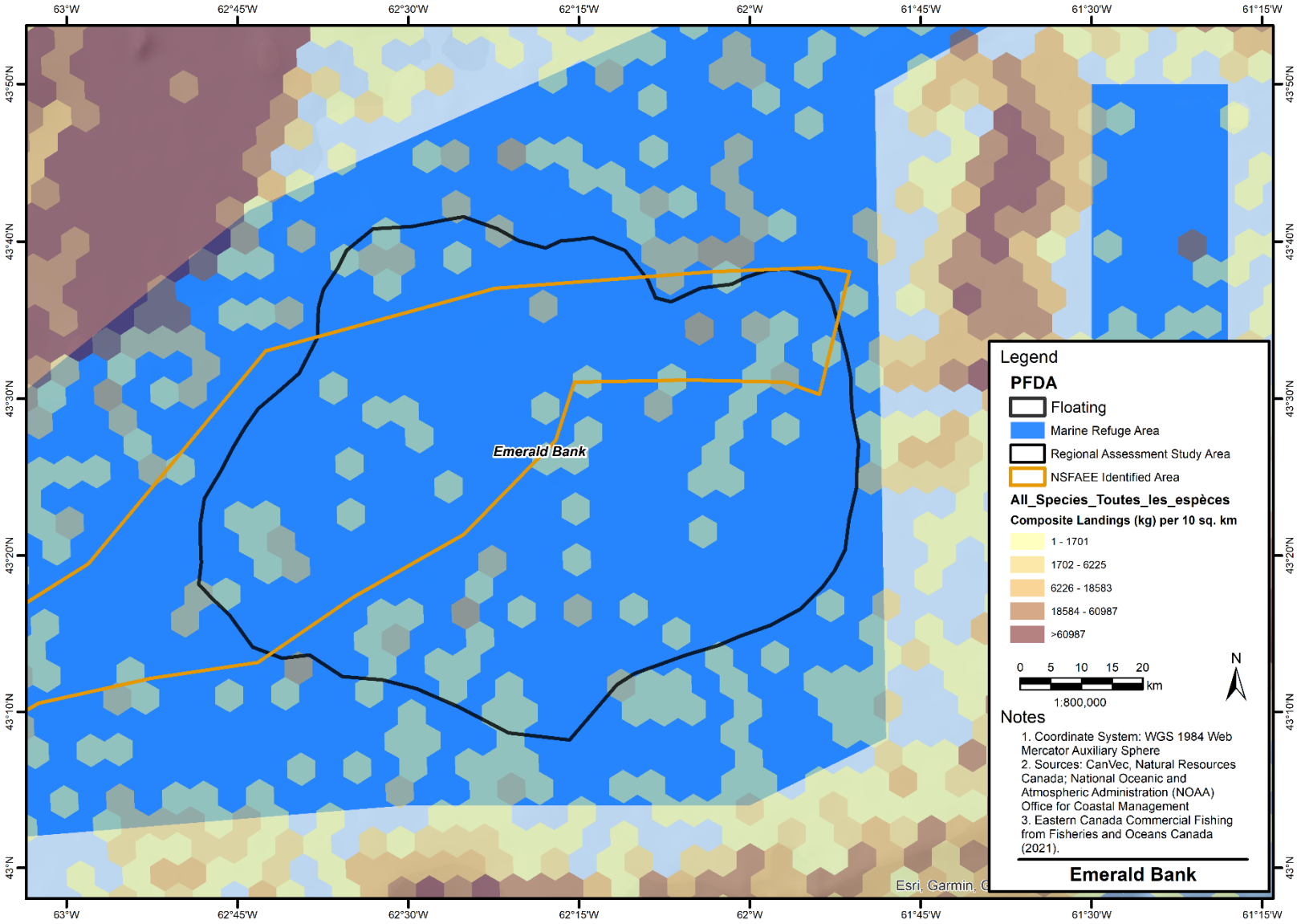

Figure 17: Emerald Bank PFDA and Surrounding Features

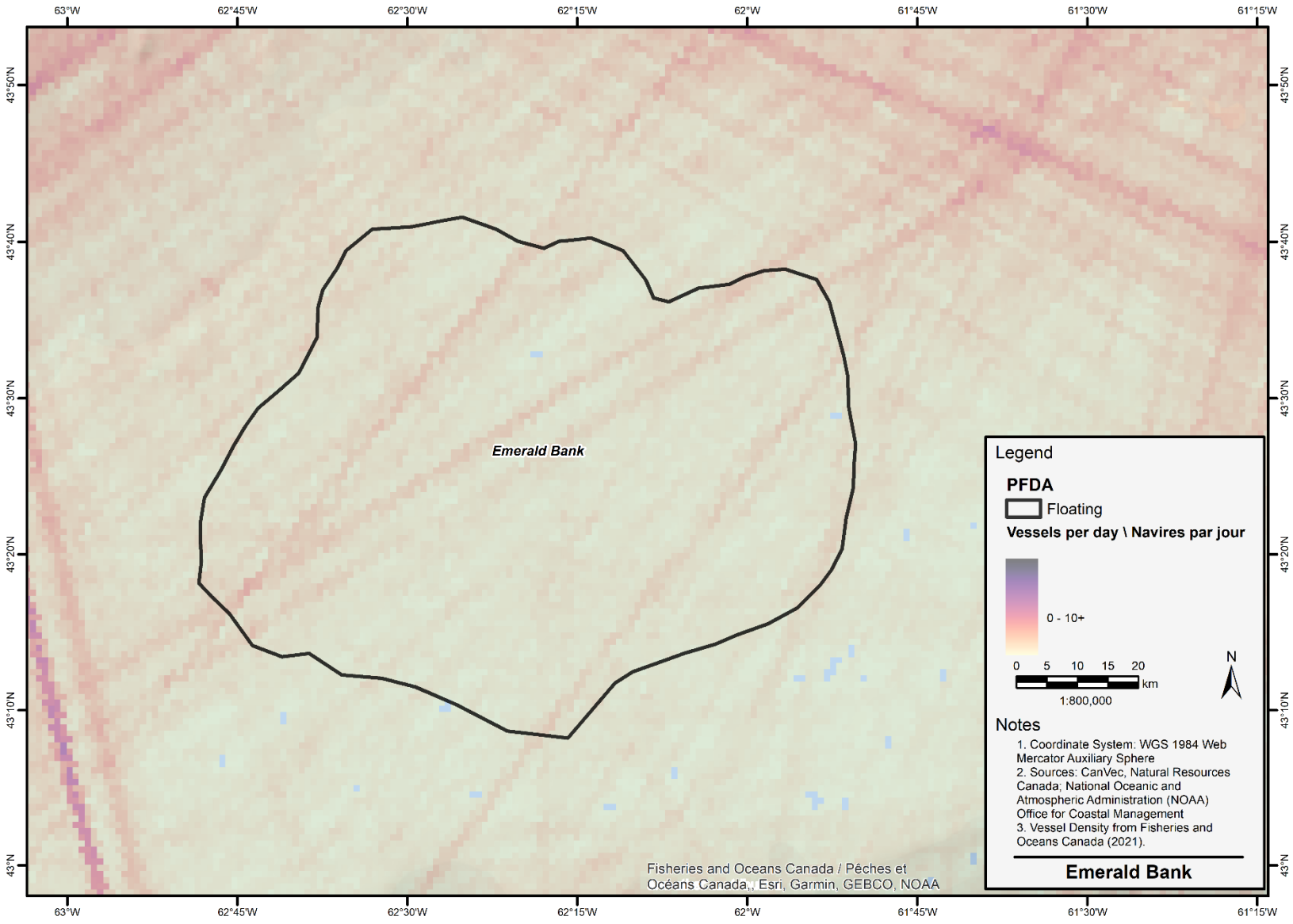

Figure 18: Emerald Bank PFDA with Vessel Density (2019)

Table 5: Summary of Information for Emerald Bank

Category	Justification	Uncertainties/Considerations
Commercial Fishery	• Avoids higher density fishing areas, as bottom-contact fishing is currently not permitted. • Further from shore so avoids inshore fisheries and inshore fishing vessel traffic. • A portion of this area was identified by the commercial fishing industry as being an area of low conflict that would reduce overall cumulative loss of space to fishing industry.	
Ecological Sensitivity	• No known marine birds or mammal migratory pathways or Critical Habitat. • No identified Important Habitat or SBA within the boundaries of this PFDA.	• Area falls within the Western/Emerald Bank Conservation Area, an area designated as a Marine Refuge under the *Fisheries Act.* OSW development could occur in a Marine Refuge, provided it does not compromise the conservations objectives. • The PFDA occurs within the Emerald-Western-Sable Island Bank Complex EBSA. OSW development is not precluded in this area; however, mitigative measures to protect the ecological values may be imposed. • Region has been noted as an area used by Northern gannets for foraging. Gulls, Shearwaters and petrels are known to be present during portions of the year, i.e., spring, summer, and fall.
Physical and Human Use Conditions	• Not identified within major shipping lanes. • Low potential for large scale ice presence. • Distance from shore reduces potential visual effects.	• Further from shoreline (~140 km to port of Halifax) and other potential port locations compared to other areas. Could impact cost of development, potentially offset by the opportunity for scale. • Currently not identified as an area of interest by developers. The area may have been discounted by industry due to its status as a Marine Refuge. • Power cable route, vessel traffic and/or indirect effects could interact with active fishing grounds.

In summary, the Emerald Bank PFDA has water depths that support floating turbine development. Given its similar size and relative proximity to the Sable Island Bank PFDA, many of the potential benefits and considerations could be shared. Given its Marine Refuge designation, the comments related to the Emerald Bank portion of the Sable Island Bank PFDA (Section 6.2.4) also apply here.

6.2.6 Eastern Shore Area

The Eastern Shore PFDA is approximately 985 km^2 in area with water depths ranging from 70-150 m. Most water depths fall within the range of 80-100 m making the area primarily suitable for floating turbines. Figures 19 to 21 show the location of the PFDA and surrounding features. Table 6 provides a justification for the identification of the Eastern Shore PFDA and identifies uncertainties that should be addressed by subsequent investigation.

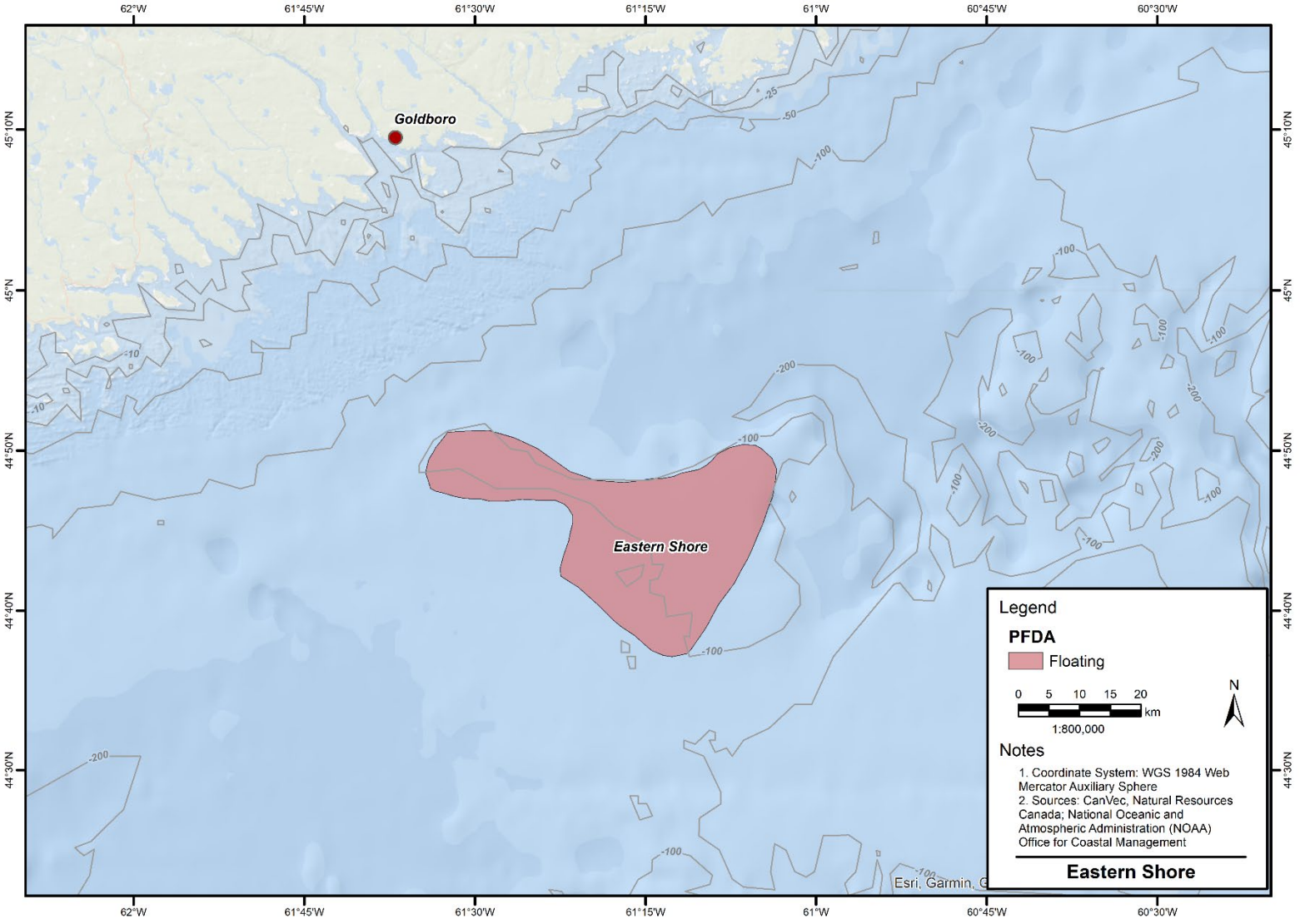

Figure 19: Eastern Shore PFDA Location

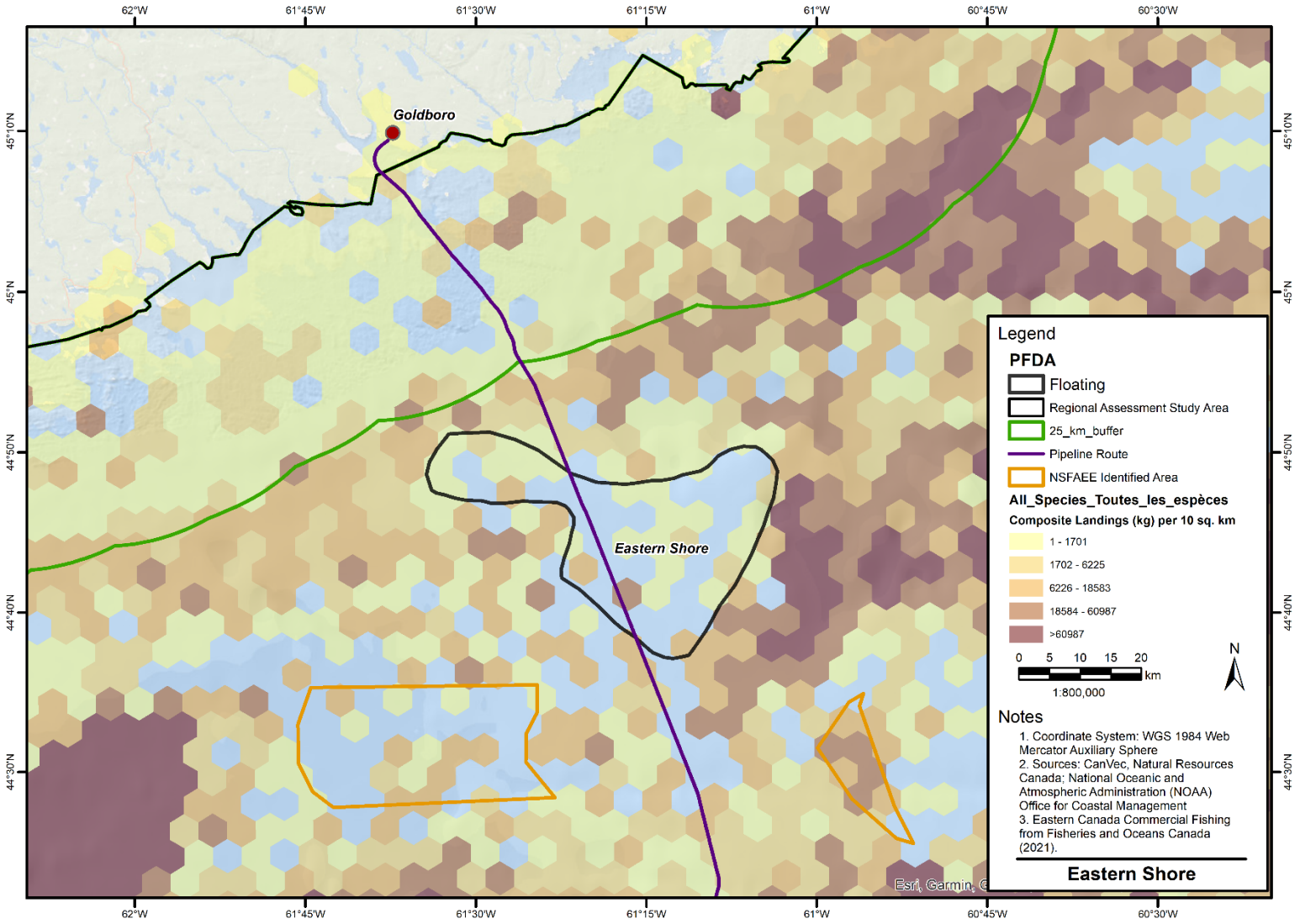

Figure 20: Eastern Shore PFDA and Surrounding Features

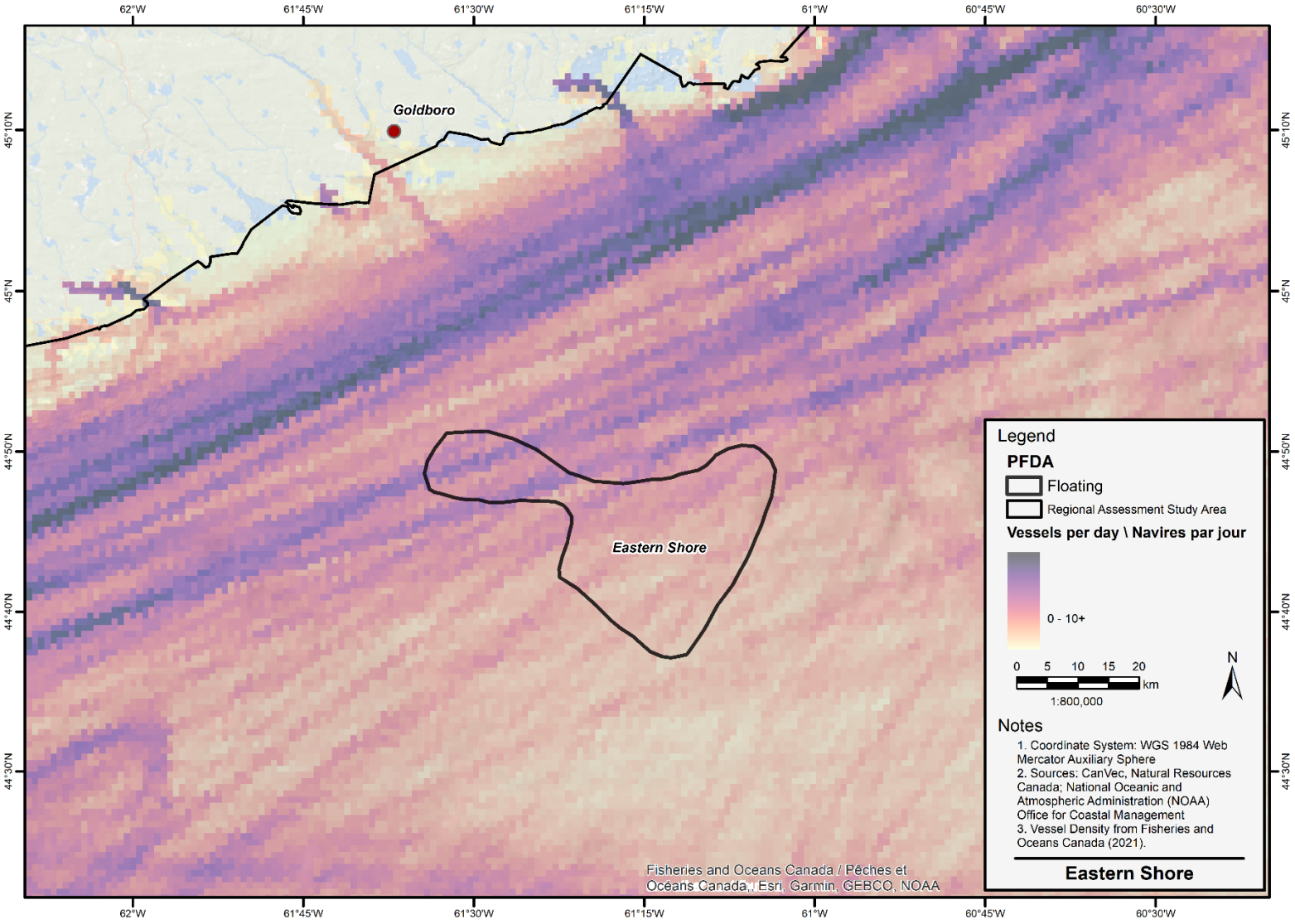

Figure 21: Eastern Shore PFDA with Vessel Density (2019)

Table 6: Summary of Information for Eastern Shore

Category	Justification	Uncertainties/Considerations
Commercial Fishery	• Designed to avoid higher density fishing activity.	• Outside of the 25 km buffer from the shoreline but likely to involve interaction with fishing vessels. • Fishing industry has expressed concern that this area is valuable to harvesters for a number of species and that there could be interaction with some harvesting activities.
Ecological Sensitivity	• No known marine bird or mammal migratory pathways. • No identified Critical Habitat or SBA within the boundaries of the PFDA. • Not currently within a legislated protected area such as an MPA.	• Closer to shore so there is higher potential for interaction with coastal bird colonies and the foraging activities of the species these colonies support.
Physical and Human Use Conditions	• Close to shoreline (~30 km) with opportunity to connect to port services and grid. • Proximity to existing pipeline infrastructure for potential power corridor to connect to mainland. • Low potential for sea ice presence. • Has been identified as an area of interest by industry stakeholders.	• Proximity to shore increases potential for visual impacts. • Some commercial shipping traffic travels through the area. • Power cable route and vessel traffic could interact with active fishing on the slopes.

In summary, the Eastern Shore PDFA has water depths that could support floating development. The area was designed to avoid other areas that DFO has identified as comprising higher-density fishing activities. There are no known marine bird or marine mammal migratory pathways, nor critical habitat or significant benthic areas within the PFDA. The proximity of the Eastern Shore PFDA to an existing pipeline right-of-way provides an established corridor to shore and to a grid connection. The PFDA is also close to port infrastructure and has been identified as an area of interest by industry.

6.2.7 Summary of PFDAs

For all PFDAs outlined above, uncertainties exist regarding the adequacy of the fisheries data available to the Committee. Most of those data are based upon official reports of fish harvesting, but it is not always clear if localities that are not included in such data nonetheless play an important role in the support of a fishery in other locations. Examples of such a role would be spawning, juvenile foraging and/or nursery areas. Such information, if it exists, may well be held by individuals in the fishery. It is important that any such information, based upon tangible evidence, be made available to assist in future assessments of potential OSW suitability for each of the PDFAs. Considerations requiring further investigation also

include potential impacts on commercial vessel traffic, foraging coastal seabird populations and the fishery.

7.0 Additional Committee Recommendations

As detailed in the preceding sections, the Committee has received input from many groups and individuals, all of which will continue to be considered throughout the next phase of the RA process. This input has also informed the Committee's decision to advance the following early recommendations in this Interim Report rather than waiting to include them in the Final Report.

Recommendation 1: Nova Scotia Offshore Wind Collaborative Research Initiative

Based on the Committee's work to date, several important research and data gaps have emerged. These gaps present challenges to any assessment of the potential consequences of OSW development in Nova Scotia. Most notably, knowledge of the offshore ecosystem is fragmented, derived largely from disconnected monitoring and research programs conducted by separate federal agencies, universities, and NGOs. The fundamental questions that arise are:

- How can the cumulative research efforts related to OSW be effectively coordinated and enhanced?
- Which data gaps have the greatest need to be addressed?
- How can the expertise and knowledge found in governments, fishers, Indigenous communities, academia, and relevant private sectors best be mobilized?
- How can the available funding opportunities be leveraged to the maximum advantage?
- How will data be collected and disseminated to ensure compatibility with end users' systems and foster open-source accountability and reporting?

The fundamental issue is one of governance, and in the Committee's view a requirement for a structure that can effectively and transparently manage the process will, to a large extent, determine the level of public, stakeholder, and rightsholder confidence in Nova Scotia's anticipated venture into this new industry.

The Committee recognizes the challenges inherent in this task, not least of which relate to the distinct mandates of government agencies that may be difficult to reconcile in a coordinated effort. Fortunately, there are competent NGOs, such as Net Zero Atlantic,[54] that are spearheading and/or managing important work related to the potential advancement of the industry. However, even during the Committee's limited tenure it has seen multiple initiatives either underway or contemplated that would benefit from a more integrated approach to establishing and executing the OSW research agenda.

The development of the Nova Scotia OSW industry is still very much in the formative development phase. There is time to consider and address this important issue. With the array of knowledge, skills,

[54] Net Zero Atlantic (netzeroatlantic.ca)

and technologies available in Nova Scotia at government agencies, universities, NGOs, communities, and technology companies, the many questions about potential environmental effects, including cumulative effects, of OSW could be addressed better here than almost anywhere in the world.

The Fundy Environmental Studies Committee (1977-1984), established to provide the foundation of knowledge about tidal power issues in the Bay of Fundy, may provide a useful precedent. That program included a coordinated research strategy supported by adequate core funding, which was carried out over a limited time frame before decisions for specific project funding were to be made. The Committee has also taken note of some of the relevant existing research frameworks such as the highly regarded Canadian Environmental Studies Research Fund (ESRF)[55] and the Scottish government's Marine Renewable Energy Program (ScotMER).[56] These are useful reference points, but don't reflect the kind of governance model required to meet the modern Canadian context for an OSW industry. The Committee's view is that the required structure must include representation from Indigenous communities and fisheries in both the planning and execution stages.

The Committee recommends that a representative steering committee be struck to form the Nova Scotia OSW Collaborative Research Initiative (or equivalent). The steering committee would:

- Develop a governance structure to oversee, finance and launch this initiative; and
- Recruit experts and/or knowledge holders from all sectors, including government, academia, Indigenous groups, fishers, and other NGOs, to collaborate on a comprehensive research program.

Once the initiative is operational, the steering committee, with the support of the experts and researchers would:

- Identify the current, planned and required environmental and socio-economic research programs related to the potential development of Nova Scotia's OSW industry;
- Prioritize research and identify pathways to funding;
- Establish research timelines that where possible accommodate the expected timing of OSW development activity; and
- Use the collective output from this initiative in an interactive process to inform the regulatory approval process (including further research, data collection and the monitoring programs required) that will guide and support all future OSW development activities.

Recommendation 2: Governments refrain from exempting project-specific Impact Assessments for OSW projects until effects on the marine ecosystem and fishing industry are better understood

Throughout the Committee's engagement efforts many parties have raised concerns about the Ministerial discretion afforded under s.112(2) of the *Impact Assessment Act* to exempt proposed OSW

[55] ESRF | The Environmental Studies Research Fund (esrfunds.org)
[56] Science and research - Marine renewable energy - gov.scot (www.gov.scot)

development projects from completing project-specific Impact Assessments. The Committee does not believe that given the emerging state of the OSW industry in Canada, and the lengthy research agenda required to properly characterize biophysical and socio-economic impacts, that the RA process is any substitute for a detailed site-specific project assessment. The Committee therefore recommends against the exercise of the Minister's discretion for the foreseeable future.

Recommendation 3: Fisheries co-existence and compensation

The Committee has undertaken steps to better understand the current relationship between the fishery and the OSW industry in jurisdictions where there are operating wind farms, and the extent to which compensation is available where avoidance and mitigation fail to prevent a 'loss.' More needs to be done. Some of the important issues are:

- The extent of fishing, by species and gear type, currently permitted and being undertaken within operating wind farms;
- The type of exclusion zones or setbacks that limit fishing activities from either an entire OSW farm boundary or individual turbines within it;
- Whether there are established insurance markets to underwrite the risks associated with commercial fishing activities within OSW farms;
- Whether there are adequate search and rescue resources in place to respond to any incident involving a fisher within an OSW area;
- The type of exclusion zones generally established during the OSW construction phase, and the extent to which these persist into the operating phase for things like subsea cables connecting the wind farm to landfall;
- Whether, in the absence of being able to avoid or mitigate an impact that results in a financial loss to fishers, and the communities and services that they support, a compensation scheme is in place to respond;
- The types of compensable loss being supported, and the evidence required to support a claim; and
- The preferred funding mechanism to support any scheme for financial compensation.
- The Committee has both limited time and resources and has concluded that the parties best positioned to advance the conversation and required research should be leading the initiative. The Committee notes that the NSFAEE represents an important mechanism for soliciting broad fishing industry feedback in a coordinated way, and NSFAEE has expressed an interest in participating in this type of collaborative work effort.

The Committee recommends that a steering committee be immediately assembled including (but not necessarily limited to) a representative from the provincial and federal governments, the CNSOER, the commercial and Indigenous fishery and the Committee (or its designate) to:

- Develop and execute a scope of work that considers in detail the broad issue of 'Fisheries Co-existence and Compensation' with reference to the non-exclusive list of issues set out above; and
- Provide a progress report with the early findings of this initiative and how they inform an approach (or approaches) for the Nova Scotia OSW industry to the Committee by the end of August 2024, so that they may be considered as part of the Final Report.

Examples of fisheries co-existence, mitigation, and/or compensation strategies, plans, and studies from other jurisdictions provide valuable insights into this topic.[57] It is hoped that the above list of issues provides an initial basis from which to commence the initiative.

8.0 Next Steps

A second engagement program will be initiated in April/May/June 2024. It will include open house sessions in communities, meetings with government agencies and individual groups, continued engagement with Indigenous peoples and the involvement of the Advisory Groups. The broad objectives are to:

- Meet with as many participants and communities as possible;
- Seek expertise, input and advice from the Advisory Groups;
- Receive feedback on the Interim Report and PFDAs;
- Consider the potential impacts (positive and adverse, including cumulative effects) of OSW development with a focus on the PFDA locations;
- Gather input on mitigation measures and other approaches for eliminating, reducing, controlling, or offsetting potential adverse effects and creating and maximizing potential positive effects.

The proposed engagement sessions will be advertised on social media, local newspapers and radio and posted on the Registry.[58] Email invitations will be sent to the RA distribution list. Participants are encouraged to provide feedback at any time throughout the RA process via email (OffshoreWindNS-EolienneExtracotiereNE@iaac-aeic.gc.ca) or by using the public comment tool on the Registry.

A draft version of the Final Report will be posted to the Registry by end of September 2024 for a 60-day public comment period. The Committee will review and consider all comments in their final deliberations. The Final Report will be submitted to Ministers by the end of January 2025.

[57] BOEM, *Guidelines for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf*, 2022;
Bonsu et al., *Co-location of fisheries and offshore wind farms: Current practices and enabling conditions in the North Sea,* 2024;
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[58] Information Sessions (iaac-aeic.gc.ca)

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Appendices

Appendix A. Glossary Terms

Advisory Groups	A group of experts/knowledge holders who lend their skills, guidance, and knowledge to the Regional Assessment Committee related to Science and Community Knowledge, Indigenous Knowledge, and Fisheries.
Artificial Reef Effects	Introduced offshore wind turbine foundations and infrastructure providing substrates that become colonized or inhabited by communities of sessile or mobile species such as crustaceans, mollusks, and fish.
Buffer	A specified zone around a map feature or features, measured in units of distance or time.
Coastal/Inshore/ Nearshore Area	The area between the low tide shoreline and the point at which breakers (breaking waves) form.
Coexistence	Placement of multiple activities or uses within the same marine area, including safety zones where applicable.
Colocation	Two or more activities with overlapping footprints or occupying the same spatial footprint.
The Committee	A group of independent persons delegated to develop a Regional Assessment report summarizing the potential development locations and effects of offshore wind energy in Nova Scotia's offshore Study Area.
Compensation	Following avoidance and minimization measures for reducing negative impacts from development on other users of the marine space, such as the fishing industry, compensation may serve as a mitigation option to reduce the anticipated financial and environmental impacts that offshore wind development may have on the commercial and recreational fishing industries.
Conservation Area	Areas that safeguard biodiversity for present and future generations by reducing stresses from human activities. These areas also provide opportunities for people to connect with nature and include protected areas and other effective area-based conservation measures (OECMs).
Consultation	Consultation refers to the legal obligations of the Crown (Government) when Aboriginal interests (rights and title) may be adversely affected by a Crown decision. Consultation consists of information sharing between government and affected Indigenous Nations and seeks to resolve potential adverse impacts to Aboriginal interests.
Critical habitat	The habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species critical habitat in the recovery strategy or in an action plan for the species.
Engagement	Engagement aims to build relationships by exchanging information in the absence of legal consultation obligations. The purpose of engagement is to build trust and create meaningful relationships. This includes information sharing regarding regulations, policy, legislation and procedures.
Ecologically and Biologically Significant Area	Area within Canada's oceans that have been identified through formal scientific assessments as having special biological or ecological significance when compared with the surrounding marine ecosystem.

Environmental Impact Statement	Document prepared by proponent/developer that identifies and assesses the environmental effects of the project and the measures proposed to mitigate those effects.
Fisheries Area Closures	A marine area closed to fishing to protect coral and sponge concentrations in an area or provide indirect benefits for the species that use this habitat.
Gender-based Analysis Plus (GBA+)	A tool for assessing a proposed project's potential positive and negative impacts on people of different genders, identities and abilities.
Gigawatt (GW)	A unit of power equal to one billion watts or one thousand megawatts.
Indigenous Knowledge	For the purposes of impact assessment, generally, Indigenous knowledge is considered as a body of knowledge built up by a group of Indigenous peoples through generations of living in close contact with the land. While the term 'traditional knowledge' is often used, the Impact Assessment Act uses the term 'Indigenous knowledge' to recognize that the knowledge system evolves and is not set in the past, as the word 'traditional' may imply.
Important Bird Area	Places of international significance for the conservation of birds and biodiversity.
Levelized Cost of Energy	Measures lifetime costs divided by energy production.
Marine Protected Area	Areas established for the long-term, and managed through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.
Marine Refuge	Area-based fisheries closures under the federal *Fisheries Act* that contribute to the other ecosystem-based conservation measure (OECM) criteria and the conservation of biodiversity over the long-term.
Marine Spatial Planning	Process for managing ocean spaces to achieve ecological, economic, cultural and social objectives.
Megawatt (MW)	Standard measure of electric power generating capacity (e.g., 1,000 kilowatts (kW) or 1 million watts (W)). Large utility scale wind turbines usually produce 900 kW to <8 MW per turbine.
Migratory Bird Sanctuaries	Areas established under the *Migratory Birds Convention Act* (1994) and administered by the Canadian Wildlife Service to help protect migratory birds by conserving their habitat and making it illegal to hunt or disturb them.
National Marine Conservation Areas (NMCAs)	Areas established for the purpose of protecting and conserving representative marine areas for the benefit, education and enjoyment of the people of Canada and the world. They are managed and used in a sustainable manner that meets the needs of present and future generations without compromising the structure and function of their ecosystems.
The Registry (i.e., The Canadian Impact Assessment Registry)	A website where the Impact Assessment Agency of Canada stores project files for public access. The Registry site for the Regional Assessment includes public notices, reports, scientific information, background documents, Committee updates and additional information relevant to the Regional Assessment.
Sea Ice	Frozen seawater that floats on the ocean surface. Seasonal ice that forms and melts each year (referred to as first-year ice) and ice that is present all-year round (referred to as multi-year ice).

Significant Benthic Area	According to DFO's Ecological Risk Assessment Framework (ERAF), these are significant areas of cold-water corals and sponge dominated communities.
Species at Risk	An extirpated, endangered, threatened species, or a species of special concern.
Surficial Geology	Material and area landforms found at the surface of the Earth.
2SLGBTQIA+	Acronym used by the Government of Canada to refer to the Canadian community. 2S: recognizes Two-Spirit people as the first 2SLGBTQI+ communities; L: Lesbian; G: Gay; B: Bisexual; T: Transgender; Q: Queer; I: Intersex, considers sex characteristics beyond sexual orientation, gender identity and gender expression; +: is inclusive of people who identify as part of sexual and gender diverse communities, who use additional terminologies.
Terms of Reference	Guiding document that defines and summarizes the purpose, objectives, mandate, and activities of the Regional Assessment Committee.

Appendix B: List of Indigenous Communities, Groups, and Organizations Contacted by the Committee During Early Engagement

Community/Group Name
Nova Scotia
Acadia First Nation
Annapolis Valley First Nation
Bear River First Nation
Eskasoni First Nation
Glooscap First Nation
Paqtnkek Mi'kmaw Nation
Pictou Landing First Nation
Potlotek First Nation
Waycobah First Nation
Wagmatcook First Nation
Membertou First Nation
Millbrook First Nation
Sipekne'katik First Nation
Prince Edward Island
Abegweit First Nation
Lennox Island First Nation
New Brunswick
Fort Folly First Nation
Eel Ground First Nation
Elsipogtog First Nation
Pabineau First Nation
Esgenoôpetitj First Nation
Buctouche First Nation
Indian Island First Nation
Eel River Bar First Nation
Metepenagiag Mi'kmaq Nation
Kingsclear First Nation
Madawaska Maliseet First Nation
Oromocto First Nation
Saint Mary's First Nation
Tobique First Nation
Woodstock First Nation
Quebec
La Nation Micmac de Gespeg
Listuguj Mi'gmaq Government
Micmacs of Gesgapegiag
Conseil des Innus d'Unamen Shipu

Conseil des Innu de Ekuanitshit
Conseil des Innus de Pakua Shipu
Conseil des Innus de Pessamit
Conseil de la Première Nation des Innus Essipit
Innu Takuaikan Uashat mak Mani-Utenam
Première Nation des Innus de Nutashkuan
Indigenous Organizations
Kwilmu'kw Maw-Klusuaqn Negotiation Office (KMKNO)
Atlantic Policy Congress of First Nations Chiefs Secretariat
Confederacy of Mainland Mi’kmaq
Mi’kmaq Conservation Group
Native Council of Nova Scotia / Maritime Aboriginal Peoples Council
Nova Scotia Native Women’s Association
Union of Nova Scotia Mi’kmaq
Unama’ki Institute of Natural Resources
Wskijnu'k Mtmo'taqnuow Agency Ltd
Agence Mamu Innu Kaikusseht (AMIK)
Atlantic Policy Congress of First Nations Chiefs Secretariat