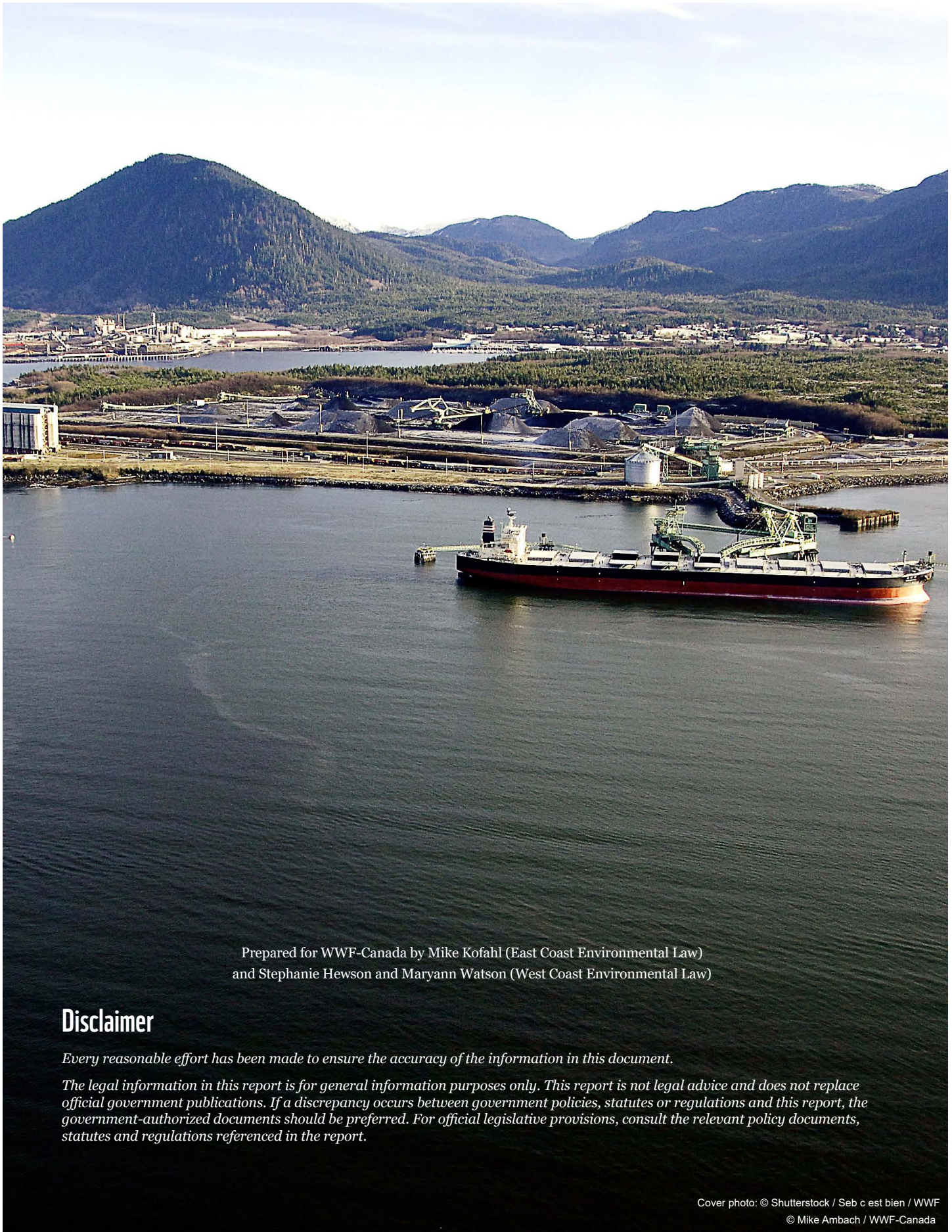


EXECUTIVE SUMMARY

CANADA'S OCEAN NOISE STRATEGY: LEGISLATION AND POLICY ANALYSIS

A REVIEW OF FEDERAL CROWN LAW AND
POLICY FRAMEWORKS TO IDENTIFY EXISTING
MECHANISMS TO MANAGE UNDERWATER NOISE
POLLUTION IN CANADA

June 2024



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Disclaimer

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OVERVIEW

UNCOVERING AND UNDERSTANDING OCEAN NOISE LEGISLATION AND POLICY IN CANADA

Canada's regulatory framework is underutilized and is not comprehensive enough to fully address underwater noise pollution. These laws can, however, be strengthened and incorporated into the eventual Ocean Noise Strategy.

Canada's oceans are becoming noisier due to increasing human activities, putting marine wildlife at risk.

The steady rise in shipping traffic, continued offshore development and exploitation of natural resources, and ever-expanding marine construction activities related to ports and terminals are drowning out the natural chirps, clicks, whistles and songs of marine species.

Underwater noise pollution can disrupt normal behaviours for noise-sensitive aquatic species including invertebrates, fish and whales. Negative impacts include increased stress levels, reduced ability to detect and avoid predators, reduced foraging opportunities, masking of communication and echolocation, and increased risk of ship strikes and stranding events ("beaching") for marine mammals.

Underwater noise is being recognized globally as a pressing ecosystem-wide threat. While Canada has become increasingly aware of underwater noise impacts over the last decade, it has not yet implemented a comprehensive national plan to address it.

The Government of Canada committed to developing a national Ocean Noise Strategy as part of the Oceans

Protection Plan launched in 2016. While the draft was promised for summer 2021, it is now expected to be released for public consultation in mid-2024 with the final strategy following in 2025.

To help inform the creation of a strong Ocean Noise Strategy, WWF-Canada commissioned East Coast Environmental Law (ECEL) and West Coast Environmental Law (WCEL) to conduct a thorough analysis of relevant federal Crown law and policy. The resulting report, *Canada's Ocean Noise Strategy: Legislation and Policy Analysis*, identifies policy gaps and provides valuable insights into how existing tools can — and should — be used by Canada to tackle underwater noise pollution.

These findings reveal a significant opportunity for the Government of Canada to become a global leader in managing underwater noise pollution and deliver transformational protections for Canada's iconic marine species and ecosystems. It is our hope that the recommendations and opportunities outlined in this analysis will meaningfully contribute to the development of Canada's Ocean Noise Strategy.

KEY FINDINGS

HOW CANADA CAN APPLY EXISTING LAW FOR QUIETER OCEANS

The findings of the Legislation and Policy Analysis are clear: tools to protect underwater soundscapes exist but are not being widely used – nor are they enough. To protect Canada’s iconic marine ecosystems and species, the federal government should act now to create a binding and enforceable national approach to addressing underwater noise.

Canada’s approach to managing and protecting marine areas has not kept pace with the rapid rise in our awareness of underwater noise pollution and its impacts on wildlife. To date, ocean noise is not explicitly regulated, nor is it incorporated into existing laws for conserving the marine environment or regulating offshore industries. However, our findings indicate that, while significant gaps exist, there are mechanisms within existing federal law and policy that could be used immediately to mitigate underwater noise impacts and then be incorporated into a more comprehensive national strategy.

Marine Environmental Quality

Canada’s primary ocean legislation, the *Oceans Act*, authorizes the Minister of Fisheries and Oceans (DFO) to establish marine environmental quality (MEQ) guidelines, objectives and criteria as part of coastal, estuarial and marine planning and management. In addition, the *Oceans Act* also enables the federal government to enact regulations that prescribe MEQ requirements and standards.

MEQ guidelines, objectives and criteria by themselves are non-regulatory, but they can become mandatory if they are formalized through legal requirements and standards, incorporated into other government requirements that *are* legally binding, or mandated by ocean industry regulators. MEQ regulations created under the *Oceans Act* could prescribe requirements and standards that would be legally binding; however, no such regulations have yet been ever created in Canada.

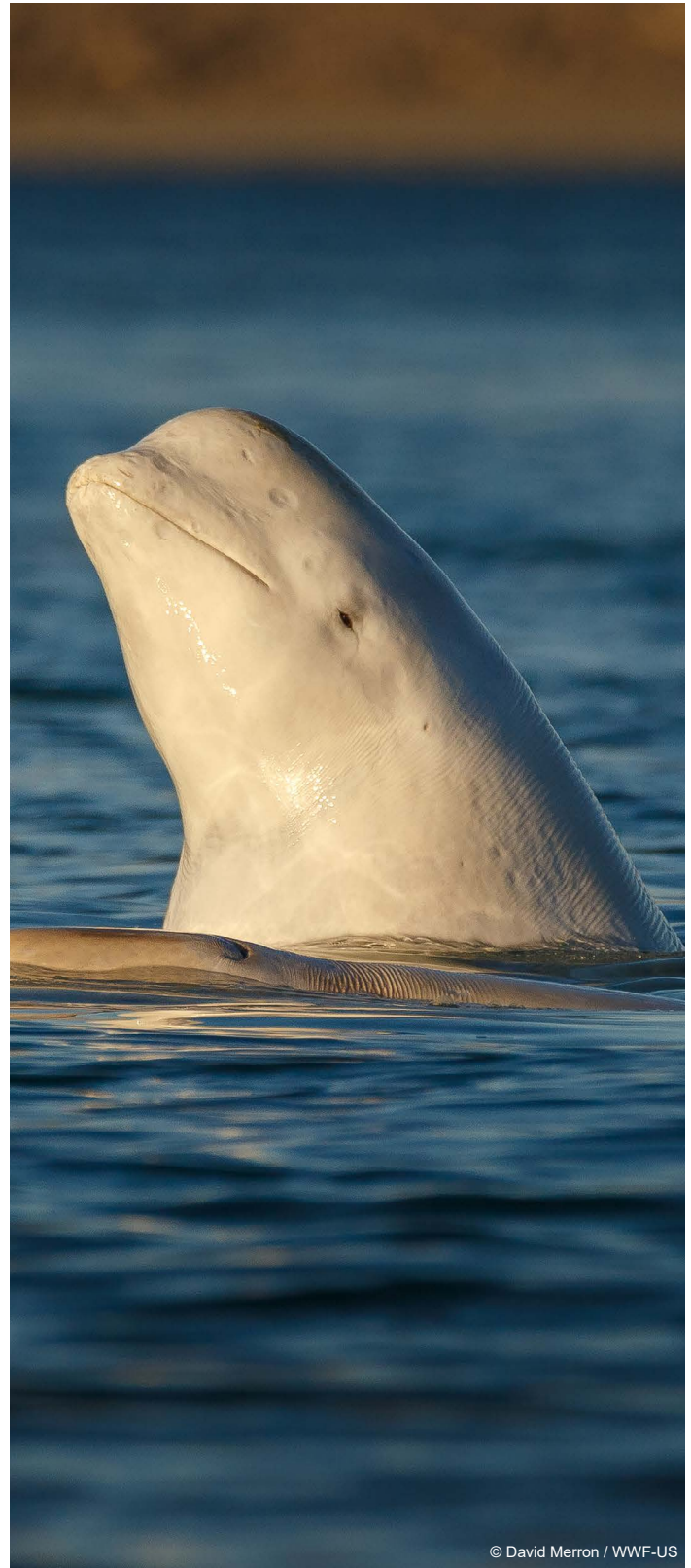


To date, only one MEQ guideline related to ocean noise exists. While the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* doesn't have the force of law on its own, it has been incorporated into legally binding conditions for some offshore industrial projects. The Nova Scotia Offshore Petroleum Board, for instance, requires all seismic programs to adhere to it and it has been incorporated into conditions of approval for projects under the *Impact Assessment Act*.

MEQ provisions in the *Oceans Act*, if enacted, would provide a pathway to manage noise pollution more effectively in Canada by establishing federal standards for noise levels and triggering further actions to manage activities to limit noise pollution:

- The federal government could use its authority to enact MEQ regulations that set standards for noise pollution by broad geographic region (for example, using the regions established under Canada's existing national bioregion framework). Such standards could include setting pre-industrial baselines for noise levels (i.e., noise levels under natural conditions) for defined regions and setting upper limits for levels of anthropogenic noise that would be tolerable in that region. These region-specific limits could be determined using biological data (such as thresholds for noise-sensitive indicator species) and informed by research and local knowledge.
- The federal government would be accountable to these regional underwater noise standards and thresholds established under the *Oceans Act*, making it incumbent upon the federal government to establish requirements for noise pollution reduction and to set region-specific noise reduction targets for areas where continuous noise levels are above the prescribed limits or thresholds.
- Such regional standards and requirements would provide clear and defined expectations that can be incorporated into environmental assessments and other decision processes relating to noise generating activities. In addition, these standards and requirements would enable regulators of specific ocean activities to establish activity-based noise limits or thresholds consistent with area-based noise reduction targets.

A national MEQ approach should aim to set regionally-specific standards for noise levels under an *Oceans Act* regulation, and further the formalization of required actions in each region to meet prescribed standards through all activities that contribute to underwater noise pollution.



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Marine Protected Areas

MPAs are designated areas of the ocean set aside to conserve biodiversity by protecting species, habitats and wider ecosystems. There are several different types of federal MPA designations, each with their own legal framework. None of the federal MPA laws directly address noise.

While most MPAs provide protection from some noise producing activities, underwater noise was not considered in the drafting of the majority of MPA regulations. Radiated noise from shipping and commercial fishing continues to be permitted in the majority of MPAs without restrictions. Some MPAs also permit construction activities.

The management plans of MPAs provide another opportunity to address underwater noise, yet less than half do so. It is crucial that federal departments and agencies prioritize underwater noise when developing new MPAs and when managing existing MPAs.

To truly be effective in preserving marine ecosystems and safeguarding species, MPAs should be “quiet” by design and incorporate noise thresholds and associated measures that limit noise-generating activities and maintain acoustic conditions that benefit the species MPAs intend to protect.

A deep dive into different types of MPAs

In Canada, there are three main types of federal designations used to create protected ocean areas:

- Marine protected areas (MPAs) established by DFO under the *Oceans Act*.
- National Marine Conservation Areas (NMCARs) established by Parks Canada/Environment and Climate Change Canada (ECCC) under the *Canada National Marine Conservation Areas Act (CNMCA Act)*
- National Wildlife Areas (NWAs) and marine National Wildlife Areas (mNWAs) established by Canadian Wildlife Services/ ECCC under the *Canada Wildlife Act*

MPAs may also include the marine components of National Parks designated under the *Canada National Parks Act* and of Migratory Bird Sanctuaries designated under the *Migratory Birds Convention Act*.

Example: Gwaii Haanas National Marine Conservation Area Reserve

The Gwaii Haanas NMCAR was established in 2010 under the *Canada National Marine Conservation Areas Act (CNMCA Act)* after decades of recognition under Haida, provincial and federal agreements. The NMCAR protects the marine component surrounding an existing terrestrial National Park Reserve and Haida Heritage Site.

All mining and oil and gas activities are prohibited in NMCAs under the CNMCA Act. The CNMCA Act also states any regulation of fisheries and aquaculture may only be done under the support of the Minister of Fisheries and Oceans, and regulations addressing marine navigation may only be done with the support of the Minister of Transport. No such regulations exist to date.

A “Multi-Species Action Plan for Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve and Haida Heritage Site” was created in 2016 for at-risk species inside the boundary of the site, including whales, dolphins and porpoises.

Measures to be taken under the Action Plan include “scop[ing] the concept of a ‘Quiet Sea Reserve’ designation for Gwaii Haanas” and “minimiz[ing] disturbance to marine mammals from visitor boats by promoting compliance with Whale Watching Guidelines.”

These measures, designed to ensure that anthropogenic noise in the marine environment does not prevent the recovery of at-risk species, address noise in the NMCAR and are focused on marine mammals only.



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Species At Risk Act

Canada's *Species at Risk Act* (SARA) prohibits the killing, harming, harassing, capture or taking of species listed as threatened, endangered or extirpated under SARA, as well as the destruction of their critical habitat.

However, there are currently no policies under SARA that quantitatively define what constitutes harm, harassment or the destruction of acoustic habitat. Any adverse effects to habitat are generally described in qualitative terms. The lack of clear and defined noise thresholds for species at risk and their habitats makes monitoring and enforcement of noise-generating activities extremely difficult and does not provide clear guidance for decision-makers.

Fortunately, it is possible to take clear action under SARA to protect at-risk species from underwater noise pollution. There are instances where DFO's recovery strategies for at-risk species have included clearly defined objectives to protect acoustic habitat, which then allowed for the introduction of mandatory legal measures to reduce noise impacts. (See *spotlight on southern resident killer whales*).

DFO should work towards developing quantitative noise thresholds and reduction targets for the habitats of all listed aquatic species at risk that need quiet soundscapes for their recovery. Clearly defining what constitutes noise-related "harm," "harassment" and "destruction" is critical to the recovery of species at risk.

Spotlight on Southern Resident Killer Whales

Southern resident killer whales (SRKW) have been listed as endangered under SARA since 2003. Due to their alarming and continuous population decline — only 74 individuals remain — the Government of Canada introduced several measures in 2019 to further protect and support their recovery.

Within the SRKW Recovery Strategy, the acoustic environment is explicitly listed as an attribute of critical habitat necessary for the population's survival and recovery, and noise is described as one of the primary human-caused threats. As a result, the Minister of Transport issued a Ministerial order under the *Canada Shipping Act, 2001* to protect SRKW's from the impacts of vessel noise. The order includes the following measures:

- Two mandatory Speed Restricted Zones, where vessels are restricted to a maximum speed of 10 knots between June and November annually.
- Two Interim Sanctuary Zones, where no vessel traffic is permitted between June and November.
- A requirement that vessels must not approach within 400 metres of killer whales in southern B.C., or position vessels in front of the path of killer whales. However, broad exceptions do exist, such as when a vessel is underway, it is not required to maintain a minimum distance of 400 metres.

But even with these enhanced protection measures, there remains a lack of area- and ecosystem-based noise thresholds to ensure that noise levels don't exceed the biological limits of SRKW and maintain the acoustic quality of critical habitat that is necessary and conducive to recovery of the population.



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KEY RECOMMENDATIONS FOR OCEAN NOISE LAW AND POLICY REFORM IN CANADA

There are several ways Canada can use its existing powers to better manage underwater noise immediately and which can then be included in the eventual comprehensive strategy:

- DFO should develop MEQ standards and requirements for ocean noise prescribed through regulations under the *Oceans Act*. MEQ standards and requirements should be applied nationally, with regional and sub-regional standards with noise thresholds specific to Arctic, Atlantic and Pacific regions.
- The federal government should mandate all ministerial agencies that have responsibility for managing the ocean and ocean-based activities to develop measures that ensure the activities they oversee contribute to meeting national, regional and sub-regional underwater noise standards, including noise budgets required to stay within defined thresholds.
- Federal agencies charged with implementation of MPAs (DFO, ECCC and Parks Canada) should enact concrete regulatory and management measures for MPAs that not only limit noise generating activities that are consistent with regional and sub-regional standards and noise thresholds, but also protect quiet areas and preserve acoustic habitat for at-risk marine species.
- Regulators responsible for assessing and approving ocean-based industrial activities should impose conditions — including adherence to activity-based noise thresholds and area-based noise targets — on all coastal and offshore projects to mitigate the impacts of underwater noise pollution on wildlife.
- Environmental Impact Assessments (EIA) should be used to identify and assess noise impacts, local and regional thresholds, areas to avoid, and mitigation measures such as the adoption of quiet technologies. Results of EIAs should be used to inform other processes, including the incorporation of ocean noise conditions into legislation and regulations.
- Transport Canada should develop regulations under the *Canada Shipping Act, 2001* to address cumulative vessel noise impacts. Regulations should identify speed restrictions and no-go zones in sensitive marine areas such as MPAs and critical habitat for at-risk species.

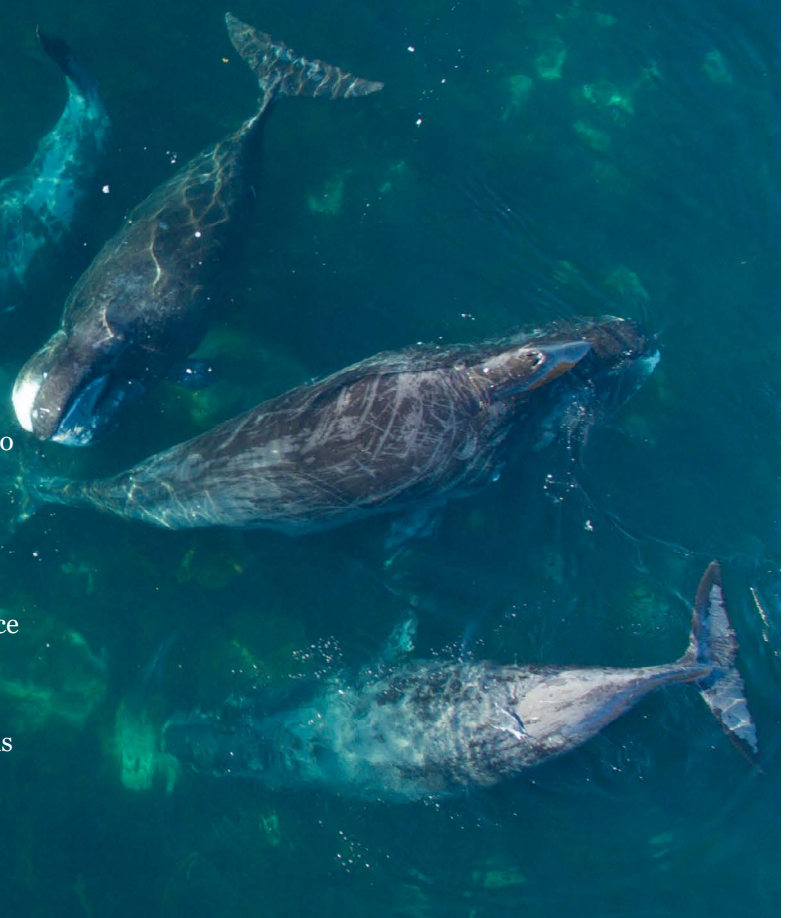
FROM PATCHWORK ACTION TO A NATIONAL OCEAN NOISE STRATEGY THAT WORKS

As noise levels in our oceans continue increasing, the current piecemeal approach to managing underwater noise pollution isn't enough to protect whales and other marine life. This report highlights several opportunities within Canada's current regulatory framework to tackle underwater noise that can be incorporated into a comprehensive Ocean Noise Strategy.

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To deliver meaningful, measurable and urgent action on underwater noise pollution, Canada's forthcoming Ocean Noise Strategy should:

1. Establish a pathway to enact noise limits for activities we know have a negative effect on soundscapes, such as shipping, and oil and gas exploration. Noise limits should be informed by biological limits (the volume different species are able to withstand without adverse impacts) and by scientific and Indigenous knowledge.
2. Take an area-based approach that includes noise reduction targets in regions that are already excessively loud, and noise limits in rapidly developing areas like the Arctic. Canada should also prioritize safeguarding protected ocean areas and key habitats for at-risk species.
3. Incentivize the development and adoption of quieter technologies while immediately implementing operational measures that can reduce noise such as ship slowdowns in critical habitats and marine protected areas.
4. Develop mandatory measures to ensure noise levels are monitored and limits and reduction targets are enforced. Without teeth, it's unlikely Canada's Ocean Noise Strategy will help mitigate noise pollution.



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For more information on WWF-Canada's priorities and recommendations, and to add your voice for quieter oceans in Canada, check out our interactive website at wwf.ca/underwaternoise.

Canada's Ocean Noise Strategy: Legislation and Policy Analysis

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LIST OF ABBREVIATIONS

60°N	Crown lands north of 60°N latitude
Accord Acts	<i>Canada–Newfoundland and Labrador Atlantic Accord Implementation Act and the Canada–Nova Scotia Offshore Petroleum Resources Accord Implementation Act</i>
Agreements (the)	<i>Inuvialuit Final Agreement, the Labrador Inuit Land Claims Agreement, and the Nunavut Land Claims Agreement</i>
AWPPA	<i>Arctic Waters Pollution Prevention Act</i>
C-CER or Commission	Commission of the Canadian Energy Regulator
Cabinet Directive	Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals
CAF	Canadian Armed Forces
CEAA	<i>Canadian Environmental Assessment Act, 2012</i>
CEPA	<i>Canadian Environmental Protection Act, 1999</i>
CER	Canadian Energy Regulator
CERA	<i>Canadian Energy Regulator Act</i>
CNMCA Act	<i>Canada National Marine Conservation Areas Act</i>
CNWA	<i>Canadian Navigable Waters Act</i>
coastal formations (the)	The Maritimes Forces Atlantic and Maritime Forces Pacific and its corresponding fleet commanders
COGOA	<i>Canada Oil and Gas Operations Act</i>
CPRA	<i>Canada Petroleum Resources Act</i>
CSA	<i>Canada Shipping Act, 2001</i>
DAOD	<i>Defence Administrative Orders and Directives</i>
DAOD 4003-0	<i>Defence Administrative Orders and Directive 4003-0, Environmental Protection and Stewardship</i>
DEES	<i>Defence Energy and Environmental Strategy</i>
DFO	Fisheries and Oceans Canada
DND	Department of National Defence
EA	environmental assessment
ECCC	Environment and Climate Change Canada
ECHO	Enhanced Cetacean Habitat and Observation Program

EEZ	(Canada's) Exclusive Economic Zone
EIA	environmental impact assessment
ESA	environmental and socio-economic assessment
GIC	Governor in Council
Gwaii Haanas	The Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site
IA	impact assessment
IAA	<i>Impact Assessment Act</i>
IAAC	Impact Assessment Agency of Canada
IFA	<i>Inuvialuit Final Agreement</i>
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IRP	Integrated Review Panel
ISR	Inuvialuit Settlement Region
LILCA	<i>Labrador Inuit Land Claims Agreement</i>
MaPP	the Marine Planning Partnership
MARCORD 46-13	Marine Mammal Mitigation Procedures for Active Sonar Use
MARPOL	<i>International Convention for the Prevention of Pollution from Ships, 1973</i>
MEQ	marine environmental quality
MMMP	marine mammal mitigation procedures
MMR	<i>Marine Mammal Regulations</i>
mNWA	marine national wildlife area
MPA	marine protected areas
MSP	marine spatial planning
NAVORD	Naval Orders
NDA	<i>National Defence Act</i>
NFLD Accord Act	<i>Canada–Newfoundland Atlantic Accord Implementation Act</i>
NIRB	Nunavut Impact Review Board
NLCA	<i>Nunavut Land Claims Agreement</i>
NMCA	national marine conservation areas
NMCA R	NMCA reserve
NPC	Nunavut Planning Commission
NS Accord Act	<i>Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act</i>
NWA	national wildlife area

offshore boards	Canada-Newfoundland and Labrador Offshore Petroleum Board and Canada-Nova Scotia Offshore Petroleum Board
ORE	offshore renewable energy
Polar Code	<i>The International Code for Ships Operating in Polar Waters</i>
Project List	<i>Physical Activities Regulations</i>
QR&O	<i>Queen's Regulations and Orders for the Canadian Forces</i>
RA	regional assessments
RCN	Royal Canadian Navy
RIAS	regulatory impact analysis statement
SA	strategic assessments
SARA	<i>Species at Risk Act</i>
SCC	Supreme Court of Canada
SCP	<i>Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment</i>
SEA	strategic environmental assessments
SEMS	Safety and Environmental Management Systems
SOLAS	<i>International Convention for the Safety of Life at Sea, 1974</i>
SRKW	Southern Resident Killer Whale
Strategy (the)	Government of Canada Ocean Noise Strategy
TISG	tailored impact statement guidelines
UNCLOS	United Nations Convention on the Law of the Sea
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples

EXECUTIVE SUMMARY

There is a growing understanding of the importance of acoustic habitat to marine wildlife, as well as how anthropogenic noise from activities such as shipping, seismic blasting, marine construction and sonar alter the marine soundscape and jeopardize the ability of marine species to survive. In order to address these concerns, the Government of Canada has begun the work of creating an Ocean Noise Strategy (the Strategy).

Four key elements are required for the Strategy to deliver meaningful, measurable and urgent action on ocean noise:

1. The establishment of noise thresholds.
2. The establishment of area-based noise targets.
3. The development and adoption of quieter technologies.
4. Strong monitoring and enforcement.

These elements, as well as the Strategy as a whole, will need to be supported by meaningful law and policy.

The legislative and regulatory tools that guide Canada's current decision-making for marine areas have not kept pace with this rapid rise in our awareness of the impacts of ocean noise. In Canada, no specific law directly addresses ocean noise or its impacts. However, there are existing laws, regulations, and policy measures that can be used or modified to address noise-emitting activities.

This report reviews federal Crown law and policy frameworks for ocean management to identify existing mechanisms that can be used to address ocean noise, as well as gaps in the current framework to be addressed through law and policy reform. The report covers existing statutes, regulations, and policies relevant to the following:

- Comprehensive ocean management through the *Oceans Act*
- Conservation (species and spatial protection)
- Fisheries
- Environmental impact assessments
- Offshore renewable energy
- Military activities
- Seabed mining
- Offshore oil and gas
- Shipping
- Construction in the marine environment

Existing Mechanisms to Address Ocean Noise

The legal frameworks reviewed in this report fall into two broad categories: laws to assess and regulate industrial ocean activities, and laws for conservation and ecosystem-based management. None of the laws or regulations we reviewed directly address ocean noise. However, they do provide mechanisms that are used to manage and mitigate noise impacts.

Under the *Oceans Act*, Canada has the ability to develop marine environmental quality (MEQ) guidelines and objectives, and to enact MEQ requirements and standards in regulations. This authority has been underused; however, Fisheries and Oceans Canada (DFO) has developed one MEQ guideline related to ocean noise: the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment*. Although the statement does not have the force of law, it can be and is incorporated into legally binding conditions for projects. DFO has not developed any other noise-related MEQ guidelines, nor has it developed any MEQ regulations. DFO could use these authorities to develop ocean noise thresholds based on biological limits and Indigenous knowledge, as well as localized and regional area-based noise targets, which could inform the assessment and approval of noise-producing industrial uses in the ocean.

Canada's *Species at Risk Act* (SARA) prohibits the harm or harassment of species at risk, as well as the destruction of these species' critical habitat. However, DFO does not have any clear policy to define or develop minimum thresholds for harm, harassment or destruction in the context of impacts to acoustic habitat. In some cases, DFO has developed recovery strategies for at-risk species that include objectives to protect their acoustic habitat, and these objectives have supported the introduction of legal measures to reduce noise impacts. For example, Transport Canada has introduced mandatory interim measures to reduce shipping impacts on the critical habitat of Southern Resident Killer Whales (SRKW). This framework would be strengthened through quantitative, area-based noise targets to protect critical habitat areas.

Marine protected areas (MPAs) can also be an effective means to protect species from noise impacts within specific areas. MPAs limit human activities within their boundaries, and this may include activities that cause noise. The federal government designates MPAs under five statutes: the *Oceans Act*, *Canada National Marine Conservation Areas Act*, *Canada Wildlife Act*, *Canada National Parks Act*, and the *Migratory Birds Convention Act*. These tools have been used to address, or at least consider, ocean noise impacts and provide some level of protection from noise-producing activities, either through the MPA's legal framework, or through voluntary measures (for example, for shipping) developed to support the MPA. However, ocean noise is not considered consistently in the development and management of MPAs. Ocean noise should be considered in the designation of all future MPAs, and in the management of existing MPAs, and measures to address ocean noise should be introduced through regulation and management measures. MPA frameworks could also be strengthened by incorporating noise thresholds shaped by biological limits and area-based noise targets.

The primary method of managing ocean noise impacts from industrial ocean activities is through assessment of noise as part of an approval process, and through conditions of approval placed on a project to mitigate its impacts. These conditions are often based on the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment*, an MEQ guideline described above, which provides guidelines for seismic activities in the petroleum and marine renewable energy industries. Although it does not have the force of law, the Statement can be and is incorporated into legally binding conditions for projects.

The *Impact Assessment Act* (IAA) is the *de facto* federal legislation dealing with assessment of project impacts, which can include noise. However, many kinds of activities, like seismic surveys for oil and gas exploration, do not require an assessment. Federal authorities—and in particular, the Canadian Energy Regulator, the Canada-Newfoundland and Labrador Offshore Petroleum Board, and the Canada-Nova Scotia Offshore Petroleum Board—have a great deal of authority and discretion to assess noise impacts from petroleum and marine renewable energy activities. These assessments are done primarily on an individual project or activity basis. Project assessments usually lead to mitigation measures as conditions of approval. There is also scope, both under the *Impact Assessment Act* or a federal cabinet directive, as well as within industry-specific regulatory regimes, to conduct regional or strategic assessment of cumulative effects. These assessments can include noise impacts. They also offer the greatest opportunity to identify and establish noise thresholds shaped by biological limits and local and Indigenous knowledge, and to identify priority area-based targets. Quiet technologies can be considered in these high-level assessments. Any measures developed as conditions of a project's approval must be subject to monitoring and enforcement by the relevant federal authority to ensure the measures are effective.

Finally, underwater noise from shipping can be addressed through area-based measures, including no-go zones and speed restrictions, as well as ship construction and design. Although it is possible to introduce regulatory measures under the *Canada Shipping Act, 2001* (CSA), there is only one example of an area-based protection currently in force. Most measures to address shipping noise are voluntary. Advocacy at the international level would be required to introduce new ship design requirements that minimize noise.

Key Recommendations for Law and Policy Reform

This report outlines a list of law and policy reforms for each legal framework that would enhance regulation of ocean noise. Below are the top five recommendations that should be included within Canada's Ocean Noise Strategy:

- DFO should develop MEQ standards and requirements for ocean noise through regulations under the *Oceans Act*. These should include thresholds based on Indigenous knowledge and biological limits, as well as local and regional area-based targets for protected and conserved areas of the ocean and key habitat for species at risk. These standards and requirements should be specific to the Arctic, Atlantic, and Pacific regions.
- DFO, Environment and Climate Change Canada (ECCC), and Parks Canada should ensure that ocean noise is addressed in the development and management of all future MPAs and species at

risk critical habitat. This should include area-based targets or noise budgets for these areas, as well as concrete regulatory and management measures to protect the marine soundscape.

- Regulators responsible for assessing and approving ocean-based industrial activities, including the Canada Energy Regulator, Impact Assessment Agency of Canada (IAAC), the Canada-Newfoundland and Labrador Offshore Petroleum Board, and the Canada-Nova Scotia Offshore Petroleum Board should impose conditions on all offshore projects emitting ocean noise to mitigate the impacts of that noise. Conditions should require proponents to adhere to noise thresholds and area-based noise targets as they are developed, and should require the use of quiet technologies where relevant. These requirements should be set out in regulators' guidance or in regulations under each relevant statute.
- Environmental impact assessments (EIAs)—including project-level impact assessments, strategic assessments and regional assessments—should be used to identify and assess noise impacts. These EIA processes should be used to identify local or regional thresholds, assess the feasibility of adopting quiet technologies, and identify areas to avoid because of harmful noise impacts. The analysis can be used in other processes, including informing regulators about which conditions should be imposed to manage ocean noise.
- Transport Canada should develop regulations under the *Canada Shipping Act, 2001 (CSA)* to address vessel noise impacts, including speed restrictions and no-go zones in sensitive areas of the ocean like MPAs and species at risk critical habitat.

1. INTRODUCTION

Marine species use sound to sense their environment, search for food, care for their young, socialize and mate, and navigate their world. However, marine ecosystems and species face pressures from a myriad of threats and activities. Activities like shipping, seismic blasting from oil and gas or mining, marine construction, and sonar are jeopardizing the ability of marine species to survive. Growing understanding of these pressures is aiding in our ability to mitigate the impacts of activities and will support restoration of vulnerable species and habitats.

1.1 Impacts of Ocean Noise

Natural underwater sounds are produced by diverse geological and biological sources. The sounds produced within, and originating from, a habitat or landscape are collectively termed the *soundscape*. For the species which experience and depend on these sounds, a soundscape may also be referred to as the *acoustic habitat*.

Anthropogenic noise also contributes to and alters these marine soundscapes and acoustic habitats; for example, loss of acoustic habitat has been well-documented for many cetacean populations.¹ However, anthropogenic noise has been shown to negatively impact many other marine species. Increasing numbers of fish are being found to produce sounds intentionally for aspects of their life (e.g. breeding, defense, group cohesion), although the vast majority of fish are unstudied for sound production.² Additionally, the marine soundscape can be used to distinguish among habitats, and carry decision-making information for marine life. There is evidence that some marine species, such as larval bivalves,³ reef fishes,⁴ crustaceans,⁵ and corals,⁶ use sound for habitat selection and settlement cues. Increasing knowledge of other species' interactions with underwater sounds and human-generated noise provides evidence that degradation of acoustic habitats is occurring in many coastal ecosystems.⁷

The legislative and regulatory tools that guide our current decision-making for marine areas have not kept pace with this rapid rise in our awareness of the impacts of ocean noise. In Canada, no specific law directly addresses ocean noise or its impacts.⁸ However, there are existing laws, regulations, and policy measures that can be used or modified to address noise-emitting activities.

¹ See e.g. R Williams et al., "Acoustic quality of critical habitats for three threatened whale populations" (2014) 17 *Anim Conserv* 174.

² K Cox et al., "Sound the alarm: A meta-analysis on the effect of aquatic noise on fish behavior and physiology" (2018) 24 *Glob Change Biol* 3105; A Looby et al., "A quantitative inventory of global soniferous fish diversity" (2022) 32 *Rev Fish Biol Fisheries* 581.

³ A Jolivet et al., "Validation of trophic and anthropic underwater noise as settlement trigger in blue mussels" (2016) 6 *Sci Rep* 1; A Lillis, DWR Bohnenstiehl, DB Eggleston, "Soundscape manipulation enhances larval recruitment of a reef-building mollusk" (2015) PeerJ.

⁴ SD Simpson et al., "Attraction of settlement-stage coral reef fishes to reef noise" (2014) 276 *Mar Ecol Prog Ser* 263.

⁵ JC Montgomery et al., "Sound as an Orientation Cue for the Pelagic Larvae of Reef Fishes and Decapod Crustaceans" (2006) 51 *Adv Mar Biol* 143.

⁶ A Lillis et al., "Variation in habitat soundscape characteristics influences settlement of a reef-building coral" (2016) PeerJ 1.

⁷ WD Halliday et al., "The plainfin midshipman's soundscape at two sites around Vancouver Island, British Columbia" (2018) 603 *Mar Ecol Prog Ser* 189.

⁸ E Marotte et al., "Recommended metrics for quantifying underwater noise impacts on North Atlantic right whales" (2022) 175 *Marine Pollution Bulletin* 113361; C Green, "Limited Options in Canada's Regulatory Tools for Addressing Underwater Noise" (2022) Thesis completed for Master of Marine Management, Dalhousie University.

Identifying current tools and gaps in ocean noise management in Canada is increasingly important as inputs of ocean noise are only growing, including from increasing shipping, coastal construction, and new areas of the ocean such as the deep sea and Arctic becoming available to human activities.⁹ Additionally, some predictions show that changing temperature regimes and salinity associated with climate change in oceans will result in areas of the oceans becoming noisier.¹⁰

1.2 The Report – An Analysis of Legislation Dealing with Ocean Noise

As part of its Oceans Protection Plan, the Government of Canada has begun the work of creating an Ocean Noise Strategy (the Strategy) and has committed to releasing a draft of the Strategy; however, the Strategy has been subject to significant delays.

Four key elements are required for the Strategy to deliver meaningful, measurable, and urgent action on ocean noise. These include:

1. Establishment of noise thresholds: These thresholds should be shaped by biological limits and by local and Indigenous knowledge.
2. Area-based noise targets: Localized and regional targets should prioritize safeguarding protected ocean areas and key habitats for at-risk marine mammals.
3. Adoption and development of quieter technologies: There is a need to develop and adopt quieter technologies for use in the underwater marine environment.
4. Strong monitoring and enforcement: Ongoing monitoring of ocean noise levels and mechanisms are needed to enforce thresholds and targets.

This report reviews federal Crown law and policy frameworks for ocean management to identify existing mechanisms that can be used to address ocean noise, as well as gaps in the current framework to be addressed through law and policy reform. It covers existing laws, regulations, and policies relevant to the following areas:

- Comprehensive ocean management
- Conservation (species and spatial protection)
- Fisheries
- Environmental impact assessments
- Offshore renewable energy
- Military activities
- Seabed mining
- Offshore oil and gas
- Shipping
- Construction in the marine environment

⁹ R Williams et al., “Noise from deep-sea mining may span vast ocean areas” (2022) 377 *Science* 157; S E Moore et al., “A New Framework for Assessing the Effects of Anthropogenic Sound on Marine Mammals in a Rapidly Changing Arctic” (2012) 62 *BioScience* 289.

¹⁰ L Possenti et al., “Predicting the contribution of climate change on North Atlantic underwater sound propagation” (2023) 11 *PeerJ* e16208.

1.3 Importance of Indigenous Rights and Governance in Developing an Ocean Noise Strategy

When Europeans arrived in what is now Canada, Indigenous nations had already been stewarding marine areas in keeping with their own Indigenous laws and customs for thousands of years. In the years since contact, most of the laws, policies and decisions of Crown governments that have resulted in ocean noise pollution were implemented without consulting or seeking the consent of Indigenous nations. Likewise, most of the laws, policies and decisions of Crown governments to conserve or protect spaces in Canada were also carried out without Indigenous involvement, and sometimes involved the outright displacement of Indigenous peoples from their own lands and waters.

As a result of decades of determined efforts by Indigenous peoples, Canada's colonial legal framework has been forced to change. Canada constitutionally protected the rights and title of Indigenous peoples under section 35 of the *Constitution Act, 1982*. The potential for ocean noise to impact section 35 Indigenous harvesting rights has been recognized by the Supreme Court of Canada. In 2017, the Court found that Canada had breached its duty to consult and accommodate the Treaty harvesting rights of the Inuit of Clyde River in relation to proposed seismic testing that would impact areas where the community harvested marine mammals.¹¹ An environmental assessment of the proposed seismic testing had found that it would cause hearing loss in marine mammals, increase their mortality risk, and change their migration routes. The Court acknowledged that these significant potential impacts could infringe upon Inuit harvesting rights and required the Crown to engage in deep consultation with the Inuit of Clyde River.¹²

Canada has also endorsed the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP),¹³ and in 2021, Canada enacted the *United Nations Declaration on the Rights of Indigenous Peoples Act* to implement the Declaration into Canadian law.¹⁴ These instruments impose legal duties on the federal government to respect the rights of Indigenous peoples, to seek their consent when making decisions that impact their rights, and to take all measures necessary to ensure that the laws of Canada are consistent with UNDRIP.

Several articles under UNDRIP support the right of Indigenous nations to address and manage the impacts of ocean noise in their marine territories:

Article 29(1): Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programmes for Indigenous peoples for such conservation and protection, without discrimination.

Article 32(1): Indigenous peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources.

Article 32(2): States shall consult and cooperate in good faith with the Indigenous peoples

¹¹ *Clyde River (Hamlet) v Petroleum Geo-Services Inc.*, 2017 SCC 40.

¹² *Ibid* at paras 43-44.

¹³ *United Nations Declaration on the Rights of Indigenous Peoples*, UNGAOR, 61st Sess, Supp No 49, UN Doc A/RES/61/295 (2007) [UNDRIP].

¹⁴ SC 2021, c 14.

concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.

These changes in Canadian law have shifted how conservation and resource management is approached in Canada. Indigenous nations are leading the way in developing initiatives to address ocean noise in many parts of Canada. Some examples include:

- The Gwaii Haanas National Marine Conservation Area Reserve and Haida Heritage Site (Gwaii Haanas), a marine protected area designated under the laws of both the Haida Nation and Canada, and jointly managed. The partners in Gwaii Haanas have created a Multi-species Action Plan for the protected area.¹⁵ One of the actions listed in the plan is to scope the concept of designating a “Quiet Sea Reserve” within the protected area.
- Efforts led by the Inuit Circumpolar Council to address ocean noise, including developing Low-Impact Shipping Corridors in the Arctic and participating in the drafting of the International Maritime Organization’s (IMO’s) *Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Adverse Impacts on Marine Life*.
- The Ships, Whales and Acoustics in Gitga’at Territory project, led by Gitga’at First Nation, North Coast Cetacean Society and WWF-Canada to develop monitoring and mitigation measures for commercial shipping impacts in important whale habitat on the north coast of British Columbia.

This report details Canada’s legal powers and responsibilities under international and domestic law to manage ocean noise to inform the Strategy. These powers must always be exercised in accordance with Canada’s constitutional obligations to respect Indigenous rights and in keeping with the UNDRIP. This means, at a minimum, that Indigenous nations should be involved in all aspects of the development of the Strategy and their consent should be sought by Canada for any decision impacting their rights and title.

¹⁵ Multi-species Action Plan for Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site [Proposed] (Parks Canada Agency: Ottawa, 2016) online: <https://wildlife-species.az.ec.gc.ca/species-risk-registry/virtual_sara/files/plans/Ap-GwaiiHannasHaida-v00-2016mar30-Eng.pdf>

2. COMPREHENSIVE OCEAN NOISE MANAGEMENT UNDER THE *OCEANS ACT*

The *Oceans Act* is Canada's primary ocean law, and provides tools for comprehensive management of the ocean. It creates the legal framework for ocean management that enables the creation of marine environmental quality objectives, as well as integrated management planning for the ocean. Both of these tools could be used to develop measures that regulate ocean noise across a broad range of activities.

2.1 Marine Environmental Quality

The *Oceans Act* has two provisions related to the management of the quality of the marine environment. Paragraph 32(d) of the *Oceans Act* authorizes the Minister of Fisheries and Oceans to establish marine environmental equality (MEQ) guidelines, objectives, and criteria as part of the implementation of integrated management plans for the ocean. Additionally, paragraph 52.1(a) allows for the Governor in Council (GIC) to prescribe MEQ requirements and standards through regulations.¹⁶ MEQ is not defined in the Act, but would likely include the acoustic quality of the marine environment.

Fisheries and Oceans Canada (DFO) papers from the early 2000s indicate that DFO intended to establish a national MEQ Framework, and documents related to integrated management planning from the same time period reference DFO's intention to develop MEQ guidelines as part of spatial plans.¹⁷ It appears that DFO did not realize either objective. DFO also has an MEQ Initiative, which has focused largely on research and data analysis.¹⁸ Thus far, the federal government has not enacted regulations under paragraph 52.1(a) of the *Oceans Act*.

DFO has indicated that it considers the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* to be an MEQ guideline developed under the *Oceans Act*.¹⁹ The statement (discussed further in chapter 8.2 of this report) provides guidelines on planning, designing, and operating seismic surveys, and includes spatial and temporal measures to reduce the impacts of noise on marine species. Interestingly, this statement was not developed within the context of integrated management planning as per paragraph 32(d) of the *Oceans Act*, nor is it a regulatory standard, as per paragraph 52.1(a).

Paragraph 32(d) MEQ guidelines, objectives, and criteria are non-regulatory. This means that they are not, on their own, binding on decision-makers or enforceable, which weakens the ability of these guidelines to meaningfully impact ocean noise pollution. However, it is possible for non-regulatory MEQ measures to become mandatory in two ways. First, they could be formalized through legal requirements and standards under paragraph 52.1(a). Second, they could be incorporated into other federal requirements that *are* legally binding. For example, the above-mentioned *Statement of Canadian Practice with respect to the*

¹⁶ Ibid s 52.1(a).

¹⁷ G Jamieson and B McCorquodale, "Proceedings of the Central Coast Marine Environmental Quality Indicators Workshop" (2005), CSAS; Fisheries and Oceans Canada, Oceans Directorate. Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada (Ottawa, 2002).

¹⁸ Fisheries and Oceans Canada, "Understanding the marine environment to better protect whales" (March 2022) online: <<https://www.dfo-mpo.gc.ca/science/partnerships-partenariats/research-recherche/marine-environment-milieu-marin/index-eng.html>>.

¹⁹ Fisheries and Oceans Canada, *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* (2005); H Breeze et al., "Efforts to advance underwater noise management in Canada: Introduction to the Marine Pollution Bulletin Special Issue" (2022) 178 *Marine Pollution Bulletin* 113596 at 2.

Mitigation of Seismic Sound in the Marine Environment is non-regulatory. However, it has become mandatory in certain circumstances, such as when it is incorporated into the conditions of approval for a project under the *Impact Assessment Act*.²⁰

MEQ guidelines in the context of integrated management planning are discussed below.

2.1.1 Addressing Ocean Noise through MEQ Measures under the *Oceans Act*

While noise thresholds and targets may exist for specific projects and activities, Canada has not developed comprehensive numerical thresholds or criteria for habitat impacts for ocean noise. This means that adverse effects to habitat are generally described in qualitative terms; for example, that noise levels do not result in “loss of habitat availability or function”.²¹

The Minister of Fisheries and Oceans should address this gap by establishing MEQ guidelines, thresholds, and criteria on ocean noise under paragraph 32(d) of the *Oceans Act*. For example, DFO could create MEQ guidelines similar to the statement on seismic sound, for other noise-generating ocean activities. DFO could also use this authority to set high-level objectives for addressing ocean noise in Canada’s marine waters, including, for example, a requirement to identify “areas of opportunity” for quiet MPAs, and to include consideration of noise in all MPA regulations and management plans.

The Minister could also establish regulations that create enforceable requirements and standards on underwater noise under paragraph 52.1(a) of the *Oceans Act*, such as targets and thresholds for acute and chronic noise levels. These thresholds and targets could be established at a national and/or regional level. Such targets could operate similarly to greenhouse gas emissions targets, that is, the federal government would be accountable to noise thresholds and targets, and be required to take action under other law policy frameworks to ensure that the cumulative noise caused by anthropogenic activities in a region do not exceed a certain threshold. This could include, for example, requirements on vessel passage through a region and on underwater construction projects approved in an area.

2.2 Integrated Management Planning

Marine planning has been suggested as a means for the government to address and manage ocean noise in a comprehensive way, by enabling the government to implement measures at a regional scale and across multiple sectors of ocean activity.²² Marine planning in Canada is mandated under section 31 of the *Oceans Act*, which requires the Minister of Fisheries and Oceans to develop integrated management plans for “all activities or measures affecting estuaries, coastal waters and marine waters”.²³ The Minister is required to coordinate with other federal ministers, boards, and agencies in order to effectively address all human uses in the ocean.²⁴

²⁰ *Impact Assessment Act*, SC 2019, c 28, ss 1, 7(3)(b) [IAA].

²¹ Fisheries and Oceans Canada, *Recovery Strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada* [Proposed] (Fisheries and Oceans Canada: Ottawa, 2018); B R Colbert, “Trends and developments in international regulation of anthropogenic sound in aquatic habitats” (2020) 147 *Journal of Acoustical Society of America* 3100 at 3103

²² Williams et al 2014, *supra* note 1 at 31.

²³ *Oceans Act*, SC 1996, c 31, s 31.

²⁴ *Ibid* ss 31, 32(b).

Section 32 of the *Oceans Act* requires that the Minister implement the plans by developing policies and programs in coordination with other federal authorities.²⁵ As discussed above, these plans may also be implemented through MEQ guidelines, objectives, and criteria.²⁶ Section 32 does not require that integrated management plans be implemented in law.

DFO has undertaken at least two different types of marine planning under these authorities.

2.2.1 *Integrated Ocean Management Plans*

DFO's first planning initiative following the passage of the *Oceans Act* was to develop integrated ocean management plans for five priority regions, or Large Ocean Management Areas, in Canada.²⁷ These plans were intended to set broad ecosystem-based management objectives for each area, including limits on ecosystem conditions that should be avoided and which would trigger management measures if surpassed.²⁸ DFO also intended to develop smaller-scale Coastal Management Area plans within these larger areas which would reflect these broader ecosystem-based management objectives through more detailed MEQ guidelines; however, to the writers' knowledge, no Coastal Management Area plans have been developed.²⁹

The integrated ocean management plans contain high-level ecological, social, cultural, and economic objectives. The plans also detail strategies and future actions in order to achieve the objectives. Only one of these plans, the Eastern Scotian Shelf Integrated Ocean Management Plan, explicitly addresses ocean noise.³⁰ Noise could, however, be considered as an element of healthy ecosystems and habitat under other plans.³¹

2.2.2 *Marine Spatial Planning*

More recently, DFO has established marine spatial planning (MSP) processes in five ocean areas in Canada. Marine spatial planning is defined in international guidance (which is referenced on DFO's website) as "a comprehensive and strategic process to analyze and allocate the use of the sea areas to minimize conflicts between human activities and maximize benefits, while ensuring the resilience of marine ecosystems."³² According to this definition, MSP typically "provides for spatial and temporal

²⁵ Ibid ss 32(a), (b).

²⁶ Ibid s 32(d).

²⁷ Fisheries and Oceans Canada, *Policy and operational framework for integrated management of estuarine, coastal and marine environments in Canada* (Ottawa: Fisheries and Oceans Canada, 2002).

²⁸ Ibid. These priority areas were identified in Canada's Ocean Action Plan, 2005, and comprised: areas in Canada's Ocean Action Plan of 2005: Placentia Bay/Grand Banks, the Scotian Shelf, the Gulf of St. Lawrence, the Beaufort Sea and the Pacific North Coast. See Fisheries and Oceans Canada, *Canada's Ocean Action Plan* (Ottawa: Fisheries and Oceans Canada, 2005) at 13-4.

²⁹ Ibid.

³⁰ Fisheries and Oceans Canada, *Eastern Scotian Shelf integrated ocean management plan* (Dartmouth: Fisheries and Oceans Canada, 2007).

³¹ For example, Objective 1.3 of the Pacific North Coast Integrated Management Area Plan is to "Conserve habitat and water quality of the ecosystem." See PNCIMA Initiative, *Pacific North Coast Management Area Plan* (2017) at 39.

³² UNESCO-IOC/European Commission. *MSPglobal international guide on marine/maritime spatial planning* (Paris: UNESCO, 2021) at 23.

measures to steer different uses of the sea areas or resources”, including permitting or excluding certain uses within particular areas, and identifying general conditions for use of the sea.³³

Four of the five areas currently under DFO MSP processes coincide or overlap with Large Ocean Management Areas that were subject to integrated management planning.³⁴ These plans are in the early stages of data-gathering and development. Marine spatial plans have already been developed on the north and central coast of British Columbia, however DFO did not participate in this process. The Marine Planning Partnership (MaPP) was co-led by coastal Indigenous nations and the Province of British Columbia, and resulted in draft marine spatial plans that include noise objectives.³⁵

There are also examples of effective MSP in Canada that have been done at a smaller scale. For example, DFO has used an MSP approach to reduce the impacts of shipping, including vessel noise, on beluga whales in the Saguenay-St. Lawrence Marine Park and surrounding waters. In that instance, an MSP approach allowed governments to work with stakeholders to co-develop shipping measures within and adjacent to the marine park that achieved a high level of compliance.³⁶

2.2.3 Addressing Ocean Noise through Integrated Management Planning

Although marine planning holds promise as a means of comprehensively managing human impacts in the ocean, efforts in Canada have yet to live up to this potential. The integrated ocean management plans that DFO has completed do not include any actionable management measures to address human impacts, nor do they contain spatially-explicit zoning requirements or MEQ values or thresholds. Instead, they identify strategies for research and for developing future management measures. For example, the objective and strategies on ocean noise in the Eastern Scotian Shelf Integrated Ocean Management Plan illustrate the level of detail typical of these plans:

Objective: Harmful noise levels are reduced to protect resident and migratory species and populations.

Strategies:

- Improve knowledge of sound and its impacts in the marine environment
- Identify mechanisms for reducing sound in the marine environment
- Identify and quantify acceptable noise levels for species/populations
- Develop management measures for ocean activities to meet acceptable levels.³⁷

Another major limitation is that none of the marine plans developed to date are legally binding. The *Oceans Act* does not require that integrated management plans be implemented in law, but rather

³³ Ibid.

³⁴ Fisheries and Oceans Canada, “Marine spatial planning areas” (January 2023) online: <<https://www.dfo-mpo.gc.ca/oceans/planning-planification/areas-aires/index-eng.html>>.

³⁵ Williams et al 2014, *supra* note 1 at 31; see e.g. Marine Planning Partnership Initiative, *Central Coast Marine Plan* (2015) at 38.

³⁶ N Menard et al., “Sharing the waters: Application of a marine spatial planning approach to conserve and restore the acoustic habitat of endangered beluga whales (*Delphinapterus leucas*) in and around the Saguenay–St. Lawrence Marine Park” (2022) 175 *Marine Pollution Bulletin* 113325.

³⁷ Eastern Scotian Shelf integrated ocean management plan, *supra* note 30 at 56.

through “policies and programs”, and there is no clear legislative authority under the Act through which to do so.³⁸ This means that the plans are not binding on decision-makers and they are not enforceable.

However, it is possible to implement elements of existing and future marine plans in law. As noted above, paragraph 52.1(a) of the *Oceans Act* allows the GIC to prescribe MEQ requirements and standards in regulation. This authority could be used to legally implement the MEQ standards and measures identified in marine plans, including ocean noise requirements. Additionally, small-scale MSP processes, like the above example in Saguenay-St. Lawrence Marine Park, have resulted in mandatory measures to address vessel traffic in the *Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations*, as well as high levels of compliance with voluntary shipping measures in the waters adjacent to the marine park.³⁹

2.3 Law and Policy Reform to Address Ocean Noise under the *Oceans Act*

The Minister of Fisheries and Oceans should address ocean noise through their authority to develop and implement integrated management plans.

Recommendations:

- DFO should establish MEQ guidelines, objectives, standards and targets on ocean noise, including binding quantitative targets for continuous and impulsive noise, through its authority under paragraphs 32(d) and 52.1(a) of the *Oceans Act*.
- DFO should legally implement the ocean noise standards identified in existing marine plans, such as those developed by MaPP in British Columbia, through MEQ regulations under paragraph 52.1(a) of the *Oceans Act*.
- DFO should use small-scale MSP processes to develop legal and voluntary measures to create quiet buffer zones around marine protected areas and critical habitat of at-risk species (discussed further in chapter 3, below).

³⁸ *Oceans Act*, supra note 23, s 32(a).

³⁹ *Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations*, SOR/2002-76.

3. CONSERVATION: SPECIES AND SPATIAL PROTECTION

The federal government has two primary means of protecting and conserving marine species and their habitat from harmful human impacts. First, the *Species at Risk Act* (SARA) creates the legal framework protecting the critical habitat of threatened and endangered species, including acoustic habitat, and the ability to create recovery strategies and action plans that address ocean noise. Second, a number of statutes allow the federal government to designate marine protected areas (MPAs), and these areas may include prohibitions and restrictions that assist in protecting acoustic habitats. Protective measures under these frameworks may be complementary or overlapping. For example, MPAs often overlap with critical habitat for species at risk and may be used to address threats to that habitat.

3.1 Species at Risk

SARA was enacted in 2002 for the purposes of preventing the further decline of at-risk wildlife species and promoting their recovery.⁴⁰ Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO) and Parks Canada share responsibility for implementing SARA, with DFO primarily responsible for protection of aquatic species at risk.

The federal government designates species as “at risk” by listing them under one of three Schedules to SARA. “Species at risk” means a threatened, endangered, or extirpated species or a species of special concern.⁴¹ Once a species is listed, a sequence of protective measures comes into play under the Act that protect individual members of a wildlife species, as well as that species’ critical habitat.

It should be noted at the outset that SARA has not lived up to expectations in terms of listing or recovery of at-risk species. Several issues have been identified with its implementation, including inadequate protections for marine species,⁴² delays in development of recovery strategies,⁴³ and continued decline of listed species and populations.⁴⁴

3.1.1 Prohibition Against Harm and Harassment of Species at Risk

Subsection 32(1) of SARA prohibits the killing, harming, harassing, capture or taking of any individual of a wildlife species that is listed as extirpated, endangered or threatened under the Act.⁴⁵ These protections apply to members of a listed species or population both within and outside of any identified critical habitat.

⁴⁰ SC 2002, c 29, s 6 [SARA].

⁴¹ Ibid s 2(1) “species at risk”.

⁴² Office of the Auditor General of Canada, *2018 Fall Reports of the Commissioner of the Environment and Sustainable Development to the Parliament of Canada: Report 2 – Protecting Marine Mammals* (Ottawa: Minister of Public Works and Government Services, 2018); J M McDevitt-Irwin et al., “Missing the safety net: evidence for inconsistent and insufficient management of at-risk marine fishes in Canada” (2015) 72 *Canadian Journal of Fisheries and Aquatic Sciences* 1596.

⁴³ 2014 FC 148

⁴⁴ A Turcotte et al., “Fixing the Canadian *Species at Risk Act*: identifying major issues and recommendations for increasing accountability and efficiency” (2021) 6 *FACETS* 1474.

⁴⁵ SARA, *supra* note 40, s 32(1).

DFO considers “harm” to mean “the adverse result of an activity where single or multiple events reduce the fitness (e.g. survival, reproduction, movement) of individuals”,⁴⁶ and it considers “harass” to mean “any act or series of acts which tend to disturb, alarm, or molest an individual or population, which by means of frequency and magnitude results in changes to normal behaviour(s) that reduce an individual’s ability to carry out one or more of its life processes which could jeopardize the survival or recovery of the species”.⁴⁷

There is currently no case law interpreting subsection 32(1) in the context of acoustic impacts. However, there have been some attempts to link acoustic impacts to DFO’s definitions for harm and harassment. For example, one analysis has suggested quantitative thresholds for “harassment” and “harm” to individuals in the context of seismic survey noise, such as “permanent hearing thresholds shifts” and “temporary hearing threshold shifts”.⁴⁸

3.1.2 Protection of Species at Risk Critical Habitat

“Critical habitat” is defined under SARA to include “the habitat necessary for survival and recovery of a listed species” and identified in that species’ recovery strategy or action plan.⁴⁹ The Federal Court of Canada has recognized that critical habitat under SARA includes the chemical, biological, and physical features and attributes of an ecosystem which allow a species to perform a function necessary for its life cycle, including acoustic elements of an ecosystem.⁵⁰

The detailed process for identifying and protecting critical habitat is as follows: once a species is listed under the Act, SARA requires that the responsible minister develop a recovery strategy and then a recovery action plan, which includes the process of identifying the species’ critical habitat and components of critical habitat.⁵¹ The Minister is required to monitor progress towards the objectives of an action plan five years after it is published.⁵² Several at-risk marine species’ action plans have been reviewed, with progress on implementation on recovery measures detailed.⁵³ However, there are no additional requirements under the Act to monitor or address recovery objectives to ensure that they are met.

⁴⁶ Fisheries and Oceans Canada. *Guidelines for Terms and Concepts Used in the Species at Risk Program*, Canadian Science Advisory Secretariat Science Advisory Report 2009/065 (2010) at 2.

⁴⁷ JA Theriault and HB Moors-Murphy, *Species at Risk criteria and seismic-survey noise thresholds for cetaceans*, Canadian Science Advisory Secretariat Research Document 2015/078 (2015) at 1.

⁴⁸ Ibid. Permanent or temporary hearing threshold shifts occur when an individual is exposed to very loud sounds and experiences a reduction in hearing sensitivity. If hearing returns to normal then this shift is temporary, however longer-term damages may still result.

⁴⁹ SARA, *supra* note 40, s 2(1) “critical habitat”.

⁵⁰ Fisheries and Oceans Canada, “Directive on identifying critical habitat for aquatic species at risk” (2015); *David Suzuki Foundation v Canada (Fisheries and Oceans)*, 2010 FC 1233 at paras 337-39 (appealed to the Federal Court of Appeal on other grounds).

⁵¹ SARA, *supra* note 40, ss 37(1), 47, 49(1)(a).

⁵² SARA, *supra* note 40, s 55.

⁵³ Implementation reports can be found in the Species at Risk Public Registry by filtering for Document Type “Report on the Progress of Recovery Document Implementation” (December 2023), online: <<https://species-registry.canada.ca/index-en.html#/documents?sortBy=documentTypeSort&sortDirection=asc&pageSize=10>>.

After a recovery strategy or action plan is published in the public registry, the Minister has 180 days to issue either a critical habitat order, which sets out how the critical habitat will be legally protected, or a protection statement, which details how sufficient legal protections of the critical habitat already exist.⁵⁴ In the marine context, legal protection of critical habitat could include fisheries closures or shipping restrictions. Critical habitat of a SARA-listed species may also be considered in identifying areas to be designated as MPAs.

In cases where the species faces imminent threats to its survival or recovery, the federal government may issue an emergency order to protect a listed species.⁵⁵ The emergency order may “identify habitat that is necessary for the survival or recovery of the species” and may include “provisions prohibiting activities that may adversely affect the species and that habitat”.⁵⁶

Critical habitat orders are generally very brief, and provide that subsection 58(1) of SARA applies to the critical habitat of the species, as identified in its recovery strategy or action plan.⁵⁷ Subsection 58(1) prohibits the destruction of the critical habitat of aquatic species that are listed as endangered or threatened under the Act.⁵⁸ ECCC’s *Species at Risk Act Policies: Overarching Policy Framework* states that destruction occurs when part of the critical habitat is “degraded, either permanently or temporarily such that it would not serve its function when needed by the species.”⁵⁹

There is no case law defining what destruction of the acoustic components of critical habitat would entail. However, an analysis of underwater noise and SARA protections in the context of seismic surveys has noted that noise-producing activities could be considered to have destroyed critical habitat, either temporarily or permanently, if they alter the acoustic environment of critical habitat to the extent that its functions, which include foraging, socializing, giving birth, and rearing young “are compromised when needed.”⁶⁰ A more comprehensive definition of destruction in the context of the acoustic environment would assist in protecting critical habitat from ocean noise impacts.

3.1.3 *Managing Ocean Noise through the Species at Risk Act*

A number of Action Plans and Recovery Strategies for marine mammals listed under SARA have included an acoustic component of the species’ critical habitat:

- Acoustic environment is included as an attribute of critical habitat of the Northern Pacific population of Humpback Whales.⁶¹

⁵⁴ SARA, *supra* note 40, s 58(5).

⁵⁵ SARA, *supra* note 40, s 80.

⁵⁶ SARA, *supra* note 40, s 80(4).

⁵⁷ See e.g. *Critical Habitat of the Killer Whale (Orcinus orca) Northeast Pacific Southern Resident Population Order*, SOR/2018-278.

⁵⁸ SARA, *supra* note 40, s 58(1). Any person who violates subsection 58(1) commits an offence under paragraph 97(1)(a) of SARA and may be prosecuted.

⁵⁹ Environment Canada, *Species at Risk Act Policies: Overarching Policy Framework*, draft (2009).

⁶⁰ Theriault and Moors-Murphy, *supra* note 47 at 2.

⁶¹ Fisheries and Oceans Canada, *Recovery Strategy for the North Pacific Humpback Whale (Megaptera novaeangliae) in Canada* (Ottawa: Fisheries and Oceans Canada, 2013).

- The “production of intense noise” is listed as an activity that would destroy critical habitat in the *Recovery Strategy for the North Atlantic Right Whale*.⁶²
- The *Action Plan for the Northern Bottlenose Whale* lists minimizing the potential impacts of anthropogenic noise on Northern Bottlenose Whales and their critical habitat by establishing “acoustic exposure thresholds for harm or harassment to individuals and destruction of critical habitat” and continued “noise mitigation and monitoring measures for beaked whales” as high priorities.⁶³
- The acoustic environment is listed as an attribute of critical habitat necessary for the survival or recovery in the *Northern and Southern Resident Killer Whales Recovery Strategy*, and noise is described as one of the primary anthropogenic threats.⁶⁴
- An *Action Plan to Reduce the Impact of Noise on the Beluga Whale and Other Marine Mammals at Risk in the St. Lawrence Estuary* (including the blue whale, Northwest Atlantic population; the fin whale, Atlantic population; and the North Atlantic right whale) focuses solely on reducing the common threat of noise impacts.⁶⁵

In a few instances, the federal government has introduced legal measures beyond a critical habitat protection order to address acoustic impacts within a species’ critical habitat. For example, the Minister of Transport issued a Ministerial order under the *Canada Shipping Act, 2001* (CSA) to protect Southern Resident Killer Whales (SRKWs) from the impacts of vessel noise. These measures, discussed in greater detail in the chapter on shipping below, include:

- Two mandatory Speed Restricted Zones near Swiftsure Bank, in which all vessels will be restricted to a maximum speed of 10 knots between June and November
- Two interim sanctuary zones where no vessel traffic is permitted during the period of June and November
- A requirement for vessels to stay at least 400 metres away from all killer whales in Southern British Columbia

Another example is the critical habitat of the Northern Bottlenose Whale on the Atlantic coast. Multiple deep-sea canyons were identified as critical habitat areas for the whale, and one of these canyons was included within the boundaries of the Gully Marine Protected Area, designated under the *Oceans Act* (discussed in more detail under chapter 3.2.1).

3.2 Law and Policy Reform to Improve Protection of Acoustic Habitat under the *Species at Risk Act*

One of the key shortcomings of addressing ocean noise under SARA is the absence of clear indicators and thresholds for anthropogenic noise. This means that adverse effects to habitat are generally described in

⁶² MW Brown et al., *Recovery Strategy for the North Atlantic Right Whale (Eubalaena glacialis) in Atlantic Canadian Waters* [Final] (Ottawa: Fisheries and Oceans Canada, 2009).

⁶³ Fisheries and Oceans Canada, *Action Plan for the Northern Bottlenose Whale (Hyperoodon ampullatus), Scotian Shelf population, in Atlantic Canadian waters* (Ottawa: Fisheries and Oceans Canada, 2017).

⁶⁴ Fisheries and Oceans Canada, 2018, *supra* note 21 at 9.

⁶⁵ Fisheries and Oceans Canada. *Action Plan to Reduce the Impact of Noise on the Beluga Whale and Other Marine Mammals at Risk in the St. Lawrence Estuary* (Ottawa: Fisheries and Oceans Canada, 2020).

qualitative terms; for example, that noise levels do not result in “loss of habitat availability or function”, which are hard to enforce and do not provide clear guidance for decision-makers.⁶⁶

Additionally, the provisions used to protect species at risk and their habitat have not been clearly linked to acoustic impacts. For example, individuals of species at risk are protected from “harm” and “harassment”, but DFO has not developed clear policy to define noise thresholds that constitute harm and harassment for listed species. Similarly, DFO does not have a definition or minimum threshold for what constitutes “destruction” of acoustic habitat.⁶⁷

Recommendations:

- DFO should consider ocean noise impacts in the development of every aquatic species’ recovery strategy and action plan and develop noise targets and thresholds for each listed species. These should include quantitative cumulative and acute acoustic thresholds for a listed species.
- DFO should develop minimum thresholds or definitions for what constitutes noise-related “harm” and “harassment” of individual species at risk under subsection 32(1) of SARA. DFO should also develop a minimum threshold or definition for what constitutes “destruction” of acoustic habitat under subsection 58(1).

3.3 Managing Noise in Marine Protected Areas

MPAs can be an effective means to protect species (particularly marine mammals) from noise impacts within specific areas.⁶⁸ MPAs limit activities within their boundaries, and this may include activities that cause noise. Thus, designation of an MPA presents the opportunity to establish place- and species-specific measures to prohibit and regulate noise-producing activities within the boundaries of the MPA.

Canada has three main MPA designations at the federal level:

- MPAs under the *Oceans Act*
- National marine conservation areas (NMCAs) and NMCA reserves (NMCARs) under the *Canada National Marine Conservation Areas Act* (CNMCA Act)
- National wildlife areas (NWAs) and marine national wildlife areas (mNWAs) under the *Canada Wildlife Act*

Additionally, the marine components of the following designations are also considered federal MPAs:

- National parks with marine components under the *Canada National Parks Act*
- Migratory bird sanctuaries with marine components under the *Migratory Birds Convention Act, 1994*

⁶⁶ Fisheries and Oceans Canada 2018, *supra* note 21; Colbert 2020, *supra* note 21 at 3103.

⁶⁷ R Williams et al., “Destroying and Restoring Critical Habitats of Endangered Killer Whales” (2021) 71 *Bioscience* 1117.

⁶⁸ See L S Weilgart, “Managing noise through marine protected areas around global hot spots” (2006) *IWC Scientific Committee* (SC/58/E25); R Williams et al, “Quiet(er) marine protected areas” (2015) 100 *Marine Pollution Bulletin* 154.

The federal government has committed to applying a baseline standard of protection to all federal MPAs designated after April 2019, which includes prohibitions on dumping, bottom trawl fishing, oil and gas activities, and mining.⁶⁹

This report includes examples of MPAs for certain designations, where the designation and noise management provisions for these areas are a result of the listing of a marine mammal population under SARA and identification of these areas as critical habitat. The Appendix includes a thorough analysis of noise-related regulations, policy and management measures for all MPAs designated under the *Oceans Act*, CNMCA Act, and through protected marine area regulations under the *Canada Wildlife Act*.

3.3.1 *Oceans Act*

The majority of federal MPAs are designated under Canada's *Oceans Act*. *Oceans Act* MPAs may be designated for one or more reasons enumerated under subsection 35(1) of the Act. Reducing the impacts of ocean noise could align with most, if not all of these reasons, including: the protection of fisheries, marine mammals, and endangered marine species and habitat; the protection of unique habitats (such as relatively quiet areas of the ocean); and to maintain ecological integrity, which could include the acoustic composition of an ecosystem.⁷⁰

Each MPA has its own regulations, which vary slightly but follow a common structure: each regulation has a blanket prohibition on any activity that “disturbs, damages, destroys or removes” any living marine organism or its habitat within the MPA; followed by a list of exceptions for activities that are allowed within the MPA despite the general prohibition. If a potentially harmful activity is not within the list of exceptions, it is presumed/understood to be prohibited within the MPA.

MPAs often overlap with critical habitat for SARA-listed species at risk and may be used as legal frameworks to help address threats to the habitat.

None of the *Oceans Act* MPA regulations directly address noise within their text; however, the majority provide protection from many noise-producing activities. For example, all but one *Oceans Act* MPA prohibits oil and gas exploration and production (including seismic surveys).⁷¹ Mining and offshore renewable energy are not included as an allowed activity in the regulations of any existing *Oceans Act* MPA.

The primary noise-producing activities that are allowed to continue in most MPAs are shipping and the vessel noise associated with commercial fishing. Additionally, some MPAs permit certain construction activities and the laying of underwater cables. Activities for the purposes of public safety, national security and law enforcement are permitted within all MPAs.

Almost every MPA contains an exception for navigation when carried out in accordance with the CSA. Those that do not may simply be an artefact of an older designation. DFO has indicated that newer MPA

⁶⁹ Fisheries and Oceans Canada, “Marine Protected Areas (MPA) Protection Standard” (March 2023), online: <<https://www.dfo-mpo.gc.ca/oceans/mpa-zpm/protection-standard-norme-protection-eng.html>>.

⁷⁰ *Oceans Act*, *supra* note 23, ss 35(1)(a), (b), (c), 35(1.1).

⁷¹ Tarium Niriyutait MPA is the exception; see *Tarium Niriyutait Marine Protected Areas Regulations*, SOR/2010-190, s 7.

regulations are more detailed in their list of exceptions, and that shipping may be understood to be allowed even if not explicitly exempted in older MPAs.⁷²

Additional information on the intent of the MPA, and the extent to which measures have been taken within the area to address ocean noise, can be found in the MPA's regulatory impact analysis statement (RIAS) and its management plan. See the Appendix for a comprehensive analysis of each MPA's regulations, RIAS and management plan, and the extent to which noise has been considered.

Example: The Gully Marine Protected Area

The Gully is a submarine canyon on the Scotian Shelf and is one of three submarine canyons identified as critical habitat of the Northern Bottlenose Whale. The Gully MPA was established in 2004 under the *Oceans Act* and uses zonation to buffer the most important and vulnerable area of the canyon. Noise from seismic activities in the area is one of the primary considerations for activities that could alter and disturb this critical habitat.⁷³

The regulations contain a unique "vicinity clause" that prohibits activities "in the MPA or in its vicinity that is likely to result in the disturbance, damage or destruction of a living marine organism, or its habitat or the seabed" within the Gully MPA itself.⁷⁴ Though it has not been applied to noise impacts, it is a potentially useful tool to address transboundary effects of noise on particularly sensitive areas. The Gully's 2008 Management Plan stated that "environmental impact assessments will be expected to directly address the effects of activities near the MPA on the environment within the MPA, including such items as noise levels and the movements of deposits and discharges."⁷⁵ The 2017 Management Plan does not repeat this statement, but notes a management priority "Monitor[ing] human activities in and near the MPA to ensure operators comply with relevant regulations and operational standards."⁷⁶ It also states that "Proponents of activities near the Gully must ensure they are in compliance with SARA."⁷⁷

3.3.2 *Canada National Marine Conservation Areas Act*

The CNMCA Act allows the Minister of Environment and Climate Change to designate NMCA's for the purpose of "protecting and conserving representative marine areas for the benefit, education and enjoyment of Canada and the world."⁷⁸ They are to be managed and used "in a sustainable manner" that does not compromise the "structure and function of the ecosystem."⁷⁹ Although not explicitly stated in the Act, this could be understood to include protection of the acoustic function of the ecosystem.

⁷² M Kofahl and S Hewson, *Navigating the Law: Reducing Shipping Impacts in Marine Protected Areas* (WWF-Canada, October 2020) at 10, online: <<https://wwf.ca/wp-content/uploads/2021/02/WWF-MPA-6-Navigating-the-Law-v5.pdf>>.

⁷³ Fisheries and Oceans Canada, *Recovery Strategy for the Northern Bottlenose Whale, Scotian Shelf population, in Atlantic Canadian Waters* (Ottawa: Fisheries and Oceans Canada, 2017).

⁷⁴ *Gully Marine Protected Area Regulations*, SOR/2004-112, s 4.

⁷⁵ Fisheries and Oceans Canada, *The Gully Marine Protected Area Management Plan* (Dartmouth: Fisheries and Oceans Canada, 2008).

⁷⁶ Fisheries and Oceans Canada, *The Gully Marine Protected Area Management Plan* (Dartmouth: Fisheries and Oceans Canada, 2017) at 15.

⁷⁷ *Ibid* at 29.

⁷⁸ *Canada National Marine Conservation Areas Act*, SC 2002, c 18, s 4(1) [CNCMA Act].

⁷⁹ *Ibid* s 4(2).

At the time of writing, only one NMCA has been designated under the CNMCA Act: the Gwaii Haanas Haida Heritage Site and National Marine Conservation Area Reserve (NMCAR). Parks Canada is in the process of developing several more throughout Canada's marine regions. The Saguenay–St. Lawrence Marine Park is often referred to as an NMCA, although it is designated under its own legislation.

Under the CNMCA Act, all mining and oil and gas activities are prohibited within NMCAs.⁸⁰ This means that seismic exploration for oil and gas purposes is not permitted. No further restrictions on noise-related activities are established under the Act. Additionally, the Act specifies that any regulation of fisheries and aquaculture may only be done with the support of the Minister of Fisheries and Oceans, and regulations addressing marine navigation may only be done with the support of the Minister of Transport.⁸¹ No such regulations currently exist.

In the case of the Gwaii Haanas NMCAR, fishing activity regulations were developed after the area was designated and have been implemented through fisheries closures.⁸² Parks Canada is currently developing regulations which are expected to provide more information on permitted and prohibited activities.⁸³

Example: Gwaii Haanas National Marine Conservation Area Reserve

The Gwaii Haanas NMCAR was established in 2010 under the CNMCA Act, as a federal designation after decades of recognition of the area under Haida, Provincial and Federal agreements. The NMCAR protects the marine component surrounding an existing terrestrial National Park Reserve and Haida Heritage Site.

A Multi-species Action Plan for Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site was created in 2016 for species requiring an action plan that occur inside the boundary of the site,⁸⁴ including 23 species or populations listed under SARA, ten of which are cetaceans.

Measures to be taken under the Action Plan include “scop[ing] the concept of a ‘Quiet Sea Reserve’ designation for Gwaii Haanas” and “minimiz[ing] disturbance to marine mammals from visitor boats by promoting compliance with Whale Watching Guidelines.”⁸⁵ These measures are designed to ensure that anthropogenic noise in the marine environment does not prevent the recovery of at-risk species.⁸⁶ They address noise in the NMCAR and are focused on marine mammal species only.

⁸⁰ CNMCA Act, *supra* note 78, s 13.

⁸¹ *Ibid* s 16(2), (3).

⁸² See Parks Canada, “Fishing: Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site” (November 2022), online: <<https://parks.canada.ca/pn-np/bc/gwaiihaanas/activ/experiences/peche-fishing>>; and Fisheries and Oceans Canada, “BC tidal areas 2, 102, 130 and 142 - Haida Gwaii: Recreational fishing limits, openings and closures” (August 2023), online: <https://www.pac.dfo-mpo.gc.ca/fm-gp/rec/tidal-maree/a-s2-eng.html#INDEFCL0SE_gh016_336_2228>.

⁸³ Parks Canada, “National marine conservation areas policy and regulations” (April 2023), online: <<https://parks.canada.ca/amnc-nmca/gestion-management>>.

⁸⁴ Parks Canada Agency, *Multi-species Action Plan for Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site* [Proposed] (Ottawa: Parks Canada Agency, 2016).

⁸⁵ *Ibid* at 21.

⁸⁶ *Ibid*.

3.3.3 Canada Wildlife Act

The *Canada Wildlife Act* enables the establishment of National Wildlife Areas as well as protected marine areas (commonly referred to as marine NWAs, or mNWAs).

NWAs

NWAs are established and regulated through the *Wildlife Area Regulations*, under the *Canada Wildlife Act*. Within an NWA, it is prohibited to carry out any industrial activity, or activity that is likely to disturb, damage, destroy, or remove from the wildlife area any wildlife, wildlife residence, or wildlife habitat, without a permit.⁸⁷ Some specific noise-polluting activities are prohibited within NWAs without a permit. For example, it is prohibited to carry out commercial shipping within an NWA, undertake any mining or excavation project, or disturb or remove any soil, sand, gravel or other material without a permit.⁸⁸

mNWAs

Marine NWAs are established through their own regulation under section 4 of the *Canada Wildlife Act*. Scott Islands is the first and only area to have been designated as an mNWA, and it was designated primarily to protect seabirds. Its Regulations include a blanket prohibition on disturbing, damaging or destroying wildlife or its habitat, or removing wildlife or its habitat from the area.⁸⁹

While the Scott Islands mNWA has measures that address noise disturbance, this is primarily in the form of airborne noise. For example, the regulations prohibit vessels from passing or anchoring within certain distances of the islands, and they prohibit flying an aircraft below a certain altitude.⁹⁰ The regulations do not include specific provisions to address ocean noise.

In addition, the regulations allow several activities that could cause acoustic disturbance, including activities for the purposes of public safety, national security or emergency, commercial and recreational fishing, the activities of foreign vessels in the part of the area that is in Canada's Exclusive Economic Zone (EEZ), navigation of military vessels, and navigation in accordance with the CSA.⁹¹

3.3.4 Canada National Parks Act

National parks may be designated under the *Canada National Parks Act*, and in some cases, mostly historical, these national parks may have marine components. An example is Pacific Rim National Park Reserve in British Columbia.

⁸⁷ *Wildlife Area Regulations*, CRC c 1609, ss 3(1)(q), (u).

⁸⁸ *Ibid* ss 3(1)(l), (r).

⁸⁹ *Scott Islands Protected Marine Area Regulations*, SOR/2018-119, s 2(1)(a).

⁹⁰ *Ibid* s 2(1)(d).

⁹¹ *Ibid* s 3-5.

In managing a national park, the first priority of the Minister must be “maintenance or restoration of ecological integrity through the protection of natural resources and natural processes.”⁹² Under the Act, “ecological integrity” is defined as “a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes.”⁹³ Particularly within marine environments, this condition could be understood to include the acoustic characteristics of a region.

The *National Parks General Regulations* contain a number of provisions that could be used to introduce measures to address ocean noise. These grant the superintendent powers to restrict or prohibit access to certain areas of the park and to prohibit certain activities either outright or only allow them in accordance with conditions of a permit.⁹⁴ The superintendent may also close areas in the park altogether to prevent danger to flora and fauna in the park.⁹⁵ The regulations also prohibit any person from causing “excessive noise” within the park, and from disturbing any wildlife within the park.⁹⁶ Although these provisions were likely intended for the management of terrestrial parks, they could also apply to introduce protective measures on ocean noise within the marine components of national parks.

3.3.5 Migratory Birds Convention Act

Migratory bird sanctuaries may be established under the *Migratory Birds Convention Act* and the *Migratory Bird Sanctuary Regulations*, in order to protect habitat of migratory birds. Although migratory bird sanctuaries are no longer considered a primary wildlife habitat protection tool by the Canada Wildlife Service, several still exist in coastal areas in Canada.⁹⁷

The regulations prohibit any person from carrying out activities that are harmful to migratory birds or their eggs, nest, or habitat without a permit.⁹⁸ In granting a permit, the Minister must include such conditions as deemed necessary to protect migratory birds, eggs, nests, or habitat.⁹⁹

Scientists increasingly understand the impacts of ocean noise on seabirds, which may interfere with their ability to hunt during prolonged dives underwater, among other effects.¹⁰⁰ This means that the habitat protection provisions within migratory bird sanctuaries may also protect acoustic habitat, and could be applied to reduce impacts of ocean noise.

⁹² *Canada National Parks Act*, SC 2000, c 32, s 8(2).

⁹³ *Ibid* s 2(1).

⁹⁴ *National Parks General Regulations*, SOR/78-213, ss 7(1), 7.1(2), (5)

⁹⁵ *Ibid* s 36(1).

⁹⁶ *National Parks Wildlife Regulations*, SOR/81-401, ss 4(1)(a), 32(1).

⁹⁷ S Hewson et al., *Protecting the Coast and Ocean: A Guide to Marine Conservation Law in British Columbia* (Vancouver: UBC Press, 2023) at 100.

⁹⁸ *Migratory Bird Sanctuary Regulations*, CRC c 1036, s 10(1).

⁹⁹ *Ibid* s 9(3).

¹⁰⁰ See e.g. K Anderson Hansen et al., "The common murre (*Uria aalge*), an auk seabird, reacts to underwater sound" (2020) 147 *Journal of the Acoustical Society of America* 4069; K Sorensen et al., "Gentoo penguins (*Pygoscelis paupua*) react to underwater sounds" (2020) 7 *Royal Society Open Science* 191988; S C Therrien, "In-air and underwater hearing in diving birds," (2014) Ph.D. Thesis, University of Maryland; K Anderson Hansen et al., "Great cormorants (*Phalacrocorax carbo*) can detect auditory cues while diving," (2017) 104 *Naturwissenschaften* 45.

3.3.6 Saguenay-St. Lawrence Marine Park Act and Regulations

Saguenay-St. Lawrence Marine Park, located in Quebec, is unique in its designation under a separate federal law, the *Saguenay-St. Lawrence Marine Park Act*, and a ‘mirrored’ provincial law.¹⁰¹ It is considered to be a NMCA, managed at the federal level by Parks Canada through the federal Act and its Regulations.

Three quarters of the Marine Park has been identified as critical habitat of the St. Lawrence Estuary beluga whale, and the park also overlaps with an area of very high vessel traffic, including commercial shipping routes and ferries, and recreational boaters and whale-watching vessels.¹⁰² The Marine Park’s Management Plan references noise from marine traffic as an impact on whales.¹⁰³

In 2016, the *Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations* were amended to introduce a number of new regulatory tools to enable Parks Canada to better protect whale species in the park, particularly St. Lawrence Estuary belugas. The Regulatory Impact Analysis Statement (RIAS) accompanying the regulations recognizes the impacts of heavy marine traffic as a key threat, including contamination, ocean noise, and increased risk of collision.¹⁰⁴ The new measures sought to introduce tools to address these issues, including:

- The power to introduce spatial and temporal restrictions on permits held by commercial tourism operators.¹⁰⁵ These restrictions are legally binding, and a permit is a legal requirement for any vessel-based commercial tourism business in the park.¹⁰⁶
- The power to create temporary exclusion zones for environmental, cultural, or health and safety reasons. These closures prohibit anyone from entering the exclusion area and apply to all vessels.¹⁰⁷ This power has been used to establish an area closure in Baie Sainte-Marguerite, an area within the marine park that is important for female belugas and their calves.¹⁰⁸ This may be the first regulatory area closure to protect a marine species at risk in Canada.¹⁰⁹
- A prohibition banning specific activities within the park, including the use of personal watercrafts, air cushion vehicles, and commercial hunting of migratory birds.¹¹⁰

¹⁰¹ *Saguenay-St. Lawrence Marine Park Act*, SC 1997, c. 37; *Act respecting the Saguenay–St. Lawrence Marine Park*, P-8.1 (Quebec).

¹⁰² Menard et al 2022, *supra* note 36 at 2.

¹⁰³ Government of Canada, Government of Quebec, “Saguenay–St. Lawrence Marine Park Management Plan” (2010) at 34.

¹⁰⁴ *Regulations Amending the Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations*, SOR/2016-257, *Canada Gazette II*, vol. 150, no. 21, October 19, 2016.

¹⁰⁵ *Marine Activities in the Saguenay St-Lawrence Marine Park Regulations*, SOR/2002-76, s 7.1; Menard et al., *supra* note 102 at 5.

¹⁰⁶ *Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations*, *supra* note 105, s 3(1); Menard et al, *supra* note 102 at 5.

¹⁰⁷ *Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations*, *supra* note 105, ss 14.1 and 14.2; Menard et al., *supra* note 102 at 5.

¹⁰⁸ Menard et al., *supra* note 102 at 4.

¹⁰⁹ *Ibid* at 13.

¹¹⁰ *Marine Activities in the Saguenay-St. Lawrence Marine Park Regulations*, *supra* note 105, s 14.4.

- Rules for conduct and vessel operation in the presence of cetaceans and any marine mammals listed under SARA. These include approach distances, vessel manoeuvring and speed limits, as well as the maximum concentration of vessels in particular observation zones at a time.¹¹¹
- A maximum speed limit of 25 knots for all vessels within the marine park, 15-20 knots in the mouth of the Saguenay in summer months, and 10 knots within observation areas or in the presence of marine mammals.¹¹²

Parks Canada also pursued voluntary measures for areas of importance for belugas that are adjacent to but outside the marine park. These measures fall within a compulsory pilotage area and are communicated through Notices to Mariners.¹¹³ Parks Canada has reported high compliance with voluntary and regulatory measures,¹¹⁴ and their success suggests that similar regulatory measures should be developed and used in other MPAs in order to reduce the impacts of vessel-related ocean noise.

3.4 Law and Policy Reform to Improve Regulation of Ocean Noise in MPAs

None of the federal MPA statutes or regulations address noise within their text. However, the majority provide some protection from many noise-producing activities, including oil and gas activities and mining. The primary noise-producing activities that are allowed to continue in most MPAs are shipping and the vessel noise associated with commercial fishing. Ocean noise is addressed in less than half of the management plans of MPAs (see Appendix).

There are limited mandatory measures to address vessel ocean noise within MPAs, with the exception of the measures recently put in place to address vessel-related noise and other impacts in the Saguenay–St. Lawrence Marine Park. In a very few cases, the federal government has developed additional voluntary measures to address vessel noise within the MPA.

Recommendations:

- DFO, ECCC, and Parks Canada should assess the impacts of anthropogenic ocean noise in the development and management of every MPA, and should introduce measures in MPA regulations and management plans to mitigate these impacts. These should include noise budgets for all existing and future MPAs to ensure that high-value areas remain protected from anthropogenic noise into the future.
- DFO, ECCC, and Parks Canada should work with Transport Canada to mitigate vessel noise in MPAs through regulatory measures for areas in Canada’s internal waters and territorial sea, and through voluntary measures in the EEZ.

¹¹¹ Ibid ss 15-19.

¹¹² Ibid ss 19-24.

¹¹³ Menard et al., *supra* note 102 at 5.

¹¹⁴ Ibid at 13.

4. FISHERIES

This chapter will focus on the role of the *Fisheries Act* as the primary federal statute governing fisheries and fish habitats that could be used to address ocean noise. Ocean noise may be addressed through legal protection for fish (including marine mammals) and fish habitat. The *Marine Mammal Regulations* (MMR) under the *Fisheries Act* also provide protective measures, including a prohibition on disturbing marine mammals, which could include acoustic disturbances, and mandatory approach distances.

4.1 *Fisheries Act*

Under Canada's constitution, the federal government is responsible for fisheries, which it regulates primarily through the *Fisheries Act* and its Regulations.¹¹⁵ The Act defines "fish" broadly to include marine animals, and defines "fish habitat" as "water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas."¹¹⁶

Subsection 35(1) of the *Fisheries Act* provides that "No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat." Habitat may be read to include acoustic habitat. We are not aware of any case law or other interpretation that clarifies this point, however critical habitat under the *Species at Risk Act* has been defined to include biophysical attributes, including sound.¹¹⁷

DFO typically assesses the habitat impacts of proposed projects, including ocean noise, on a project-by-project basis, and imposes mitigation measures if needed.¹¹⁸ DFO can authorize any residual harm to fish through an authorization for the activity issued under the *Fisheries Act*.¹¹⁹ DFO appears to consider the noise impacts of proposed projects with respect to marine mammals, for example bowhead and beluga whales in the Arctic.¹²⁰ However, it does not appear that DFO regularly considers the impacts of noise on fish species when assessing authorizations for proposed projects.

4.1.1 *Marine Mammal Regulations*

The MMR, enacted under the *Fisheries Act*, provide additional protections to marine mammals from whale watching and related activities.¹²¹ Included among these measures are specified approach distances that vessels must abide by in the presence of marine mammals, which provide some protection from both acoustic and physical disturbances caused by vessels.

¹¹⁵ *Constitution Act, 1867* (UK), 30 & 31 Vict, c 3 reprinted in RSC 1985, Appendix II, No 5, s 91(12); *Fisheries Act*, RSC 1985, c F-14.

¹¹⁶ *Fisheries Act*, *supra* note 115, s 2(1).

¹¹⁷ See discussion on the *Species at Risk Act*, in section 3.1 of this report.

¹¹⁸ B W Hanna et al., "Managing Anthropogenic Underwater Noise in the Northwest Territories, Canada" in *The Effects of Noise on Aquatic Life*, A N Popper and A Hawkins, eds., 625-627 (New York: Springer, 2012).

¹¹⁹ *Fisheries Act*, *supra* note 115, s 35(2)(b).

¹²⁰ Hanna et al., *supra* note 118, 625-626.

¹²¹ *Regulations Amending the Marine Mammal Regulations*, SOR/2018-126, *Canada Gazette II*, vol. 152, no. 14, June 22, 2018.

Section 7 provides that “no person shall disturb a marine mammal”, except under certain defined conditions.¹²² Although “disturb” is not defined, the regulations were amended in 2018 to specifically identify several activities that constitute a disturbance, including activities related to vessel maneuvering around marine mammals, and approaching a marine mammal at distances less than the approach distances set out in Schedule VI of the regulations.¹²³ Schedule VI defines approach distances for whales, dolphins, porpoises, and walrus, and specifies distances dependent on different locations throughout Canada, and whether the species is at risk.¹²⁴ The regulations also specify requirements for maneuvering of aircrafts at less than 1,000 feet above, and within a 0.5 nautical mile radius of a marine mammal.¹²⁵

These amendments reflect some of the measures in the voluntary *Be Whale Wise Guidelines*, and in many regards are a successful example of the progression of voluntary measures into legally binding and enforceable requirements.¹²⁶ However, section 7 was also amended to provide an exception to the Schedule VI approach distances for any “vessel that is in transit”,¹²⁷ meaning they would not apply to any vessels travelling from point A to point B, and so may not assist in reducing acoustic disturbance from commercial shipping and other vessels transiting the ocean.

4.1.2 Application of Fisheries Act Measures to Fish Species

Paradoxically, protective measures related to ocean noise under the *Fisheries Act* have not focused on fish species. This is because the main source of these measures is the *Marine Mammal Regulations*. Existing designations and regulations to protect vulnerable fish species were not created or established with the impacts of ocean noise on fish in mind, and therefore do not account for or manage these. This lack of consideration afforded to fish species is no longer consistent with the best available science on ocean noise.

At least 800 species of fish from over 100 families are known to produce sounds, and studies continue to document and identify soniferous (sound-producing) fishes.¹²⁸ Fish produce sounds using a variety of means, and use sounds in several different contexts, including for feeding, spawning, fighting, and group cohesion.

For example, it is now known that several species of rockfish produce sounds for spawning and defensive behaviours.¹²⁹ However, a recent study showed that Rockfish conservation areas in the Salish Sea do not provide protections from noise levels compared to nearby unprotected sites.¹³⁰ These *Fisheries Act*

¹²² *Marine Mammal Regulations*, SOR/93-56, s 7(1) [MMR].

¹²³ *Ibid* ss 7(3), (4).

¹²⁴ *Ibid* Schedule VI.

¹²⁵ *Ibid* s 7.2(1).

¹²⁶ See e.g. *Be Whale Wise: Marine Wildlife Laws & Guidelines for Boaters, Paddlers and Viewers* (2016), online: <<https://www.bewhalewise.org/wp-content/uploads/2021/07/Be-Whale-Wise-Brochure-2021.pdf>>.

¹²⁷ MMR, *supra* note 122, s 7(5)(a).

¹²⁸ Cox et al 2018, *supra* note 2

¹²⁹ B Nichols, "Characterizing Sound Production in Nearshore Rockfishes (*Sebastes spp.*)" (2005) *USF Tampa Graduate Theses and Dissertations*.

¹³⁰ K Nikolich et al., "The sources and prevalence of anthropogenic noise in Rockfish Conservation Areas with implications for marine reserve planning" (2021) 164 *Marine Pollution Bulletin* 112017.

designations for the purpose of protecting rockfish populations from direct pressure but are not adapting to the knowledge of noise impacts on these species.

Recommendation: The Ocean Noise Strategy could require Fisheries and Oceans Canada to use its authorities under the *Fisheries Act* to develop policies directed at addressing and mitigating the impacts of ocean noise on all fish species.

5. ENVIRONMENTAL IMPACT ASSESSMENTS

An environmental impact assessment (EIA), also called an environmental assessment (EA) or impact assessment (IA), is a planning process that is used to consider the potential effects of a project or activity before it begins. An EIA can be used to anticipate a project's positive and adverse effects, consider its contributions to cumulative effects and sustainability, design measures to mitigate those effects if that is possible, and in cases where effects are significant, inform decision-makers about whether a project should proceed in light of those effects. Effects that are considered during an EIA are usually effects on the environment, but modern-day best practice dictates consideration of socio-economic impacts as well, which is reflected in most EIA regimes.

This chapter focuses primarily on how noise can be assessed (and in some cases managed) using federal impact assessment processes (which includes project-level IAs, assessments of projects on federal lands, regional assessments, and strategic assessments) that are conducted under the *Impact Assessment Act*. Attention is given both to the role of federal authorities within those impact assessment processes and the intersection of federal impact assessments with environmental assessment processes enabled by Canada-Indigenous land claims agreements within the Arctic region. Additionally, the role of federal strategic environmental assessments conducted under the *Cabinet Directive on the Environmental Assessment of Policy, Plan, and Program Proposals* (Cabinet Directive) is discussed.

5.1 Assessment Processes under the *Impact Assessment Act*

The *Impact Assessment Act* (the IAA) and its Regulations set out the Government of Canada's approach to IA. The Minister of Environment and Climate Change (in chapter 5.1, the Minister) is responsible for the IAA. The Impact Assessment Agency of Canada (IAAC or the Agency) is the agency responsible for supporting impact assessment processes under the IAA. Various federal authorities (for the purposes of this report, the Canadian Energy Regulator and the Offshore Petroleum Boards for Newfoundland and Labrador and Nova Scotia) have responsibilities related to IAs of projects under their mandates over offshore oil and gas and offshore renewable energy projects. Finally, federal departments and agencies also have duties under the IAA.

A recent reference opinion of the Supreme Court of Canada (the SCC) found that the parts of the IAA related to the assessment of projects on the *Physical Activities Regulations* (commonly referred to as the Project List) are unconstitutional. The SCC was silent about regional assessments and strategic assessments, although they are included in the parts of the IAA that the court found unconstitutional. Because the court's opinion is not legally binding, the IAA has not been struck down. The federal government plans to introduce amendments to bring it into conformity with the Constitution.¹³¹

¹³¹ Government of Canada, "Statement on the Interim Administration of the *Impact Assessment Act* Pending Legislative Amendments" (October 2023) online: <<https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/practitioners-guide-impact-assessment-act/statement-interim-administration-impact-assessment-act-pending-legislative-amendments.html#>>

The IAA creates four kinds of IA processes: project-level impact assessments, regional assessments (RA), strategic assessments (SA), and assessments of projects on federal lands.

5.1.1 Project-Level Impact Assessments

There are five phases to a project-level IA. In the planning phase (the first phase), the proponent must register their project with IAAC if it is a type of project listed in the Project List. IAAC will consider the project in light of prescribed factors, including whether there will be adverse effects on areas of federal jurisdiction, and decide whether the project requires an IA.¹³² Some projects will not be required to proceed further, but typically, an IA will be required for large projects. A project can also be designated for a project-level IA at the discretion of the Minister.¹³³

There are many marine projects that are included in the Project List and that could conceivably create ocean noise. For example:

- developing a marine terminal or aquaculture facility in a wildlife area, migratory bird sanctuary, or protected marine area (established under the *Canada Wildlife Act*);¹³⁴
- developing a project in an NMCA that is contrary to a management plan;¹³⁵
- testing of military weapons for more than five days;¹³⁶
- developing a mine (if prescribed production thresholds are reached);¹³⁷
- drilling, testing, and abandoning offshore exploratory wells;¹³⁸
- developing offshore platforms for oil and gas;¹³⁹
- developing interprovincial or international electrical transmissions lines and pipelines;¹⁴⁰
- developing tidal power facilities;¹⁴¹
- developing offshore wind projects with ten or more turbines;¹⁴² or
- developing a marine terminal.¹⁴³

¹³² *Impact Assessment Act*, SC 2019, c 28, s 16(2) [IAA].

¹³³ *Ibid* s 9. Note: following the Supreme Court of Canada's reference decision, the Impact Assessment Agency of Canada released interim guidance which states that it will not designate projects using the power available in section 9.

¹³⁴ *Ibid* Schedule, s 1.

¹³⁵ *Ibid* Schedule, s 2.

¹³⁶ *Ibid* Schedule, s 17.

¹³⁷ *Ibid* Schedule, s 18.

¹³⁸ *Ibid* Schedule, s 34.

¹³⁹ *Ibid* Schedule, ss 35, 36.

¹⁴⁰ *Ibid* Schedule, ss 39-41.

¹⁴¹ *Ibid* Schedule, s 42.

¹⁴² *Ibid* Schedule, ss 44, 45.

¹⁴³ *Ibid* Schedule, ss 52, 53.

The nature of the Project List is such that a project, rather than its individual impacts (i.e. noise), is the “trigger” for an impact assessment. It is noteworthy that under predecessor legislation (the *Canadian Environmental Assessment Act, 2012* (CEAA)) seismic surveys required an environmental assessment, but they no longer require an IA under the IAA.¹⁴⁴

The *Physical Activities Regulations* (i.e. the Project List) should be amended to require an IA for projects that produce substantial ocean noise, such as seismic surveys. The discretionary power available to the Minister to designate projects for IA could also be used to designate such projects. The Strategy could be used to identify the kinds of projects that produce substantial ocean noise and warrant an impact assessment. A review of the *Physical Activities Regulations* is currently being undertaken by the IAAC and could provide an opportunity to amend the Project List.

During the planning phase, a proponent of a project occurring in the marine environment must provide information about their project based on the requirements in the *Information and Management of Time Limits Regulations*. The proponent’s registration document must be representative of the project and contain all of the information prescribed in Schedule 2 of those regulations,¹⁴⁵ including a description of all activities, alternative means of carrying out the project or potential alternatives to the project that are technically and economically feasible, and potential effects of the project (including on fish and fish habitat and aquatic species listed under the *Species at Risk Act*).¹⁴⁶ The effects of a project on the marine soundscape could be included in a project description.

If IAAC decides a project will require an IA, it must provide the proponent with Tailored Impact Statement Guidelines (TISG). During the Impact Statement phase (the second phase), the proponent must gather the information about its project that is required by the TISG. The proponent will then produce an Impact Statement to IAAC that describes the results of its work, including any studies conducted.

When the IAAC provides a proponent with its TISG, and the proponent’s project will occur in the marine environment, there is an opportunity for the TISG to require that the proponent consider the Strategy or ocean noise standards. This could conceivably include a requirement for the proponent to identify any existing regional or local noise thresholds and technology for mitigating noise impacts.

Consider the Sorel-Tracy Port Terminal Project, where the proponent proposes to build and operate a new port terminal in Sorel-Tracy, Quebec that would accommodate up to 35 ships each year. In the TISG for that project, various noise impacts are identified as important for the proponent to consider in their assessment.¹⁴⁷ The proponent must “provide current ambient noise levels at key receptor points”,

¹⁴⁴ *Inclusion List Regulations*, SOR/94-637 (Repealed), s 19.1(a), 79.

¹⁴⁵ *Information and Management of Time Limits Regulations*, SOR/2019-283, s 4.

¹⁴⁶ *Ibid* Schedule 2.

¹⁴⁷ Impact Assessment Agency of Canada, “Tailored Impact Statement Guidelines: Sorel-Tracy Port Terminal Project” (May 2023), online: <<https://iaac-aeic.gc.ca/050/evaluations/document/147519>> at pages 28-30 [Sorel-Tracy TISG].

including a baseline ambient noise survey and permissible noise levels for each receptor.¹⁴⁸ The proponent is also required to provide a noise management plan in their Impact Statement.¹⁴⁹

In some cases, the Minister may refer an impact assessment to a review panel if they are of the opinion that it is in the public interest.¹⁵⁰ A project-level IA of a project that is regulated by a body referred to as a “life-cycle regulator” must be referred to a review panel.¹⁵¹ A review panel conducted by a life-cycle regulator is known as an Integrated Review Panel (IRP) because they seek to integrate IAA requirements with the life-cycle regulators’ responsibilities under their statutory regime. Life-cycle regulators are the federal authorities responsible for the *Canadian Energy Regulator Act* (CERA) and the *Nuclear Safety and Control Act*. Provisions of the IAA that are not yet proclaimed into force will make the Offshore Petroleum Boards in Nova Scotia and Newfoundland and Labrador (which are currently responsible for regulating offshore petroleum) life-cycle regulators as well. As discussed in Chapter 6, the offshore petroleum boards may regulate offshore renewable energy projects in the future and those projects would also be reviewed by an IRP.¹⁵² In an IRP process, the life-cycle regulator is involved in establishing the terms of reference for the panel.¹⁵³

If a life-cycle regulator has legislated requirements to consider impacts of ocean noise from projects under their mandate, or a practice of considering the effects of ocean noise impacts from projects as part of an approval or authorization process, an IRP process can be an effective way to shape decision-making at an early stage (i.e. to identify ocean noise impacts at the planning stage).

When an Impact Statement is completed, the agency or an appointed review panel (including an IRP) will assess the likely impacts from the proposed project and produce an impact assessment report (the third phase). As this stage, IAAC or a review panel uses the information contained in the Impact Statement to conduct an analysis and to produce a report. The report must set out effects that, in the Agency’s opinion, are likely to be caused by the project, and which effects, if any, are adverse effects within federal jurisdiction or adverse direct or incidental effects. The report must identify which effects are significant.¹⁵⁴ The report will also set out the Agency’s recommendations on mitigation measures and a follow-up program. A final report from the IRP must include any information that would ultimately be necessary for

¹⁴⁸ Ibid at 44.

¹⁴⁹ Ibid at 47.

¹⁵⁰ IAA, *supra* note 132, s 36(1).

¹⁵¹ Ibid s 43.

¹⁵² The offshore petroleum boards would become regulators for offshore renewable energy projects in their respective offshore areas if Bill C-49, *An Act to amend the Canada–Newfoundland and Labrador Atlantic Accord Implementation Act and the Canada–Nova Scotia Offshore Petroleum Resources Accord Implementation Act and to make consequential amendments to other Acts*, Forty-fourth Parliament, First Session, 70-71 Elizabeth II – 1-2 Charles III, 2021-2022-2023-2024, currently before Parliament, is passed.

¹⁵³ IAA, *supra* note 132, ss 46, 47.

¹⁵⁴ Ibid s 28.

the lifecycle regulator to issue a licence required under its home statute.¹⁵⁵ The recommendations in these reports are not binding on the decision-maker.

There are opportunities during the first three phases of a project-level IA process (the planning and assessment phases) to identify how a project will contribute to ocean noise and assess whether the project should occur or whether conditions can be used to mitigate that noise. This is an early opportunity to identify and plan for (i.e. prevent or manage) ocean noise from large projects.

As an example, at various points in a project-level IA, stakeholders and rightsholders have a right to meaningfully participate in the process; furthermore, the IAA requires consideration of community knowledge and Indigenous knowledge.¹⁵⁶ These public participation processes can provide opportunities for noise impacts to be raised or for biological and local noise thresholds to be identified. There are also opportunities for stakeholders, rightsholders, regulators, and other participants to identify areas to prioritize for protection from ocean noise and to identify opportunities for adoption of alternative technologies. In the Sorel-Tracy Port Terminal project example above, the requirements in its TISG to assess various noise impacts were, in part, “based on comments from participants during the Planning Phase”.¹⁵⁷

After the assessment phase comes the decision-making phase (the fourth phase). Currently, the Minister or the GIC (depending on the circumstances) will decide whether the project’s adverse effects are within federal jurisdiction, or whether adverse direct or incidental effects are in the public interest. That decision will be based on the final report made by the Agency or review panel. The IAA prescribes the factors for the decision-maker to consider when determining what is in the public interest. If a decision is made to approve a project, it will be subject to terms and conditions set by the decision-maker.

An approval under IAA for projects occurring in the marine environment can and should incorporate conditions or terms that require the proponent to adhere to Canada’s Ocean Noise Strategy or relevant noise standards like the SCP and require regular reporting on noise impacts. Terms and conditions that are imposed on projects occurring in the marine environment under the IAA could also include requirements for proponents to adhere to noise thresholds, area-based targets, or technology requirements to prevent or mitigate ocean noise.

Decisions about oil and gas exploration projects under the previous regime, the *Canadian Environmental Assessment Act, 2012* (CEAA), required the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* (SCP) to be followed. For example, in then-Minister Wilkinson’s 2021 decision about a BHP Canada exploration drilling project, the proponent was required to apply the SCP during planning, and conduct vertical seismic surveys and establish a safety zone of a minimum of 500 metres from the sound source.¹⁵⁸

¹⁵⁵ Ibid ss 51(2), (3).

¹⁵⁶ Ibid s 22(1).

¹⁵⁷ Sorel-Tracy TISG, *supra* note 147 at 28.

¹⁵⁸ Minister of Environment and Climate Change, Decision Statement Issued under Section 54 of the *Canadian Environmental Assessment Act, 2012* to BHP Petroleum (New Ventures) Corporation for the BHP Canada Exploration Drilling Project (January 11, 2021) at s 3.9, online: <<https://iaac-aeic.gc.ca/050/documents/p80174/137602E.pdf>>.

Any decision to approve a project must include a requirement for a follow-up program and, where appropriate, an adaptive management plan (the fifth phase).¹⁵⁹ Follow-up programs provide another opportunity to monitor and enforce noise standards that are terms or conditions for projects imposed by an approval under the IAA.

5.1.2 Assessment of Projects on Federal Lands or Outside of Canada

In an assessment of a project carried out on federal lands or outside of Canada, a federal authority must assess whether carrying out the project will cause significant adverse environmental effects, and if so, whether they are justified in the circumstances.¹⁶⁰ A “federal authority” includes any federal minister, agency, or department.¹⁶¹ These assessments are not projects IAs, but rather, are assessments conducted by the federal authority internally with some limited public participation opportunities. Many federal activities are covered by these assessments, including work or activities related to federal marine infrastructure.

The Minister may prescribe projects that do not need a federal lands assessment because they will cause only insignificant adverse environmental effects.¹⁶² The Minister does this using the *Designated Classes of Projects Order*.¹⁶³ It is used to exempt projects with a small footprint, including the maintenance, repair, or removal of shoreline stabilization works, wharves, piers, docks, boathouses, launch ramps, or navigational aids, and maintenance or repair of causeways, fishways, fish ladders, retaining walls or breakwaters, which are on federal lands administered by Parks Canada, and projects carried out in NMCA.s.¹⁶⁴

Although the *Designated Classes of Projects Order* is used to exempt general classes of projects from being assessed by a federal authority, individual projects within those classes must nonetheless undergo assessment in the following cases:

- they interfere with navigation as set out in subsection 5(1) of the *Canadian Navigable Waters Act* (CNWA);
- they cause a change to:
 - any characteristic of a water body;
 - migratory birds or nests as defined in the *Migratory Birds Convention Act, 1994*; or
 - a wildlife species, or the residences or critical habitats of wildlife species, as defined in the *Species at Risk Act*;

¹⁵⁹ IAA, *supra* note 132, s 64(4).

¹⁶⁰ *Ibid* ss 82, 83.

¹⁶¹ *Ibid* s 2.

¹⁶² *Ibid* s 88(1).

¹⁶³ SOR/2019-323.

¹⁶⁴ *Ibid* Schedule 2, ss 11, 12.

- they cause harmful alteration, disruption, or destruction of fish habitat, or cause a deposit of a deleterious substance into water frequented by fish per subsection 35(1) or 36(3) of the *Fisheries Act*;
- they require a permit under subsection 3(1) of the *Wildlife Area Regulations*; or
- they contravene a prohibition listed in subsection 2(1) of the *Scott Islands Protected Marine Area Regulations*; or
- they involve the removal of or damage to any structure or resource that is of historical, archeological, paleontological, or architectural significance.¹⁶⁵

The specific projects that are not exempted by the *Designated Classes of Projects Order* should be examined to ensure that all projects that will cause ocean noise are required to undergo an assessment of a project on federal lands. Furthermore, the phrase “a change to any characteristic of a water body” should be amended to ensure that it captures introduction of noise energy.

5.1.3 Regional and Strategic Assessments

The Minister has discretion to designate two additional kinds of assessments that are not focused on specific projects. A regional assessment is an assessment of the regional effects of activities, and a strategic assessment is an assessment of the effects of a federal program, plan, or policy. Ideally, these types of assessment facilitate a tiered approach to impact assessment by informing federal decision-making (including project-level IA) at a strategic level. They are meant to provide information that project-level IAs cannot or are not well-placed to provide (for example, cumulative effects). The outcome of an RA or an SA is a report to the Minister. An RA or SA will lead to conclusions or recommendations, which will strongly inform government decisions. The findings of an RA or SA must also be considered in a project-level IA.

Under the IAA, the Minister has the discretion to create a regulation exempting certain types of projects listed in the *Physical Activity Regulations* from an IA which they would otherwise require. The Minister can only create such a regulation after considering an RA or SA that has been carried out in relation to the type of project under consideration.¹⁶⁶ Currently, two types of projects may be exempted using this power: offshore exploratory oil and gas and offshore wind.¹⁶⁷ To be eligible for exemption, the proponent for an individual project needs to demonstrate it will meet the conditions established in the regulation.¹⁶⁸

¹⁶⁵ Ibid at section 4.

¹⁶⁶ IAA, *supra* note 132, s 112(2). SAs and RAs should not be confused with federal Strategic Environmental Assessments, which are required under the Government of Canada’s Cabinet Directive on the Environmental Assessment of Policy, Plan, and Program Proposals for proposals that have environmental impacts, and which require ministerial or Cabinet approval. See: Government of Canada, “Department of Justice Activities and Commitments Related to Strategic Environmental Assessment” (July 2016), online: <<https://www.canada.ca/en/impact-assessment-agency/programs/strategic-environmental-assessment/cabinet-directive-environmental-assessment-policy-plan-program-proposals.html>>.

¹⁶⁷ IAA, *supra* note 132, s 112(1)(a.2).

¹⁶⁸ Ibid ss 112(1)(a.2), 112.1.

The first regional assessment completed under the IAA, examining exploratory oil and gas drilling east of Newfoundland and Labrador, led to the creation of an exemption regulation. The *Regulations Respecting Excluded Physical Activities (Newfoundland and Labrador Offshore Exploratory Wells)* exempt offshore exploratory oil and gas projects from project-level IAs, but require proponents to apply the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* during the planning and conducting of vertical seismic surveys.¹⁶⁹ The regulation also requires a marine mammal and sea turtle monitoring plan to be developed at least 30 days before a seismic survey.¹⁷⁰ Currently, two RAs of offshore wind development are being conducted in the offshore of Newfoundland and Labrador and Nova Scotia, which could result in offshore wind projects being exempted from project-level IAs in the future.

Regional and strategic assessments can be valuable tools to guide and improve planning by informing government decision-making about individual projects in the marine environment. They are particularly valuable for considering regional cumulative effects of multiple activities in the marine environment—including synergetic, compensatory, and additive effects of ocean noise—and for assessing the sustainability of projects. They are especially powerful planning tools because they must be considered in relevant project-specific IAs.

Ideally, an RA or SA would be used to:

- identify regional- or policy- level opportunities and barriers to reducing noise from projects,
- identify relevant and appropriate regional or local noise thresholds,
- identify sensitive marine ecosystems where area-based noise targets can be applied,
- identify technology options for reducing ocean noise and barriers to their implementation, and
- identify minimum mitigation measures for noise that are appropriate in a region or sub-region.

They should not be used to exempt projects from IA, especially when there are adverse impacts from ocean noise.

5.2 Environmental Assessments under Comprehensive Land Claims Agreements in the Arctic

There are various comprehensive land claims agreements in Canada. These agreements are modern treaties between Indigenous nations and Crown governments. These treaties clarify the terms of the nation-to-nation relationship between Indigenous peoples and Crown governments and define how resources on traditional territories are used and co-managed.¹⁷¹ They may also include provisions related

¹⁶⁹ *Regulations Respecting Excluded Physical Activities (Newfoundland and Labrador Offshore Exploratory Wells)* under section 92 of the *Impact Assessment Act*, SC 2019, c 28 (June 3, 2020), s 15.

¹⁷⁰ *Ibid* s 16.

¹⁷¹ Land Claims Agreements Coalition, “What is a Modern Treaty?” (2023), online: <<https://landclaimscoalition.ca/modern-treaty/#:~:text=Also%20known%20as%20comprehensive%20land,percent%20of%20Canada%27s%20land%20mass>>.

to Indigenous self-governance.¹⁷² There are currently 26 modern treaties. We have not covered all the comprehensive land claims agreements in Canada, but instead, focused on three – the *Inuvialuit Final Agreement* (IFA), the *Labrador Inuit Land Claims Agreement* (LILCA), and the *Nunavut Land Claims Agreement* (NLCA) (in this chapter, collectively the Agreements) – to examine the role of these agreements in impact assessment. All three Agreements are considered a land claims agreement within the meaning of section 35 of the *Constitution Act, 1982*.

The *Inuvialuit Final Agreement* (the IFA) affects the lives of all Inuvialuit and everyone who lives and works in the Inuvialuit Settlement Region (ISR).¹⁷³ The IFA grants rights and benefits to the Inuvialuit in areas including lands, wildlife management, and economic and social development. It grants title to approximately 5000 square miles of land that is a protected area with no development allowed, and title to 30,000 square miles of traditional lands.¹⁷⁴ On these lands, the Inuvialuit received ownership of the beds of lakes, rivers, and water bodies, subject to a 100-foot access strip along the coastline of navigable waters.¹⁷⁵

Part 11 of the IFA provides for an Environmental Impact Screening and Review Process. All development is subject to an initial screening.¹⁷⁶ A screening committee may establish an exclusion list that allows exemptions to this requirement.¹⁷⁷ The screening committee also determines whether a development will have “significant negative environmental impacts” and whether the project will require a full environmental impact assessment.¹⁷⁸ If a full EIA is required, the screening committee can refer the project to a government EIA review process or to an Environmental Impact Review Board process.¹⁷⁹ The board will review the project and recommend whether or not the project can proceed. The recommendation goes to the government authority that is “competent to authorize the development” and that authority decides on what basis it may proceed and with what terms and conditions, if any.¹⁸⁰

The LILCA establishes the Labrador Inuit Settlement Area in which various Inuit rights are recognized. Within the Labrador Inuit Settlement Area are specific lands that the Agreement recognizes as Labrador Inuit Lands. The Agreement recognizes Inuit ownership (in fee simple) of Labrador Inuit Lands, and it also

¹⁷² Crown-Indigenous Relations and Northern Affairs Canada, “Comprehensive Claims” (July 2015), online: <<https://www.rcaanc-cirnac.gc.ca/eng/1100100030577/1551196153650>>.

¹⁷³ For access to a map of the ISR see Inuvialuit Regional Corporation, “Inuvialuit Land Administration” (accessed December 2023), online: <https://irc.inuvialuit.com/wp-content/uploads/2023/10/Inuvialuit_Settlement_Region_Map_0.pdf>.

¹⁷⁴ *Inuvialuit Final Agreement*, 5 June 1984, as amended by PC 1987-26, 15 January 1987, s 7(1)(a), online: <https://irc.inuvialuit.com/wp-content/uploads/2023/10/Inuvialuit_Final_Agreement_2005.pdf> [IFA].

¹⁷⁵ Inuvialuit Regional Corporation, “Summary of the Inuvialuit Final Agreement” (accessed December 2023), online: <https://irc.inuvialuit.com/wp-content/uploads/2023/10/IFA_Summary.pdf>.

¹⁷⁶ IFA, *supra* note 175, s 11(1).

¹⁷⁷ *Ibid* s 11(2)(c).

¹⁷⁸ *Ibid* s 11(17).

¹⁷⁹ *Ibid* ss 11(19) or 11(20).

¹⁸⁰ *Ibid* ss 11(29), (32).

recognizes extensive, but not unlimited, Inuit jurisdiction to govern Labrador Inuit Lands in accordance with Inuit governance structures and Inuit laws.³

Chapter 11 of the LILCA deals with EA, whose definition includes the following:

- (a) an assessment of the Environmental Effects of a proposed undertaking, project, work or activity in Labrador Inuit Lands that is conducted in accordance with Inuit Laws made under part 11.3;
- (b) an assessment of the Environmental Effects of a Project or Undertaking that is conducted under the *Canadian Environmental Assessment Act*;
- (c) an assessment of the Environmental Effects of a Project or Undertaking that is conducted under the *Canadian Environmental Protection Act*; or
- (d) an assessment that is conducted under two or more Laws referred to in clauses (a), (b) and (c).¹⁸¹

No project in Labrador Inuit Lands may commence without an EA being completed and all permits, licences, and authorizations being issued by the appropriate authority *and* by the Nunatsiavut government under Inuit law.¹⁸² There is an attempt to harmonize EA where multiple assessments may be required; for example, the Nunatsiavut Government and relevant authorities will consult on how EA processes will interact.¹⁸³

When the Nunatsiavut Government receives a registration document or application for a project in Labrador Inuit Lands, or an application for a permit, licence, or authorization in relation to a project in Labrador Inuit Lands, that in its opinion may “reasonably be expected to have adverse Environmental Effects”, it will provide notice to the proponent, and the provincial minister and the minister responsible for the *Canadian Environmental Protection Act* (CEAA).¹⁸⁴ Likewise, if a provincial or federal authority receives an application that in its opinion will have adverse environmental effects, it must provide notice to the Nunatsiavut Government.¹⁸⁵ The Nunatsiavut government may require assessment of environmental effects in relation to any approval, permit, licence, or authorization it may issue under an Inuit Law, and attach conditions and terms.¹⁸⁶ Importantly, the Nunatsiavut Government may only require an assessment of an oil and gas exploration project if that project requires an EA under the CEAA (no longer in force and replaced by the IAA) or the CEPA.¹⁸⁷

¹⁸¹ *Labrador Inuit Land Claims Agreement*, 1 December 2005, s 11.1.1, online: <<https://www.rcaanc-cirnac.gc.ca/eng/1293647179208/1542904949105>>.

¹⁸² *Ibid* s 11.2.1.

¹⁸³ *Ibid* ss 11.2.3, 11.2.9.

¹⁸⁴ *Ibid* s 11.2.6.

¹⁸⁵ *Ibid* ss 11.2.7, 11.2.8.

¹⁸⁶ *Ibid* s 11.3.1.

¹⁸⁷ *Ibid* s 11.3.2.

A project may undergo assessment under only Inuit Laws or under both Inuit Laws and relevant provincial and federal EA processes.¹⁸⁸ The *Nunatsiavut Environmental Protection Act* sets out the process for EAs conducted under Inuit Laws.¹⁸⁹ A provincial or federal authority must consult with the Nunatsiavut Government before taking action that allows a project to proceed.

The *Nunavut Land Claims Agreement* (NLCA) applies to the Nunavut Settlement Area (NSA), which is comprised of two parts: Area A and Area B. These areas include lands, water, and marine areas.¹⁹⁰

Article 12 of the NLCA deals with EA; it applies to the NSA and the Outer Land Fast Ice Zone. Shipping associated with project proposals are subject to the process as well.¹⁹¹ The Nunavut Impact Review Board (NIRB) screens projects to determine whether a review is required, gauges regional impacts, reviews ecosystem and socio-economic impacts, determines whether projects can proceed, imposes terms and conditions, and monitors projects that proceed.¹⁹² The NIRB's primary objective is to protect and promote future wellbeing of communities and protect ecosystemic integrity.¹⁹³

The Nunavut Planning Commission (NPC) first screens a project to determine whether it complies with land use plans and then forwards the project proposal to the NIRB.¹⁹⁴ The NIRB screens projects to determine whether it will have "significant impact potential".¹⁹⁵ Proposals are exempt from EA screening if they are listed in Schedule 12-1, but the NPC can move forward on a screening if it has concerns about cumulative impacts of the project.¹⁹⁶ The NIRB reviews the proposal and indicates to the Minister, in writing, whether a proposal may proceed without review (with or without conditions), a proposal requires review, whether more information is needed, or whether impacts are unacceptable.¹⁹⁷ The Minister may refer the project to a review despite the NIRB's finding.¹⁹⁸ Where a review is required by the NIRB and Minister, the project is referred to a federal "environmental assessment panel" if a federal EA is required, and in all other cases to the NIRB for a review of ecosystemic and socio-economic impacts within the NSA.¹⁹⁹

¹⁸⁸ Ibid s 11.4.

¹⁸⁹ *Nunatsiavut Environmental Protection Act*, CIL 31-12-2012, N-5.

¹⁹⁰ *Nunavut Land Claims Agreement*, 25 May 1993, art 3, online: <<https://nlca.tunnngavik.com/>>. A map of the two areas can be found in Schedule 3-1.

¹⁹¹ Ibid s 12.12.2.

¹⁹² Ibid s 12.2.2.

¹⁹³ Ibid s 12.2.5.

¹⁹⁴ Ibid s 12.3.1.

¹⁹⁵ Ibid s 12.4.1.

¹⁹⁶ Ibid ss 12.3.2, 12.3.3.

¹⁹⁷ Ibid s 12.4.4.

¹⁹⁸ Ibid s 12.4.6.

¹⁹⁹ Ibid s 12.4.7.

Where a project reviews a review panel EA, the panel conducts the review in accordance with provisions contained in Part 6 of Article 12; such a process must provide the same opportunities as a review provided by the *Environmental Assessment and Review Process Guidelines Order*.²⁰⁰ These regulations, which are explicitly mentioned by the Agreement, are an Order in Council that pre-date the CEAA. The panel issues a set of guidelines dictating the substance of the assessment.²⁰¹ The panel issues a report to the Minister of Environment and the Minister, which is then reviewed by the NIRB. The minister makes the final decision on the project.²⁰² In all other cases, the NIRB conducts a review and then provides the Minister with a report setting out its assessment and determination.²⁰³

The Minister makes a final decision; where it can proceed, the NIRB issues a project certificate with any terms and conditions.²⁰⁴ The Minister may also decide the project is not in national or regional interest and require it abandoned or modified. A monitoring program may be established as a condition of approval.²⁰⁵ There is no clear mechanism or path for a monitoring program to alter the conditions of a project if there are changes to the actual impacts. However, the NIRB may reconsider the terms and conditions in the certificate if terms and conditions are not achieving their purpose, circumstances related to the project or effects are significantly different, or technological developments or new information provides more efficient methods of accomplishing those purposes.²⁰⁶

The Agreements function in effectively the same manner with respect to assessing projects. Each creates a multi-tiered environmental assessment process through which effects of projects are assessed. The process begins with project screening to determine whether a full assessment is required (similar to the function of registration under the IAA). If effects may be significant, a full assessment will be required. The EA processes conducted under the Agreements interact with federal and provincial or territorial assessment processes.

All of the conclusions reached above with respect to assessment of noise impacts apply to the environmental assessment processes that are conducted under Comprehensive Land Claims Agreements, with relevant modifications. An EA process conducted under a Comprehensive Land Claims Agreement could be used to inform local and regional noise thresholds or limits, as informed by Indigenous knowledge. The processes could also be used to identify area-based targets, including in the Arctic regions, that could inform federal decision-making processes.

It is important to note that under the *Impact Assessment Act*, the Agency, or the Minister in the case of a review panel IA, must offer to consult and cooperate with respect to the impact assessment of a

²⁰⁰ Ibid s 12.6.1.

²⁰¹ Ibid s 12.6.5.

²⁰² Ibid ss 12.6.9, 12.6.10, 12.6.11.

²⁰³ Ibid s 12.5.2.

²⁰⁴ Ibid s 12.5.12.

²⁰⁵ Ibid s 12.7.2.

²⁰⁶ Ibid s 12.8.2.

designated project with any jurisdiction that has powers, duties or functions related to the assessment of the environmental effects of the project.²⁰⁷ This is important for assessment of projects in the Arctic because “jurisdiction” includes:

- any body established under a land claim agreement (referred to in section 35 of the *Constitution Act, 1982*) that has powers, duties, or functions in relation to an assessment of the environmental effects of a designated project,
- an Indigenous governing body with powers, duties, or functions in relation to an assessment of the environmental effects of a designated project under a land claim agreement or an act of Parliament or provincial legislature, and
- an Indigenous governing body that has entered into an agreement under the IAA.²⁰⁸

The Agency or review panel must consider comments received from such a jurisdiction as part of their assessment in preparing a final report.²⁰⁹ The Agency may delegate to such a jurisdiction “any part of the impact assessment” of a project, including the preparation of a report.²¹⁰ Additionally, the Minister may approve a substitution of an IA under the IAA for an assessment conducted by such a jurisdiction (but the Minister cannot approve a substitution for a review panel process or an IA of activities regulated under the *Canada Oil and Gas Operations Act (COGOA)*, the *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada–Nova Scotia Offshore Petroleum Resources Accord Implementation Act (Accord Acts)*, or *Canada Transportation Act*.²¹¹ The Minister may also enter into an agreement for a regional assessment with such a jurisdiction.²¹²

The Minister could rely on a “jurisdiction” within the meaning found in the *Impact Assessment Act* to consult and cooperate with bodies established under Land Claims Agreements to facilitate Indigenous co-development and leadership with respect to assessing projects. This could conceivably lead to local or regional noise thresholds or area targets being placed on projects that are reflective of Indigenous knowledge.

5.3 Strategic Environmental Assessments

The Government of Canada’s Cabinet Directive requires the federal government to conduct Strategic Environmental Assessments (SEAs) that take sustainability considerations and cumulative effects into account when federal policies, plans, or programs related to the assessment and regulation of projects will require approval by a federal Minister or the federal cabinet and implementation of the proposal will result in “important environmental effects”.

²⁰⁷ IAA, *supra* note 132, s 21.

²⁰⁸ *Ibid* s 2, “jurisdiction”.

²⁰⁹ *Ibid* s 22(1)(o).

²¹⁰ *Ibid* s 29.

²¹¹ *Ibid* ss 31(1), 32.

²¹² *Ibid* s 93(1)(a)(i).

A SEA conducted under the Cabinet Directive begins when the appropriate department or agency conducts a preliminary assessment (called a “scan”) of the proposed policy, plan, or program, preferably at the earliest stages of development. This scan is used to screen proposals for potential important environmental effects and is used to identify strategic considerations at a general or conceptual level. If important environmental effects (these can be positive or adverse effects) are identified, a detailed assessment is required.²¹³

Similar to SAs conducted under the IAA, a SEA can be used to consider higher-level strategic direction that will be relevant for many projects, including cumulative effects. SEAs may be useful in helping to identify local, regional, and cumulative effects of policies, plans, and programs that will affect management of ocean noise. A SEA could even be used to assess the Strategy prior to implementation to identify potential positive or negative impacts on the reduction or elimination of ocean noise.

5.4 Law and Policy Reform to Address Ocean Noise Using Environmental Impact Assessments

EIAs are a useful planning tool to consider and assess the effects of individual projects on the marine environment, to analyze regional cumulative effects, and to understand the impacts of government programs and policies. In this regard, processes to assess projects under the federal IAA can be useful to understand impacts of ocean noise and to identify ways to prevent, mitigate or manage those impacts. As a planning tool, they are best used at the earliest stages of development and are most effective when combined with other regulatory tools.

Recommendations:

- Ocean noise potentially generated from projects and activities should be considered as part of an impact assessment process to inform decision-making about those projects.
- Noise thresholds, area targets, and quiet technology requirements should be incorporated as conditions of approval in EIA processes or as mitigation measures.
- Ocean noise impacts should be identified for monitoring through follow-up programs under the IAA.
- The application of and adherence to science-based federal ocean noise standards as a standard, mandated condition for projects approved under the IAA should be a key priority.
- One effective way to manage noise would be to require all offshore seismic activities—whether they are conducted as part of petroleum exploration or scientific study—to undergo an impact assessment. This would require an amendment to the *Physical Activities Regulations*.

²¹³ Public Safety Canada, *Follow-up Audit on the Implementation of the Commissioner of the Environment and Sustainable Development Recommendations on Sustainable Development Strategies* (Ottawa: Public Safety Canada, 2019) at 4.

6. OFFSHORE RENEWABLE ENERGY

This chapter of the report focuses on the nascent federal legal framework dealing with regulation of offshore renewable energy (ORE) projects. The primary focus is on the existing role of the Canadian Energy Regulator, which has responsibilities under the CERA to regulate OREs. Attention is also given briefly to the potential future role of Offshore Energy Regulators (to be constituted under the Accord Acts following amendments in federal Bill C-49) in assessing and regulating OREs in the offshore of Newfoundland and Labrador and Nova Scotia.²¹⁴

6.1 Regulation of Offshore Renewable Energy under the *Canadian Energy Regulator Act*

Canada's offshore renewable energy projects are currently regulated by the Canada Energy Regulator (the CER) under the CERA. Canada established a legislative framework for offshore renewable energy under Part 5 of CERA in August 2019.²¹⁵ The Department of Natural Resources and Renewables is currently developing regulations under CERA that will govern exploration, construction, operation, and decommissioning of offshore renewable energy projects.²¹⁶ The Minister of Natural Resources is the responsible minister under the CERA. Development of OREs may be subject to IA processes (see Chapter 5).

6.1.1 *The Canada Energy Regulator*

The Canada Energy Regulator (CER) regulates inter-provincial and international trade and commerce related to natural resource development. The CER does its work primarily through the Commission of the Canadian Energy Regulator (the Commission or C-CER), which is appointed by the GIC.²¹⁷

The Commission is a court of record and has all the powers, rights, and privileges vested in a superior court of record with respect to the matters within its jurisdiction. The powers include the power to hold hearings, compel testimony and production of documents, inspect property, and enforce its orders.²¹⁸ The C-CER has jurisdiction to inquire into any matter if it considers that:²¹⁹

- (a) a person has failed to do anything that is required to be done under this Act, under a condition of a document of authorization, or under an order made or direction given under this Act;

²¹⁴ See Bill C-49, supra note 152.

²¹⁵ Natural Resources Canada, "Offshore Renewable Energy Regulations: Proposed Technical Requirements" (2022) at 3, online: <https://natural-resources.canada.ca/sites/nrcan/files/public-consultation//orer_-_technical_requirements_paper_-_en.pdf>.

²¹⁶ Natural Resources Canada, "The Offshore Reviewable Energy Regulations Initiative" (May 2023), online: <<https://www.nrcanengagenrcan.ca/en/collections/offshore-renewable-energy-regulations-initiative#p1>>; Natural Resources Canada, "Forward Regulatory Plan" (March 2022), online: <<https://natural-resources.canada.ca/transparency/acts-and-regulations/forward-regulatory-plan/18316>>.

²¹⁷ *Canadian Energy Regulator Act*, SC 2019 c 28 s 10, s 28(1) [CERA].

²¹⁸ *Ibid* s 31.

²¹⁹ *Ibid* s 32(1).

- (b) a person has done or is doing anything that is contrary to or in contravention of this Act, a condition of a document of authorization or an order made or direction given under this Act; or
- (c) the circumstances may require the Commission, in the public interest, to make any order or give any direction, leave, sanction or approval that it is authorized to make or give, or that relates to anything that is prohibited, sanctioned or required to be done under this Act, a condition of a document of authorization, or an order made or direction given under this Act.

It also has power to order any person to do anything they are required to do under the Act or prohibit anything contrary to the Act.²²⁰

The C-CER has powers over monitoring and enforcement, which makes it a strong candidate to manage ocean noise from projects and activities which it regulates.

The Commission must consider any adverse effects that a decision, order, or recommendation may have on the rights of the Indigenous peoples of Canada under section 35 of the *Constitution Act, 1982*.²²¹ One member of the C-CER must be an Indigenous person, and the Commission must also establish an advisory committee for the purpose of enhancing the involvement of Indigenous peoples.²²²

6.1.2 Canada Energy Regulator Authorizations

Under CERA, an authorization is required for any offshore renewable energy project or offshore power line project.²²³ An authorization may be provided by the Commission following a review of all factors prescribed in CERA or its Regulations.²²⁴ Factors include environmental effects (including cumulative effects), effects on Indigenous peoples, and the results of an RA or SA conducted under the IAA.²²⁵ “Environmental effects” is not defined under the CERA and should be clearly defined to ensure that, when the Commission is reviewing an offshore renewable energy project prior to authorization, ocean noise impacts are captured by that review.

If a project is approved, the CER’s inspectors monitor a project’s activities during construction, operation, maintenance, and abandonment.²²⁶ An authorization granted by the Commission may be subject to any conditions imposed by it or by regulation.²²⁷

²²⁰ Ibid s 34.

²²¹ Ibid s 56(1).

²²² Ibid ss 26(2), 57(1).

²²³ Ibid ss 297, 298.

²²⁴ Ibid s 298.

²²⁵ Ibid s 298(3).

²²⁶ Canada Energy Regulator, “Lifecycle Approach” (March 2022), online: <<https://www.cer-rec.gc.ca/en/safety-environment/environment/lifecycle-approach/>>.

²²⁷ CERA, *supra* note 217, s 298(9).

There are currently no regulations under the *CERA* that detail how offshore renewable energy projects will be reviewed by the C-CER, but Natural Resources Canada is developing Offshore Renewable Energy Regulations as part of its Offshore Renewable Energy Regulations Initiative (which is part of its 2022–24 Forward Regulatory Plan). The aim is to develop modern safety and environmental protection regulations for exploration, construction, operation, and decommissioning activities related to offshore renewable energy projects.²²⁸ The Offshore Renewable Energy Regulations will apply to offshore wind, wave, and tidal energy developments. Publication of draft regulations in the *Canada Gazette, Part I* is anticipated in 2024, and a public comment period will follow publication. Finalized regulations are currently projected to be published in the *Canada Gazette, Part II* in 2024, at which point they will come into force.

6.1.3 Environmental and Socio-Economic Assessments for Offshore Renewable Energy Projects

The Commission’s work begins when a proponent submits an application for an ORE project. At this stage, the C-CER assesses the information contained in the proponent’s application; later, it may hold public hearings. At the beginning of an application process, a proponent is required to engage stakeholders and rightsholders. The CER’s **Filing Manual** identifies the required steps and information.²²⁹

A proponent must submit an environmental and socio-economic assessment (an ESA) as part of its application to the C-CER (these apply primarily to pipeline projects, as larger projects – including offshore renewable projects – are assessed through an integrated review process under the IAA). One objective of an ESA is to ensure that projects do not cause, or contribute to, significant adverse effects.²³⁰ Effects on the acoustic environment are a factor to be considered.²³¹ Where there is public concern associated with an increase in noise levels during construction, the proponent must also complete a noise impact assessment.²³² Additionally, where a project results or may result in an “increase in noise emissions during operations or maintenance”, the proponent must do the following:²³³

- describe existing ambient noise levels in the area, including the methods and data sources used to determine the ambient levels;
- identify the potentially affected receptors and permissible sound levels for each receptor;
- quantify noise levels at appropriate distances from the facility and describe the frequency, duration and character of noise;
- provide the predicted sound levels from the project alone and predicted cumulative sound levels in combination with other existing and future physical facilities and activities in the area, including an assessment of low frequency noise;

²²⁸ Natural Resources Canada, *supra* note 215.

²²⁹ *Canada Energy Regulator, “Filing Manual”* (August 2020), online: < <https://www.cer-rec.gc.ca/en/applications-hearings/submit-applications-documents/filing-manuals/filing-manual/index.html> > at 22 [Filing Manual].

²³⁰ *Ibid* at 43.

²³¹ *Ibid* at 50.

²³² *Ibid* at 94.

²³³ *Ibid* at 94-95.

- describe engagement with regulators, stakeholders, community groups, landowners, and Indigenous Nations about potential effects of the project on the acoustic environment;
- identify and justify the applicable guidelines used to determine the significance of the effects of the predicted emissions associated with the project;
- provide a noise management plan, including identification of noise sources, an assessment of current noise mitigation measures, performance effectiveness of noise control devices, best practices programs, and continuous improvement programs; and
- identify the need for follow-up monitoring for the purposes of validation of the model or as a result of any concerns raised by the public.

The guidance found in the CER’s Filing Manual for the conduct of ESAs in relation to assessing effects on the acoustic environment requires consideration of any effects from inaudible noise (e.g. low frequency noise) and effects of noise on wildlife.²³⁴ The guidance does not require assessment of cumulative effects, nor require consideration of thresholds shaped by local biological limits or local and Indigenous knowledge. Additional guidance materials are referenced in the *Filing Manual: the Alberta Energy Regulator’s Directive 038: Noise Control*, the Alberta Utilities Commission’s *Rule 012 – Noise Control*, and the British Columbia Energy Regulator’s *British Columbia Noise Control Best Practices Guideline*.²³⁵ The guidance does not direct proponents to consider relevant or applicable quieting technology.

Since the CER already identifies additional materials as part of its guidance to proponents undertaking assessments of effects on the acoustic environment, it would be useful for the Strategy for relevant noise standards to be identified.

Within the ESA process, the applicant will be responsible to determine the potential adverse effects of the project. A proponent may determine the project will have “negligible effects” in certain conditions, including that “there is no increase in noise emissions”.²³⁶ The assessments must include identification of wildlife and wildlife habitat in the area, and effects from disturbances that include sensory disturbances (light and noise).²³⁷

The CER’s guidance for ESAs is focused on mitigating and “controlling” noise, rather than on ensuring the suitability and sustainability of projects that cause ocean noise. The CER should adopt clearer guidance for assessing ocean noise from projects under its mandate which incorporates best practice standards and relevant policies, including the Strategy.

The CER’s approach to ESAs is currently focused on assessing pipeline, natural gas, and related facilities; there is no mention of offshore renewable energy. The CCER’s decisions and recommendations are shaped by guidance notes, which help to explain the CCER’s expectations and explain how it regulates

²³⁴ Ibid at 94.

²³⁵ Ibid at 94.

²³⁶ Ibid at 23.

²³⁷ Ibid at 84.

operations (for example, how enforcement works).²³⁸ However, there is no guidance for offshore renewable energy projects.

The CER's environmental and socio-economic assessments, as informed by its *Filing Manual* and guidance notes, should reflect the CER's clear jurisdiction and responsibility to regulate offshore renewable energy projects, including ocean noise caused by those projects.

6.2 Regulation of Offshore Renewable Energy in Nova Scotia and Newfoundland and Labrador

The Accord Acts create the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board (together, the offshore boards). These regulatory bodies are responsible for issuing licences for offshore oil and gas exploration and development, managing, and conserving offshore petroleum resources, protecting the environment, and ensuring the safety of offshore workers. Amendments to the Accord Acts contained in federal Bill C-49, which is before Parliament at the time of writing, would expand the scope of the offshore boards to include regulation of ORE projects in their respective offshore areas. If the proposed amendments are approved, the CER would not be responsible for OREs in the offshore areas covered by the amended Accord Acts.

Bill C-49 makes amendments to both the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, with the primary feature of the amendments being the re-configuration of the offshore boards to expand the scope to regulation of offshore renewable energy. The existing role of the offshore boards is discussed further in Chapter 8. The proposed amendments would see the creation of a new type of land tenure, alongside joint ministerial decision-making processes, for issuance of submerged land licences for offshore renewable projects.

The process for ORE project approval as proposed by Bill C-49 would begin with the offshore board making a call for bids where the federal Minister and relevant provincial minister have jointly approved.²³⁹ The call for bids would need to include factors like the terms and conditions to which a particular licence provided under the bid would be subject, and the criteria that the offshore board will use to assess bids.²⁴⁰ The offshore boards would then make an offshore renewable energy recommendation about an ORE project that made a successful bid. The federal Minister and respective provincial minister would make a final decision about whether an ORE project is approved.²⁴¹ This is an important difference from the existing offshore petroleum regulatory regime, in which decisions of the offshore boards are final unless there is joint agreement by both Ministers that the decision of the offshore board will be cancelled.

²³⁸ Canadian Energy Regulator, "Acts and Regulations" (January 2023), online: <<https://www.cer-rec.gc.ca/en/about/how-we-regulate/guidance/index.html>>.

²³⁹ Bill C-49, *supra* note 152, ss 38, 147.

²⁴⁰ *Ibid.*

²⁴¹ *Ibid* ss 19, 125.

The offshore boards will issue submerged land licences where a project is approved by both Ministers (in some limited research situations, facilities will not require a licence where they are not anchored to the seabed).²⁴² The offshore boards would be responsible for all aspects of the projects, including construction, maintenance, and decommissioning, and can attach terms and conditions on a licence if those terms and conditions are consistent with their respective Accord Act and its Regulations.²⁴³

Under the amendments to the Accord Acts being proposed in Bill C-49, the offshore boards could attach terms and conditions on licences for offshore renewable energy projects that would require proponents to adhere to ocean noise thresholds or to consider the use of quieting technologies.

The GIC has power to make regulations prohibiting OREs in portions of the respective offshore areas that are or may be identified as an area for environmental or wildlife conservation or protection. The Governor-in-Council may also establish terms, conditions, and criteria for bids.²⁴⁴ As noted above with respect to the regulatory framework for OREs under *CERA*, the framework proposed under Bill C-49 will need to be fully developed using regulations and other tools like directives and guidance notes.

It is likely that the regulatory regimes for ORE under *CERA* and the proposed amendments to the Accord Acts will closely resemble each other, just as the regulatory regimes under the existing Accord Acts for petroleum closely resembles the regimes under *COGOA* and the *Canadian Petroleum Resources Act* (*CPRA*).

6.3 Law and Policy Reform to Address Ocean Noise Caused by Offshore Renewable Energy

Because the offshore renewable energy industry is still in its infancy in Canada, the federal legislative framework is not robust and contains very little detail about how OREs would be practically regulated by the CER (or in the future, by offshore energy regulators in Nova Scotia and Newfoundland and Labrador). This creates an important opportunity for new legal frameworks to be developed in a way that ensures ocean noise caused by OREs is fully assessed and managed.

Recommendations:

- The regulatory bodies responsible for OREs (i.e. the Canada Energy Regulator and potentially the offshore boards under the Accord Acts) should be responsible for assessing environmental and socio-economic assessments of projects in a way that includes an analysis of noise impacts from those projects.
- The regulatory bodies for OREs should have clear guidance for decision-making related to ocean noise impacts so that conditions placed on regulated projects could include requirements to

²⁴² Ibid ss 38, 147.

²⁴³ Ibid.

²⁴⁴ Ibid.

adhere to noise limits, adopt quieter technologies, or carry out sufficient underwater noise monitoring.

7. NAVAL OPERATIONS AND ACTIVITIES

Naval operations and exercises involve many activities that introduce sound into the marine environment, including live-ammunition training, vessel noise, explosions, and mid-frequency sonar.²⁴⁵ This chapter of the report focuses on legislation and policies, and in particular naval orders, that deal with military application of sonar. The primary focus will be on two naval orders (NAVORD 3137-S: *Canadian Towed Array Sonar and NIXIE Towing and Operating* and NAVORD 4003-6: *Marine Mammal Mitigation Procedures for Active Sonar Use*) which deal with the military's use of sonar technology, as well as create and implement protections for marine mammals under the *Fisheries Act* and protections for species at risk under the *Species at Risk Act*.

7.1 Environmental Stewardship under the *National Defence Act* and its Regulations

Canada's *National Defence Act* (the NDA) is the primary statute governing Canada's military.²⁴⁶ It authorizes the GIC and the Minister of National Defence to create the *Queen's Regulations and Orders for the Canadian Forces* (QR&O).²⁴⁷ These are regulations governing various matters including environmental protection.

Article 1.23 of the QR&O authorizes the Chief of Defence Staff to issue orders and instructions.²⁴⁸ The Deputy Minister and Chief of Defence Staff have used this power to issue comprehensive *Defence Administrative Orders and Directives* (DAOD), which include direction on environmental stewardship and protection, in particular DAOD 4003-0 (Environmental Protection and Stewardship) and, formerly, DAOD 4003-2 (Environmental Assessment).²⁴⁹ These are a primary mechanism through which environmental protection, including with respect to managing ocean noise, is or may be carried out.

Naval Orders (NAVORD), as authorized under article 4.12 of the QR&O, are orders that the Royal Canadian Navy (RCN) uses to communicate policies to its members, including with respect to environmental protection.

²⁴⁵ M J Chupick, "Marine Mammal Mitigation Procedures in the Royal Canadian Navy (RCN)" (August 2014) submitted in partial fulfillment for the degree of Master of Marine Management at 4.

²⁴⁶ RSC 1985, c N-5.

²⁴⁷ *Ibid* s 12.

²⁴⁸ *Queen's Regulations and Orders for the Canadian Forces*, art 1.23, online: <https://www.canada.ca/content/dam/dnd-mdn/migration/assets/FORCES_Internet/docs/en/about-policies-standards-queens-regulations-orders-vol-01/Volume1_Final.pdf>. Articles 1.3, 1.4 and 1.235 gives authority for other persons to be authorized to issue orders and instructions.

²⁴⁹ See: Government of Canada, "Defence Administrative Orders and Directives" (March 2017), online: <<https://www.canada.ca/en/department-national-defence/corporate/policies-standards/defence-administrative-orders-directives.html>>

The RCN's organization structure for managing environmental issues is set out in Naval Order 1002-0 RCN *Safety and Environmental Program Management*.²⁵⁰ The Commander of the RCN has overall responsibility to ensure that a marine mammal mitigation procedures (MMMP) policy is established. The Maritimes Forces Atlantic and Maritime Forces Pacific and its corresponding fleet commanders (the coastal formations) have responsibility for implementation. Formation Safety and Environmental Offices located at each are the key organizations for environmental issues.²⁵¹

7.1.1 DAOD 4003-0, *Environmental Protection and Stewardship*

The *Defence Administrative Orders and Directive 4003-0, Environmental Protection and Stewardship* (DAOD 4003-0) is a directive issued by the Assistant Deputy Minister of Infrastructure and Environment.²⁵² It applies to employees of the Department of National Defence (DND) and officers and non-commissioned members of the Canadian Armed Forces (CAF).²⁵³ It creates a Code of Environmental Stewardship which requires the DND and the CAF to (among other responsibilities):

- integrate environmental concerns with other relevant concerns in decision-making;
- practice pollution prevention in day-to-day activities and operations by seeking ways to reduce generation of noise; and
- manage lands in an environmentally sound manner, including protection of ecologically significant areas.²⁵⁴

The policy statement of DAOD 4003-0 requires that DND and CAF will, among others, implement a sustainable development strategy, conduct environmental assessments, and develop, operate, and maintain an environmental management system.²⁵⁵

DAOD 4003-0 is a high-level policy directive so there is no specific direction to DND and CAF about how to implement the Code of Environmental Stewardship. However, it does require individuals to exercise due diligence, including knowing and obeying federal environmental laws and regulations, and provides a list of references to Acts, Regulations, Central Agency Policies, and Policy DAOD that includes the *Fisheries Act* and its Regulations, the *Oceans Act*, and the *Canada Wildlife Act* and its Regulations.

DAOD 4003-0 could better address ocean noise by including general policies on marine environmental stewardship that could be applied to instances of noise-related impacts (for example, the federal Marine

²⁵⁰ Chupick, *supra* note 245 at 30.

²⁵¹ *Ibid* at 32.

²⁵² Government of Canada, *DAOD 4003-0, Environmental Protection and Stewardship*, (May 2017), online: <<https://www.canada.ca/en/department-national-defence/corporate/policies-standards/defence-administrative-orders-directives/4000-series/4003/4003-0-environmental-protection-and-stewardship.html>> [DAOD].

²⁵³ *Ibid* s 1.

²⁵⁴ *Ibid* s 3.2.

²⁵⁵ *Ibid* s 5.

Protected Areas Protection Standard)²⁵⁶ or specific policies like Canada’s Ocean Noise Strategy that would help inform decision-making about marine activities and operations.

The DAOD provides a table of authorities indicating which level in the chain of command is responsible for setting or implementing environmental stewardship policies (replicated below):²⁵⁷

Table 7.1.1 – Authorities Responsible for Environmental Stewardship Policies

Title	Authority
Vice Chief of Defence Staff	Direct the inclusion of environmental programs in business plans at all levels
Level 1 Advisors as set out in the <i>Defence Plan On-Line</i>	Establish environmental protection and stewardship procedures and instructions and associated programs unique to their organization
Assistant Deputy Minister (Infrastructure and Environment)	Provide guidance, advice and oversight for environmental protection and stewardship, including national-level environmental issues, objectives and targets.
Director General Environment	Issue orders, directives and instructions required to implement the environmental protection and stewardship policy.

It is not clear at which level in the chain of command that Canada’s Ocean Noise Strategy or marine noise standards could be integrated into decision-making.

7.1.2 NAVORD 4003-6: Marine Mammal Mitigation Procedures for Active Sonar Use

The NAVORD 4003-6: *Marine Mammal Mitigation Procedures for Active Sonar Use* (NAVORD 4003-6)²⁵⁸ provides overarching direction for conducting exercises, trials, maintenance and operations that involve the use of Active Sonar Systems that may disturb, harass or harm marine mammals.²⁵⁹ It applies to all

²⁵⁶ Fisheries and Oceans Canada, “Federal Marine Protected Areas Protection Standard”, *supra* note 69

²⁵⁷ DAOD, *supra* note 252, s 4.1.

²⁵⁸ Note: For the purposes of this Report, a 2014 version of NAVORD 4003-6 was reviewed. Access to the current version was requested from the DND on October 4, 2023. The request was denied and instead, we were directed to request the information through DND’s Directorate of Access to Information and Privacy.

²⁵⁹ *Naval Orders: Marine Mammal Mitigation Procedures for Active Sonar Use (NAVORD 4003-6)*, issued by the Commander Maritime Forces Atlantic under authority of the Commander of the Royal Canadian Navy, July 2014, s 3.2 [NAVORD]. See also the

Canadian ships, submarines, helicopters, and long range patrol aircraft deploying active sonar systems while conducting peacetime exercises and domestic operations.²⁶⁰ It is implemented in accordance with DAOD 4003-0 and the Defence Environmental Strategy.²⁶¹ The NAVORD contains the high-level policy guidance related to MMMP while specific mitigation measures are contained in ship class Safety and Environmental Management Systems (SEMS) manuals.²⁶²

NAVORD 4003-6 is guided by implementation of the precautionary measures resulting in identification of “low risk areas for exercises and operations”. Planners and operators must carry out mitigation measures that are specified in the NAVORD and through further direction in Formation and Ship Class SEMS manuals.²⁶³

Under NAVCORD 4003-6, naval exercises involving active sonar operations should not be planned or conducted in areas with restrictions (defined as areas with restrictions due to environmental sensitivities), including MPAs, proposed MPAs, and International Maritime Organization (IMO) Areas to be Avoided”.²⁶⁴

The *NAVORD 4003-6: Marine Mammal Mitigation Procedures for Active Sonar Use* is an example of a legislative tool that has been used—in this case, by the DND—to restrict the use of noise-producing activities in sensitive marine environments.

7.1.3 *Maritime Command Order: Marine Mammal Mitigation Procedures for Active Sonar Use*

The provisions of the former Marine Mammal Mitigation Procedures for Active Sonar Use (MARCORD 46-13)²⁶⁵ were adapted from the Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment (the SCP).²⁶⁶ MARCORD 46-13 is no longer in effect, and provisions dealing with sonar were replaced by NAVORD 4003-6. Operator-level mitigation procedures that used to be contained in MARCORD 46-13 were inserted into SEMS Manuals for specific classes of military ships.²⁶⁷

MARCORD 46-13 contained specific mitigation procedures for the use of active sonar.²⁶⁸ Those procedures included:

description in: Department of National Defence, “Due Diligence Determination (DDEED) Report. Project: Operation NANOOK-TUUGAALIK 2022 and NANOOK-NUNAKPUT 2022” (30 June 2022) at C-6.

²⁶⁰ NAVORD, *supra* note 259, s 3.3

²⁶¹ *Ibid* s 3.1.

²⁶² Chupick, *supra* note 245 at 63.

²⁶³ NAVORD, *supra* note 259, s 4.1.

²⁶⁴ *Ibid* ss 2, 4.5.

²⁶⁵ Department of Defense (DND). 2008. *Maritime Command Order: Marine Mammal Mitigation Procedures [MARCORD]*. Unpublished. 46-13 (3A).

²⁶⁶ Chupick, *supra* note 245 at 15.

²⁶⁷ *Ibid* at 37.

²⁶⁸ *Ibid* at 37.

- Planning to avoid marine mammal habitat.²⁶⁹
- Mitigation Avoidance Zones, in which sonar operations ceased if a marine mammal was within one of these zones.²⁷⁰
- The use of marine mammal observers.
- The use of passive acoustic monitoring.²⁷¹
- Ramp-up procedures, which involved a slow ramping up of sound energy to deter marine mammals from approaching.²⁷²

Environmental assessments have been conducted for each coastal formation’s operating areas to help planners select appropriate areas for military exercises.²⁷³ Specific areas where sonar operations are prohibited can be promulgated in orders that apply to the specific coastal formation. For example, such an order was made by the Maritime Forces Atlantic formation commander:

“Accordingly, Underwater Sound Generating Systems shall be prohibited, for exercise purposes, in known MM (Marine Mammal) habitat areas identified in the CANLANT/JTFA(A) AOR (Canadian Atlantic Area of Responsibility). These known habitats include the Bay of Fundy, Roseway Right Whale Conservation Zone and the Gully Marine Protected Area; further details on these MM habitat areas and other known dolphin and whale concentration areas are provided in the MOAMP and GIS package available from N48 (FSE). Marine Mammal encounters and mitigation actions shall be included in post exercise/serial reports.” (MARLANTORD 44-4: Requests for Service Support)²⁷⁴

The military’s current approach to managing noise impacts in the marine environment is primarily focused on mitigation, rather than prevention. It is not clear whether its mitigation procedures are shaped or guided by science or Indigenous knowledge, or whether there were avenues to addressing noise by implementing quieter technologies.

7.2 Defence Energy and Environmental Strategy

The Government of Canada recently developed an integrated strategy for energy and environmental management called the *Defence Energy and Environmental Strategy* (DEES). It is considered the DND’s “primary” vehicle for sustainable development planning and reporting, and is meant to help integrate

²⁶⁹ Ibid at 37.

²⁷⁰ Ibid at 42.

²⁷¹ Ibid at 45.

²⁷² Ibid at 46.

²⁷³ Ibid at 38.

²⁷⁴ Ibid at 40.

sustainable development principles into DND policies, programs, and daily operations, including for environmental issues like water quality and ecosystem health.²⁷⁵

The DEES is divided into four parts, which are energy efficiency, climate change, sustainable real property, and green procurement. There are a number of objectives under its sustainable real property theme, including managing training areas, protecting flora and fauna, and waste management.²⁷⁶ However, there are no references to reducing noise impacts in the marine environment.

7.3 Law and Policy Reform to Address Ocean Noise Caused by Military Activities

Canada's Department of Defence has legislation and policies dealing specifically with the marine environment, including ones that can be used to manage noise-related impacts from military operations and activities. However, a strong emphasis of the military environmental stewardship regulations and policies are related to mitigating effects on marine mammals, and there are fewer clear and explicit paths to protecting other kinds of species or ecosystems.

Recommendation:

- DAOD 4003-0 and NAVORD 4003-6 should provide clearer guidance that incorporates best practices with respect to managing noise impacts in the marine environment through incorporation by reference of standards or policies like the Strategy to further inform decision-making about military operations and activities in the marine space.

²⁷⁵ Government of Canada, "Public Statement for the Strategic Environmental Assessment of the Defence Energy and Environmental Strategy" (May 2018), online: <<https://www.canada.ca/en/department-national-defence/services/greening-defence/public-statement-strategic-environmental-assessment-defence-energy-environment-strategy.html>>

²⁷⁶ Canada Department of National Defence and Canadian Armed Forces, "Defence Energy and Environment Strategy – Harnessing energy efficiency and sustainability: Defence and the road to the future, 2020–2023" (2020), online: <https://www.canada.ca/content/dam/dnd-mdn/images/dees2020/2020-23%20Defence%20Energy%20and%20Environment%20Strategy_EN%20-%20Signed.pdf>

8. SEABED MINING

Canada does not have legislation specifically governing seabed mining, so this chapter briefly discusses Canada's policy statement related to seabed mining. Mining operations taking place on land that may create noise impacts on the marine environment are primarily in the jurisdiction of the provinces and territories, but some aspects may be directly regulated by federal statutes like the *Fisheries Act*.

8.1 Canada's Statement on Seabed Mining

Canada's *Statement on Seabed Mining* (in this chapter, the Statement) was issued by the Ministers of Natural Resources and Fisheries, Oceans, and Canadian Coast Guard on February 9, 2023. The Statement makes a commitment to responsible resource management that upholds strong environmental, social, and governance principles to address climate change, biodiversity loss, and pollution, and declares that Canada's current position on seabed mining is that "in the absence of a rigorous regulatory structure" Canada will not authorize seabed mining in areas under its jurisdiction (i.e. on the seabed up to 250 nautical miles into the ocean).²⁷⁷ The Statement outlines what a "rigorous regulatory structure" for seabed mining might involve: due diligence; the use of precautionary and ecosystem-based approaches; gaining a robust knowledge base on ocean environments; understanding of potential impacts of seabed mining operations to ensure decisions are informed by science; ocean protection; consideration of environmental, economic, and social effects; and, engagement with rightsholders and stakeholders.²⁷⁸

Some of the language used in the Statement with respect to what a regulatory regime would look like echoes language and principles used in the federal IAA: understanding impacts based on environmental, economic, and social effects, and engagement with rightsholders and stakeholders. More specifically, the Statement's reference to building a robust knowledge base might specifically allude to a broader regional or strategic-level assessment, or perhaps a federal SEA. It is likely that an early step in any future development of a seabed mining regulatory regime would be one or more impact assessments, strategic assessments, or regional assessments of seabed mining.

8.2 Federal Legislation Dealing with Terrestrial Mining Effects in the Marine Environment

Coastal mining operations can have ocean noise impacts. Mines and their ancillary activities and operations are the primary jurisdiction of the provinces and territories under section 92 of the *Constitution Act, 1867* (primarily with respect to local works and undertakings and natural resources). However, aspects of terrestrial mining are regulated by the federal government.

²⁷⁷ Natural Resources Canada, "Statement on Seabed Mining" (9 February 2023), online: <<https://www.canada.ca/en/natural-resources-canada/news/2023/02/statement-on-seabed-mining.html#>>

²⁷⁸ Ibid.

8.2.1 Metal and Diamond Mining Effluent Regulations

The *Metal and Diamond Mining Effluent Regulations* are created under the *Fisheries Act*.²⁷⁹ They regulate effluent from metal and diamond mines in a manner that is similar to regulation of other deleterious substances (like pulp and paper effluent or municipal wastewater discharge) that may be deposited into waters frequented by fish.²⁸⁰ The definition of “effluent” does not include any reference to noise or energy. However, it is possible that other measures could be introduced under the *Fisheries Act* to address noise impacts from coastal mining projects. Refer to Chapter 4 for more information and discussion.

8.3 Law and Policy Reform to Address Ocean Noise Caused by Seabed Mining

Canada does not have a regulatory regime in place for seabed mining, and there is currently no seabed mining activity taking place.

Recommendations:

- Any future regulatory regime should be designed to address noise impacts as a priority consideration. Future legal research on other jurisdictions with seabed mining regulatory regimes in place would be particularly useful to identify barriers and opportunities to address noise impacts from seabed mining.
- Environmental impact assessments (project-level, regional, or strategic) would play a key role in development of a seabed mining regime.

²⁷⁹ SOR/2002-222.

²⁸⁰ The *Metal and Diamond Mining Effluent Regulations* are enacted under the *Fisheries Act*, *supra* note 115, subsections 34(2), 36(5) and 38(9), which deal with the protection of fish and fish habitat and pollution prevention.

9. OFFSHORE OIL AND GAS

This chapter focuses on legislation and policies used to regulate exploration for, and production of, oil and gas (i.e. petroleum) in the offshore. COGOA, CPRA, as well as their associated regulations, are the main legislation that govern most aspects of offshore petroleum, and those aspects dealing with seismic testing are a particular focus of this chapter. The related Accord Act regimes in Newfoundland and Labrador and Nova Scotia are also examined. Finally, attention is paid to the *Order Prohibiting Certain Activities in Arctic Offshore Waters, 2022* and other considerations related to the Arctic marine environment. The construction of offshore petroleum platforms is discussed below in Chapter 11.

9.1 Overview of How Offshore Oil and Gas Activities are Regulated

The legal regime used to issue rights to explore for, develop, and produce petroleum in Canada is shaped by a need to balance the interests of the Crown government as “owner” of the resources and private interests seeking to engage in those activities.²⁸¹ The Crown’s role as both “owner” and regulator of petroleum resources causes conflict, and the two roles are separated to some extent in the regulatory regime.²⁸² Offshore petroleum projects are governed primarily by two companion statutes, the CPRA, COGOA, and their respective regulations.

The administration of offshore petroleum resources may be divided into three regions: the areas north of 60°N latitude (60°N), Newfoundland and Labrador and Nova Scotia, and the remaining areas of Canada.

The administration of petroleum resources on Crown lands north of 60°N in the Northwest Territories, Nunavut, and Northern offshore under CPRA is the responsibility of the Minister of Indigenous and Northern Affairs (specifically, the Petroleum and Mineral Resources Management Directorate). North of 60°N, the departments of Indigenous and Northern Affairs and Natural Resources and Renewables are responsible for issuing land tenure and licences under the CPRA, approving or waiving benefits plans, collecting royalties, and deciding whether an area will be open for bids.

Petroleum resources in the offshore areas of Newfoundland and Labrador and Nova Scotia are regulated by the respective offshore boards for those areas (these boards are jointly appointed by the federal Minister of Natural Resources and the respective provincial government). The offshore boards are empowered under the Accord Acts to issue calls for bids and licences, and to otherwise approve and authorize activities in their respective offshore areas related to petroleum exploration and production.

²⁸¹ R J Harrison, *Review of the Canada Petroleum Resources Act submitted by the Minister’s Special Representative* (May 30, 2016) at 6.

²⁸² *Ibid.*

The CER is responsible for regulating petroleum projects in all other marine areas. The Minister of Natural Resources (in this chapter, the Minister) is responsible for administration of the CPRA in all other areas.²⁸³ The minister is the ultimate decision-maker on whether a licence is issued.

The rights to explore and develop petroleum resources on frontier lands (i.e. offshore areas) are granted under the CPRA.²⁸⁴ Authorization for specific activities associated with exploring for and producing petroleum are granted under COGOA. This is analogous to ownership rights versus building permits.²⁸⁵ Generally, exploration for petroleum cannot occur until permission is granted under the CPRA. Operations authorized under CPRA cannot occur without separate approvals issued under COGOA. However, some exploration activities do not require a licence: for example, a licence is not required to conduct seismic surveys (although authorization from the CER under COGOA is required). Petroleum operations are also subject to impact assessment processes (see Chapter 5).

In the offshore areas of Newfoundland and Labrador and Nova Scotia, the *Canada-Newfoundland Atlantic Accord Implementation Act* (NFLD Accord Act) and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* (NS Accord Act), together the Accord Acts, are used to licence and regulate offshore petroleum projects in a similar manner to CPRA and COGOA.

A summary of the process involved for assessing and permitting an offshore petroleum follows:

1. Call for bids: An area is opened for exploration and development. The respective Minister may issue a call for bids at their sole discretion.²⁸⁶ An operator may request a specific offshore area to be opened to bids.²⁸⁷
2. Exploration licence: If an operator has a successful bid, it is awarded an exploration licence under CPRA or an Accord Act, as relevant. The operator also requires an operating licence and operations authorization from the CER under the COGOA,²⁸⁸ or an offshore board under its respective Accord Act.²⁸⁹
3. Impact Assessment: A federal impact assessment under the IAA is carried out for the drilling, testing and abandonment of exploratory wells in an area set out in an exploration licence.²⁹⁰

²⁸³ See: Government of Canada, “Review of the Canada Petroleum Resources Act” (September 2016), online: <<https://www.rcaanc-cirnac.gc.ca/eng/1436896797399/1538587658118>>. See also definition of “Minister” at *Canada Petroleum Resources Act*, RSC 1985, c 36, s 2 [CPRA].

²⁸⁴ See CPRA, *supra* note 283, s 2 definition of “frontier lands”. The scope of the statute’s application is explored in subsequent sections.

²⁸⁵ Harrison, *supra* note 281 at 9.

²⁸⁶ CPRA *supra* note 283, ss 13, 14.

²⁸⁷ *Ibid* s 14(2).

²⁸⁸ *Canada Oil and Gas Operations Act*, RSC 1985, c O-7, s 5 [COGOA].

²⁸⁹ *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act*, SC 1987, c 3, s 138 [NFLD Accord Act]; *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, SC 1988, c 28, s 142 [NS Accord Act].

²⁹⁰ See *Physical Activities Regulations*, SOR/2019-285, s 34, Schedule.

Additional environmental assessments may also be required under comprehensive land claims agreements.

4. Technical Review: the CER or respective offshore petroleum board, will complete a technical review of the proposed drilling project. If the CER or offshore petroleum board supports the application, it will issue an operations authorization with terms and conditions that consider recommendations from an IA process.
5. Significant Discovery and Production Licences: If petroleum is discovered, a significant discovery licence and eventually, a production licence, may be issued.
6. Monitoring: The CER or respective offshore board continues to monitor the operator's compliance with the legislation and the conditions and terms of its licence.

There are many opportunities to address noise impacts caused by petroleum exploration and production in the marine environment, including specifically the seismic surveying that occurs early in the process.

9.2 *Canada Petroleum Resources Act*

The CPRA governs (i.e. authorizes) the issuance of licences (exploration licences, significant discovery licences, and production licences) for federally owned petroleum rights on “frontier lands”, which includes the territorial sea and continental shelf,²⁹¹ but does not include areas offshore of Newfoundland and Labrador and Nova Scotia that are covered by the Accord Acts (see chapter 9.4 below). A licence granted under the CPRA provides the holder interests in petroleum resources (referred to as title rights). Former interests (i.e. interests granted by permits, special renewable permits, exploration agreements, and leases) are replaced by exploration licences under the CPRA.²⁹²

Petroleum interests are granted under CPRA using a public call for bids process.²⁹³ The CPRA does not require the federal government to initiate a bidding process or to grant interests after bids have been received.²⁹⁴ This means the federal government has significant discretion to determine when or if petroleum interests will be issued. The responsible minister typically issues a call for nominations, inviting proponents to request offshore areas to be included in a call for bids.²⁹⁵ It is not clear that there are practices in place to identify areas where bids should not take place.

There are no factors for the Minister to consider when deciding whether to place a call for bids. Legislated factors for consideration could be used to help guide the Minister in making this important first

²⁹¹ CPRA, *supra* note 283, s 2 definition of “frontier lands”.

²⁹² *Ibid* ss 113, 114.

²⁹³ *Ibid* s 14.

²⁹⁴ *Ibid* s 16(1).

²⁹⁵ Harrison, *supra* note 281 at 26.

step. Factors could include areas to be avoided because of environmental impacts, including ocean noise impacts caused by petroleum projects.

In reviewing the CPRA in 2016, Rowland J. Harrison, the Minister’s special representative, recommended that the CPRA be amended to require that the minister complete and consider a SEA—encompassing the area in which a call for bids is proposed—before a call for bids is issued.²⁹⁶ A SEA could be used to assess noise from oil and gas exploration on the proposed area.

A strategic environmental assessment should be used to assess areas before a call for bids is issued for petroleum exploration. A SEA can be used at an early stage to identify regional and local noise thresholds, and identify areas where ocean noise generated from petroleum projects would cause such environmental impacts that those areas should be avoided.

Any licence issued under the CPRA can include terms and conditions as long as they are consistent with the CPRA and its Regulations; such terms and conditions could impose requirements to limit noise to established thresholds (including ones shaped by local or regional biological limits, and by local and Indigenous knowledge) and prescribe the use of quieting technologies. Terms and conditions can be prescribed by the GIC or agreed to by the Minister and the interest owner.²⁹⁷

A licence issued under the CPRA can impose conditions on its holder that could require adherence to noise thresholds or the use of quieting technology.

With respect to area-based noise targets, one power available to the GIC under the CPRA is the ability to make an order prohibiting the issuance of interests in frontier lands specified in the order. Such an order may be made for “such purposes and under such conditions” set out in the order.²⁹⁸ Another power available to the GIC is the ability to make an order prohibiting an interest owner or other person from commencing or continuing work authorized under COGOA on the frontier lands if the GIC considers it is in the national interest to do so, or that it is necessary because of prescribed circumstances (which includes the occurrence of an environmental or social problem of a serious nature, or the designation of a marine protected area under sections 35(3) or 35.1(2) of the *Oceans Act* (i.e. a marine protected area).²⁹⁹ This power is currently used to create the *Order Prohibiting Certain Activities in Arctic Offshore Waters, 2022*, which prohibits any person, including an interest owner of a licence set out in its schedule, to commence or continue work that is authorized under COGOA on the frontier lands in Canadian Arctic offshore waters over which the Minister of Northern Affairs has administrative responsibility.³⁰⁰ The *Order* repealed a former order (the *Order Prohibiting Certain Activities in Arctic Offshore Waters*) and is set to be repealed in December 31, 2023. It is likely that another order will take its place because the Government of Canada

²⁹⁶ Ibid at 33.

²⁹⁷ CPRA, *supra* note 283, s 24.

²⁹⁸ Ibid s 10(1).

²⁹⁹ Ibid s 12(1).

³⁰⁰ SOR/2022-274, s 1.

has issued a moratorium on new oil and gas licences in Canada’s Arctic waters.³⁰¹ This order-making power can be used to protect sensitive areas or species from ocean noise resulting from oil and gas activities.

Governor in Council orders, issued under the CPRA, have been used to prevent petroleum projects from occurring in sensitive ecosystems (i.e. the Arctic) and could be used in the future to protect areas vulnerable to noise generated from petroleum activities.

An exploration licence issued under the CPRA is required to drill and test for oil and gas and is needed before an operator can apply for other approvals (including an operating licence from the CER or offshore petroleum board, an operations authorization, and a well approval under COGOA). The responsible minister can impose terms and conditions on any bids, which all bidders must comply with and which will be imposed on all exploration licences issued under that call for bids. This provides an early opportunity for the responsible minister or regulatory body to require that operators indicate how they intend to comply with Canada’s Ocean Noise Strategy and other applicable standards. If an exploration licence is issued, the impact assessment process is a second opportunity to require examination of an operator’s ocean noise, particularly with respect to drilling noise (see Chapter 5).

9.3 *Canada Oil and Gas Operations Act*

The COGOA is used to regulate exploration, drilling, production, processing, and transportation of oil and gas in marine areas controlled by the federal government. Specifically, its purpose is to promote safety, protection of the environment, and conservation of oil and gas resources.³⁰² No person may conduct any operations related to exploration, drilling, or production, processing, or transportation of oil and gas in any area to which the COGOA applies unless they have an operating licence issued under the COGOA and have authorizations for the work or activity.

Under COGOA, the CER is responsible for managing oil and gas development and production in the “frontier areas” (i.e. ocean areas), which include the Northwest Territories, Nunavut, and Sable Island, the submarine areas outside of a province’s jurisdictional waters, and the territorial sea or continental shelf. The CER assesses applications and issues authorizations under the COGOA and can attach conditions to an authorization issued to achieve the goals of the COGOA. It has full jurisdiction to inquire into, hear, and determine any matter that relates to compliance of any regulation, order, or direction made under the COGOA or a contravention of the Act, including an operating licence or authorization.³⁰³ It also has order-

³⁰¹ Government of Canada, “Order Amending the Order Prohibiting Certain Activities in Arctic Offshore Waters: SOR/2021-272”, Canada Gazette Part II: Vol 156 (5 January 2022), online: <<https://gazette.gc.ca/rp-pr/p2/2022/2022-01-05/html/sor-dors272-eng.html>>.

³⁰² COGOA, *supra* note 288, s 2.1.

³⁰³ *Ibid* s 5.31(1).

making powers to compel compliance with the Act, any of its Regulations, an order or direction made under the Act, or an operating licence or authorization.³⁰⁴

The C-CER may issue an operating licence and authorizations necessary for each work or activity proposed under the COGOA.³⁰⁵ An operating licence is subject to any requirements imposed by the C-CER or prescribed under the COGOA.³⁰⁶ Additionally, an authorization is subject to approvals determined by the C-CER or prescribed in regulations, including requirements for carrying out environmental programs or studies.³⁰⁷ An operating licence or authorization may be suspended or revoked if an operator fails to comply with a requirement or approval of a licence or authorization.³⁰⁸ The C-CER can vary the conditions of an operating licence or authorization issued under section 383 of the CERA.³⁰⁹

The CER, acting primarily through its Commission, is the primary regulator of petroleum in offshore areas not covered by the Accord Acts and is therefore the main body that would address noise impacts under the COGOA regulatory regime. It is responsible for monitoring and enforcement of ocean noise caused by petroleum projects (for example, enforcing conditions pertaining to ocean noise thresholds).

Before the C-CER provides an approval, it must approve a development plan related to the relevant pool or field (one or more natural underground reservoirs).³¹⁰ The development plan must include a description of the general development approach and all technical or other information necessary for a comprehensive review and evaluation of the development.³¹¹ The C-CER may approve the development plan, subject to consent of the GIC, with respect to the general development approach and other requirements it considers appropriate.³¹² A development plan could be used to address concerns about ocean noise for the area around a pool or field at an early stage of the regulator's decision-making process.

It should be noted that if an application under COGOA is for a "designated project" (i.e. a type of project listed in the Project List under the IAA), thereby requiring an impact assessment, the Minister of Environment and Climate Change must issue their decision under the IAA before the authorization can be granted.³¹³

³⁰⁴ Ibid s 5.32.

³⁰⁵ Ibid s 5(1).

³⁰⁶ Ibid s 5(3).

³⁰⁷ Ibid s 5(4).

³⁰⁸ Ibid s 5(5).

³⁰⁹ Ibid s 5(6).

³¹⁰ Ibid s 5.1(1).

³¹¹ Ibid s 5.1(3).

³¹² Ibid s 5.1(4).

³¹³ Ibid s 5.0001(3).

The GIC has power under the COGOA to make regulations related to safety, protection of the environment, accountability, and production and conservation of oil and gas resources.³¹⁴ This includes power to make regulations pertaining to exploration and drilling, and prohibiting introduction into the environment of substances, classes of substance, and forms of energy.³¹⁵ While the C-CER has regulatory responsibilities, its duties can be shaped by regulations created at the federal cabinet level. This means the GIC can make regulations that guide the C-CER's management of noise impacts. For example, the GIC could create new regulations or amend existing regulations under COGOA to require all licence holders to adhere to ocean noise limits or develop quiet technology.

Activities relevant to managing ocean noise generated by offshore oil and gas are regulated under COGOA primarily through regulations.

9.3.1 *Canada Oil and Gas Drilling and Production Regulations*

The *Canada Oil and Gas Drilling and Production Regulations* create a system for authorizations and set requirements for drilling and production, including a requirement for licence holders to maintain a management system and environmental protection plan.³¹⁶ A management plan must include processes for setting goals for improvement of safety, environmental protection and waste prevention, and for ensuring and maintaining integrity of all facilities, structures and equipment.³¹⁷

The CER must grant a well approval if an operator demonstrates that its work or activity will be conducted safely, without waste and pollution.³¹⁸ The CER can suspend or revoke the well approval for non-compliance.³¹⁹ Pollution is defined as “the introduction into the natural environment of any substance or form of energy outside the limits applicable to the activity that is subject to an authorization, including spills”.³²⁰ An operator must cease any work or activity without delay if it will cause or is likely to cause pollution.³²¹ Operators must also ensure procedures and equipment are in place to prevent pollution.³²²

The management system required by the *Canada Oil and Gas Drilling and Production Regulations* should explicitly require an operator to show how work will be conducted at or below acceptable noise thresholds. There is an opportunity for the CER to incorporate regional or local noise thresholds into their authorization process, or to require adherence with appropriate ocean noise standards and policies.

³¹⁴ Ibid s 14(1).

³¹⁵ Ibid ss 14(1)(b), (g).

³¹⁶ Ibid ss 5(1), 6.

³¹⁷ Ibid s 5(2).

³¹⁸ *Canada Oil and Gas Drilling and Production Regulations*, SOR/2009-315, s 13.

³¹⁹ Ibid s 14.

³²⁰ Ibid s 1(1).

³²¹ Ibid s 24(1)(c).

³²² Ibid ss 30, 34(1).

9.3.2 *Canada Oil and Gas Geophysical Operations Regulations*

The *Canada Oil and Gas Geophysical Operations Regulations* deal with regulation of petroleum-related seismic testing (included in the definition of “geophysical operations”).³²³ These regulations set out the application process for a geophysical operation authorization, which is submitted to the Chief Conservation Officer.³²⁴ Part II of the regulations deal with offshore geophysical operations and set conditions on the use of air gun systems, air gun testing, gas exploders, and electrical seismic energy sources. High resolution seismic surveys are used to detect oil and gas before drilling ever occurs. A seismic test consists of compressed air or sonic waves sent towards the seabed to determine the depth, location, and structure of the geology and resources underneath the seafloor. The air or sonic waves are generated by air guns that emit continuous, loud blasts at low frequencies through the water column.³²⁵

The provisions of these regulations deal with the operational conditions for discharge of air guns, gas exploders, and electrical cables, but do not set thresholds, limits, or other conditions on their use for the purposes of environmental protection. The CER conducts an environmental assessment report that outlines its decision on applications for seismic tests, including impacts and mitigation measures. As noted in Chapter 5, an impact assessment of petroleum-related seismic activities is not required under the IAA.

The CER could set operational conditions related to managing ocean noise as part of its authorization process for geophysical operations. Those conditions could be informed by its environmental assessments.

9.3.3 *Canada Oil and Gas Operations Regulations*

The *Canada Oil and Gas Operations Regulations* are the general regulations under the COGOA. They prohibit the holder of an operating licence from carrying out any geotechnical or engineering feasibility program, environmental study, geophysical or geological program, diving program, or other work required by the COGOA unless that work is expressly authorized by regulations made under the Act.³²⁶ The *Canada Oil and Gas Operations Regulations* could be used to incorporate standards for ocean noise into the regime under COGOA.

9.4 *Canadian Energy Regulator Act*

³²³ *Canada Oil and Gas Geophysical Operations Regulations*, SOR/96-117, s 2; see also M Brooks, “The Canadian Arctic Offshore Oil and Gas Regulatory Regime” (World Wildlife Fund – Canada, June 2016) online: <https://wwf.ca/wp-content/uploads/2020/06/Canadian-Arctic-Oil-Reg-Regime_Final-Report.pdf>

³²⁴ *Canada Oil and Gas Geophysical Operations Regulations*, *supra* note 323, s 3.

³²⁵ Brooks, *supra* note 323 at 12.

³²⁶ *Canada Oil and Gas Operations Regulations*, SOR/83-149, s 5.

The CER has regulatory responsibility for oil and gas exploration in northern Canada and the offshore not under provincial or territorial regulation or captured by the Accord Acts, including in Nunavut and parts of the Northwest Territories. The CER regulates seismic activities, including marine seismic programs. The last such program was conducted in 2012. The CER expects operators to follow the DFO's *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment*.³²⁷

As noted in chapter 9.3 above, under COGOA any proponent of a petroleum development must apply for and receive an operating licence from the CER, including for geophysical operations, drilling or changing the condition of a well, building and operating facilities, production, and abandonment. Under the CERA, the C-CER may vary the conditions of any operating licence or authorization issued under it.³²⁸

The C-CER's decisions and recommendations are shaped by guidance notes.³²⁹ These guidance notes help to clarify the C-CER's expectations and explain how it operates (including monitoring and enforcement).³³⁰ The *Canada Energy Regulator Event Reporting Guidelines* provide further guidance on reporting requirements found under the *Canada Oil and Gas Drilling and Production Regulations* (section 75), which are created under the COGOA. The *Guidelines* state that operators are expected to report introduction of a substance or a form of energy as pollution if it exceeds a limit of discharge which is outlined in an environmental protection plan prepared in relation to an authorization (see chapter 9.3.1 above).³³¹

When a proponent seeks approval for petroleum operations, they must submit an application or file information so that the C-CER can evaluate the overall "public good" and potential negative aspects, weight those impacts, and make a decision that considers economic, environmental, and social interests.³³² The information that is necessary is outlined in the CER's *Filing Manual*. A "risk-oriented approach" is used to evaluate applications.³³³

Clearer rules about the limits of pollution (including potentially noise energy) that petroleum operations are permitted to release could be incorporated into decision-making for operations by making changes to the *Canada Energy Regulator Event Reporting Guidelines* (non-binding) or amendments to the *Canada Oil and Gas Drilling and Production Regulations* (binding). These would be outlined in an operator's environmental protection plan. At minimum, the C-CER should require adherence to the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment*.

³²⁷ Canada Energy Regulator, "Seismic in a marine environment" (June 2023), online: <<https://www.cer-rec.gc.ca/en/about/north-offshore/seismic-marine.html>>

³²⁸ CERA, *supra* note 217, s 383.

³²⁹ Canada Energy Regulator, *supra* note 238.

³³⁰ *Ibid.*

³³¹ Canada Energy Regulator, "*Canada Energy Regulator Event Reporting Guidelines*" (Revised October 2020), s 8.1.3, online: <https://www.cer-rec.gc.ca/en/about/acts-regulations/cer-act-regulations-guidance-notes-related-documents/canada-energy-regulator-event-reporting-guidelines/#s8_1_1>.

³³² *Filing Manual*, *supra* note 229 at 1.

³³³ *Ibid.*

9.5 The Accord Acts

The *Canada-Newfoundland Atlantic Accord Implementation Act* (NFLD Accord Act) and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act* (NS Accord Act), together the Accord Acts, implement agreements between the federal government and the respective provincial governments of Newfoundland and Labrador and Nova Scotia to collaboratively manage oil and gas resources in the respective offshore areas governed under the Accord Acts. The Accord Acts establish the offshore boards that are responsible for governing oil and gas operations in their respective offshore areas.

Recently, Bill C-49 was introduced into federal Parliament to amend both Accord Acts; the amendments would make the offshore boards into regulators with responsibilities over offshore renewable marine developments, in addition to oil and gas (see Chapter 6). The offshore boards currently work in a similar manner to the CER in that they are responsible for issuing authorizations for activities and for monitoring and enforcing compliance.

The Nova Scotia Offshore Petroleum Board requires all seismic programs to adhere to the mitigation within the *Statement of Canadian Practice with Respect to Mitigation of Seismic Sound in the Marine Environment*.³³⁴ Similarly, the Newfoundland and Labrador Offshore Petroleum Board incorporates the *Statement* into its *Geophysical, Geological, Environmental and Geotechnical Program Guidelines*.³³⁵ In the future, the guidance notes should be updated to reference all new ocean noise standards and the Strategy.

As part of their mandate, the offshore boards grant and administer offshore area interests using a call for bids process. Any person may nominate offshore lands to be included in a call for bids. The offshore boards review the nominated lands, with priority on identifying environmentally sensitive areas and fisheries.³³⁶ In Nova Scotia, any call for bids must be evaluated using a SEA, while calls for bids are subject to one of four SEAs that have been completed by the Canada-Newfoundland and Labrador Offshore Petroleum Board for areas with potential for offshore petroleum exploration.³³⁷ Once a call for bids has closed, bids are evaluated by the respective offshore board, with awarding of licences subject to federal and provincial approval.

³³⁴ Canada-Nova Scotia Offshore Petroleum Board, “Environment”, online: <<https://callforbids.cnsopb.ns.ca/2021/09/environment>>

³³⁵ For example, see: Canada-Newfoundland and Labrador Offshore Petroleum Board, “Statement into its *Geophysical, Geological, Environmental and Geotechnical Program Guidelines*” (June 2019), ss 1, 5.1.4.2, online: <<https://www.cnlopb.ca/wp-content/uploads/guidelines/ggeggp.pdf>>.

³³⁶ Canada-Nova Scotia Offshore Petroleum Board, “Call for Bids” (accessed December 2023), online: <<https://www.cnsopb.ns.ca/what-we-do/lands-management/call-for-bids/>>; Newfoundland and Labrador Industry, Energy and Technology, “Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB)” (accessed December 2023), online: <<https://www.gov.nl.ca/iet/energy/petroleum/offshore/cnlopb/>>; for example, see the NFLD Accord Act, *supra* note 289, s 58.

³³⁷ Canada-Newfoundland and Labrador Offshore Petroleum Board, “Strategic Environmental Assessment (SEA)” (accessed December 2023), online: <<https://www.cnlopb.ca/sea/>>.

A SEA, conducted by an offshore board, should include an assessment of noise generated by petroleum activities and operations prior to a call for bids. The assessment should use updated noise standards and Canada's ocean noise strategy.

9.6 Law and Policy Reform to Address Ocean Noise Caused by Offshore Oil and Gas

There are multiple and various opportunities for ocean noise from petroleum activities to be managed within these regimes. The primary regulators of offshore petroleum, the CER and the respective offshore boards under the Accord Acts, will be responsible for monitoring and enforcing conditions related to ocean noise that are imposed on offshore petroleum projects.

Recommendations:

- The CPRA should be amended to prescribe factors for consideration when the Minister is considering whether to place a call for bids in the offshore. Factors could include areas to be avoided because of environmental impacts, including ocean noise impacts caused by petroleum projects.
- Regulators for offshore petroleum should be required to conduct a strategic environmental assessment before a call for bids is issued for petroleum exploration. A SEA can be used at an early stage to identify regional and local noise thresholds, and identify areas where ocean noise generated from petroleum projects would cause such environmental impacts that those areas should be avoided.
- The regulatory bodies should have clear guidance about noise impacts so conditions can be placed on projects that include requirements to adhere to noise limits, adopt quieter technologies, or carry out sufficient underwater noise monitoring.
- The management system required by the *Canada Oil and Gas Drilling and Production Regulations* should explicitly require an operator to show how work will be conducted at or below acceptable noise thresholds.

10. SHIPPING

Marine shipping, including cruise tourism, is a significant source of ocean noise, primarily because of the chronic, low-frequency noise from propulsion systems, but also from mechanical operations or navigational signals.³³⁸ This low-frequency ambient noise has had demonstrated impacts on marine mammals, altering their behaviour, including by interfering with animals' ability to communicate with one another, to forage for food, and to avoid predators.³³⁹

Governments can manage vessel noise by implementing area-based measures that reduce the proximity of noise to marine wildlife (e.g. approach distances and no-go zones) or that reduce the volume of vessel noise (i.e. speed restrictions). Additionally, the federal government can significantly reduce vessel noise by mandating improvements to vessel design and technology. This chapter describes Canada's legal powers under international and domestic law to address ocean noise from ships, including a chapter on Arctic-specific legislation.

10.1 Jurisdiction over Shipping

Subject to the rights of Indigenous peoples, Canada has jurisdiction under international law to manage shipping activities in the marine areas off the coast of Canada. Shipping in Canada is primarily regulated through the *Canada Shipping Act, 2001* (CSA) and its Regulations. It is also governed in accordance with international conventions and policies. These international legal instruments include the *United Nations Convention on the Law of the Sea* (UNCLOS), which establishes maritime zones over which countries have jurisdiction and imposes rights and responsibilities on countries.³⁴⁰ These maritime zones (which are also reflected in Canada's *Oceans Act*) include Canada's internal waters, which includes areas landward of the low-tide line, as well as harbours, coves, and historic bays. Canada has full jurisdiction to regulate shipping within these areas.³⁴¹

Canada also has jurisdiction over its territorial sea which extends from up to 12 nautical miles out from its shoreline. Within the territorial sea, Canada has full jurisdiction to regulate shipping activities, including with respect to environmental protection and pollution prevention, but cannot impair the right of innocent passage of foreign ships (i.e. the ability of ships to travel from point A to B in a peaceful and efficient way).³⁴²

Canada's EEZ, pursuant to UNCLOS, extends from 12 to 200 nautical miles offshore (and even further, to the limit of the continental shelf, in some areas). Within its EEZ, Canada has the right and duty to protect and preserve the marine environment and may adopt laws and regulations that "at least have the same effect as that of generally accepted international rules and standards".³⁴³ In the Arctic, the Canadian

³³⁸ J-P Jalkanen et al., "Underwater noise emissions from ships during 2014–2020" (2022) 311 *Environmental Pollution* 119766; B L Southall et al., "Underwater Noise from Large Commercial Ships—International Collaboration for Noise Reduction" in J Carlton, P Jukes & Y-S Choo, eds., *Encyclopedia of Maritime and Offshore Engineering* (New Jersey: John Wiley and Sons, Ltd, 2018) 1577.

³³⁹ Southall et al., *supra* note 338 at 4.

³⁴⁰ *United Nations Convention on the Law of the Sea*, December 10, 1982, 1833 UNTS 3 (entered into force November 16, 1994, ratified by Canada November 7, 2003), art 211 [UNCLOS].

³⁴¹ *Ibid* arts 2, 8.

³⁴² *Ibid* art 17.

³⁴³ *Ibid* art 211(5)

government has additional authority to regulate vessel pollution to the limits of the EEZ in ice-covered areas.³⁴⁴

If Canada wishes to adopt more stringent regulations for vessels in a defined area of the EEZ, article 211(6) of UNCLOS outlines a procedure to seek approval to do so from the IMO. However, while these additional laws may address discharges or navigation, they “shall not require foreign vessels to observe design, construction, manning or equipment standards other than generally accepted international rules and standards.”³⁴⁵

Finally under UNCLOS, states are responsible for ensuring that vessels flying their flag adhere to the requirements of international rules and standards, “including in respect of design, construction, equipment and manning of vessels.”³⁴⁶ In respect of foreign vessels, Canada cannot regulate the design, construction, equipment, and manning of foreign ships, “unless they are giving effect to generally accepted international rules or standards.”³⁴⁷ These international rules and standards are generally understood to be found in the *International Convention for the Prevention of Pollution from Ships, 1973* (MARPOL), and the *International Convention for the Safety of Life at Sea, 1974* (SOLAS).

Within Canada’s internal constitutional framework, it is the federal government that is responsible for enacting laws and regulations to regulate shipping and navigation, subject to the rights of Indigenous nations.³⁴⁸ Marine transportation is regulated by Transport Canada.

10.2 International Law

As noted above, Canadian shipping law is governed in accordance with international convention, including UNCLOS, MARPOL, and SOLAS. None of these conventions explicitly address noise, a threat which has emerged more recently. However, they do provide powers that can be used to address noise pollution, as detailed in this chapter.

10.2.1 *United Nations Convention on the Law of the Sea*

UNCLOS, sometimes referred to as the constitution of the oceans, provides the framework for international ocean governance, including by establishing maritime zones, as mentioned above, as well as rules for addressing navigation, safety, and the preservation of the marine environment.

Vessel noise is not explicitly addressed anywhere within UNCLOS. However, the definition of “pollution of the marine environment” under article 1(4) could be read to encompass vessel noise:

“[Pollution of the marine environment] means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health,

³⁴⁴ Ibid art 234.

³⁴⁵ Ibid art 211(6)(f).

³⁴⁶ Ibid art 217(2).

³⁴⁷ Ibid art 21(2).

³⁴⁸ *Constitution Act, 1867*, *supra* note 115, s 91(10).

hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water, and reduction of amenities.”³⁴⁹

It is unlikely that noise was intended to be included in this definition when it was drafted, but it could reasonably be understood to be energy that harms living resources and marine life, and thus a form of marine pollution.

If noise was recognized as a form of pollution of the marine environment under UNCLOS, then signatory states would be obliged to take action to address it. Article 192 of UNCLOS provides that states have an obligation to protect and preserve the marine environment.³⁵⁰ Under article 194, they must also take all measures necessary to “prevent, reduce and control pollution of the marine environment from any source”; article 194(3) further clarifies that measures taken shall deal with “all sources of pollution” of the marine environment.³⁵¹ Measures taken to address pollution from vessels shall include measures “regulating the design, construction, equipment, operation and manning of vessels.”³⁵²

With respect to pollution from vessels, UNCLOS requires states to “establish international rules and standards to prevent, reduce and control pollution of the marine environment from vessels.”³⁵³ The convention does not provide these rules and standards itself, but rather they are generally understood to be established through MARPOL.³⁵⁴

10.2.2 *International Convention for the Prevention of Pollution from Ships*

MARPOL is the primary international treaty dealing with the prevention of pollution from ships into the marine environment and sets international rules and standards on this subject that form the baseline of pollution prevention law in Canada and other signatory states. Canada has adopted most aspects of MARPOL through the CSA and its Regulations.

MARPOL does not directly address noise. It refers to pollution as resulting from “oil and other harmful substances”³⁵⁵ and, unlike UNCLOS, it does not refer to energy as a form of pollution. MARPOL has six annexes which provide detailed regulations on six sources of pollution: oil, noxious liquid substances, harmful substances in packaged form, sewage, garbage, and air pollution. These regulations include specifications on the design and construction of ships to prevent these sources of pollution. None of these annexes addresses noise.³⁵⁶

However, it is possible that mandatory ship design requirements for noise reduction could be introduced through MARPOL in the future, as has been done for other sources of pollution in the past. For example, the IMO introduced amendments to MARPOL Annex VI, which entered into force in 2013, to introduce

³⁴⁹ UNCLOS, *supra* note 340, art 1(4) [emphasis added].

³⁵⁰ *Ibid* art 192.

³⁵¹ *Ibid* art 194(1), (3).

³⁵² *Ibid* art 194(3)(b).

³⁵³ *Ibid* art 211.

³⁵⁴ K Scott, “International Regulation of Undersea Noise” (2004) 53 *International & Comparative Law Quarterly* 287–323 at 8.

³⁵⁵ *International Convention for the Prevention of Pollution from Ships*, 12 ILM (1973)1319, 17 ILM (1978) 456. In force 1983, Preamble, Article 1(1) [MARPOL].

³⁵⁶ Scott, *supra* note 354 at 8.

new mandatory energy efficiency measures in ship design and operation to reduce greenhouse gas emissions from commercial shipping.³⁵⁷ These new regulations require that new ships meet a certain minimum energy efficiency for their size and class. Analogous requirements could be introduced to address vessel noise.

10.2.3 *International Convention for the Safety of Life at Sea*

SOLAS establishes safety measures for navigation, as well as marine environmental protection, which have been introduced into Canadian law through the CSA. SOLAS does not specifically address ocean noise. However, it does contain area-based measures that could be used to reduce the impact of noise in specific areas. While SOLAS primarily addresses safety measures for navigation, chapter V of SOLAS permits the creation of ships' routing systems, such as shipping lanes and areas to be avoided. These routing measures may be created for reasons that include protection of the marine environment.³⁵⁸ SOLAS routing measures have been used to reduce the risk of vessel collisions with marine mammals and could also be used to reduce the impacts of ocean noise.

SOLAS also contains provisions related to the safe construction and design of ships. Chapter II-1 of the convention addresses the construction, structure, subdivision, stability, machinery, and electrical installations on board ships. These measures do not address ocean noise, however, Part A-1, Regulation 3-12 does deal with protection against noise on board the vessel, primarily from machinery.³⁵⁹

10.2.4 *IMO Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Adverse Impacts on Marine Life*

Despite the absence of an international legal framework addressing ocean noise, the topic has been a recent focus of the IMO. In September 2023, the IMO released its *Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Adverse Impacts on Marine Life*.³⁶⁰ These guidelines updated the initial guidelines released in 2014. The Revised Guidelines are directed at ship builders and operators, and provide several approaches to reduce ocean noise, including recommendations on ship construction, design, and maintenance, which are addressed in the chapter on shipping design below, and operational approaches to reducing ocean noise.

The Revised Guidelines include design considerations for new ships and for the modification of existing ships, where possible. These include:

- Designing hull form and other factors to create a more homogeneous wake field for the inflow of water to the propeller;³⁶¹

³⁵⁷ IMO, "Improving the energy efficiency of ships" (accessed December 2023), online: <<https://www.imo.org/en/OurWork/Environment/Pages/Improving%20the%20energy%20efficiency%20of%20ships.aspx>>.

³⁵⁸ International Convention for the Safety of Life at Sea (SOLAS), 1974, 1 July 1975, 1184 UNTS 3, Chapter V Regulation 10.2 (entered into force 25 May 1980), regulation 10(1), (4) [SOLAS].

³⁵⁹ Ibid regulation 3-12.

³⁶⁰ International Maritime Organization, *Revised Guidelines for the Reduction of Underwater Radiated Noise from Shipping to Address Adverse Impacts on Marine Life*, MPEC.1/Circ.906 (22 August 2023) [Revised Guidelines on Underwater Radiated Noise].

³⁶¹ Ibid at 6.3–6.4; 6.8–6.9.

- Designing propellers to minimize cavitation while optimizing energy efficiency, and considering emerging technologies that reduce the propulsion power required;³⁶²
- Configuring onboard machinery to reduce ocean noise as well as airborne sound that can be transmitted into water. This includes optimizing type of equipment and location, using systems to address vibration, and considering alternative power systems like electric propulsion;³⁶³
- Maintaining the surface quality and finish of propellers and ship hulls through proper cleaning and maintenance.³⁶⁴

The operational approaches outlined in the Revised Guidelines include:

- Adjusting ship's routing, speed, and sail time, including avoiding national and international protected areas and critical times of year.³⁶⁵
- Determining whether ships transit through protected areas, including sea-ice covered regions, as well as shipping routes overlapping with endangered species habitat, important marine mammal areas and marine protected areas.³⁶⁶
- Increased additional efforts in Inuit Nunaat, where there is potential for heightened noise impacts from icebreaking on noise-sensitive species and Indigenous hunting.³⁶⁷
- For ships with fixed pitch propellers, reducing ship speed to below the ship's cavitation inception speed (if possible), or to lower speeds that reduce cavitation.³⁶⁸

While non-binding, the Revised Guidelines may support and inform domestic Canadian policies and laws to address ocean noise, including technological requirements for vessels, as well as area-based closures, speed restrictions, and shipping lanes. On the other hand, a 2019 study by WWF-Canada found that the IMO's original 2014 Guidelines on ocean noise had little uptake with industry professionals, and it is unlikely that they have generated changes to ship design and operation that would reduce ocean noise.³⁶⁹ This suggests that mandatory regulation of ocean noise, for example as a pollutant under MARPOL, may be necessary for real change to ship design and operation to occur.

10.3 *Canada Shipping Act, 2001* and its Regulations

The CSA is the primary statute regulating marine navigation and shipping in Canada. One of its objectives is the protection of the marine environment from the damage caused by shipping.³⁷⁰

³⁶² Ibid at 6.6–6.7.

³⁶³ Ibid at 6.10–6.14.

³⁶⁴ Ibid at 6.16–6.18.

³⁶⁵ Ibid at 6.20.

³⁶⁶ Ibid at 6.21.

³⁶⁷ Ibid at 6.22.

³⁶⁸ Ibid at 6.23–6.25.

³⁶⁹ WWF-Canada, *Filtering Through The Noise: Benchmarking Study on the Implementation of the International Maritime Organization's Underwater Vessel Noise Guidelines* (August 9, 2019) at 7, online: <<https://wwf.ca/wp-content/uploads/2022/01/Benchmarking-Study-on-URN-IMO-Guidelines-Report-Final.pdf>>.

³⁷⁰ *Canada Shipping Act, 2001*, SC 2001, c 26, s 6(c) [CSA].

There is no mention of noise, ocean noise, or acoustic disturbance within the CSA and its Regulations. Moreover, the definition of “pollutant” in the Act, which is similar to how the term is defined in MARPOL, does not appear to include noise:

pollutant means

(a) a substance that, if added to any waters, would degrade or alter or form part of a process of degradation or alteration of the quality of the waters to an extent that is detrimental to their use by humans or by an animal or a plant that is useful to humans; and

(b) any water that contains a substance in such a quantity or concentration, or that has been so treated, processed or changed, by heat or other means, from a natural state, that it would, if added to any waters, degrade or alter or form part of a process of degradation or alteration of the quality of the waters to an extent that is detrimental to their use by humans or by an animal or a plant that is useful to humans.

It includes oil, hazardous and noxious substances and any substance or class of substances that is prescribed for the purpose of this Part to be a pollutant.³⁷¹

However, the federal government can address ocean noise through its powers over vessel routing and navigation under the CSA, and has done so, including by implementing compulsory routes, areas to be avoided, and areas where anchoring is prohibited. As noted above, these measures must respect ships' right of innocent passage within Canada's territorial sea. Within the EEZ, Canada may introduce voluntary routing measures under these provisions, but international approval may be required for mandatory routing measures. Additionally, the federal government can introduce measures under the CSA related to ship design.

10.3.1 Area-Based Measures

Three subsections of the CSA grant the federal government the authority to introduce area-based measures that address ocean noise:

- Paragraph 35.1(1)(j) enables the Governor in Council, on the recommendation of the Minister of Transport, to make regulations to protect the marine environment from the impacts of navigation and shipping activities, by designating “compulsory routes and recommended routes”.³⁷²
- Paragraph 35.1(1)(k) enables the Governor in Council, on the recommendation of the Minister of Transport, to make regulations to protect the marine environment from the impacts of navigation and shipping activities, by “regulating or prohibiting the operation, navigation, anchoring, mooring or berthing of vessels or classes of vessels”.³⁷³
- Paragraph 136(1)(f) enables the Governor in Council, on the recommendation of the Minister of Transport, to make regulations “regulating or prohibiting the navigation, anchoring, mooring or berthing of vessels for the purposes of promoting the safe and efficient navigation of vessels and protecting the public interest and the environment”.

³⁷¹ Ibid “pollutant” at ss 165, 185, 194

³⁷² Ibid s 35.1(1)(j)

³⁷³ Ibid s 35.1(1)(k)

Section 35.1 was introduced in 2018 with the express purpose of enabling Transport Canada to develop regulations that address environmental impacts of shipping, including ocean noise. Natasha Rascenin, then Assistant Deputy Minister for Transformation at Transport Canada, testified as follows in front of the Senate Committee:

“As you well know, vessels can have environmental impacts even when there are no accidents or spills. These can include ocean noise, vessel strikes or shoreline erosion. The proposed amendments would enhance the government's ability to put in place regulations, if they are required, to protect sensitive ecosystems, including endangered whale populations, from the impacts of routine shipping and navigation.”³⁷⁴

As of the date of this report, these powers have not been used to introduce any new permanent regulations to address ocean noise.

10.3.2 *Interim Orders to Protect Whales*

However, Transport Canada has used paragraphs 35(1)(k) and 136(f) of the CSA, in conjunction with section 10.1, to implement interim measures to protect Southern Resident Killer Whales (SRKWs) and North Atlantic right whales by Ministerial order.³⁷⁵ These interim orders are intended to address threats posed by vessel traffic to the respective whale species, and the SRKW Interim Order in particular is designed to reduce the impacts of vessel noise.³⁷⁶

The interim order to protect SRKWs is particularly designed “to mitigate impacts of vessel noise and other disturbances, and to help create a temporary refuge for killer whales.”³⁷⁷ It does so by implementing three mandatory measures for vessels operating within certain areas on the southern British Columbia Coast:

- A requirement that ships abide by approach distances of 400 metres in SRKW critical habitat and certain BC waters from June 1 2022 to May 31 2023 (these distances are larger than the 200 metres approach distance from SRKWs otherwise required through the MMR under the *Fisheries Act*),³⁷⁸

³⁷⁴ Standing Senate Committee on Transport and Communications, 42nd Parliament, 1st Session. Nov 20, 2018. Evidence on Divisions 22 and 23 of Part 4 of Bill C-86, A second Act to implement certain provisions of the budget tabled in Parliament on February 27, 2018, and other measures [emphasis added].

³⁷⁵ At the time of writing, the most current version of these orders (which expire after a year and must be renewed) are the *Interim Order for the Protection of the Killer Whale (*Orcinus orca*) in the Waters of Southern British Columbia, 2023* (June 1, 2023) and the *Interim Order for the Protection of North Atlantic Right Whales (*Eubalaena glacialis*) in the Gulf of St. Lawrence, 2023* (April 19, 2023). Section 10.1 was introduced in the same bill as section 35.1 in 2018, and it allows the Minister to issue interim orders using any of the regulation-making authorities in the CSA, which last for a period of up to one year. The Annual Edition 2023 of the Notices to Mariners notes that the interim orders are in place “pending further feasibility assessment work on longer term measures to reduce physical and acoustic disturbances.” Canadian Coast Guard, Notices to Mariners 1 to 46 – Annual Edition 2023 at 30 [Notices to Mariners, Annual Edition 2023].

³⁷⁶ Notices to Mariners, Annual Edition 2023, *supra* note 375 at 14, 30: “Southern Resident Killer Whale Interim Order” and “Protecting the North Atlantic right whale: New speed restriction measures in the Gulf of St. Lawrence.”

³⁷⁷ Transport Canada, “Protecting Killer Whales (*Orcinus orca*) in the Waters of Southern British Columbia, 2023” *Ship Safety Bulletin No. 13/2023* (15 June 2023).

³⁷⁸ MMR, *supra* note 122, Schedule VI.

- The establishment of two Interim Sanctuary Zones, where vessel traffic is prohibited from June 1 2022 to November 30 2022;
- The establishment of two Seasonal Slowdown Areas, near Swiftsure Bank, where all vessels are restricted to a maximum speed of 10 knots from June 1 to November 30, 2022.³⁷⁹

The Annual Edition 2023 of the Notices to Mariners notes that these interim orders are in place “pending further feasibility assessment work on longer term measures to reduce physical and acoustic disturbances.”³⁸⁰

The interim order to protect North Atlantic right whales introduces mandatory speed restriction zones in the Gulf of the St. Lawrence, in order to protect the North Atlantic right whales that are increasingly present in the area.³⁸¹ These include static zones, dynamic shipping zones, seasonal management areas, a voluntary seasonal slowdown zone, and a restricted area. Generally, vessel speed is restricted to 10 knots over ground when required, and vessels must not exceed 8 knots in the restricted area during summer months.³⁸² Although these restrictions are in place to reduce vessel collisions with right whales, the speed restrictions may also have benefits in terms of ocean noise.

10.3.3 Vessel Operation Restriction Regulations

The *Vessel Operation Restriction Regulations*, enacted under sections 136 and 207 of the CSA, introduce area-based restrictions on vessel operation and navigation in Canadian waters.³⁸³ These include no-go zones, prohibited areas for motorized vessels, speed restricted areas, and restrictions on certain recreational activities.

The restrictions under these regulations appear to largely apply to recreational boaters, and the no-go zones are all in freshwater areas, with the exception of a small marine area in Howe Sound (British Columbia) that overlaps with a provincial park.³⁸⁴ However, these regulations could potentially be expanded to protect areas permanently from vessel traffic or to restrict speed in certain areas, or could be used as a template for new regulations that specifically apply to reduce ocean noise.

10.3.4 Ship Design Measures

Under international law, Canada has the authority to regulate the construction and design of vessels that are registered as Canadian vessels, which would include vessels designed for local use and traffic like shipping vessels, ferries and pleasure craft. As noted in the chapter on jurisdiction, Canada cannot regulate the construction and design of foreign vessels beyond international rules and standards.

Three subsections of the CSA grant the federal government power to enact regulations with respect to ship design and construction:

³⁷⁹ Notices to Mariners, Annual Edition 2023, *supra* note 375 at 13.

³⁸⁰ *Ibid* at 30.

³⁸¹ Transport Canada, “Protecting the North Atlantic right whale: speed restriction measures in the Gulf of St. Lawrence” *Ship Safety Bulletin No. 05/2023* (6 June 2023).

³⁸² *Ibid*.

³⁸³ SOR/2008-120. Section 136 of the CSA applies to vessels generally, and section 207 applies to pleasure crafts.

³⁸⁴ *Ibid* Schedule 1.

- Paragraph 35.1(1)(a) of the CSA grants the federal government power to enact regulations “respecting the design, construction, manufacture and maintenance of vessels or classes of vessels” for the purposes of “protection of the marine environment from the impacts of navigation and shipping activities”;
- Paragraph 120(1)(a) of the CSA grants the federal government power to enact regulations “respecting the design, construction, manufacture and maintenance of vessels or classes of vessels” for the purposes of safety of vessels and persons on board; and
- Paragraph 190(1)(h) of the CSA grants the federal government power to enact regulations “respecting the design, construction, manufacture and maintenance of vessels or classes of vessels” for the purposes of protecting the marine environment, particularly with respect to pollution prevention.

Similar regulatory powers are granted under each of the above provisions with respect to the design and construction of machinery and equipment aboard vessels.³⁸⁵

Canada has enacted several regulations under these provisions relating to hull design, load line, or freeboard and vessel pollution and dangerous chemicals. There are currently no regulations in place to address vessel design for ocean noise, but the federal government could use these powers to mandate ship designs that minimize shipping noise.

Transport Canada has launched a program called the Quiet Vessel Initiative, which is designed to advance research and development towards quieter vessel technologies.³⁸⁶ These include retrofits, new vessel design, and operational practices to reduce vessel noise underwater. The Quiet Vessel Initiative is funding work in industry, academia, NGOs, and Indigenous governments. Projects funded so far include work to understand the benefits of low friction hull coatings to reduce greenhouse gas emissions and ocean noise for B.C. Ferries, and work to optimize propeller design.³⁸⁷

10.4 Voluntary Measures: Notices to Mariners and Marine Safety Transport Publications

In the absence of regulations, voluntary measures may also be an effective means to protect habitats from vessel noise. Voluntary measures are typically communicated through Notices to Mariners published by the Canadian Coast Guard, or through Ship Safety Bulletins issued by Transport Canada.

Studies of voluntary measures have found that vessel compliance ranges from high to low or negligible.³⁸⁸ While not legally enforceable, compliance may still be high where vessel operators choose to adhere to

³⁸⁵ CSA, *supra* note 370, ss 35.1(c), 120(c), 190(j).

³⁸⁶ Transport Canada, “Quiet Vessel Initiative” (2023), online: <<https://tc.canada.ca/en/programs/quiet-vessel-initiative>>

³⁸⁷ S German, “Government of Canada: Reducing Vessel Noise and Disturbance” *Salish Sea Ecosystem Conference* 68 (28 April 2022), online: <<https://cedar.wvu.edu/cgi/viewcontent.cgi?article=3230&context=ssec>>.

³⁸⁸ H P Huntington et al., (2014) “Vessels, risks, and rules: Planning for safe shipping in Bering Strait,” 51 *Marine Policy* 119 at 124; J Parsons, *Benchmarking of best practices for Arctic Shipping*, (Ottawa: WWF-Canada, 2012); G Silber, J Adams and C Fannesbeck, “Compliance with Vessel Speed Restrictions to Protect North Atlantic Right Whales” (2014) 2 *PeerJ* 2014 399; M McKenna et al., “Response of Commercial Ships to a Voluntary Speed Reduction Measure: Are Voluntary Strategies Adequate for Mitigating Ship-Strike Risk?” (2012) 40 *Coastal Management* 634.

voluntary measures to reduce risk, or to protect their insurance coverage, as insurers may view them as representing the appropriate standard of care, and require that operators follow them.³⁸⁹ Additionally, voluntary measures may have greater influence where they overlap with compulsory pilotage areas, as marine pilots have a statutory obligation to provide their services in a way that promotes safety and environmental protection.³⁹⁰

Voluntary measures may also be used as a stepping stone towards mandatory measures. For example, the approach distances set out in the MMR under the *Fisheries Act* were initially voluntary guidelines.

The Notices to Mariners 1 to 46, Annual Edition 2023, contains several voluntary measures to reduce ocean noise, including in certain MPA and critical habitat areas under SARA. These include:

- Recommended measures that vessels should adhere to within certain MPAs, including:
 - Within The Gully MPA on the Atlantic coast, which is also critical habitat for the Northern Bottlenose whale, avoiding passage through the area. If passage is required, decreasing vessel speed to 10 knots or less. These measures are designed “to eliminate or reduce acoustic disturbances and vessel collisions.”³⁹¹
 - Within Saguenay–St. Lawrence Marine Park and its surrounding waters in Quebec, which is critical habitat for beluga, slowing down to 10 knots in particular areas and avoiding other areas altogether, “to minimize the impact of noise.”³⁹² These guidelines are in addition to mandatory measures set out in the *Saguenay-St Lawrence Marine Park Regulations*.
 - Within Tarium Niryutait MPA and Anguniaqvia niqiqyuam MPA in the Arctic, voluntary measures to “reduce the risk of ocean noise disturbance and collisions with whales.” General guideline to adhere to community supply routes year-round. Between June 1 and October 1, avoid “red” areas and reduce speed to 10 knots or less in “yellow” areas. If transit through “red” area is required, restrict speed to 10 knots, and maintain 400 metre approach distance from whales.³⁹³
 - Within the Robson Bight (Michael Bigg) Ecological Reserve in British Columbia, which is also part of the critical habitat area for northern resident killer whales, avoiding passage through the Ecological Reserve, or, if necessary to enter, maintaining a 300 metre approach distance, and travelling at 7 knots or less. The goal of these measures is “to eliminate or reduce physical and acoustic disturbance and vessel collisions”.³⁹⁴
- Voluntary measures, in addition to mandatory measures already in place, to protect SRKWs and NRKWs. Transport Canada recommends that boaters:
 - “Reduce speed to less than 7 knots when within 1000 metres of a killer whale;
 - Turn off echo sounders and fish finders, when safe to do so; and

³⁸⁹ *Peracomo Inc v Telus Communications*, 2014 SCC 29; Huntington et al, *supra* note 388 at 124.

³⁹⁰ *Pilotage Act*, RSC 1985, c P-14, s 2(a). See also Menard et al, *supra* note 102 at 5.

³⁹¹ Notices to Mariners, Annual Edition 2023, *supra* note 375 at 40.

³⁹² *Ibid* at 21.

³⁹³ *Ibid* at 65, 69.

³⁹⁴ *Ibid* at 22–34.

- Place their engine in neutral idle, when safe to do so, if inadvertently within the approach distance to a killer whale.”³⁹⁵
- General guidelines when in the vicinity of marine mammals, including reducing speed to 7 knots when within 1000 metres of marine mammals, “to eliminate or reduce acoustic disturbances and vessel collisions.”³⁹⁶
- Guidelines to avoid passage in Grand Manan Basin and Roseway Basin, which is critical habitat for North Atlantic right whales, from June to December, and reducing speed to 10 knots or less if passage is required.³⁹⁷

The Notices to Mariners also includes the Vancouver Fraser Port Authority’s Enhanced Cetacean Habitat and Observation (ECHO) Program, described in greater detail in the chapter on ports, below.

10.5 Arctic-Specific Shipping Legislation

10.5.1 International Law

Under international law, Canada has increased jurisdiction over shipping and navigation in the Arctic. UNCLOS specifies coastal states have the right to adopt laws to prevent, reduce and control vessel pollution in ice-covered areas within the EEZ, while having due regard to navigation.³⁹⁸ This is due to the increased sensitivity of these ecosystems and the relatively low levels of human activity. As noted above, “pollution” under UNCLOS is defined to include both substances and energy, and thus could provide a basis for regulating vessel noise to the limits of the EEZ in the Arctic.

The *International Code for Ships Operating in Polar Waters* (known as the Polar Code) entered into force in 2017, after the maritime safety provisions of the Polar Code were adopted under SOLAS, and the environmental protection provisions were adopted under MARPOL.³⁹⁹ The Polar Code does not specifically recognize noise as a form of pollution. However, Part 1-A, Chapter 11 sets out requirements for voyage planning in polar waters, calling for masters planning routes through these areas to consider:

- “current information and measures to be taken when marine mammals are encountered relating to known areas with densities of marine mammals, including seasonal migration areas,”⁴⁰⁰

³⁹⁵ Ibid at 34.

³⁹⁶ Ibid at 12.

³⁹⁷ Ibid at 16.

³⁹⁸ UNCLOS, *supra* note 340, art 234.

³⁹⁹ The Polar Code was adopted through the following MSC and MEPC resolutions: Resolution MSC.385(94), adopted 21 November 2014, effective 1 January 2017; Amendments to the International Convention for the Safety of Life at Sea 1974, IMO Resolution MSC.386(94), adopted 21 November 2014, effective 1 January 2017; International Code for Ships Operating in Polar Waters (Polar Code) Resolution MEPC.265(68), adopted 15 May 2015, effective 1 January 2017; Amendments to MARPOL Annexes I, II, IV and V, IMO Resolution MEPC.266(68), adopted 15 May 2015, effective 1 January 2017. References in this report refer to the consolidated text, available online:

<<https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/POLAR%20CODE%20TEXT%20AS%20ADOPTED.pdf>> [Polar Code].

⁴⁰⁰ Ibid s 11.3.6

- “current information on relevant ships’ routing systems, speed recommendations and vessel traffic services relating to known areas with densities of marine mammals, including seasonal migration areas;”⁴⁰¹ and
- “national and international designated protected areas along the route”.⁴⁰²

While the Polar Code requires ships to consider these sources of information, the Code does not mandate specific speed, approach, or avoidance requirements for vessels to maintain through protected areas or in the presence of marine mammals. Thus, their efficacy in addressing vessel noise is unclear. Additionally, commentators have noted that icebreakers are significantly louder than regular commercial vessels, as the noise caused by breaking ice is significant, and propulsion systems are louder than those for vessels in open waters.⁴⁰³

The IMO’s Revised Guidelines on ocean noise recommend that additional efforts be taken to decrease the impacts of vessel noise on marine mammals in the Arctic, given the presence of noise-sensitive species and the potential for interfering with Indigenous hunting rights.⁴⁰⁴ Measures to be taken include “reducing the noise impact from icebreaking and implementation of operational approaches and monitoring.”⁴⁰⁵

In October 2023, the IMO released new *Guidelines for Underwater Radiated Noise Reduction in Inuit Nunaat and the Arctic*.⁴⁰⁶ These guidelines are intended to be supplementary to the Revised Guidelines, and to “enable engagement of Inuit and other Indigenous communities and the incorporation of Indigenous Knowledge” in the review of the Revised Guidelines.⁴⁰⁷ They detail the unique operating environment of the Arctic and Inuit Nunaat, including the impacts of noise on marine wildlife and Indigenous harvesting rights, the increased levels of shipping noise caused by ice-breaking, and unique characteristics of noise propagation in the Arctic environment.⁴⁰⁸

The guidelines also recommend specific noise management planning approaches for ships operating in Inuit Nunaat, including: incorporating Indigenous knowledge into voyage planning and operations, considering operational approaches to reduce noise such as ship speed reduction, retrofitting ships to reduce noise emissions, monitoring noise emissions and the impacts of these emissions, and supporting community-led shipping governance efforts.⁴⁰⁹

⁴⁰¹ Ibid s 11.3.7

⁴⁰² Ibid s. 11.3.8.

⁴⁰³ S Ghosh and C Rubly, “The emergence of Arctic shipping: issues, threats, costs and risk-mitigating strategies of the Polar Code.” (2015) 7 *Journal of Maritime & Ocean Affairs* 171.

⁴⁰⁴ Revised Guidelines on Underwater Radiated Noise, *supra* note 360 at 6.22.

⁴⁰⁵ Ibid.

⁴⁰⁶ International Maritime Organization, *Guidelines for Underwater Radiated Noise Reduction in Inuit Nunaat and the Arctic*. MPEC.1/Circ.907 (3 October 2023).

⁴⁰⁷ Ibid at 1.

⁴⁰⁸ Ibid at 1-2.

⁴⁰⁹ Ibid at 2-3.

10.5.2 Arctic Waters Pollution Prevention Act and its Regulations

Canada has a specific regime for addressing commercial shipping in the Arctic, through the *Arctic Waters Pollution Prevention Act* (AWPPA) and its Regulations.⁴¹⁰ The Act addresses safety of navigation and marine pollution in the Arctic.

Section 4 of the AWPPA prohibits the deposit of waste in Arctic waters, while the *Arctic Shipping Safety and Pollution Prevention Regulations* address pollution in the form of substances, including sewage, garbage, waste, noxious liquids, and oil.⁴¹¹ These regulations do not identify noise as a source of pollution.

Subsection 11(1) of the AWPPA enables the Governor in Council, by order, to prescribe “shipping safety control zones” within arctic waters. The federal government has used this power to designate 16 shipping safety control zones within the entirety of Canada’s Arctic waters, to the limits of the EEZ.⁴¹²

Within a shipping safety control zone, the Governor in Council may make regulations with respect to ship construction, as well as time periods within which that area is off limits.⁴¹³ Canada has used this authority to set requirements for ship design under the *Steering Appliances and Equipment Regulations*⁴¹⁴ and to set requirements for ship design and time periods for navigation in specific zones under the *Arctic Shipping Safety and Pollution Prevention Regulations*.⁴¹⁵

These regulatory authorities could be used to introduce design requirements and prohibited time periods within these zones that would specifically address vessel noise concerns.

10.6 Port Authorities

Under Canada’s constitution, the federal government has jurisdiction over ports and port activities related to navigation and shipping.⁴¹⁶ Under the *Canada Marine Act*, the federal government has created 17 autonomous port authorities that are responsible for managing the larger ports across the country, while Transport Canada retains authority over regional and remote ports.⁴¹⁷ This chapter focuses on autonomous port authorities.

Port authorities are corporate bodies established through letters patent, and have power over shipping, navigation, transportation of passenger goods, and handling of goods and storage of goods on the lands

⁴¹⁰ *Arctic Waters Pollution Prevention Act*, RSC 1985, c A-12 [AWPPA].

⁴¹¹ *Ibid* s 4; *Arctic Shipping Safety and Pollution Prevention Regulations*, SOR/2017-286.

⁴¹² *Shipping Safety Control Zones Order*, CRC, c 356.

⁴¹³ AWPPA, *supra* note 410, ss 12(1)(a), (c).

⁴¹⁴ SOR/83-810.

⁴¹⁵ SOR/2017-286.

⁴¹⁶ *Constitution Act, 1867*, *supra* note 115, s 91(10).

⁴¹⁷ *Canada Marine Act*, SC 1998, c 10, Schedule; A E Chircop et al., eds., *Canadian Maritime Law*, 2/e (Toronto: Irwin Law, 2016) at 137.

and waters within their jurisdiction.⁴¹⁸ The geographic extent of their jurisdiction is set out in letters patent, and includes navigable waters and land.⁴¹⁹

One of the purposes of the *Canada Marine Act* is to “provide for a high level of safety and environmental protection”.⁴²⁰

Ports can use their powers over navigation and shipping to promote safe and efficient navigation or environmental protection in port waters. This includes the ability to monitor ships about to enter the port or within the port, establishing practices and procedures for ships to follow, and establishing traffic control zones for the above purposes.⁴²¹ These practices and procedures shall not be inconsistent with the CSA, or other national standards and practices related to marine vessel traffic services.⁴²² Port authorities could introduce mandatory measures to reduce ocean noise within ports, such as speed restrictions.

At least one port authority also established voluntary initiatives to enhance environmental protection in areas outside the port. The Vancouver Fraser Port Authority introduced a voluntary program for vessels called the Enhanced Cetacean Habitat and Observation Program (ECHO), which began in 2017. The program’s goal is to reduce ocean noise in SRKW feeding areas and is led by the Port Authority in cooperation with Crown governments, Indigenous nations, industry, and environmental organizations.⁴²³ The program includes three measures:

- A voluntary ship slowdown in Haro Strait and Boundary Pass to 14.5 knots for vehicle carriers, cruise ships, and container vessels, and 11 knots for bulkers, tankers, ferries, and government vessels, running from approximately June 1 to November 30;⁴²⁴
- A voluntary ship slowdown in Swiftsure Bank to 14.5 knots for vehicle carriers, cruise ships, and container vessels, and 11 knots for bulkers, tankers, ferries, and government vessels, running from June 1 to October 31;⁴²⁵ and
- A voluntary inshore lateral displacement towards the south (away from Vancouver Island) of tugboat vessel traffic in the Strait of Juan de Fuca, from June 1 to October 31.⁴²⁶

⁴¹⁸ *Canada Marine Act*, *supra* note 417, s 28.

⁴¹⁹ *Ibid* definition of “port” in s 5 and s 28(1).

⁴²⁰ *Ibid* s 4(d).

⁴²¹ *Ibid* ss 56(1)(a), (b), (d).

⁴²² *Ibid* s 56(3).

⁴²³ Notices to Mariners, Annual Edition 2023, *supra* note 375 at 34–37.

⁴²⁴ *Ibid* at 34; Port of Vancouver, “2023 Haro Strait and Boundary Pass voluntary ship slowdown” (2023), online: <<https://www.portvancouver.com/environmental-protection-at-the-port-of-vancouver/maintaining-healthy-ecosystems-throughout-our-jurisdiction/echo-program/projects/haro-slowdown/>>.

⁴²⁵ Notices to Mariners, Annual Edition 2023, *supra* note 375 at 37; Port of Vancouver, “2023 Swiftsure Bank voluntary ship slowdown” (2023), online: <<https://www.portvancouver.com/environmental-protection-at-the-port-of-vancouver/maintaining-healthy-ecosystems-throughout-our-jurisdiction/echo-program/projects/swiftsure-bank-slowdown/>>.

⁴²⁶ Notices to Mariners, Annual Edition 2023, *supra* note 375 at 35; Port of Vancouver “2023 Strait of Juan de Fuca voluntary inshore lateral displacement” (2023), online: <<https://www.portvancouver.com/environmental-protection-at-the-port-of-vancouver/maintaining-healthy-ecosystems-throughout-our-jurisdiction/echo-program/projects/lateraldisplacement/>>.

Assessment of the Haro Strait and Boundary Pass slowdown has revealed at least 80% compliance since the second year of the program.⁴²⁷ Participation in the lateral displacement in the Strait of Juan de Fuca has been lower.⁴²⁸ The Vancouver Port Authority estimates that the ECHO initiatives have “reduc[ed] sound intensity underwater by up to 55% in slowdown areas, and by up to 70% per tug transit.”⁴²⁹

Port authorities may also charge fees to users of the port, including harbour dues, berthage, duties, and tolls.⁴³⁰ These fees must be at a level that permits the port to be financially self-sustaining, and they must be fair and reasonable.⁴³¹ Some port authorities have used their power to impose user fees to create incentives related to ocean noise. For example, the Vancouver Fraser Port Authority is offering harbour due rate discounts of up to 75% for “quiet vessels” as certified by a ship classification society.⁴³² The Prince Rupert Port Authority offers a similar incentive.

10.7 Law and Policy Reform to Address Ocean Noise from Shipping

Addressing vessel noise will require law reform at both the national and international level.

Recommendations:

- Transport Canada should advocate for law and policy changes at the IMO to address vessel noise impacts, including:
 - Recognition of noise as a form of pollution of the marine environment under UNCLOS; and
 - Introduction of mandatory ship design requirements for noise reduction under MARPOL, similar to the new mandatory energy efficiency measures to reduce greenhouse gas emissions from commercial shipping;
- Transport Canada should use its regulatory authority under section 35.1 of the CSA to develop regulations to protect sensitive ecosystems from vessel noise, including through speed restrictions and no-go zones, and ship design requirements that minimize noise. Transport Canada should introduce navigation requirements under the AWPPA to minimize ocean noise, and should mandate ship design requirements that minimize ocean noise for ships travelling in Arctic waters.
- Transport Canada should collaborate with DFO, ECCC, and Parks Canada to develop mandatory and voluntary measures to address ocean noise within MPAs.
- Port authorities should use their powers to promote safe and efficient navigation or environmental protection in port waters to introduce mandatory measures to address ocean noise within the port. Port authorities should also support and promote voluntary measures, like the ECHO program, for vessels that use the port.

⁴²⁷ R E Burnham et al., “The Efficacy of Management Measures to Reduce Vessel Noise in Critical Habitat of Southern Resident Killer Whales in the Salish Sea” (2021) 8 *Frontiers in Marine Science*.

⁴²⁸ *Ibid.*

⁴²⁹ Port of Vancouver, *supra* note 425.

⁴³⁰ *Canada Marine Act*, *supra* note 417, ss 2, 49(1); Chircop et al, *supra* note 417 at 146-47.

⁴³¹ *Canada Marine Act*, *supra* note 417, s 49(3).

⁴³² Port of Vancouver, “New incentive for cargo and cruise vessels intended to quiet waters around the Port of Vancouver for at-risk whales” Press Release (25 January 2017); Rightship, “The Vancouver Fraser Port Authority is encouraging cleaner fuels, one ship at a time” (16 May 2023), online: <<https://rightship.com/insights/vancouver-fraser-port-authority-encouraging-cleaner-fuels-one-ship-time#:~:text=Currently%2C%20the%20port%20authority%20offers,slowdowns%20to%20reduce%20underwater%20noise>>.

11. CONSTRUCTION IN THE MARINE ENVIRONMENT

Construction in the marine environment can involve the use of a variety of materials and equipment to build a variety of structures, including offshore platforms, moorings, pipelines, cables, wharves, bridges, tunnels, breakwaters, and docks. It may include diving and the use of underwater vehicles. A variety of different federal legislation and policies may be relevant to construction in the marine environment, but those dealing with marine transportation and infrastructure, impact assessment, fisheries and fish ecosystems, and species conservation will all be key (see the associated chapters above).

This chapter focuses on legislation and policy applicable to construction of projects (particularly marine-adjacent infrastructure) that is not captured under specific industry-focused legal regimes. The primary focus is on the *Canadian Navigable Waters Act* (CNWA), which deals with projects that affect navigation in Canada’s navigable waters and creates an assessment and permitting process for these activities that may include considerations for noise and noise mitigation. Attention is also given briefly to the applicability of the *Canadian Environmental Protection Act, 1999* (CEPA), the *Canada Oil and Gas Installations Regulations*, which regulate construction of offshore oil and gas installations (including noise generated during construction), and the *Statement of Canadian Practice: Mitigation of Seismic Sound in the Marine Environment*.

11.1 *Canadian Navigable Waters Act*

The CNWA governs projects (called minor or major works) that affect navigation in Canada’s navigable waters.⁴³³ The CNWA prohibits the construction, placement, alteration, rebuilding, removal, or decommissioning of a “work” in, on, over, under, through, or across any “navigable water”.⁴³⁴ A work may be classified as a “major work” or as a “minor work”. These classifications are set out in the *Major Works Order* and the *Minor Works Order* established under the CNWA. Any person wishing to carry out a minor work must do so in accordance with the requirements in the Act; for any major work, an approval is also required. The Minister of Transport will consider the prescribed factors in the assessment for an application, which are primarily focused on impacts to navigation.⁴³⁵

11.1.1 *Major Works Order*

The list of major works that are set out in the *Major Works Order* is short, and includes only certain water control structures, ferry cables, bridges, causeways, and aquaculture facilities.⁴³⁶ Some of the types of

⁴³³ RSC 1985, c N-22.

⁴³⁴ *Ibid* s 3.

⁴³⁵ *Ibid* s 7(7).

⁴³⁶ *Major Works Order*, SOR/2019-320.

projects are only major works if they meet certain criteria. For example, only dams that are capable of impounding at least 30 000 square metres of water are considered a major work.⁴³⁷

The *Major Works Order* could be amended to include other kinds of projects where they produce significant impacts on navigation. For example, projects could have thresholds placed on them where, if they exceed certain sizes or scopes related to noise, they would be a major project. Alternatively, projects occurring in certain locations—like the Arctic—that are more susceptible to noise impacts might be added as major works. However, the impacts need to be tied to interference with navigation.

11.1.2 *Minor Works Order*

The list of minor works is set out in the *Minor Works Order*, and include erosion-protection works, docks and boathouses, slipways and ramps, aerial cables, buried pipelines, outfalls and intakes, dredging, mooring systems, watercourse crossings, and scientific equipment.⁴³⁸

It is unlikely that the *Minor Works Order* is a significant opportunity to address noise impacts, since it deals with minor projects that interfere with navigation.

11.2 *Canadian Environmental Protection Act, 1999*

The CEPA has limited application to underwater noise.

Part 7, Division 2 of CEPA deals with the Protection of the Marine Environment from Land-Based Sources of Pollution. Section 121(1) allows the Minister to issue environmental objectives, guidelines, and codes of practice to prevent and reduce marine pollution from land-based sources.

“Land-based sources” is defined as “point and diffuse sources on land from which substances or energy reach the sea by water, through the air or directly from the coast. It includes any sources under the sea bed made accessible from land by tunnel, pipeline or other means.”⁴³⁹ “Marine pollution” is defined to include the introduction by humans “of substances or energy into the sea”.⁴⁴⁰ These definitions include energy within the definition of pollution and thus could include noise, but the provisions under this section would only address ocean noise that originates on land (that is, “from the coast”). Thus, this section’s application to underwater noise is limited and cannot be used to develop objectives or guidelines for ocean-based sources of noise.

⁴³⁷ Ibid s 1(a).

⁴³⁸ *Minor Works Order*, SOR/2021-170.

⁴³⁹ *Canadian Environmental Protection Act, 1999*, SC 1999, c 33, s 120 “land-based sources”

⁴⁴⁰ Ibid s 120 “marine pollution”.

Part 7, Division 3 of CEPA addresses Disposal at Sea. Disposal is defined to include the intentional disposal or deposit of substances, materials, and objects into the ocean.⁴⁴¹ This section does not address non-physical pollutants like noise, and thus does not assist in regulating underwater noise.

11.3 Canada Oil and Gas Installations Regulations

The *Canada Oil and Gas Installations Regulations*, created under COGOA, create requirements for construction and operation of offshore pipelines and platforms, and set requirements for the design of offshore oil and gas installations. Every offshore installation must be designed according to prescribed standards that relate to the structural soundness of offshore installations and platforms (i.e. for strength and stability, load, steel and concrete platforms, transportation, and installation).⁴⁴²

Standards for offshore oil and gas platforms could be amended to allow for consideration of new technologies that reduce the noise generated onboard offshore platforms. Alternatively, or in conjunction, standards or policies could be incorporated by reference into the *Canada Oil and Gas Installations Regulations*.

11.4 Seabed and Sub-seabed Mapping

Seabed mapping and sub-seabed mapping activities are not specifically regulated activities (except for specific seismic activities in certain industries). Currently, an initiative under the federal government's Oceans Protection Plan—the same initiative under which the Ocean Noise Strategy work is being conducted—called the Community Hydrology program is being used to collect bathymetric data for coastal communities.⁴⁴³ DFO announced the new seafloor mapping program on June 21, 2023.⁴⁴⁴

To our knowledge, there is no general-purpose federal legislation that regulates hydrographic surveying, which primarily consists of sounding lines or echo sounding (i.e. sonar), although hydrology and marine sciences fall under the powers, duties, and functions of the Minister of Fisheries, Oceans and the Canadian Coast Guard.⁴⁴⁵

The Minister of Fisheries, Oceans and the Canadian Coast Guard is responsible for coordinating, promoting, and recommending national policies and programs related to hydrography, and may set

⁴⁴¹ Ibid s 122(1) "disposal".

⁴⁴² *Canada Oil and Gas Installations Regulations*, SOR/96-118, ss 38, 39.

⁴⁴³ Government of Canada, "Community Hydrography" (August 2023), online: <<https://www.dfo-mpo.gc.ca/science/hydrographie-hydrographie/opp-ppo/index-eng.html>>.

⁴⁴⁴ Government of Canada, "New seafloor mapping program supports marine safety and planning in two Indigenous communities" (June 2023), online: <<https://www.canada.ca/en/fisheries-oceans/news/2023/06/new-seafloor-mapping-program-supports-marine-safety-and-planning-in-two-indigenous-communities.html>>.

⁴⁴⁵ *Department of Fisheries and Oceans Act*, RSC 1985, c. F-15, s 4; *Oceans Act*, *supra* note 23, ss 40(2), 42-46.

standards and establish guidelines for use by hydrographers and others in collecting data.⁴⁴⁶ The Canadian Hydrographic Service, as part of the DFO, represents Canada at the International Hydrographic Organization (IHO), which is established under the *Convention on the International Hydrographic Organization*.⁴⁴⁷ DFO has issued a Standard for Hydrographic Surveys based on IHO standards;⁴⁴⁸ however, the standards do not include guidance for minimizing the impacts of noise from hydrographic activities and operations.

The Canadian Hydrographic Service should provide guidance to hydrographers to minimize ocean noise impacts.

11.4.1 *Statement of Canadian Practice: Mitigation of Seismic Sound in the Marine Environment*

The *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* (in this chapter the Statement) deals with seismic surveys in the marine environment. As a policy of the federal government, it does not have the force of law. For seismic surveys conducted for the purpose of oil and gas exploration, the Statement will be administered by the existing oil and gas regulatory bodies, which are the National Energy Board, the Canada-Nova Scotia Offshore Petroleum Board, and the Canada-Newfoundland and Labrador Offshore Petroleum Board. For seismic surveys conducted for any other purposes, the Statement will be administered under the *Oceans Act* by DFO.⁴⁴⁹

The Statement is based on a DFO-sponsored peer review of scientific knowledge, entitled the “Review of Scientific Information on Impacts of Seismic Sound on Fish, Invertebrates, Marine Turtles and Marine Mammals”, which was conducted in 2004. The Statement is intended to formalize and standardize minimum mitigation measures related to seismic surveys in the marine environment, and these are given effect through existing regulatory regimes (for example, see Chapters 6 and 9 related to offshore renewable energy and oil and gas, respectively). The Statement applies to all seismic surveys conducted in Canadian marine waters that use air source arrays, and therefore it does not apply to ice-covered waters.⁴⁵⁰

11.5 Law and Policy Reform to Address Ocean Noise Related to Construction

The CNWA is not an effective tool for managing impacts of noise on the marine environment since its primary objective is preventing and mitigating interference with navigation.

⁴⁴⁶ *Oceans Act supra* note 23, ss 43(a), 45(a).

⁴⁴⁷ Government of Canada, “About the Canadian Hydrographic Service” (October 2022), online: <<https://www.charts.gc.ca/help-aid/about-apos/index-eng.html>>.

⁴⁴⁸ Canadian Hydrographic Service, *Standards for Hydrographic Surveys*, 4th edition (February 2021), online: <<https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/41034685.pdf>>.

⁴⁴⁹ Government of Canada, “Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment” (17 August 2016), online: <<https://www.dfo-mpo.gc.ca/oceans/publications/seismic-sismique/index-eng.html>>.

⁴⁵⁰ *Ibid* ss 1, 2.

There is no federal legislation dealing specifically with seabed and sub-seabed mapping, but the Canadian Hydrographic Service could implement standards to prevent, reduce, and mitigate ocean noise impacts under the *Oceans Act*.

Recommendations:

- The *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* does not have the force of law and is outdated, being primarily based on a 2004 DFO report. It should be updated and expanded to provide noise thresholds for ocean noise and made applicable to all activities that generate ocean noise.

12. CONCLUSION

Ocean noise is not explicitly regulated in Canada under standalone legislation, nor it is incorporated into existing laws on marine conservation and impact assessment, or through legislative frameworks for ocean activities including fishing, seabed mining, offshore renewable energy, offshore oil and gas, military activities, shipping, and construction in the marine environment.

Despite this, noise has been addressed through a number of different federal laws and policies. This includes mitigation measures as part of the impact assessment process, voluntary and mandatory area-based restrictions to address the impacts of vessel noise, measures to protect the critical habitat of species at risk, and spatial restrictions on activities through marine protected area designations. Additionally, Canada does have one policy in place to address one of the most acutely harmful forms of ocean noise, the *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment*.

Canada can go beyond these existing tools to address noise in a more comprehensive way. The recommendations identified throughout this report, and listed below, represent significant strides towards a framework for addressing ocean noise. Law and policy that is designed to keep pace with our growing understanding of these impacts will support the restoration of vulnerable species and habitats that rely on sound to live.

12.1 Key Recommendations for Law and Policy Reform in Canada's Ocean Noise Strategy

Each chapter of this report includes a list of recommended law and policy reforms that would enhance regulation of ocean noise. The full list of these recommendations is provided in the following chapter.

There are five key recommendations for law and policy reform that should be included within Canada's Ocean Noise Strategy as a matter of priority. These are:

1. DFO should develop MEQ standards and requirements for ocean noise through regulations under the *Oceans Act*. These should include thresholds based on Indigenous knowledge and biological limits, as well as local and regional area-based targets for protected areas and key habitat for at-risk species. These standards and requirements should be specific to the Arctic, Atlantic, and Pacific regions.
2. DFO, ECCO, and Parks Canada should ensure that ocean noise be addressed in the development and management of all future MPAs and species at risk critical habitat. This should include area-based targets or noise budgets for these areas, as well as concrete regulatory and management measures to protect the marine soundscape.
3. Regulators responsible for assessing and approving ocean-based industrial activities, including the CER, IAAC, and the offshore boards should impose conditions on all offshore projects emitting ocean noise to mitigate the impacts of that noise. Conditions should require proponents to adhere to noise thresholds and area-based noise targets as they are developed, and should require the use of quiet technologies where relevant. These requirements should be set out in regulators' guidance or in regulations under each relevant statute.
4. Environmental impact assessments—including project-level impact assessments, strategic assessments and regional assessments—should be used to identify and assess noise impacts. These EIA processes should be used to identify local or regional thresholds, assess the feasibility of adopting quiet technologies, and identify areas to avoid because of harmful noise impacts. The analysis can be used in other processes, including informing regulators about which conditions should be imposed to manage ocean noise.
5. Transport Canada should develop regulations under the CSA to address vessel noise impacts, including speed restrictions and no-go zones in sensitive areas of the ocean like marine protected areas and species at risk critical habitat.

12.1 Full List of Recommendations:

Comprehensive Ocean Noise Management under the *Oceans Act*

- DFO should establish MEQ guidelines, thresholds and targets, including quantitative targets, on ocean noise through its authority under paragraphs 32(d) and 52.1(a) of the *Oceans Act*.
- DFO should legally implement the ocean noise standards identified in existing marine plans, such as those developed by the Marine Planning Partnership in British Columbia, through MEQ regulations under paragraph 52.1(a) of the *Oceans Act*.
- DFO should use small-scale MSP processes to develop legal and voluntary measures to create quiet buffer zones around marine protected areas and critical habitat of at-risk species.

Conservation: Species at Risk

- DFO should consider ocean noise impacts in the development of every aquatic species' Recovery Strategy and Action Plan and develop noise targets and thresholds for each listed species. These should include quantitative, cumulative, and acute acoustic thresholds for a listed species.
- DFO should develop minimum thresholds or definitions for what constitutes noise-related “harm” and “harassment” of individual at-risk species, under subsection 32(1) of SARA. DFO should also develop a minimum threshold or definition for what constitutes “destruction” of acoustic habitat under subsection 58(1).

Conservation: Marine Protected Areas

- DFO, ECCC, and Parks Canada should assess the impacts of anthropogenic ocean noise in the development and management of every MPA, and should introduce measures in MPA regulations and management plans to mitigate these impacts. These should include noise budgets for all existing and future MPAs to ensure that high-value areas remain protected from anthropogenic noise into the future.
- DFO, ECCC, and Parks Canada should work with Transport Canada to mitigate vessel noise in MPAs through regulatory measures for areas in Canada's internal waters and territorial sea, and through voluntary measures in the EEZ.

Fisheries

- The Ocean Noise Strategy could require DFO to use its authorities under the *Fisheries Act* to develop policies directed at addressing and mitigating the impacts of ocean noise on all fish species.

Environmental Impact Assessment

- Ocean noise potentially generated from projects and activities should be considered as part of an impact assessment process to inform decision-making about those projects.
- Noise thresholds, area targets, and quiet technology requirements should be incorporated as conditions of approval in EIA processes or as mitigation measures.
- Ocean noise impacts should be identified for monitoring through follow-up programs under the IAA.
- The application of and adherence to science-based federal ocean noise standards as a standard, mandated condition for projects approved under the IAA should be a key priority.
- One effective way to manage noise would be to require all offshore seismic activities—whether they are conducted as part of petroleum exploration or scientific study—to undergo an impact assessment. This would require an amendment to the *Physical Activities Regulations*.

Offshore Renewable Energy

- The regulatory bodies responsible for OREs (i.e. the Canada Energy Regulator and potentially the offshore boards under the Accord Acts) should be responsible for assessing environmental and socio-economic assessments of projects in a way that includes an analysis of noise impacts from those projects.
- The regulatory bodies for OREs should have clear guidance for decision-making related to ocean noise impacts so that conditions placed on regulated projects could include requirements to adhere to noise limits, adopt quieter technologies, or carry out sufficient underwater noise monitoring.

Military Activities and Operations

- DAOD 4003-0 and NAVORD 4003-6 should provide clearer guidance that incorporates best practices with respect to managing noise impacts in the marine environment through incorporation by reference of standards or policies like Canada's Ocean Noise Strategy to further inform decision-making about military operations and activities in the marine space.

Seabed Mining

- Any future regulatory regime should be designed to address noise impacts as a priority consideration. Future legal research on other jurisdictions with seabed mining regulatory regimes in place would be particularly useful to identify barriers and opportunities to address noise impacts from seabed mining.
- Environmental impact assessments (project-level, regional, or strategic) would play a key role in development of a seabed mining regime.

Offshore Oil and Gas

- The CPRA should be amended to prescribe factors for consideration when the Minister is considering whether to place a call for bids in the offshore. Factors could include areas to be avoided because of environmental impacts, including ocean noise impacts caused by petroleum projects.
- Regulators for offshore petroleum should be required to conduct a strategic environmental assessment before a call for bids is issued for petroleum exploration. A SEA can be used at an early stage to identify regional and local noise thresholds and identify areas where ocean noise generated from petroleum projects would cause such environmental impacts that those areas should be avoided.
- The regulatory bodies should have clear guidance about noise impacts so conditions can be placed on projects that include requirements to adhere to noise limits, adopt quieter technologies, or carry out sufficient underwater noise monitoring.
- The management system required by the *Canada Oil and Gas Drilling and Production Regulations* should explicitly require an operator to show how work will be conducted at or below acceptable noise thresholds.

Shipping

- Transport Canada should advocate for law and policy changes at the IMO to address vessel noise impacts, including:
 - Recognition of noise as a form of pollution of the marine environment under UNCLOS; and
 - Introduction of mandatory ship design requirements for noise reduction under MARPOL, similar to the new mandatory energy efficiency measures to reduce greenhouse gas emissions from commercial shipping.
- Transport Canada should use its regulatory authority under section 35.1 of the CSA to develop regulations to protect sensitive ecosystems from vessel noise, including through speed restrictions and no-go zones, and ship design requirements that minimize noise. Transport Canada should introduce navigation requirements under the AWPPA to minimize ocean noise, and should mandate ship design requirements that minimize ocean noise for ships travelling in Arctic waters.
- Transport Canada should collaborate with DFO, ECCC, and Parks Canada to develop mandatory and voluntary measures to address ocean noise within MPAs.
- Port authorities should use their powers to promote safe and efficient navigation or environmental protection in port waters to introduce mandatory measures to address ocean noise within the port. Port authorities should also support and promote voluntary measures, like the ECHO program, for vessels that use the port.

Construction in the Marine Environment

- The *Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment* does not have the force of law and is outdated, being primarily based on a 2004 DFO

report. It should be updated and expanded to provide noise thresholds for ocean noise and made applicable to all activities that generate ocean noise.

Appendix: Underwater Noise Measures in Marine Protected Areas

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
Banc-des-Américains MPA	Internal waters	<ul style="list-style-type: none"> · navigation, anchoring prohibited in zone 1 · some commercial fishing in zones 2a and 2b · some recreational fishing in zones 2a and 2b · applications may be made to the Minister to conduct certain activities (scientific research or monitoring, habitat restoration, educational or commercial marine tourism activity) <p>note: the MMR will impose approach distances for marine tourism</p> <ul style="list-style-type: none"> · public safety, national defence, national security, law enforcement, emergency response 	N/A	RIAS here. <ul style="list-style-type: none"> · UWN identified as a threat in relation to: marine transportation/vessel noise, marine tourism, submarine cables, and oil and gas (which is prohibited) · Noise mentioned as a concern in marine mammal conservation and that it may be further addressed in the future, if needed, through voluntary measures or regulatory amendments 	N/A
Basin Head MPA	Internal waters	<ul style="list-style-type: none"> · vessel operation in zone 2 solely for transiting in order to launch the vessel from, or land it at, a boat launch · vessel operation permitted in zone 3 · commercial and recreational fishing in zones 2 and 3 · applications may be made to the Minister to conduct scientific or an educational activities <ul style="list-style-type: none"> · public safety, national defence, national security, law enforcement, emergency response 	Management Plan here. <p>Use of motorized vessels not permitted in Zones 1 and 2; in Zone 2 only use of vessel is to launch or land a vessel and proceed to zone 3.</p> <p>Vessel traffic permitted in zone 3.</p> <p>No mention of noise.</p>	RIAS here. <p>Same restrictions as management plan.</p> <p>No mention of noise.</p>	N/A
Musquash Estuary MPA	Internal waters	<ul style="list-style-type: none"> · recreational fishing · some commercial fishing (species permitted varies by zone) · vessel operation, but with speed restrictions · construction of a boat launch; 	Management Plan here. <p>"Operation of a marine vessel (any large vessel including ships, sail boats, and motorized personal watercraft) is allowed in zones 2A and 2B at a maximum</p>	RIAS here. <p>Same restrictions as management plan.</p> <p>No mention of noise.</p>	N/A

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
		<p>maintenance, repair or removal of a wharf or boat launch; or maintenance of a navigation channel</p> <ul style="list-style-type: none"> · applications may be made to the Minister to conduct scientific, educational, archaeological, commercial tourism, or habitat restoration activities · public safety, national defence, national security, law enforcement, emergency response 	<p>speed of 5 knots, and in zone 3 at a maximum speed of 8 knots.</p> <p>Operation of a motorized marine vessel is prohibited in zone 1 except with an approved activity plan (e.g. for scientific research) and for the purpose of public safety, national defence, national security, law enforcement, or environmental emergency response and clean up."</p>		
Anguniaqvia niqiqyuam MPA	Territorial sea	<ul style="list-style-type: none"> · some recreational fishing · navigation · some dredging · applications may be made to the Minister to conduct scientific research or monitoring activity, educational activity, or commercial marine tourism · public safety, national defence, national security, law enforcement, emergency response 	N/A	<p>RIAS here</p> <p>Vessel navigation permitted within the MPA.</p> <p>No mention of noise.</p>	Voluntary guidelines on transit to address underwater noise and physical disturbance, including adhering to community supply routes year-round. Between June 1 and October 1, avoid "red" areas and reduce speed to 10 knots or less in "yellow" areas. If transit through "red" area is required, restrict speed to 10 knots and maintain 400 metre approach distance from whales.
Gwaii Haanas Haida Heritage Site and National Marine Conservation Area Reserve	Internal waters and territorial sea	<p>Note: <i>CNMCA Act</i> follows a different format than the <i>Oceans Act</i> and the <i>Canada Wildlife Act</i>. It prohibits all exploration and exploitation of hydrocarbons, minerals and aggregates, and also prohibits the disposition of any interest in public lands (which would likely prohibit any activities requiring tenures, including offshore renewable energy and aquaculture.</p> <ul style="list-style-type: none"> · Permitted activities include: recreational 	<p>Management Plan here.</p> <p>For visitor experience, vessel and air traffic (e.g. helicopters, float planes, drones) is managed to minimize noise.</p> <p>No mentions of noise relating to marine life.</p> <p>New Gwaii Haanas zoning implemented in 2019, all</p>	N/A	N/A

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
		and commercial fishing in certain zones, marine tourism, and navigation	commercial and recreational fishing activities will be prohibited within the marine strict protection zones.		
Eastport MPA	Territorial sea	<ul style="list-style-type: none"> · applications may be made to the Minister to conduct scientific or educational activity · public safety, national defence, national security, law enforcement, emergency response · no other exceptions 	Management Plan here. No mention of noise.	No mention of vessels, noise.	N/A
Gilbert Bay MPA	Territorial sea	<ul style="list-style-type: none"> · fishing for seals · some recreational fishing in zones 1A, 1B, 2 and 3 · some commercial fishing in zone 2 and 3; maintenance, repair or removal of a wharf in zones 1A or 1B; construction, maintenance, repair, or removal of a wharf in zone 2; and construction, maintenance, repair, or removal of a wharf, causeway, or bridge in zone 3 · applications may be made to the Minister to conduct scientific or educational activity · public safety, national defence, national security, law enforcement, emergency response 	Management Plan here. No mention of noise.	No mention of vessels, noise.	N/A
Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA	Territorial sea	<ul style="list-style-type: none"> · some commercial and recreational fishing in the adaptive management and vertical adaptive management zones · navigation, no anchor may enter a core protection zone · laying, maintenance, or repair of cables in the adaptive management zones if it is not likely to result in the damage, destruction, or removal of any part of the glass sponge reefs · applications may be made to the Minister 	N/A	RIAS here. "Vessel navigation in the adaptive management zone (AMZ) and vertical adaptive management zone (VAMZ) will be allowed to be carried out in accordance with the CSA and its Regulations, provided that the vessel's anchor does not enter the core protection zone (CPZ)." 	N/A

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
		to conduct scientific research or monitoring, or any educational activity · public safety, national defence, national security, law enforcement, emergency response		No mention of noise.	
Tarium Nirjutait MPA	Territorial sea	· dredging · fishing · scientific activity in certain circumstances · oil and gas exploration and exploitation · navigation for purposes of public safety, law enforcement or national security, or for Canadian sovereignty	Management Plan here. Oil and gas construction and maintenance could pose risk to beluga + habitat through disturbance or whale strikes "from increased shipping noise and vessel traffic." (20) Concerns about impact of drilling noise on beluga. (23) "Commercial vessels should remain in community supply routes for safety reasons and to minimize the exposure of beluga to propeller noise and ship strikes." (34)	RIAS here. "The Tarium Nirjutait Management Plan will therefore include guidelines recommending that vessels avoid the Tarium Nirjutait MPAs. If they must cross through the Tarium Nirjutait MPAs, they are asked to transit these areas using recommended routes that will be identified in the Management Plan" (1759) Permits oil + gas, including seismic. No mention of noise.	Voluntary guidelines on transit to address underwater noise and physical disturbance, including adhering to community supply routes year-round. Voluntary guidelines between June 1 and October 1 to avoid "red" areas and reduce speed to 10 knots or less in "yellow" areas. If transit through "red" area is required, restrict speed to 10 knots and maintain 400 metre approach distance from whales.
Laurentian Channel MPA	Territorial sea and EEZ	· navigation, anchoring prohibited in zone 1a or 1b · laying, maintenance and repair of cables in zones 2a and 2b · applications may be made to the Minister to conduct scientific research or monitoring or educational activities · public safety, national defence, national security, law enforcement, emergency response	N/A	RIAS here. Risk assessment determined that vessel traffic was incompatible with conservation; impacts to Leatherback Sea Turtles. The MPA is in a high traffic area, however vessels cannot be regulated under international law, but "efforts will be made to enhance stewardship and awareness of the area within the shipping community." Prohibition on recreational and	N/A

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
				commercial fishing, oil and gas development and seismic surveys throughout the MPA.	
St. Anns Bank MPA	Territorial sea and EEZ	<ul style="list-style-type: none"> · fishing for seals · some commercial and recreational fishing in zones 2, 3, and 4 · navigation · applications may be made to the Minister to conduct scientific research or monitoring activity, educational activity, or commercial marine tourism activity · public safety, national defence, national security, law enforcement, emergency response 	N/A	<p>RIAS here.</p> <p>Notes that vessel noise presented medium to high risks to fish, turtles and marine mammals, but Canada has limited authority to address navigation in the EEZ. "efforts will be made to enhance stewardship and awareness of the area within the shipping community."</p> <p>Seismic for scientific research would require approval of Minister, would require that such activities are not likely to destroy the habitat of any living marine organism, and serve to increase knowledge of the MPA.</p>	N/A
Endeavour Hydrothermal Vents MPA	EEZ	<p>Note: this MPA only protects subsoil, seabed and superjacent, or overlying, waters.</p> <ul style="list-style-type: none"> · activities relating to scientific research as approved by Minister · an activity authorized under the <i>Oceans Act</i>, the <i>Coastal Fisheries Protection Act</i>, the <i>Fisheries Act</i> or the <i>Coasting Trade Act</i> · navigation for purposes of public safety, law enforcement or national security, or for Canadian sovereignty 	<p>Management Plan here.</p> <p>Primary vessel traffic is research vessels; some incidental traffic from commercial fishing, commercial shipping, naval activities. "This traffic is presumed not to pose a threat to the Endeavour ecosystem." (8)</p> <p>Identified stressors include introduction of energy- light, noise (seismic/acoustic), particularly for SARA-listed marine mammals.</p> <p>- Mitigation: research plans</p>	<p>RIAS here.</p> <p>"Prospects for oil and gas exploration in the MPA are very low due to seismic activity and the thin oceanic crust. The remoteness and depth of the Endeavour Hydrothermal Vents area and the current moratorium on oil and gas exploration makes oil and gas." (952)</p> <p>Exploration and extraction economically infeasible.</p> <p>"Transport Canada indicated no concerns about the designation</p>	N/A

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
			<p>should include amount of energy (light or noise) to be emitted.</p> <p>"Seismic: DFO Pacific has identified a process to consider seismic proposals consistent with the statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment." (37)</p>	<p>of an MPA as surface shipping traffic does not impact the proposed MPA" (954)</p> <p>No mention of noise.</p>	
SGaan Kinghlas-Bowie Seamount Haida Heritage Site and MPA	EEZ	<ul style="list-style-type: none"> · commercial and recreational fishing · navigation · navigation for purposes of public safety, law enforcement or national security, or for Canadian sovereignty · marine scientific research activities · applications may be made to the Minister to conduct scientific research, monitoring, educational or commercial marine tourism 	<p>Management Plan here.</p> <p>Notes impacts of vessel noise as a chronic stressor for marine life; ongoing acoustic monitoring to understand baseline noise levels. (20)</p> <p>Strategic Objective 2.2: Vessel traffic is managed to not compromise the protection and conservation of the SK-B MPA by working with other federal agencies.</p> <p>Operational Objectives 2.2(b): Underwater noise from vessel traffic is monitored to establish a baseline. (26)</p>	<p>RIAS here.</p> <p>No mention of noise.</p> <p>Note that regulations predate management plan by 11 years.</p>	N/A
The Gully MPA	EEZ	<ul style="list-style-type: none"> · a person can apply to the Minister to carry out an activity · some commercial fishing in zones 2 or 3 · navigation for purposes of public safety, law enforcement or national security, or for Canadian sovereignty · marine scientific research activities carried out or sponsored by a foreign government · navigation 	<p>Described as a threat: "Human-generated sound in waters of the Scotian Shelf." (12)</p> <p>"The key threats associated with shipping are acoustic disturbances and collisions." (35)</p>	<p>RIAS here.</p> <p>Vessel noise identified as a primary conservation threat; though traffic understood to be low for the region. International law did not allow restrictions on shipping, so concerns to be addressed through voluntary guidelines for vessel operation</p>	<p>Avoiding passage through the area, or if passage is required, decreasing vessel speed to 10 knots or less.</p>

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
			<p>Research and monitoring projects for acoustic habitat.</p> <p>Seismic sound.</p> <p>NOTMAR - Voluntary measures to avoid area, etc.</p>	<p>through NOTMAR. (673, 679-80)</p> <p>Voluntary measures for oil and gas; "Since 1997, the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB) has not authorized oil and gas activities or issued licences within the area of interest (AOI) boundary." (673)</p>	
Tang.ewan — ḥačwīqak — Tsigis MPA (proposed)	EEZ	<ul style="list-style-type: none"> · some commercial or recreational fishing in the General Zone, Dellwood Zone, or Union Zone · laying, maintenance or repair of cables · navigation · applications may be made to the Minister to conduct scientific research or monitoring activity or an educational activity 	N/A	<p>RIAS here.</p> <p>Area is in Canada's EEZ, so under international law vessel traffic would continue to be allowed throughout the MPA.</p> <p>No mention of noise.</p>	N/A
Scott Islands mNWA	Internal waters, territorial sea and EEZ	<ul style="list-style-type: none"> · public safety or national security · recreational and commercial fishing · navigation, including by foreign military or Canadian forces 	N/A	<p>2018 RIAS here.</p> <p>Identified need to limit noise disturbance to seabirds.</p>	N/A
Tuvaijuittuq (Interim) MPA	Internal waters, territorial sea and EEZ	<ul style="list-style-type: none"> · national defence activities · marine scientific research activities · navigation by a foreign national, ship, state or entity · laying, maintenance, and repair of cables and pipelines by a foreign state 	N/A	<p>RIAS here.</p> <p>"Vessel traffic to and through the MPA has been limited in the last decade as there are no communities in or near this area. A data analysis conducted by Maerospace (2019) concluded that satellite automatic identification system data provided no indication of vessel traffic in the area during the period of March 2017 to November 2018. Therefore, no incremental impact on shipping is</p>	N/A

Name of MPA	Maritime zone	Permitted activities that may cause underwater noise	Management Plan Measures	Regulatory Impact Analysis Statement (RIAS)	Voluntary noise-related measures in Notices to Mariners (NOTMAR), Annual Edition 2023
				likely” means no vessel traffic is allowed, as order freezes the footprint. No mention of noise.	