



Environmental  
Defenders Office

**Submission to the Inquiry into the Impact of seismic testing on fisheries and the marine environment**

**16 December 2019**

## About EDO

EDO is a community legal centre specialising in public interest environmental law. We help people who want to protect the environment through law. Our reputation is built on:

***Successful environmental outcomes using the law.*** With over 30 years' experience in environmental law, EDO has a proven track record in achieving positive environmental outcomes for the community.

***Broad environmental expertise.*** EDO is the acknowledged expert when it comes to the law and how it applies to the environment. We help the community to solve environmental issues by providing legal and scientific advice, community legal education and proposals for better laws.

***Independent and accessible services.*** As a non-government and not-for-profit legal centre, our services are provided without fear or favour. Anyone can contact us to get free initial legal advice about an environmental problem, with many of our services targeted at rural and regional communities.

Environmental Defenders Office is a legal centre dedicated to protecting the environment.

[www.edo.org.au](http://www.edo.org.au)

### Submitted to:

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## Introduction

Environmental Defenders Office Ltd (**EDO**) is a legal centre dedicated to protecting the environment. EDO welcomes the opportunity to make a submission to the Inquiry into the Impact of seismic testing on fisheries and the marine environment (**Inquiry**) being undertaken by the Environment and Communications References Committee (**Committee**).

Given our specific expertise, our comments to this Inquiry focus largely on part b) of the Terms of Reference (**ToR**), namely the regulation of seismic testing in both Commonwealth and state waters. We provide some brief responses to the other ToRs to set the context for our submission to the Inquiry.

This submission addresses:

- **ToR A - The body of science and research into the use of seismic testing**
- **ToR B - The regulation of seismic testing in both Commonwealth and state waters**
  - **General assessment of impacts on fish species**
  - **Assessments under the *Environment Protection and Biodiversity Conservation Act 1999*; and**
  - **Marine parks.**
- **ToR C - The approach taken to seismic testing internationally**
- **Recommendations**

### Summary of Recommendations

EDO provides the following recommendations to the Inquiry:

1. Assessment processes for all seismic activities should require an explicit consideration of the impacts on fisheries and the marine environment, beyond only impacts on MNES.
2. Assessment of seismic activities should explicitly consider climate change risks associated with any subsequent utilisation of the fossil fuel resource. This would include consideration of the amount of greenhouse gas emissions that would likely result from opening up new petroleum and gas resource areas, and risks to fish populations, fisheries and marine environments from impacts such as ocean temperature increases, ocean acidification, sea-level rise that are an inevitable consequence of climate change.
3. Decision making must adequately incorporate the precautionary principle and intergenerational equity and be consistent with ecologically sustainable development.
4. Petroleum and gas activities, including seismic testing, should be excluded from all marine parks.

## **ToR A - The body of science and research into the use of seismic testing**

The University of Tasmania's Institute for Marine and Antarctic Studies (**IMAS**) has been undertaking research into the direct impact of seismic testing on marine species that are important for commercial fisheries. They have identified significant increases mortality in scallops as a result of noise from seismic airguns,<sup>1</sup> a potential three-fold increase in mortality of adult and larval zooplankton,<sup>2</sup> and damage to the sensory organs and righting reflexes of rock lobsters.<sup>3</sup> The impacts of noise on marine life remains an evolving field of research, but a 2015 review identified that “*anthropogenic noise can cause auditory masking, leading to cochlear damage, changes in individual and social behavior, altered metabolisms, hampered population recruitment, and can subsequently affect the health and service functions of marine ecosystems*”.<sup>4</sup> These impacts occur in an environment where 90% of fish stocks are already considered fully fished or over-fished,<sup>5</sup> making them vulnerable to cumulative anthropogenic impacts.

Over the past decade there has been extensive research on the impact of petroleum and gas exploration, often focussed on seismic testing including the use of air guns, on marine mammals. Noise from seismic testing can cause both individual and population level impacts through behavioural changes, including disturbance from breeding and feeding grounds, interference with communication, increased levels of physiological stress, physical injury and in extreme cases may even result in death.<sup>6</sup> Division 3 of the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* establishes the Australian Whale Sanctuary within Commonwealth waters whereby it is an offence to kill, injure or interfere with a cetacean (whales, dolphins and porpoises). All states and territories with also protect marine mammals within their waters. In 2008, the Australian Government released *EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales*<sup>7</sup> however extensive research has been conducted on the impact of seismic testing since that time and as a result these guidelines are no longer based on the best available science.

Also important in the context of this Inquiry is that, while seismic testing does not occur exclusively for petroleum and gas exploration, it is a key driver for much of the testing done in Australian waters. The impacts of fossil fuel extraction are therefore also a relevant consideration for this Inquiry. Burning of fossil fuels is the major contributor to anthropogenic climate change. Australia's climate has warmed by just over one degree Celsius (°C) since 1910 and average temperatures are projected to rise further. Impacts that are the result of a changing climate are already occurring. For marine species, these include the warming and

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<sup>1</sup> Day, R., McCauley, R., Fitzgibbon, Q., Hartmann, K. and Semmens, J. (2017) Exposure to seismic air gun signals causes physiological harm and alters behavior in the scallop *Pecten fumatus* *Proceedings of the National Academy of Sciences* 114 (40) E8537-E8546. Available at: <https://www.pnas.org/content/114/40/E8537>

<sup>2</sup> McCauley, R., Day, R., Swadling, K., Fitzgibbon, Q., Watson, R. and Semmens, J (2017) Widely used marine seismic survey air gun operations negatively impact zooplankton. *Nature Ecology & Evolution* 1, Article number: 0195. Available at: <https://www.nature.com/articles/s41559-017-0195>

<sup>3</sup> Day, R., McCauley, R., Fitzgibbon, Q., Hartmann, K. and Semmens, J. (2019) Seismic air guns damage rock lobster mechanosensory organs and impair righting reflex *Proceedings of the Royal Society B* 286. Available at: <https://royalsocietypublishing.org/doi/10.1098/rspb.2019.1424>

<sup>4</sup> Peng, C., Zhao, X., and Liu, G. (2015) Noise in the sea and its impacts on marine organisms *International journal of environmental research and public health*, 12(10), 12304–12323. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4626970/>

<sup>5</sup> FAO (2018) *The State of World Fisheries and Aquaculture 2018: Meeting the Sustainable Development Goals* UN, New York. Available at: <http://www.fao.org/3/i9540en/i9540en.pdf>

<sup>6</sup> See for example Erbe, C., Dunlop, R. and Dolman, S. (2018) *Effects of Noise on Marine Mammals* 10.1007/978-1-4939-8574-6\_10.

<sup>7</sup> Available at: <https://www.environment.gov.au/resource/epbc-act-policy-statement-21-interaction-between-offshore-seismic-exploration-and-whales>

acidification of oceans, sea level rise, and an increase in extreme weather events. This in turn impacts both fisheries and the broader marine environment. In light of the unequivocal scientific evidence of the impacts of anthropogenic climate change, the international community agreed in late 2015 to keep the increase in global average temperature to well below 2°C above pre-industrial levels, and to pursue efforts to limit the increase to 1.5°C. Despite this, Australia’s regulatory framework is failing to adequately incorporate climate change impacts into decision making.

## **ToR B - The regulation of seismic testing in both Commonwealth and state waters**

Seismic testing in the marine environment in Australia is largely regulated through petroleum and gas exploration legislation. This legislation is divided between state/territory jurisdictions and the Commonwealth through the Offshore Constitutional Settlement, implemented through various legislative instruments. With some exceptions, states/Northern Territory are responsible for managing exploration activities within the first 3 nautical miles of the territorial sea and the Commonwealth is responsible for management to the outer edge of the Economic Exclusive Zone (200 nm). Key legislation and regulations include those listed in Table 1.

| <b>Jurisdiction</b> | <b>Key Legislation</b>  |
|---------------------|---|
| Commonwealth        | <i>Offshore Petroleum and Greenhouse Gas Storage Act 200</i><br><i>Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009</i> |
| New South Wales     | <i>Petroleum (Offshore) Act 1982</i>  |
| Northern Territory  | <i>Petroleum (Submerged Lands) Act 1981</i><br><i>Petroleum (Environment) Regulations 2016</i>  |
| Queensland          | <i>Petroleum (Submerged Lands) Act 1982</i>   |
| South Australia     | <i>Petroleum and Geothermal Energy Act 2000</i><br><i>Petroleum Regulations 2000</i><br><i>Petroleum and Geothermal Energy Regulations 2013</i>     |
| Tasmania            | <i>Petroleum (Submerged Lands) Act 1982</i><br><i>Petroleum (Submerged Lands) (Management of Environment) Regulations 2012</i>                      |
| Victoria            | <i>Offshore Petroleum and Greenhouse Gas Storage Act 2010</i>   |
| Western Australia   | <i>Petroleum and Geothermal Resources Act 1967</i><br><i>Petroleum (Submerged Lands) (Environment) Regulations 2012</i>                             |

This submission deals with three key issues in relation to legislative regime for seismic testing, namely:

1. General assessment of impacts on fish species;
2. Assessments under the *Environment Protection and Biodiversity Conservation Act 1999*; and
3. Marine parks.

### **1. General assessment of impacts on fish species**

In light of the emerging evidence of impacts from seismic testing on marine life and in the knowledge that the ultimate goal of a large proportion of such testing is to develop new fossil fuel reserves, the precautionary principle should be applied in management of seismic testing. Assessment of proposed seismic testing operations should include a stronger focus on the impact any such testing will have on marine life. Assessment should also explicitly consider climate change risks and impacts of the activity itself and any subsequent utilisation of the fossil fuel resource. In determining whether an areas should be opened for seismic

testing for petroleum and gas exploration decision-making should adopt tools to ensure 'carbon restraints' are assessed alongside other important ecological restraints, including consideration of the amount of greenhouse gas emissions that would likely result from opening up new petroleum and gas resource areas, and assess risks to fish populations, fisheries and marine environments including ocean temperature increases, ocean acidification, sea-level rises.

## **2. Assessments under the *Environment Protection and Biodiversity Conservation Act 1999*.**

EDO has previously raised concerns about the regulatory framework for assessing offshore oil and gas activities, now undertaken by the National Offshore Petroleum Safety and Environmental Management Authority (**NOPSEMA**).<sup>8</sup> Primarily, we have been concerned that the NOPSEMA assessment and approval processes do not equate to the regulatory requirements under the *Environment Protection & Biodiversity Conservation Act 1999* (**EPBC Act**) where impacts on matters of national environmental significance (**MNES**) were previously assessed.

We note that since that transfer of assessment responsibilities under the EPBC Act to NOPSEMA has occurred, NOPSEMA has made significant progress in increasing in transparency around decision making and strengthening assessment requirements. This submission comments on a key area where further work is required, particularly in light of the emerging science around impacts of seismic testing on marine species.

Approval of exploration activities, including seismic testing, under the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (**Environment Regulation**), requires the decision-maker to be 'reasonably satisfied' that the environmental impacts and risks associated with the project will be 'reduced to as low as reasonably practicable' (**ALARP**) (s. 10 (1) (a), 10A (b)). The definition of 'as low as reasonably practicable' includes consideration of economic as well as environmental costs. While the Regulator must be 'reasonably satisfied' that the environmental performance outcomes for the offshore project proposal are consistent with the principles of ecologically sustainable development (**ESD**), the Environment Regulation does not require the Regulator to be satisfied that any aspect of the environment plan is consistent with ESD.

EDO remains concerned that ALARP is not necessarily consistent with ESD, particularly because it does not contain within it any notion of the precautionary principle or intergenerational equity. Rather, it assumes that development must proceed – but be managed in such a way that balances the economic/health and safety costs of reducing environmental impacts with net environmental benefit. This lack of focus on the precautionary principle or intergenerational equity means that some of the key threats of seismic testing, namely the emerging evidence of noise impacts and climate change, to already at risk marine species are not being adequately considered in decision making.

## **3. Marine Parks**

Currently management plans for Commonwealth marine parks allow seismic testing to be undertaken in multi use and special purpose zones, in line with a valid permit. This is in contrast to states such as NSW where the creation of a marine park prevents any mining exploration or extraction. Given marine parks have been identified as key areas for protecting marine biodiversity and environments all marine parks should be consistently protected from the threats associated with seismic testing.

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<sup>8</sup> EDO's previous submission are available at: <https://www.edo.org.au/national-submissions/>

## ToR C - The approach taken to seismic testing internationally

There are a range of approaches taken to seismic testing internationally. In this submission, we focus on the recent decision by New Zealand to end the granting of new offshore petroleum exploration permits and to limit new onshore petroleum exploration permits to those in the Taranaki region. This decision was implemented to support a just transition to a low carbon economy in New Zealand.<sup>9</sup> It was enacted through the *Crown Minerals (Petroleum) Amendment Act 2018* which amended the *Crown Minerals Act 1991*, to prevent a person from applying for an exploration permit for petroleum (s. 23A(2)(a)), unless the application was in respect of any land in the onshore Taranaki region (s. 23A(2)(b)), and to prevent the Minister from granting a permit for petroleum in respect of any land outside the onshore Taranaki region (s. 25(2A)). Limits on expansions of existing projects were also applied (s. 36(2A)).

Ultimately, if the world is to limit climate change to 1.5-2°C, it will be necessary to end the use of fossil fuels. It would provide greater certainty for the industry and the community if Australia were to implement legislation, similar to that now in place in New Zealand, that clarifies that fossil fuel exploration and exploitation within Australia has a finite life.

## Recommendations

EDO provides the following recommendations to the Inquiry:

1. Assessment processes for all seismic activities should require an explicit consideration of the impacts on fisheries and the marine environment, beyond only impacts on MNES.
2. Assessment of seismic activities should explicitly consider climate change risks associated with any subsequent utilisation of the fossil fuel resource. This would include consideration of the amount of greenhouse gas emissions that would likely result from opening up new petroleum and gas resource areas, and risks to fish populations, fisheries and marine environments from impacts such as ocean temperature increases, ocean acidification, sea-level rise that are an inevitable consequence of climate change.
3. Decision making must adequately incorporate the precautionary principle and intergenerational equity and be consistent with ecologically sustainable development.
4. Petroleum and gas activities, including seismic testing, should be excluded from all marine parks.

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<sup>9</sup> The Bill's second reading speech is available at: [https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb\\_20181101\\_20181101\\_12](https://www.parliament.nz/en/pb/hansard-debates/rhr/combined/HansDeb_20181101_20181101_12)