



To: CGG Algoa Stakeholder Engagement Team
SLR Consulting (South Africa) (Pty) Ltd

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From: The Green Connection and Natural Justice

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Dear CGG Algoa Stakeholder Engagement Team,

COMMENTS ON THE BASIC ASSESSMENT REPORT FOR PROPOSED SPECULATIVE 3D SEISMIC SURVEY IN THE ALGOA, AND OUTENIQUA BASINS OFF THE SOUTHEAST COAST, SOUTH AFRICA

INTRODUCTION

1. These comments are made jointly by Green Connection and Natural Justice.
2. Green Connection is a registered non-governmental organisation, that believes that economic growth and development, improvement of socio-economic status and conservation of natural resources can only take place within a commonly understood framework of sustainable development. The Green Connection aims to provide practical support to both the government and non-governmental/civil society sectors, which are an integral part of sustainable development.
3. Natural Justice: Lawyers for Communities and the Environment is a non-profit organisation specialising in environmental and human rights law in Africa – with a focus on the pursuit of social and environmental justice for local and indigenous communities. Natural Justice offers direct support to local and indigenous communities impacted by the ever-increasing demand for land and resources, through legal empowerment.
4. We attached hereto a report by WildTrust scientists, Dr. J. Harris, Dr. J. Olbers, L. Guastella, and Dr. K. Wright, titled “Review and Comment on Basic Assessment Report (BAR) on the Proposed 3D Seismic Survey off the Southeast Coast, South Africa, by CGG Services, Project Reference 720.03122.0001” and dated 30 May 2022 (“WildTrust Report”). The contents of the Wildtrust Report are incorporated herein.

COMMENTS

The BAR and EMPr fail to adequately address the impact of the proposed seismic testing on the marine environment, including on marine fauna and Marine Protected Areas

5. Dr. J. Harris, Dr. J. Olbers and Dr. K. Wright from WildTrust have conducted an in-depth analysis on the scientific basis for concerns regarding the potential harm to marine wildlife caused by Shell Seismic Surveys on the Wild Coast of South Africa. This report is attached as Appendix A to the

WildTrust Report. Their report, based on peer-reviewed literature on the physiological and ecological impacts of seismic survey activities, specifically examines the relevance of this information to the context of the Shell survey area and its impact on vulnerable and endangered species. Whilst the report primarily focuses on the Shell survey area, its key findings can be applied more broadly to seismic survey impacts. Many of the concerns identified in the report are still applicable to the proposed CGG seismic survey area.

6. After a review of the available information, including the CGG BAR, EMPr, and specialist marine studies the WildTrust Report confirms that seismic surveys do indeed cause harm to both species and the overall ecology. The authors are of the opinion that significant direct harm to populations of endangered species is the most likely scenario if seismic surveys are carried out in the Algoa/Outeniqua Basin off the Southeast Coast of South Africa. The Report further identifies critical flaws in CGG's proposal. The survey area outlined by CGG encompasses several significant marine protected areas likely to be impacted by the activities, including the Port Elizabeth Corals MPA, Robbenberg MPA, Tsitsikamma MPA, Sardinia Bay MPA, Addo Elephant MPA, Amathole MPA, Dwesa-Cwebe MPA, and Hluleka MPA. Moreover, it overlaps with the Kingklip Ecologically and Biologically Significant Area (EBSA), trawling grounds, and habitats of resident cetacean populations, while also posing a threat to migrating turtle populations.
7. While the proposed mitigation measures aim to minimize impacts, the experts argue that the suitability of the survey area itself, from a marine ecological perspective, raises concerns. If authorised, they believe that there remains a high likelihood of the reconnaissance activities causing direct harm to individual species, populations, and ecosystems. This perspective contradicts assertions made by the Environmental Assessment Practitioner (EAP). In their collective opinion, the risks associated with the proposed activity have not been fully acknowledged or accurately assessed. Given the significant probability of environmental harm, they strongly advise against authorizing this activity. The subsequent sections will delve into these aspects in greater detail.
8. As discussed in further detail below, seismic testing has a significant adverse impact on numerous species of marine fauna, including the dozens of endangered and vulnerable species located in the proposed testing area. Not only does the BAR and the EMPr fail to adequately assess and weigh the harm to these species, the reports also omit key information regarding the danger of the seismic tests in question and the populations that are likely to be impacted.
9. Furthermore, the BAR and the EMPr fail to provide adequate weight and consideration to the international legal protections afforded to many of the species that will be present in the testing area.

Failure to adequately assess acoustic impacts

10. Underwater sound travels far more efficiently than other sensory inputs such as light. Whales, dolphins, fish and other marine species have accordingly evolved to depend on sound to reproduce, forage, avoid predators, navigate, and communicate—in short, for virtually every vital life function. This also makes ocean species acutely sensitive to acoustic disturbance, which can disrupt or prevent these vital activities. The behaviour of sound in the marine environment is different from sound in air. The extent and way that sound travels (propagation) is affected by many factors, including the frequency of the sound, water depth and density differences within the water column that vary with temperature, salinity and pressure.¹ Seawater is roughly 800–

¹ Wagstaff RA. 1981. Low-frequency ambient noise in the deep sound channel – the missing component. *J Acoustical Soc Am.* 69:1009–1014; Clay CS, Medwin H. 1997. *Acoustical Oceanography*. New York, (NY): Wiley); Lurton X. 2010. *An introduction to underwater acoustics*. 2nd ed. Westport: Springer; Etter PC. 2013. *Underwater acoustic modeling and simulation*. Boca Raton (FL): CRC Press

1500 times denser than air and sound travels around five times faster in this medium.² Consequently, a sound arriving at an animal is subject to propagation conditions that are complex, and therefore environmental assessments are required to carefully consider the many variables that increase the complexity of sound dispersal characteristics and consequently, impacts to ocean biodiversity within water.

11. Due to the fact that airguns are fired as often as every ten seconds, twenty-four hours a day, for months at a time, each blast can produce effective sound levels up to 220 decibels that are powerful enough to be heard underwater for hundreds³, or even thousands⁴, of kilometres. These blasts have been known to cause direct physical harm, disturbing, injuring, and even killing animals across the entire marine ecosystem, from the smallest zooplankton to the largest whales. Furthermore, fish catches are diminished, impacting fishers and tour operators who depend on healthy ocean ecosystems.⁵ In addition, due to overlap of multi-sound propagation and reverberation and the distances sound travels, seismic blasts create continuous and sustained ambient noise over great distances that can harass and interfere with marine species life functions incessantly throughout the months of the exploration.⁶
12. Given the above, the BAR ought to have assessed the immediate and chronic impacts of sonar and seismic surveys on all species. Many marine species, beyond marine mammals, depend on sound and acoustic cues for biological functions. A relevant impact that may follow from the proposed seismic survey is the conversion and fragmentation of the natural habitat, which could result in the shrinking of the habitats of multiple species causing a decrease in the populations and associated numbers. At some point, declining populations reach a 'threshold' beyond which they 'crash' and become extinct, and it is likely that these reconnaissance activities pose a threat to the natural habitat through the impending conversion and fragmentation of the natural habitat, likely resulting in a decrease of the populations.
13. The BAR⁷ when referring to potential impacts to marine fauna, refers to ensuring that the proposed survey is undertaken in a manner consistent with the JNCC guidelines. These guidelines were the first national guidelines to be developed, and have subsequently become the basis of international mitigation measures for noise pollution during seismic surveys. However, the shortcomings in these guidelines were criticised as far back as 2009:

"relatively few aspects of these measures have a firm scientific basis or proven efficacy. Existing guidelines do not offer adequate protection to marine mammals, given the complex

² Lurton X. 2010. An introduction to underwater acoustics. 2nd ed. Westport: Springer, p. 16

³ B.J. Estabrook et al.. Widespread spatial and temporal extent of anthropogenic noise across the northeastern Gulf of Mexico shelf ecosystem. *Endangered Species Research*, 30:267-382, (2016); M. Guerra et al.. 2016. High-resolution analysis of seismic air gun impulses and their reverberant field as contributors to an acoustic environment. In A.M. Popper and A. Hawkins, eds. *The Effects of Noise on Aquatic Life II*, at 371-379. New York, N.Y.: Springer.

⁴ v S.L. Nieukirk et al. 2012. Sounds from Airguns and fin whales recorded in the mid-Atlantic Ocean. 1999-2009. *Journal of the Acoustical Society of America*, 131: 1102-1112.

⁵ P. J. O. Miller et al., Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico, 56 *Deep Sea Research Part I: Oceanographic Research Papers* 1168–1181 (2009), <https://www.sciencedirect.com/science/article/pii/S0967063709000508>; W. John Richardson, Gary W. Miller & Charles R. Greene, Displacement of migrating bowhead whales by sounds from seismic surveys in shallow waters of the Beaufort Sea, 106 *The Journal of the Acoustical Society of America* 2281–2281 (1999), <https://asa.scitation.org/doi/10.1121/1.427801> (last visited Nov 18, 2021); Stacy L. DeRuiter et al., First direct measurements of behavioural responses by Cuvier's beaked whales to mid-frequency active sonar, 9 *Biology Letters* 20130223 (2013), <https://royalsocietypublishing.org/doi/10.1098/rsbl.2013.0223>

⁶ M. Guerra et al. High-resolution analysis of seismic air gun impulses and their reverberant field as contributors to an acoustic environment, In A.M. Popper and A. Hawkins, eds. *The Effects of Noise on Aquatic Life II*, at 371-379, (2016), New York, N.Y.: Springer.

⁷ Chapter 8 page 197 of BAR

*propagation of airgun pulses; the difficulty of monitoring in particular the smaller, cryptic, and/or deep-diving species, such as beaked whales and porpoises; limitations in monitoring requirements; lack of baseline data; and other biological and acoustical complications or unknowns. Current guidelines offer a 'common sense' approach to noise mitigation, but in light of recent research and ongoing concerns, they should be updated, with broader measures needed to ensure adequate species protection and to address data gaps."*⁸

14. The JNCC guidelines, as highlighted by WildTrust marine scientists, have raised concerns regarding the observation of turtles at the surface. In sea states above Beaufort 1, their reliability decreases, and detection rates decline with distance from the vessel. However the guidelines do not account for detecting turtles below the surface, where they are most vulnerable. Detection heavily relies on human effort, leading to variations among observers. Additionally, turtle detection is hindered during nighttime and poor weather conditions. Turtles are not easily visible, typically being seen only 5 to 10% of the time. While manta rays and tuna activity are relatively more detectable, they also have their limitations
15. A 2015 article by Hawkins et al identifies a number of information gaps relating to understanding the effects of noise on fishes and invertebrates.⁹ This study notes that the expansion of shipping and aquatic industrial activities has led to growing concerns about the effects of anthropogenic sounds on aquatic life, including sound from offshore oil exploration and production.¹⁰ Among other things, the study makes the following relevant observations:
 - 15.1. There are 'very substantial gaps in our understanding of the effects of these sounds, especially for fishes and invertebrates. Currently, it is almost impossible to come to clear conclusions on the nature and level of man-made sound that have the potential to cause effects upon these animals.'¹¹
 - 15.2. While direct physiological impacts (such as mortality) of seismic impulses are likely limited to species close to seismic airgun arrays, 'research into the effects of acoustic noise exposure has examined only a fraction of fishes or invertebrates.'¹²
 - 15.3. Furthermore, '[m]any fishes, and at least some invertebrates, depend on sound to communicate with each other, detect prey and predators, navigate from one place to another, avoid hazards, and generally respond to the world around them.'¹³
 - 15.4. While there is limited data on the effects of sound on mortality of fish, '[t]he greater likelihood is that fishes and invertebrates will be injured by high intensity impulsive sounds with rapid rise times, and that some of these injuries could result in fatalities over the short term or over a longer term if animal fitness is compromised.... If an animal is injured it may be more susceptible to infection because of open wounds or a compromised immune system. Even if the animal is not compromised in some way, it is possible that the damage will result in lowering fitness, reducing the animal's ability to find food or make it more subject to predation.'¹⁴
 - 15.5. Concerns include how anthropogenic sound can alter the general behaviour of fish and invertebrates given that they are 'likely to show behavioural responses to sounds at much greater

⁸ Parsons et al 'A critique of the UK's JNCC seismic survey guidelines for minimising acoustic disturbance to marine mammals: Best practise?', Marine Pollution Bulletin 58 (2009) 643-651. Available online at: https://www.academia.edu/12955376/A_critique_of_the_UK_s_JNCC_seismic_survey_guidelines_for_minimising_acoustic_disturbance_to_marine_mammals_Best_practise?pop_sutd=false

⁹ Hawkins et al 'Information gaps in understanding the effects of noise on fishes and invertebrates', Rev Fish Biol Fisheries (2015).

¹⁰ Ibid, 39-64.

¹¹ Ibid, p39.

¹² Ibid, p49.

¹³ Ibid, p52.

¹⁴ Ibid, p54.

distances from the sources than those that will result in physical injury. Changes in behaviour could have population level effects as a consequence of keeping animals away from preferred habitats, diverting them from migratory routes..., or interfering with reproductive behaviour.¹⁵

15.6. In their review of studies on the behaviour of wild fishes in response to sounds, Hawkins et al point out that '[s]uch studies have been confined to very few species and the data are often contradictory. There is a lack of information not only for immediate effects on fish that are close to a source but also on fish that are more distant'.¹⁶

15.7. There 'is a particular need to investigate the propagation of sound and vibration through the seabed, as this is especially relevant to benthic fishes and invertebrates and for exposure to.... seismic airguns',¹⁷ with many fish and invertebrates sensitive to particle motion rather than sound pressure.

16. In a separate contextual assessment of the impact of seismic surveys on South African Fisheries conducted by Russell¹⁸ (this report also does not appear to have been considered in the specialist studies conducted for the EIA). Russell points out that:

*"Seismic air gun arrays output a rather broadband low-frequency sound (i.e. not a single "tone" or "chord", but rather a noise composed of an undifferentiated range of tones). Peak output is generally in the range of 50Hz, with a secondary peak appearing in the 150-200Hz range, and continuing decreasing peaks up to almost 1kHz. **The end result of all this is that, given the relatively extreme source levels of airgun sound, even creatures whose hearing is not centred on the lower frequencies can hear and are affected by the sound of seismic surveys.**"*¹⁹ (emphasis added)

17. Russell goes on to point out that:

17.1. Fish hearing via the inner ear is typically restricted to low frequencies, but that fish also receive low-frequency sound through their lateral lines to detect water movement relative to the fish. It is thought that the lateral lines functions in a variety of behavioural contexts, 'including prey localization, predator avoidance, communication during spawning, and navigation around obstacles. The relationship between the lateral line and the auditory system of fish is not fully understood and continues to be investigated'.²⁰

17.2. Fish also respond to pressure gradients with their lateral lines and swim bladders, and have particle motion sensors. These systems are used to respond to subtle phase differences (for example to instantly join in schooling movements or to respond to disturbances caused by a food source). While all sound diminishes with distance, 'low-frequency sounds diminish more slowly, meaning their impact can last over longer distances than those of high-frequency sounds. Energy at low frequencies can travel great distances. Thus, there can be a larger potential range of impact to organisms whose hearing is tuned to lower frequencies, or who use low frequencies to communicate'.²¹

17.3. Fish use sound to communicate, and sound may be related to reproduction and used as an escape response, while sound interception is used respond to the sounds of prey or predators: 'It is possible that man-made sound could mask or otherwise interfere with fish communication. The

¹⁵ Ibid, p54.

¹⁶ Ibid, p54-56

¹⁷ Ibid, p57.

¹⁸ Russell, D. 'Assessing the Impact of Seismic Surveys on South African Fisheries' (5 April 2018). Available online at: [www.rfalliance.org.za/wp-content/uploads/2018/10/Assessing-Impact-of-Seismic-Surveys-on-South African-Fisheries-April-2018.pdf](http://www.rfalliance.org.za/wp-content/uploads/2018/10/Assessing-Impact-of-Seismic-Surveys-on-South-African-Fisheries-April-2018.pdf)

¹⁹ Russell, p4.

²⁰ Russell, p4.

²¹ Russell, p5

consequences of interruption of communication between fishes are essentially unknown'.⁵² Furthermore, '[s]tudies indicate that behavioural and physiological reactions to seismic sounds may vary between fish species (for example, according to whether they are territorial or pelagic) and also according to the seismic equipment used. Because of the complexity of marine ecosystems, and because sea species respond to sound in ways well beyond current human understanding, ongoing research is required, and a common sense precautionary approach is needed.

- 17.4. Frequency ranges are also important, with larger whales 'likely the most susceptible to direct impact by relatively low frequency output of airguns, since they make the most use of low frequency bands themselves'.²²
- 17.5. Russell then goes onto summarising the potential impacts on South African fisheries as follows, with the following negative impacts identified:
- 17.6. Hake – seismic surveys appear not to impact hake long term. With hake there is temporary behavioral disruption, Namibian hake longliners saying that after a seismic vessel goes past, the hake disappears for around three days before they are able to start catching again.²³
- 17.7. Small pelagic fishery – seismic surveys may have a significant impact, long surveys of around 6 months, and multiple survey cumulative impact particularly in 2013, may have cost the industry a lot of money.²⁴
- 17.8. West coast tuna pole and line fishery – impacts appear to be localized, disrupting fast swimming tunas migration flow by forcing them to move on. But where there are cumulative impacts from repetitive surveys in the same area, as has occurred off Southern Namibia tuna fishing grounds, where catches have severely declined since 2011, and in 2017 dropped off to non-commercial catch rates, there is the ominous possibility that the tunas change their migration path. Environmental factors such as El Nino appear to also have contributed significantly, but combined with regular seismic surveys, the environmental signals are potentially devastating....²⁵
- 17.9. Squid – serious scientific concerns about the impact of low frequency seismic sound on squid. Appears to be a drop in squid jig catches with seismic surveys.²⁶
- 17.10. Rock lobster – no significant drop in catches, but need research on different life history stages, which have different levels of sensitivity to airgun sound. Findings among related species show that egg development among specific crustaceans may be retarded, metabolic rates increased and internal organs damaged following exposure to high amplitude anthropogenic sound.²⁷
18. The Marine Fauna Impact Assessment and the Sound Transmission Modelling Study fail to assess the impact of airgun blasts on the behaviour of marine mammals. Instead, they rely on inapplicable, outdated, and generic thresholds.
- 18.1. The Sound Transmission Modelling Study states that "for behavioural changes, the widely used assessment criterion for the onset of possible behavioural disruption in marine mammals is root-mean-square (RMS) SPL of 160 dB re 1µPa for impulsive noise." The Study indiscriminately applies this allegedly "widely used" criterion to marine mammals of all hearing groups.²⁸ In contrast, the Marine Fauna Impact Assessment recognizes that cetaceans may suffer from behavioral disturbance at thresholds lower than 160 dB. Specifically, the Assessment points out that "subtle

²² Russell, p5

²³ Russell, p5

²⁴ Russell, p6.

²⁵ Russell, p6.

²⁶ Russell, p6.

²⁷ Russell, p6.

²⁸ Sound Transmission Modelling Study at 15, 43.

alterations in behaviour may occur at received levels of 120 dB,”²⁹ and that localised avoidance of survey vessels during airgun operations as well as a reduction in social interactions among whales has occurred at levels over 130 dB.³⁰

- 18.2. The Study relies on the United States’ National Marine Fisheries Service (NMFS) interim sound threshold guidance from 2013 as the main basis for adopting the 160 dB behavioral disruption threshold for marine mammals.³¹ The threshold for behavioural disturbance in North America originated from a few field studies on baleen whales from the 1980s,³² but it is now widely regarded as an inaccurate threshold to determine behavioural changes in cetaceans. In fact, even as far back as 2013, NMFS classified the 160 dB threshold as merely “generic criteria” meant to be replaced with better guidance.³³ According to NMFS, there’s a current need for guidance, beyond generic criteria, that addresses the complexity of marine mammal behavioral responses to anthropogenic sound.³⁴
- 18.3. Moreover, the 160 dB threshold that the Sound Transmission Modelling Study relies on contradicts scientific literature on the behavioral effects of cetaceans to seismic surveying. Blackwell et al. synthesized more than ten years of studies on the responses of bowhead whales to seismic surveys and showed that the behaviour of bowhead whales was disrupted at levels much lower than 160 dB, also demonstrating that a single behavioral threshold across all marine mammals is inadequate.³⁵ Similarly, Gomez et al. looked at hundreds of studies that reported behavioural changes in marine mammals in response to anthropogenic noise. The Gomez study confirmed that contextual exposure, including the movement and depth of the sound source, the proximity of the sound source to the receiver, the ratio of signal to background noise, the sound level above hearing threshold, the bathymetry in the area, the receivers’ species, sex, age, reproductive state, prior experience, motivation, and behavioural state before exposure, all affect the behavioural responses of marine mammals to anthropogenic sounds like airgun blasts.³⁶ Thus, the generic 160 dB threshold used in the Sound Transmission Modelling Study applied across all marine mammals and across the entire Area of Interest without any other contextual considerations, fails to account for behavioural effects on marine species.
- 18.4. There are multiple species of cetaceans found within the Reconnaissance Permit Area, including the year-round resident Bryde’s whale, common dolphins, humpback whales, bottlenose dolphins, pilot whales, striped dolphins, and sperm whales.³⁷ Application of science that accounts for the individual physiology, behaviour, and sensitivity of each species during seismic surveying is, therefore, essential to understanding what the short and long-term effects of airgun blasts are on cetaceans in the area.
- 18.5. Finally, the Marine Fauna Impact Assessment improperly and inexplicably cites Popper et al. (2014) to support the use of the 160 dB threshold for marine mammals in the Sound Transmission

²⁹ Marine Fauna Impact Assessment at 112.

³⁰ Marine Fauna Impact Assessment at 109.

³¹ Sound Transmission Modelling Study at 15.

³² Gomez et al. (2016) at 802

³³ Peer Review Report: National Oceanic and Atmospheric Administration Draft Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammals: Acoustic Threshold Levels for Onset of Permanent and Temporary Threshold Shifts (2013), <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>, at 10.

³⁴ National Oceanic and Atmospheric Administration, Marine Mammal Acoustic Technical Guidance, <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>. See also Gomez et al. (2016).

³⁵ Gomez et al. (2016) at 803.

³⁶ Gomez et al. (2016) at 803.

³⁷ Wild Trust Comment 10.

Modelling Study.³⁸ Popper et al., however, deals solely with sound exposure for fishes and turtles, not marine mammals.

19. The Marine Fauna Impact Assessment and the Sound Transmission Modelling Study fail to assess the impact of airgun blasts on the behaviour of sea turtles. Instead, they rely on inapplicable, outdated, and generic thresholds.

- 19.1. The behavioural disruption threshold that the Sound Transmission Modelling Study uses for sea turtles is root-mean-square (RMS) SPL of 166 dB re 1µPa for impulsive noise.³⁹ The Study's reliance on this 166 dB threshold for sea turtles is based on a 2011 Arctic Programmatic Environmental Impact Statement from NMFS.⁴⁰ As indicated in the Programmatic Environmental Impact Statement, however, the 166 dB threshold is solely based on captive studies of sea turtles.⁴¹ In fact, both the McCauley et al. (2000), which the Study Transmission Modelling also cites to, and the Programmatic Environmental Impact Statement offer a very narrow view of the potential behavioural effects on sea turtles. The McCauley study exposed one green sea turtle and one loggerhead sea turtle to only two events of airgun blasts with a maximum of 2 hours of continuous blasting. The sea turtles demonstrated increased swimming speed above exposure levels of 166 dB.⁴² Accordingly, the 166 dB behavioural threshold that the Sound Transmission Study adopts was established through a limited and captivity-based study, which is inadequate to assess the effects of airgun blasting on sea turtles in the wild without further analysis.

- 19.2. Popper et al. (2014) also addresses the 166 dB behavioural threshold but, unlike the Sound Transmission Modelling Study, it emphasizes that the value originated from responses "elicited in caged animals."⁴³ In addition, Popper points to a lower behavioural threshold of 150 dB where sea turtles have the "potential to experience a behavioural response."⁴⁴ Nonetheless, this value, lacks scientific validity.⁴⁵

- 19.3. Sea turtles have been largely neglected in research to understand the effects of seismic surveys on their physiology and behaviour.⁴⁶ Gaps in scientific knowledge, however, warrant application of the precautionary principle and are neither invitations nor excuses for industry to conduct incomplete assessments that endanger the marine environment.⁴⁷

- 19.4. It is therefore submitted that in light of the data and information gaps and lack of certainty, insufficient data is available to draw credible conclusions regarding the significance of seismic survey impacts on marine fauna and fisheries. In addition, the proposed mitigation measures, whilst being an attempt to minimise impacts, fall short in that the survey area itself is unsuitable for such a survey, from a marine ecological perspective. Should the activity be authorised, the likelihood of the reconnaissance activities causing direct harm to individual species, populations or ecosystems remains high, despite comments to the contrary by the Environmental Assessment Practitioner (EAP).

³⁸ Marine Fauna Assessment at 109.

³⁹ Sound Transmission Modelling Study at 16.

⁴⁰ Sound Transmission Modelling Study at 16.

⁴¹ Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research (June 2011) at 3-70.

⁴² Environmental Impact Assessment of a Marine Geophysical Survey by the R/V Marcus G. Langseth in the Central Gulf of Alaska (June 2011) at 173.

⁴³ Popper et al. (2014) at 47.

⁴⁴ Popper et al. (2014) at 36.

⁴⁵ Popper et al. (2014) at 36.

⁴⁶ Nelms et al. (2016).

⁴⁷ See also WILDTRUST's Comment #33.

Impacts on MPAs, CBSa and EBSAs

20. The BAR and the EMPr do not adequately address the domestic legal obligations with respect to the several Marine Protected Areas, Critical Biodiversity Areas, Ecologically Sensitive Areas that will be impacted by this testing. These include the following:

- 20.1. Port Elizabeth Corals Marine Protected Area;⁴⁸
 - 20.2. Kingklip Corals Ecologically or Biologically Significant area⁴⁹ and overlaps with trawling grounds and resident cetacean populations, whilst also putting migrating turtle populations at risk;
 - 20.3. There is also an approximately 13.4% overlap with Critical Biodiversity Area 1 (CBA1) and CBA2 areas and a 6.5% overlap with Ecological Support Areas (ESA), including the buffer around the Port Elizabeth Corals MPA;⁵⁰ and
 - 20.4. Is in close proximity to Robberg MPA, Tsitskima MPA, Sardinia Bay MPA, Addo Elephant MPA, Amathole MPA, Dwesa-Cwebe MPA and Hluleka MPA.
21. There is no evidence of due consideration of the legislative principles that inform the National Environmental Management: Integrated Coastal Management Act 24 of 2008 ("NEM:ICMA")⁵¹ nor the Marine Living Resources Act and its Norms and Standards for the management of protected areas in South Africa⁵² addressed by the EAP as required by EIA regulations.⁵³ These legislative frameworks are relevant and applicable in the assessments of alternatives as they regulate:
- 21.1. the conservation and management of the marine environment, the long-term sustainable utilization of marine living resources and equitable access to exploitation, utilization and protection of certain marine living resources;⁵⁴ and
 - 21.2. conservation and protection of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.
22. The exploration and production of petroleum resources in South African marine areas is classified as "not compatible" with critical biodiversity areas and ecological support areas due to the potential negative impacts it could have on these areas and the species that inhabit them. The drilling, dredging, and other activities associated with offshore oil and gas exploration and production can lead to habitat destruction, disruption of food webs, and the release of toxic substances into the marine environment, which can have significant negative impacts on biodiversity.
23. Section 48(1)(a)(i) of the National Environmental Management: Protected Areas Act, 57 of 2003 ("NEM:PAA") stipulates that any activity, including petroleum exploration and production, that may cause significant ecological degradation or threaten the survival of a species or ecological community within a protected area is prohibited. This would include any reconnaissance activities that may have negative impacts on the species or ecological communities that inhabit a protected

⁴⁸ BAR p. 130

⁴⁹ BAR p. 131.

⁵⁰ BAR p. 132

⁵¹ National Environmental Management: Integrated Coastal Management Amendment Act 36 of 2014.

⁵² National Environmental Management: Protected Areas Act 57 of 2003.

⁵³ EIA Regulations. Appendix 1. Regulation 2(a); Regulation 3(e)(ii)(iii)

⁵⁴ The ICMA establishes a framework for the regulation and management of activities within the coastal zone (including the Transkei Exploration Area). Its purpose is to establish a system of integrated coastal and estuarine management, including norms and standards and policies to promote the conservation of the coastal environment and maintain the natural attributes of coastal landscapes and seascapes, and to ensure that the development and use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable. It also prohibits the inappropriate development of the coastal environment and other adverse effects on the coastal environment

area. In addition, section 48(1)(a)(ii) of the NEM:PAA⁵⁵ prohibits any activity that may have a detrimental effect on the ecological functioning of a protected area or ecological support area, which would include offshore oil and gas exploration and production activities that could lead to habitat destruction, disruption of food webs. Therefore, use of seismic survey technology in, near or around protected marine areas may be considered an activity that could have a detrimental effect on the ecological functioning of a protected area or ecological support area, and thus be subject to the provisions of the NEM:PAA.⁵⁶

24. At page 57 of the BAR, there is an acknowledgement that the project's area overlaps with the Port Elizabeth Corals Marine Protected Area (MPA), and an overlap with the Kingklip Corals Ecologically or Biologically Significant Area (EBSA) in the inshore area of the Reconnaissance Permit area.⁵⁷ Its further acknowledged that there is also an approximately 13.4% overlap with Critical Biodiversity Area 1 (CBA1) and CBA2 areas and a 6.5% overlap with Ecological Support Areas (ESA), including the buffer around the Port Elizabeth Corals MPA.

24.1. The proposed seismic survey activities are very likely to disturb and harm Marine Protected Areas (MPAs), Critical Biodiversity Areas (CBAs), and Ecologically or Biologically Significant Areas (EBSAs), as well as their associated fauna, which are located adjacent to, within, and surrounded by the 3D Seismic survey permit area. There are seven marine protected areas and at least two marine protected areas adjacent to the reconnaissance permit area, that could be potentially affected by the seismic surveys. Furthermore, the EMPr makes note of the fact that vessel movement between the area of interest and Port of Gqeberha might also pass in close proximity to the western edge of the Addo Elephant MPA inshore of the proposed survey area of interest, as well as passing through the Algoa to Amathole EBSA. These areas have been identified and set aside, and resources have been invested, in order to protect these biologically critical habitats and the marine species that depend on them.

25. The Port Elizabeth Corals MPA falls within the area of interest and will be impacted. This particular MPA was created to protect an important spawning area for Kingklip which is a valuable fisheries resource in South Africa. This MPA, and the species it is meant to protect, will have seismic surveying encircling it.

26. The Port Elizabeth Corals MPA area is recognized as an EBSA "because of its importance in the life history of a wide variety of marine species, including Kingklip."⁵⁸ There is also a seasonal fisheries management area along the border of the MPA, which "was established to protect kingklip during their spawning season, when they aggregate in large numbers."⁵⁹ The BAR provides for a buffer of 2km which is inadequate and "makes a mockery of the MPA."⁶⁰

27. As noted above, marine species have evolved to rely upon sound because it efficiently and effectively travels in water. As an example, Kingklip, meant to be protected in the Port Elizabeth Corals MPA, rely upon sound. Kingklip "use specialised drumming muscles to communicate across

⁵⁵ Section 48(1)(a)(ii). Prohibition of certain activities within protected areas (1) Unless otherwise provided for in this Chapter or in terms of any other law, no person may, within a protected area or its surrounding area, undertake or permit any activity that— (a) may— (ii) have a detrimental effect on the ecological functioning of the protected area or the ecological support system of which it forms part."

⁵⁶ This provision prohibits any person from undertaking or permitting any activity that may have a detrimental effect on the ecological functioning of a protected area or the ecological support system of which it forms part. This includes any activity that could cause significant ecological degradation or threaten the survival of a species or ecological community within a protected area, or that could have a negative impact on the ecological functioning of the area or its surrounding ecosystem.

⁵⁷ see Figure 7-46 on page 57 of BAR.

⁵⁸ Marine Fauna at 83.

⁵⁹ Marine Fauna at 83.

⁶⁰ WILDTRUST's Comment #1

the ocean” in order to aggregate during their spawning season.⁶¹ As another example, larval corals rely on reef sounds to determine where to settle; disturbance to reefs and associated soundscapes negatively impacts coral settlement, and thus continued reef building.⁶²

28. In their report, Wildtrust scientists find that in its current form, the survey area makes a mockery of the Port Elizabeth Corals MPA. Even though it provides for a 2 km buffer, this is deemed to be inadequate to protect this MPA, which will be bombarded by sound from all directions (albeit at different times). The overlapping of the survey area with fishing grounds, resident cetaceans and turtle routes needs to be addressed as well as environmental damage to the sensitive marine environments that overlap the survey area.
29. The two kilometre buffer is inadequate because the noise produced by airgun arrays becomes virtually continuous at greater distances from the source creating chronic noise impacts. This is because the sounds emanating from a seismic airgun array do not behave as individual and finite sound source in situ but reflect off the ocean surface and seafloor as they travel, leading to a continuous increase in the sound level through reverberation. The effect has repeatedly been documented.⁶³ Studies have found seismic surveys causing elevated ambient noise levels by more than 25 dB (approximately a 4-fold increase in noise levels) across distances of 40 km and these sound levels remain elevated during the periods between airgun blasts.⁶⁴ Open ocean condition observations have found that the noise produced and were sustained for months at a time.⁶⁵
30. In addition, seismic airguns produce noise that can travel long distances through seawater, even when they are directed downwards towards the seabed. Studies have shown that seismic blasts are at least detectable at distances greater than 500-700 km.⁶⁶ Other studies have detected seismic

⁶¹ Marine Fauna at 83-84.

⁶² Vermeij et al. Coral Larvae Move toward Reef Sounds. PLoS One 5, e10660 (2010); Lillis et al. Variation in habitat soundscape characteristics influences settlement of a reef-building coral. PeerJ 4, e2557 (2016); Gordon et al. Habitat degradation negatively affects auditory settlement behavior of coral reef fishes. Proc. Nat. Acad. Sci. U.S.A. 115(20), 5193-5198. doi:10.24378/exe.265.

⁶³ Nieu Kirk et al. 2004. Low-frequency whale and seismic airgun sounds recorded in the mid-Atlantic Ocean. Journal of the Acoustical Society of America 115:1832-1843; Nieu Kirk et al. 2012. Sounds from Airguns and fin whales recorded in the mid-Atlantic Ocean. 1999-2009. *Journal of the Acoustical Society of America* 131: 1102-1112; Estabrook et al. 2016. Widespread spatial and temporal extent of anthropogenic noise across the northeastern Gulf of Mexico shelf ecosystem. *Endangered Species Research* 30:267-382; Guan, S., et al. 2015. Airgun inter-pulse noise field during a seismic survey in an Arctic ultra shallow marine environment. *Journal of the Acoustical Society of America* 138: 3447-3457; Guerra et al. 2016. High-resolution analysis of seismic air gun impulses and their reverberant field as contributors to an acoustic environment.

⁶⁴ Nieu Kirk et al. 2004. Low-frequency whale and seismic airgun sounds recorded in the mid-Atlantic Ocean. Journal of the Acoustical Society of America 115:1832-1843; Nieu Kirk et al. 2012. Sounds from Airguns and fin whales recorded in the mid-Atlantic Ocean. 1999-2009. *Journal of the Acoustical Society of America* 131: 1102-1112; Guerra et al. 2016. High-resolution analysis of seismic air gun impulses and their reverberant field as contributors to an acoustic environment.

⁶⁵ Estabrook et al. 2016. Widespread spatial and temporal extent of anthropogenic noise across the northeastern Gulf of Mexico shelf ecosystem. *Endangered Species Research* 30:267-382; Wiggins et al. 2016. Gulf of Mexico low-frequency ocean soundscape impacted by airguns. *Journal of the Acoustical Society of America* 140:176-183.

⁶⁶ Estabrook et al. 2016. Widespread spatial and temporal extent of anthropogenic noise across the northeastern Gulf of Mexico shelf ecosystem. *Endangered Species Research* 30:267-382; Wiggins et al. 2016. Gulf of Mexico low-frequency ocean soundscape impacted by airguns. *Journal of the Acoustical Society of America* 140:176-183; Guan, S., et al. 2015. Airgun inter-pulse noise field during a seismic survey in an Arctic ultra shallow marine environment. *Journal of the Acoustical Society of America* 138: 3447-3457; Guerra et al. 2016. High-resolution analysis of seismic air gun impulses and their reverberant field as contributors to an acoustic environment. In A.M. Popper and A. Hawkins, eds. *The Effects of Noise on Aquatic Life II*, at 371-379. New York, N.Y.: Springer;

surveys at levels sufficient to mask, or obscure, baleen whale calls at distances of thousands of kilometres away from the source.⁶⁷ In assessing impacts or establishing protective measures, the assumption that sound does not affect marine life beyond a few kilometres from the source is in error; in fact, airgun noise influences and degrades the acoustic habitat of marine species over a far greater area, undermining the utility of a 2km buffer to protect the Port Elizabeth Corals MPA.

31. A study was conducted by McCauley et al (2003) whereby an investigation was conducted on the effects of exposure to airgun sounds on pink snapper.⁶⁸ The fish were exposed to air guns over several hours. The fish were allowed to survive for different intervals after exposure, and the ears were then examined for any damage resulting from exposure to the sound. The results clearly showed that there was extensive damage to the sensory cells of the ear and that the level of damage increased the longer the fish were allowed to survive post-exposure, up to at least 58 days.⁶⁹ Even though the study had limitations it did demonstrate that seismic air guns can have a substantial effect on the ears (and thus the hearing) of a marine species. Although it is likely that some fish species would immediately leave the area of an air gun study, there are many species of fish that tend to remain in one place when presented with a fright stimulus, and it is likely that such species could have profound damage to their ears and hearing if there is sufficient exposure to seismic sounds by the activities proposed.
32. In addition, Plettenberg Bay and Algoa Bay are two of seven places in the world, which have been recognized as Whale Heritage Sites.⁷⁰ Whale Heritage Sites "formally recognise and accredit destinations around the world that support and demonstrate the importance of whales, dolphins and porpoises and their ocean habitats through culture, education, research, and conservation."⁷¹ The Whale Heritage Site recognition identifies for tourism and other purposes, those areas that respect and celebrate cetaceans and that engage communities involve community members with marine culture, heritage and biodiversity. The Whale Heritage Site certification process is a five-tiered process which requires a significant investment of time and money in order to achieve and maintain this status.⁷² The BAR did not consider the impacts of its activities on tourism and the investments and commitments local communities have made into protection, study, education and culture of South Africa's cetacean populations.

Information gaps

33. There also appears to be key information gaps in the Marine Fauna Specialist Report, including failure to provide the details of the benthic macrofaunal communities beyond the shelf break, details on demersal fish communities beyond the shelf break, information specific to the marine communities of three key submarine canyons—Sundays, Addo, and Cannon Rocks—and current information on the distribution, population sizes, and trends of most cetacean species occurring

Keen et al. 2018. Seismic airgun sound propagation in Arctic Ocean waveguides. Deep-Sea Research Part I- Oceanographic Research Papers 141:24-32, <https://doi.org/10.1016/j.dsr.2018.09.003>.

⁶⁷ Nieukirk et al. 2004. Low-frequency whale and seismic airgun sounds recorded in the mid-Atlantic Ocean. *Journal of the Acoustical Society of America* 115:1832-1843; Nieukirk et al. 2012. Sounds from Airguns and fin whales recorded in the mid-Atlantic Ocean. 1999-2009. *Journal of the Acoustical Society of America* 131: 1102-1112.

⁶⁸ McCauley, Robert & Fewtrell, Jane & Popper, Arthur. (2003). High intensity anthropogenic sound damages fish ears. *The Journal of the Acoustical Society of America*. 113. 638-42. 10.1121/1.1527962.

⁶⁹ See note above

⁷⁰ Plett Tourism, Plettenberg Bay Awarded Whale Heritage Site Status, available at <https://www.plett-tourism.co.za/plettenberg-bay-awarded-whale-heritage-site-status/>

⁷¹ World Cetacean Alliance, Whale Heritage Sites, <https://worldcetaceanalliance.org/whale-heritage-sites/>.

⁷² Whale Heritage Sites, Certification Process, <https://whaleheritagesites.org/how-to-become-a-whs/>.

in South African waters and in the project area in particular. The report also did not provide adequate assessment of the environmental impacts in all seasons.

34. Accordingly, the proposed 3D seismic survey should not be authorised in the absence of adequate and up-to-date baseline data relating to the proposed 3D seismic survey area, and until such time as the various uncertainties relating to the significance of impacts of 3D seismic surveys on marine fauna have been clarified and information gaps filled.

Inadequate mitigation measures

35. With regards to the proposed mitigation measures as outlined in the EMPr, a number of significant concerns are noted by WildTrust scientists (refer to annexure A to these comments). These include:

- 35.1. MMOs have limitations in detecting marine mammals, with approximately 65% of large marine mammals going undetected, leaving over a third undetected. This raises concerns about the accuracy and reliability of MMO observations
- 35.2. The difficulty of detecting small and juvenile cetaceans, turtles, fish, and zooplankton is emphasized. These species are inherently harder to observe visually, making it more likely for them to go unnoticed during MMO monitoring. This is a significant concern as these smaller species often play crucial ecological roles and are vulnerable to the impacts of seismic activities.
- 35.3. While soft starts may reduce the impact on highly mobile large animals, they are unlikely to be adequate for many species that are prevalent in the area during the austral summer months. These less mobile species, including smaller turtles, penguins, invertebrates, fish species, and zooplankton, may not be able to avoid the seismic array or leave the affected area, leaving them more vulnerable to harm. “
- 35.4. Termination of seismic shooting upon detection of certain species is not a sufficient mitigation measure, as harm may have already occurred. Therefore, relying solely on termination does not address the harm already inflicted upon the animals, potentially resulting in long-lasting negative effects on their fitness and well-being.
- 35.5. Smaller and less visible species lack mitigation measures. This is a major concern due to the lack of specific mitigation measures for smaller and less visible species. While larger and more visually detectable species are considered in mitigation strategies, smaller species such as fish and zooplankton, as well as less visible species, are not adequately addressed. This oversight leaves these important but often overlooked species without any protection or mitigation measures.

Substantial adverse impact on marine fauna violates international law

36. The harmful effects of seismic testing on marine mammals have been well-established. Yet, as indicated above, the BAR provides that knowledge of cetacean distribution patterns in the proposed survey area is poor as it falls between the main east and west coast whaling grounds while most recent research in the area has been very coastal in nature, as well as information on smaller cetaceans in deeper waters remains poor outside of reports from seismic surveys themselves. This suggests that there may well be gaps in the information provided by the Marine Fauna Impact Assessment as well as the BAR with respect to populations of cetaceans in and around the test area, even though these species will be among the worst impacted.⁷³ The specialist mentions existing sources of noise for these animals, such as noise associated with the shipping industry.⁷⁴ However, the specialist fails to account for the cumulative impact of existing noise

⁷³ BAR p. 111. And page 62 of Marine Fauna Specialist Report

⁷⁴ Page 196 of Marine Specialist Fauna Report

pollution in the ocean when combined with the noise that will result from the seismic testing.⁷⁵ The Marine Fauna Impact Assessment states how harmful seismic testing is to these species, yet improperly relies on a dearth of data regarding population numbers in arriving at their conclusions.⁷⁶ Because of the well-established harm that seismic testing has on cetaceans and the noted absence of data on cetacean populations available to the specialist⁷⁷, a comprehensive assessment that assesses and incorporates this crucial missing data must be conducted prior to an environmental authorisation being issued.

37. Numerous species that are found in and around the proposed test area are protected under the Convention on Migratory Species of Wild Animals (CMS) as well as the protocol concerning protected areas and wild fauna and flora in the Eastern African Region better known as the Nairobi Convention⁷⁸, and thus in failing to protect them, South Africa is violating its international treaty obligations. As indicated above, in order to meet its obligations under the treaty, there must be a thorough environmental impact assessment undertaken and environmental authorisation issued.
38. Under CMS Article III,⁷⁹ South Africa has a duty “to prevent, remove, compensate for, or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species” and “to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species. Allowing seismic testing, which causes known harm to the CMS Annex I protected species of whales, would be a direct violation of South Africa’s duties under the Convention and the Nairobi Convention.
39. Beyond marine mammals, the expected impact of seismic testing on other species is particularly concerning in light of the number of ICUN Red List threatened and endangered species in and around the proposed testing area. This includes loggerhead and leatherback sea turtles, which are protected under South African law and which are known to migrate through the area in question. Leatherback turtles—listed as Critically Endangered on the ICUN Red List—and loggerhead and green turtles—both listed as Endangered on the ICUN Red List— are present in and around the test area. South Africa, as a signatory of the Convention on Migratory Species, the Africa-Atlantic Memorandum of Understanding, and Indian Ocean South East Asia Memorandum of Understanding, is obligated to protect sea turtles in its national waters, regardless of whether they are non-resident nesters or resident foragers. These sea turtle species are also protected under the Marine Living Resources Act, 1998. The seismic testing constitutes a threat to these species, which are protected under both national and international law, and should not move forward.
40. Bird species also stand to be adversely impacted by this testing, including the critically endangered Tristan Albatross and Leach’s Storm Petrel, and the endangered African Penguin, Cape Cormorant, Bank Cormorant, Roseate Tern, Atlantic Yellow-nosed Albatross, Indian Yellow-nosed Albatross, and Subantarctic Skua.
41. Under both domestic and international law, these endangered and vulnerable species must be protected. Authorizing seismic testing to move forward without comprehensively quantifying and adequately assessing specific information regarding the specific population counts of all these endangered species, the specific impacts anticipated on each individual type of species as a result

⁷⁵ Page 193-196 of Marine Specialist Fauna Report

⁷⁶ Page 102-108 of Marine Specialist Fauna Report

⁷⁷ Page 62 of Marine Specialist Report.

⁷⁸ Article 8.1 and 8.3(a)(b)(c), 10(f) and 10(g) of the Nairobi Convention accessible here http://nairobiConvention.org/CHM%20Documents/Protocols/Nairobi_Convention_Text_1985-22-34.pdf and article 8 of the amended Nairobi Convention, accessible here <https://www.nairobiConvention.org/clearinghouse/sites/default/files/UNEP-DEPI-EAF-COP8-2015-10-en-Amended-Nairobi-Convention.pdf>

⁷⁹ U.N. Convention on the Conservation of Migratory Species of Wild Animals (CMS) 1651 U.N.T.S. 333 (Jun. 23, 1979, entry into force Nov. 1, 1983)

of this testing, and appropriate species-specific mitigation measures to eliminate or reduce these impacts, would contravene both domestic and international laws meant to protect these threatened species.

There is no safe time to conduct the seismic surveys

42. The survey is proposed for the austral summer months (January to May), but we submit that there is no time in this period in which the impacts on marine species is acceptable.
43. The following table is drawn from Shell EMPr and shows the different aspects of the ocean ecosystem and where the sensitive times are:

Transkei and Algoa Exploration Areas Environmental Management Programme (EMPr) Final Report
June 2013 www.erm.com

Table 6.4 *Summary of Scheduling Interactions based on Breeding, Migration, Fishing Seasons and Weather Conditions*

Species/ Activity	J	F	M	A	M	J	J	A	S	O	N	D
Juvenile turtles in Agulhas current												
Fin whale												
Blue whale												
Southern right whale												
Sei whale												
Humpback whale												
Various resident cetaceans*												
Sardine Run												
Unconducive weather conditions												

* These include Cuvier's beaked whale, pygmy sperm whales, killer whale, false killer whales, pygmy killer whales, Risso's dolphins, sperm whales and shortbeaked common dolphin which are found throughout the offshore waters of the South Coast.

44. We have raised concerns elsewhere in these comments regarding the impacts on endangered species, such as loggerhead and leatherback turtles, during the proposed seismic period.

Failure to adequately assess cumulative impacts on the environment

45. The BAR and the EMPr must provide an analysis of the cumulative impacts/effects of the proposed activities, which takes into account past impacts on the environment, current other impacts, and foreseeable future impacts in conjunction with the anticipated impact of climate change. The BAR fails to adequately assess cumulative impacts. Offshore oil and gas exploration, which are the direct and foreseeable result of this proposed seismic testing, stand in direct contravention of South Africa's international commitments to decrease greenhouse gas emissions and end reliance on fossil fuels.
46. Though required by law, cumulative effects are seldom addressed at project level EIA, and therefore developments are often approved on a piecemeal basis, without the bigger picture being considered. The National Environmental Management Act, 107 of 1998 ("NEMA"), together with the EIA Regulations, requires that EIAs include, amongst other things, an assessment of the nature, extent, duration and significance of the consequences for or the impacts on the environment of that activity, including the cumulative impacts. Phases of reconnaissance activities cannot be

viewed in isolation from other exploration and reconnaissance activities, or from other exploration and production activities and the impacts associated therewith. The intent here is to upscale activities in the event of a positive find which will lead to considerably greater potential impacts. This application has only assessed one phase of a project, and has deliberately excluded the potential impacts of a following phase. As such it has failed to consider the whole scenario and is therefore fatally flawed.

47. Whilst it is accepted that reconnaissance, exploration and production are separately listed in the listing notices, and that a new and separate application for environmental authorisation will be required for any further exploration and production activities arising in the future, the proposed reconnaissance activities cannot be viewed in isolation from further phases of reconnaissance, or exploration, from other ongoing reconnaissance or exploration activities currently being undertaken, and the impacts associated therewith. It is submitted that the impacts and risks of other reconnaissance phases (at the very least) and exploration activities undertaken in close proximity should be assessed and considered to a reasonable extent in the current application, because if they are found to be unacceptable, which we submit is likely, then the proposed activities are unnecessary and completely avoidable.
48. The assessment must therefore provide a comprehensive explanation of the baseline environment, which includes analysis of past impacts and current threats in conjunction with the impacts that are likely to result from the proposed activities. In spite of this requirement, the marine fauna specialist report specifically has not included any analysis of the cumulative impacts of climate change in conjunction with the impacts of the proposed seismic testing and future anticipated exploration and/or production activities.⁸⁰
49. The WildTrust Report also identifies that cumulative impacts, from all sound sources are not adequately dealt with and investigated, including the additional impact that the seismic surveys will add to the 'already noisy soundscape'.⁸¹
50. Anticipated cumulative impacts the EAP ought to have taken into account and assessed, bearing in mind the climate crisis, which include:
 - 50.1. Warming of ocean temperatures which have been associated with decreased productivity, diversity, and resilience of nearshore marine ecosystems over the past few decades,⁸² and are likely to cause uncoupling of predator prey dynamics and populations as species' ranges shift in response to preferred thermal environments.
 - 50.2. Acidification of the ocean caused by increasing temperatures which can alter growth, survival, and reproduction of species.⁸³ At particular risk are organisms with calcareous skeletons that cannot form properly in acidified seawater, which tend to occupy the base of marine food webs, amplifying the effects to higher trophic level fisheries species.⁸⁴

⁸⁰ Page 193-197 of Marine Specialist Fauna Report.

⁸¹ Page 8 of Annexure A (WILD TRUST Expert Comment)

⁸² M.L. Pinsky, A.M. Eikeset, D.J. McCauley, J.L. Payne and J.M.. 2019. Greater vulnerability to warming of marine versus terrestrial ectotherms. *Sunday Nature*, 569 (7754) pp. 108-111

⁸³ D.E. Ramos-Muñoz, R. Ramos-Reyes, L.F. Zamora-Cornelio and A. Espinoza-Tenorio Cuadernos de Geografía. 2019. Exclusión en el Golfo de México: Una visión desde los pescadores sobre la industria petrolera en Tabasco. *Revista Colombiana de Geografía*, 28 (2), pp. 357-372.

⁸⁴ D.E. Ramos-Muñoz, R. Ramos-Reyes, L.F. Zamora-Cornelio and A. Espinoza-Tenorio Cuadernos de Geografía. 2019. Exclusión en el Golfo de México: Una visión desde los pescadores sobre la industria petrolera en Tabasco. *Revista Colombiana de Geografía*, 28 (2), pp. 357-372

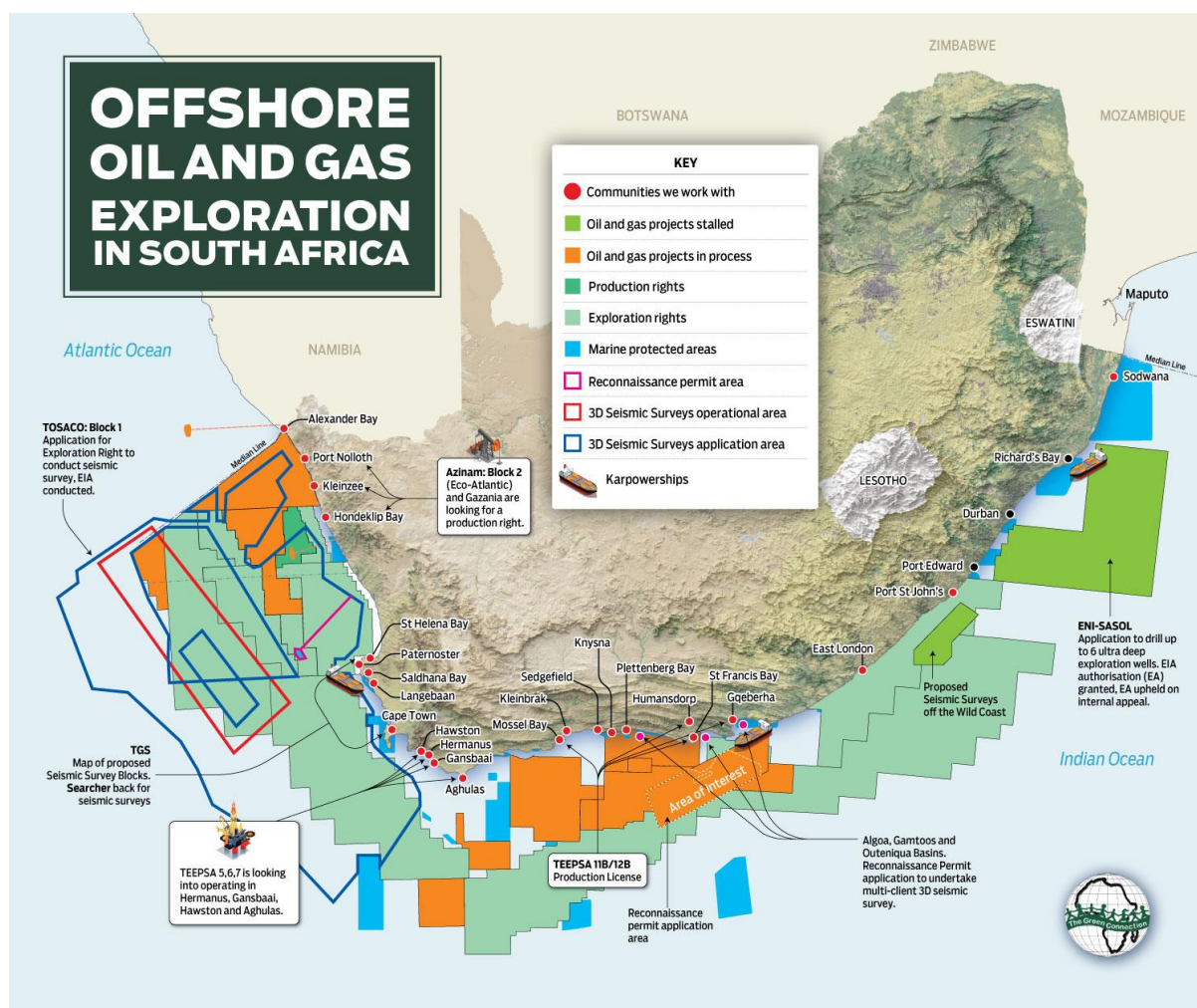
- 50.3. Sea-level rise which will shift habitat space in which nearshore marine species can thrive, with the magnitude of effects varying by region depending on local geomorphology.⁸⁵ These climate change impacts on oceans will further compound the pressures and stresses experienced by small scale fisheries (SSFs) that have been characterized to result in/from a 'coastal squeeze'.⁸⁶
- 50.4. The BAR has failed to identify the impact of climate change on the species that are likely to be affected by the future anticipated/foreseeable exploration activities stemming from the proposed seismic testing, and did not include an assessment of this information in the terms of reference for the specialist who conducted the Marine Faunal Assessment.⁸⁷ Consequently, the threats that marine species are already facing and will face due to pervasive climate change—such as sea-level rise, increased likelihood of harmful algal blooms, and increases in the severity and frequency of storms—were not considered, nor was the cumulative impact of these threats in conjunction with the impacts of the proposed seismic testing as well as future foreseeable/anticipated exploration activities on those species.
- 50.5. The BAR adopts a very narrow assessment of the cumulative impacts of the activities associated to seismic survey, which are interconnected to future anticipated exploration activities, thereby restricting a wholistic assessment of the potential impact of the ocean and the coastal spaces of the Eastern Cape. Should the likely positive find of fossil fuel reserves occur resulting from the surveying, possible transformations of the oceanic spaces within the permitted area and surrounds will likely lead to: 1) spatial expansion of oil development and increasing territorial claims and disputes, and 2) industrialization, and development of coastal areas resulting in the displacement of previous users such as small-scale fisheries and local and indigenous coastal communities from areas of the ocean.

⁸⁵ A. Adusah-Karikari. 2015. Black gold in Ghana: Changing livelihoods for women in communities affected by oil production. *The Extractive Industries and Society*, 2 (1), pp. 24-32.

⁸⁶ F. Bulleri and M.G. Chapman. 2010. The introduction of coastal infrastructure as a driver of change in marine environments. *Journal of Applied Ecology*, 47 (1), pp. 26-35

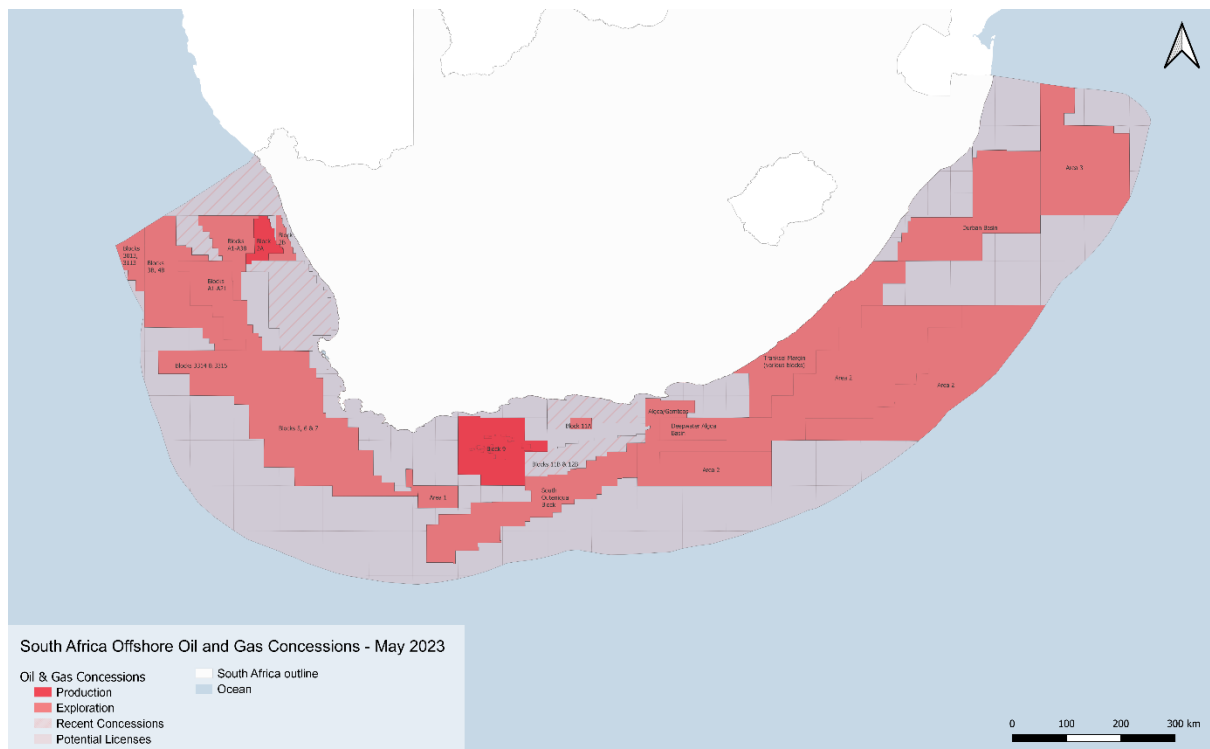
⁸⁷ Page 193-197 of Marine Specialist Fauna Report

50.6. The BAR appears to recognize the concern for the potential for cumulative impacts stemming from increased background anthropogenic noise levels which are likely to be ongoing and widespread.⁸⁸ However, the BAR fails to assess the cumulative impacts of other seismic testing and exploration activities on these species. The BAR states that, “Should other speculative or proprietary seismic survey campaigns be undertaken concurrently with CGG’s proposed survey campaigns be undertaken concurrently with CGG’s proposed survey off the Southeast Coast, cumulative impacts may be likely, and there would need to be alignment in planning of such concurrent operations in order to avoid cumulative impacts”.⁸⁹ In addition, there are multiple other publicly announced oil and gas exploration activities set to commence off the east and south-east coasts of South Africa which overlap with the CGG’s proposed seismic survey. See below references to the above:



⁸⁸ Pg 321 FBAR

⁸⁹ Pg 259 FBAR.



(Information received from Petroleum Agency SA, in response to a PAIA Request submitted by the Legal Resources Centre on 12 October 2022)

51. The EAP admits in the BAR at page 38, that it is reasonably foreseeable that further exploration and future production activities could arise from the proposed exploration activities if the license is subsequently authorized. This assertion is supported by and gleaned from the following statements:

“The proposed project will potentially lead to South Africa being able to optimise its own indigenous resources to provide the hydrocarbon needs, rather than having to import, as at present”

and

“In terms of offshore oil and gas exploration, the goal is to further enhance the enabling environment for exploration of oil and gas, resulting in an increased number of exploration wells drilled, while simultaneously maximising the value captured for South Africa. In this regard, a key target identified by Operation Phakisa is the drilling of 30 exploration wells in ten years. As the proposal by CGG entails the exploration for future prospects, which could be subjected to possible future exploration drilling, they are deemed to be in line with the objectives of Operation Phakisa”⁹⁰

52. It is clear that the BAR considers that the impact of this likely exploration and extraction is reasonably foreseeable and therefore must be considered as part of the cumulative impact of the proposed reconnaissance activities. This is especially true when determining the desirability of the proposed project.
53. The BAR fails to identify or assess any impacts flowing from activities downstream of seismic surveys, including exploration drilling and production.

⁹⁰ Pg 35 Draft BAR.

54. The legislative framework itself indicates that a production right flows directly from an exploration right, meaning that the two processes are inextricably linked.⁹¹ However, in order to facilitate the process of applying and acquiring an exploration right, and subsequently a production right in order to access a petroleum resource, geoscience data and information related to the reconnaissance must be submitted by holders of rights granted in terms of the MPRDA. The link between the processes of reconnaissance through seismic surveys and exploration, therefore enhances the facilitation of the acquisition of a production right.
55. The Mineral and Petroleum Resources Development Act (MPRDA) therefore closely connects the outcomes stemming from the processes of reconnaissance through seismic surveys and exploration, with production by granting a holder of an exploration right the exclusive right to apply for, and be granted, the renewal of the exploration right or a production right, subject to few conditions.⁹² This is directly facilitated from the acquisition of data from the reconnaissance process.
56. At the very least a broad assessment of the impacts and risks associated with future invasive exploration activities, production activities and use of any discovered oil reserves should be included in the BAR.
57. This reasoning was developed in the case of *Director: Mineral Development, Gauteng Region and Another v Save the Vaal Environment and Others*⁹³, and more recently confirmed in the Shell judgment⁹⁴ where it has been held that the granting of permits to conduct exploratory activities such as seismic surveys are discrete stages in a single process that culminate in the production and combustion of oil and gas and the emissions of greenhouse gases. Consequently, seismic surveys are preliminary processes that have the potential to set into motion a chain of events which, in the intended course will lead to commencement of production, which will contribute to the exacerbation of the climate crisis and impact communities' livelihoods, their spiritual and cultural practices, and access to food.
58. Further, impacts related to production activities are reasonably foreseeable impacts eventuating from the collection and acquisition of data through reconnaissance activities. If the impacts and risks associated with production are unacceptable, then any and all risks and impacts associated with the acquisition of data that facilitates reconnaissance activities are unnecessary, undesirable, and completely avoidable.
59. The BAR misinterprets cumulative impacts of reconnaissance by failing to consider the impacts associated with exploration and subsequently production, leading to an artificial conclusion in the basic assessment report that the project is beneficial. The detrimental environmental impacts of the project, as part of an entire petroleum beneficiation process involving both exploration (which is informed by data collected through reconnaissance processes) and production activities, are substantial and therefore an assessment of the cumulative impacts of both exploration and production activities is required.
60. The BAR makes multiple selective and misleading distinctions between current seismic testing and future oil and gas production activities.⁹⁵ In seeking to justify the desirability of the proposed seismic testing, the EAP uses the purported benefits of oil and gas production, such as claims of

⁹¹ Mineral and Petroleum Resources Development Act (MPRDA), Section 82.1

⁹² Mineral and Petroleum Resources Development Act (MPRDA), Section 82.1.

⁹³ *DIRECTOR: MINERAL DEVELOPMENT, GAUTENG REGION & ANOTHER v SAVE THE VAAL ENVIRONMENT (PTY) LTD* [1996] 1 All SA 2004 (T). At para 17 the court had held in the instance that that the granting of permits to conduct exploratory activities sets in motion a chain of events which, in the ordinary course of events, leads to the commencement of mining operations

⁹⁴ *Sustaining the Wild Coast NPC & Others v Minister of Mineral Resources and Energy & Others*, High Court of South Africa, Eastern Cape Division, Makhanda – Case No. 3491/2021

⁹⁵ Pg 34-38 of Draft BAR

bolstered energy supply stability; however, also while assessing desirability, the EAP asserts that the adverse effects of oil and gas production cannot be associated with the proposed seismic testing because production is not guaranteed.⁹⁶ The EAP cannot utilise the supposed benefits of oil and gas production to justify seismic testing while at the same time refusing to acknowledge the harm associated with those same activities.

61. The EAP has a duty to evaluate the cumulative impact of past, current, and foreseeable reconnaissance and exploration operations on the environment and marine species. A full environmental impact assessment, including a proper evaluation of the cumulative impact of **all the foreseeable seismic testing and exploration activities** on marine species, must be undertaken prior to the approval of this reconnaissance permit. This has however not been considered and assessed accordingly, which represents a deficiency with the current draft of the BAR and the EMPr.
62. In addition to failure to consider the climate impacts associated with further exploration and production, the BAR fails to adequately assess the climate impacts of the proposed reconnaissance activities. The seismic testing itself can result in significant greenhouse gas emissions. The project's vessels are estimated to consume 8,580 tons of fuel during the five-month survey, and the project's greenhouse gas emissions are estimated at 27,570 tons of CO₂.⁹⁷
63. Activities in all phases of oil development contribute to greenhouse gas emissions and exacerbate ongoing climate change, and therefore all aspects associated to oil and gas development and their climate change impacts such as warming ocean temperatures, acidification and sea level rise, outside of seismic surveys must also be assessed.
64. The EAP relies on supposed unavailability of concrete information regarding future exploration and production activities in claiming that they cannot assess the cumulative impacts of the license being granted. However, future exploration and drilling activities are clearly foreseeable, and the potential impact of those future activities on marine species, the fishing industry, and climate change must be considered in order to make an accurate determination of the desirability of the proposed reconnaissance activities.

Incompatibility of the proposed exploration activities with South Africa's international climate obligations

65. Given that the proposed reconnaissance is a precursor to a long-term and large-scale project, consideration must be given to the ways in which climate change will likely impact on the area and communities where the project will be based, and how the project's own impacts will affect the project's resilience or vulnerability to the effects of climate change as they intensify. No such consideration of climate impacts or impacts on climate resilience is present in the report.
66. South Africa is particularly vulnerable to the impacts of climate change, including the impacts of sea level rise, temperature increase, and increased frequency of extreme weather events. Energy infrastructure is not immune from these impacts. A 2022 study published in the Journal of Marine Science and Engineering, which included a review of recent research on climate change impacts on oil and gas infrastructure, concluded that "climate change represents a serious threat to the coastal and offshore oil and gas infrastructure and contributes to the oil spill risks."⁹⁸

⁹⁶ Pg 38 of the Draft BAR

⁹⁷ Page 176 of FBAR.

⁹⁸ Dong et al, *Climate Change Impacts on Coastal and Offshore Petroleum Infrastructure and the Associated Oil Spill Risk: A Review*, page 10.

67. In light of the above, it is clear that BAR has omitted to provide a climate change assessment of the proposed activity and in doing so has not provided interested and affected parties (I&APs) with the opportunity to comment on the adequacy and scope of any study to be undertaken on these climate impacts.
68. Furthermore, the EAP relies heavily on outdated information and policies with respect to climate change. Many of the national policy and planning frameworks that the EAP cites in its desirability assessment are outdated and predate the Paris Agreement, as well as key reports from the Intergovernmental Panel on Climate Change (IPCC). These outdated reports include the 1998 White Paper on the Energy Policy of the Republic of South Africa, the 2011 New Growth Path, the 2013 National Development Plan 2030, the 2013 Draft Integrated Energy Plan, the 2014 Operation Phakisa approach, and the 2014 National Climate Change Response White Paper. Not only is much of the information in these white papers and plans now outdated, but some of these policies have since been replaced or have since come into conflict with South Africa's international climate obligations.
69. Proven oil and gas reserves far exceed the amount of oil and gas that can safely be used without causing catastrophic climate change. The world's nations have a finite amount of carbon – called a “carbon budget” – that can still be emitted before catastrophic climate change becomes unavoidable.⁹⁹ In the latest IPCC report, the following has been noted:
70. Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020. Global greenhouse gas emissions have continued to increase, with unequal historical and ongoing contributions arising from unsustainable energy use.¹⁰⁰
71. Global net anthropogenic GHG emissions have been estimated to be 59±6.6 GtCO₂-eq in 2019, about 12% (6.5 GtCO₂-eq) higher than in 2010 and 54% (21 GtCO₂-eq) higher than in 1990, with the largest share and growth in gross GHG emissions occurring in CO₂ from fossil fuels combustion and industrial processes (CO₂-FFI) followed by methane.¹⁰¹
72. Global GHG emissions in 2030 implied by nationally determined contributions (NDCs) announced by October 2021 make it likely that warming will exceed 1.5°C during the 21st century, with carbon budgets being depleted by about years 2028 and 2032 respectively.¹⁰² This would therefore make it harder to limit warming below 2°C. There are gaps between projected emissions from

⁹⁹ <https://www.theguardian.com/environment/2015/jan/07/much-worlds-fossil-fuel-reserve-must-stay-buried-prevent-climate-change-study-says> ; IEA (2021), *Net Zero by 2050*, IEA, Paris <https://www.iea.org/reports/net-zero-by-2050>, License: CC BY 4.0

¹⁰⁰ IEA. (2021). *Global Energy Review 2021*. <https://www.iea.org/reports/global-energy-review-2021>

¹⁰¹ IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926 <https://www.ipcc.ch/report/ar6/wg3/figures/summary-for-policymakers/figure-spm-1/>

¹⁰² Global GHG emissions in 2030 implied by nationally determined contributions (NDCs) announced by October 2021 make it likely that warming will exceed 1.5°C during the 21st century, with carbon budgets being depleted by about years 2028 and 2032 respectively <https://www.ipcc.ch/report/ar6/wg3/resources/spm-headline-statements/>

implemented policies and those from NDCs, and finance flows fall short of the levels needed to meet climate goals across all sectors and regions.¹⁰³

73. Maintaining emission-intensive systems may, in some regions and sectors, be more expensive than transitioning to low emission systems.¹⁰⁴
74. A substantial 'emissions gap' exists between global GHG emissions in 2030 associated with the implementation of NDCs announced prior to COP26 and those associated with modelled mitigation pathways that limit warming to 1.5°C (>50%) with no or limited overshoot or limit warming to 2°C (>67%) assuming immediate action. This would make it likely that warming will exceed 1.5°C during the 21st century. Modelled pathways that are consistent with NDCs announced prior to COP26 until 2030 and assume no increase in ambition thereafter have higher emissions, leading to a median global warming of 2.8 [2.1–3.4]°C by 2100.¹⁰⁵
75. Continued greenhouse gas emissions will lead to increasing global warming, with the best estimate of reaching 1.5°C in the near term in considered scenarios and modelled pathways. Every increment of global warming will intensify multiple and concurrent hazards. Therefore deep, rapid, and sustained reductions in greenhouse gas emissions would lead to a discernible slowdown in global warming within around two decades, and also to discernible changes in atmospheric composition within a few years.
76. The latest IPCC report therefore point to a climate emergency that demands drastic reductions in greenhouse gas emissions and an swift end to use of fossil fuels. Similarly, a recent study published in the respected scientific journal Nature concluded that almost 60% of oil and gas reserves must remain unextracted to keep global warming below 1.5C, which means oil and gas production must decrease by 3% annually until 2050.¹⁰⁶ The International Renewable Energy Agency (IREA), an intergovernmental organization with 162 member states, recently found that current emissions must fall by 70% in the next three decades to keep the temperature rise well below 2°C.¹⁰⁷ In May 2021, the IREA published a report that found there can be no new oil and gas fields approved for

¹⁰³ IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926 <https://www.ipcc.ch/report/ar6/wg3/figures/summary-for-policymakers/figure-spm-1/>

¹⁰⁴ IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926 <https://www.ipcc.ch/report/ar6/wg3/figures/summary-for-policymakers/figure-spm-1/>

¹⁰⁵ IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926 <https://www.ipcc.ch/report/ar6/wg3/figures/summary-for-policymakers/figure-spm-1/>

¹⁰⁶ Welsby, D., Price, J., Pye, S. et al. Unextractable fossil fuels in a 1.5 °C world. *Nature* 597, 530–535 (2021). <https://doi.org/10.1038/s41586-021-03991-2>

¹⁰⁷ Intergovernmental Panel on Climate Change (IPCC). 2018. Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. <https://www.ipcc.ch/sr15/>

development to maintain a pathway to 1.5°C.¹⁰⁸ Furthermore, an IPCC Special Report¹⁰⁹ on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty also submits that in order to hit that target of 1.5°C, electricity sectors around the world must decarbonize by 2050: gas plants are not the answer to replacing coal plants if we are to hit that target

77. Further exploration of oil and gas reserves off the coast of South Africa stands in direct contradiction to these undisputed findings and would constitute non-compliance with South Africa's international commitments to lower greenhouse gas emissions.
78. In addition, studies have increasingly shown that moving towards gas as a bridge fuel towards transitioning to clean energy cannot be supported. Firstly, the IPCC's 1.5°C target cannot be met with new gas development. Research has shown that in order to meet Paris' 1.5°C target gas reserves already found in the ground must be left in the ground and all new fossil fuel development must be halted. In fact, even emissions from existing and proposed energy infrastructure represent more than the entire carbon budget that remains if our target is 1.5°C.¹¹⁰
79. Given South Africa's extreme vulnerability to the impacts of climate change - arguably any decision such as a decision to authorize the application for reconnaissance, will likely lead to locking the country in to more harmful greenhouse (GHG) emissions through fossil fuel exploitation, which is neither necessary nor desirable. This would be in direct contravention of the state's constitutional obligations to protect the rights of the people of South Africa, and the duty of care embodied in section 28 of the National Environmental Management Act, 1998 ("NEMA")
80. The legislative and policy scheme and framework of NEMA and South Africa's climate change policy commitments, therefore support the conclusion that an assessment of climate change impacts and mitigating measures will be relevant factors in the environmental authorisation process. The assessment of a climate change impacts and mitigating measures will be best accomplished through a specialist researched climate change impact assessment. Therefore before any decision to authorize the activity can be made, consideration must be given to the multifaceted impacts of the entire value chain of offshore oil and gas exploration and production for the climate crisis, including the additional GHG emissions that would arise from the exploitation of petroleum resources, which would be supported by accelerated systemic reconnaissance and exploration permits. The implication of the reconnaissance permit for exploration of oil and gas reserves include the following:
 - 80.1. the exacerbation of South Africa's own vulnerability to the climate crisis, including the social, external costs of these GHG emissions, the resultant climate impacts for South Africa and the constitutional rights of people in South Africa.¹¹¹

¹⁰⁸ IEA (2021), *Net Zero by 2050*, IEA, Paris <https://www.iea.org/reports/net-zero-by-2050>, License: CC BY 4.0

¹⁰⁹ *Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* <https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/>

¹¹⁰ Oil Change International. 2016. *The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production*. <https://priceofoil.org/2016/09/22/the-skys-limit-report/>

¹¹¹ The Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) in the USA has attributed global amounts in scope and applicability, representing the costs of global climate impacts. This is a widely used method for calculating the cost of projects' GHG emissions. The social cost of carbon, as determined by the IWG, is a consensus of the estimate of the social cost of carbon as calculated by three proprietary models: FUND, DICE, and PAGE, as described in the Technical Support Document available at https://www.epa.gov/sites/production/files/2016-12/documents/scc_tsd_2010.pdf (p5):

- 80.2. the extent to which the further exploitation of oil and gas would even be economically and legally viable in a market where fossil fuels are increasingly constrained and such projects are likely to become stranded assets with high economic costs for the country.

Inadequate Need and Desirability Assessment

81. The need and desirability assessment fails to consider all relevant factors, including those contemplated by NEMA and in the Guideline, considerations of intra- and inter-generational equity in the context of sustainability, and cumulative impacts, taking into account intended future phases of this project, site specific need and desirability, as well as set out below.
82. The EIA Regulations require that the need and desirability assessment be site specific, that it should be considered “in the context of the development footprint on the approved site”.¹¹²
83. No attempt has been made to consider need and desirability from a site-specific context. Reliance on perceived long-term benefits of exploration and production and its associated activities, but dismissal of the need to consider long-term and associated negative impacts of conducting reconnaissance which will lead to eventual exploration and production and its associated activities, runs counter to the NEMA principles.
84. This particular project which invariably facilitates a dependence on oil and gas exploration for production, is incompatible with South Africa’s national climate change policies and South Africa’s international climate change commitments. South Africa has committed itself to combat climate change under international law, with South Africa’s 2021 Nationally Determined Contribution under the Paris Agreement representing an ambitious goal which will necessitate adjustments to national policies in order to achieve. However, the stated need for and desirability of the proposed need for seismic data to inform exploration and production strategies is incompatible even with these less ambitious national policies.
85. In Chapter 5 of its Nationally Determined Contribution, South Africa commits to reduce its emissions to below a baseline of 34% by 2020 and 42% by 2025, this commitment will require a major transition to sustainable development. This plan states the vision that by 2030, “South Africa’s transition to a low-carbon, resilient economy and just society will be well under way.”¹¹³
86. Key contributors to this transition will include a commitment to undertake mitigation actions and policy instruments that support mitigation and an expanded renewable energy programme. By 2030, a substantial proportion of the low-carbon infrastructure should be in place or at an advanced stage of planning, *particularly* in the energy and transport sectors.
87. The need and desirability chapter highlights the supposed alignment of gas extraction with the National Development Plan and the 2019 IRP, but South African’s carbon space has significantly narrowed since the NDP was drafted. South Africa’s current NDC commitments and net zero aspirations have led to a finite carbon space—the upper bound of which is now 50% lower than the upper bound of the range envisaged as acceptable at the time of the NDP’s drafting.⁵ Ignoring the reality of this limited carbon space will lead to stranded assets and could “result in the economic stranding of entire sectors of the economy.”¹¹⁴
88. Although the BAR refers to national policies which seemingly affirm the need to acquire and develop infrastructure necessary for development, particularly in the energy sector, it fails to take

¹¹² Regulation 14(2)(a)(ii) of the Environmental Impact Assessment Regulations, 2014

¹¹³ Page 12 of Department of Environment, Forestry and Fisheries (DEFF). 2016. South Africa's Intended Nationally Determined Contribution towards a universal climate agreement. Pretoria: DEFF

¹¹⁴ Meridian Economics, *Hot Air About Gas: An Economic Analysis of the Scope and Role for Gas-Fired Power Generation in South Africa* (2022), page 3, <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

into account that there are national policy documents which commit South Africa's to cutting greenhouse gas emissions, with a majority of those cuts occurring within the energy sector. These include:

- 88.1. The National Climate Change Response White Paper (2011) sets out its National Climate Change Response Objective, which includes making "a fair contribution to the global effort to stabilise [greenhouse gas] concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system". This White Paper also identifies within Chapter 5 of the National Development Plan 2030, that the energy sector as the main contributor to South Africa's greenhouse gas emissions, requires a consideration of "the most promising mitigation options" to be energy efficiency, demand side management and investment in renewable energy.¹¹⁵
- 88.2. The Climate Change Bill (B9-2022) also states the objective to "make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system."¹¹⁶
- 88.3. If the oil and gas reserves that are ultimately exploited *are* used for energy needs in South Africa, this will prevent South Africa from fulfilling its international climate obligations, including its 2021 Nationally Determined Contribution (NDC) under the Paris Agreement, and thus eliminates the desirability of the proposed project. South Africa has committed to stay on a pathway to keep global average temperature increases below 1.5 degrees Celsius, which global experts agree can only be achieved if no new oil and gas reserves are exploited.¹¹⁷
89. The BAR overstates the need for oil and gas exploration for production, as necessary for remedying South Africa's energy insecurity issues. It is clear that the promise of improved energy security underpins the need and desirability analysis, as does the supposed need for significant amounts of gas as a "transition fuel". The notion of gas as a "bridging fuel" to replace coal, while we transition to renewable energy, is outdated and incorrect. Renewable energy sources like wind and solar have become the cheapest forms of bulk energy supply in most countries. Even in regions where solar and wind energy are not yet cheaper than gas, we have reached a point where an energy system based on renewable energy sources will eventually lower costs everywhere.¹¹⁸ A report by Oil Change International has found that wind and solar have emerged as the cheapest forms of bulk power in major emerging markets currently dominated by coal, indicating that cost is no longer a barrier to adding renewable generation capacity.¹¹⁹ The report's findings also challenge the economic and climate justifications for the construction of large-scale liquefied natural gas (LNG) facilities in the US and other countries.¹²⁰
90. The proposed project which envisions utilising seismic survey technology to explore for oil and gas, would not necessarily have any impact on South Africa's energy security, however any oil and gas extracted following a successful reconnaissance and exploration campaign would not belong to South Africa, but would invariably belong to the companies that extract for profit.¹²¹ Energy companies compete for access to mineral rights granted by governments by either entering a

¹¹⁵ Chapter 5 of the National Development Plan 2030, which discusses South Africa's transition to a low-carbon economy. On page 212 of the document

¹¹⁶ Parliament of the Republic of South Africa. 2022. Climate Change Bill (B9-2022). Cape Town: Parliament of the Republic of South Africa.

¹¹⁷ https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf

¹¹⁸ BloombergNEF. 2021. New Energy Outlook 2021. London: BloombergNEF at page 2.

¹¹⁹ https://priceofoil.org/content/uploads/2019/05/gasBridgeMyth_web-FINAL.pdf

¹²⁰ Id.; <https://www.iisd.org/articles/gas-bridge-fuel>

¹²¹ Stewart Glickman and Shang Yang Chuah, *Oil, Gas & Consumable Fuels Industry Surveys* (New York: CFRA, 2019)

concession agreement, meaning any discovered oil and gas are the property of the producers, or a production-sharing agreement.

91. If we consider this reality then the oil and gas that will be eventually extracted by oil and gas companies, is ultimately exploited for profit and not to generate a benefit that results in broad based security for energy production nor lead to the production of energy for South Africa and its citizens. If the potential oil and gas that is found following a successful reconnaissance, and that are ultimately exploited are *not* used to produce energy for South Africa, this invariably undermines the sole stated goal underpinning the need and desirability of this proposed reconnaissance project—its supposed contribution to energy security for South Africa—and provides no tangible benefit for South Africans.
92. It is common practice that proposed exploration activities such as reconnaissance, only commence months¹²² and sometimes years after the need and desirability assessment is undertaken, with extraction and production only commencing years later.¹²³ According to one study, the world's largest oil and gas fields took an average of 5.5 years from discovery to first production and 17 years to reach peak output.¹²⁴ Chevron Corporation's (CVX) Gorgon natural gas development project off the coast of Australia took 30 years to complete, and another six years to begin producing liquefied natural gas.¹²⁵ Given the examples provided above which are of common practice, the proposed reconnaissance project in no way provides a remedy nor will address in the immediate future South Africa's current energy insecurity issues.
93. What is more, by the time any resources discovered in the subject exploration block are ready for production, South Africa will have already needed to transition to renewable energy sources if the country intends to adhere to its international climate commitments, meaning that oil and gas will not be as beneficial to South Africa's economy as the applicant claims in its need and desirability assessment.
94. At page 35 of the BAR, the EAP refers to the 2019 IRP as supporting the need to developing gas for diversifying South Africa's energy mix, as well as being considered a "transition fuel". Need and desirability analysis should not rely on the incorrect presumption that South Africa will require significant amounts of gas as part of its energy mix as soon as 2030. Reliance on this presumption is flawed in four key respects.
- 94.1. First, reliance on the 2019 Integrated Resource Plan (IRP) does not excuse the EAP from undertaking a need and desirability analysis, including consideration of climate change, in terms of NEMA requirements.
- 94.2. Second, the IRP does not indicate a need for significant amounts of gas by 2030.
- 94.3. Thirdly, recent reports have suggested that even the 2019 IRP's small allocation of gas within the energy mix is more than will actually ever be required. The Vital Ambition Report¹²⁶ by Meridian Economics in collaboration with the Council for Scientific and Industrial Research ("CSIR") Energy

¹²² On average it takes approximately six months. See <https://oceansnotoil.org/seismic-surveys-2/>

¹²³ While new wells in developed reservoirs can be drilled and brought online in a matter of months, production from new fields can take years due to complex permitting requirements and the construction of infrastructure such as pipelines and storage facilities.

¹²⁴ Henrik Wachtmeister, Mikael Höök, "Investment and production dynamics of conventional oil and unconventional tight oil: Implications for oil markets and climate strategies" Energy and Climate Change, Volume 1, 2020, 100010, ISSN 2666-2787, <https://doi.org/10.1016/j.egycc.2020.100010>.
(<https://www.sciencedirect.com/science/article/pii/S2666278720300106>)

¹²⁵ <https://australia.chevron.com/-/media/australia/our-businesses/documents/Gorgon-Project-Milestones-Fact-Sheet.pdf>

¹²⁶ Meridian Economics, 2020. A Vital Ambition: Determining the Cost of Additional CO2 Emission Mitigation in the South African Electricity System. See at <https://meridianeconomics.co.za/wp-content/uploads/2020/07/Ambition.pdf>

Centre ("Vital Ambition Report") states that gas to power is only justified in the South African energy mix in so far as it is required for low-utilisation flexible capacity (peaker plants) for balancing the system during peak power demand. The report confirms that no investments in gas infrastructure for energy production and generation is needed now or in the near future.¹²⁷ Furthermore the 2019 IRP will likely need to be updated in the foreseeable future to align with South Africa's 2021 Nationally Determined Contribution under the Paris Agreement and to keep pace with quickly evolving science and significant reductions in price for solar and wind energy. However, even the 2019 IRP, which is rooted in an outdated and scientifically and economically unsound understanding of the necessity for any gas in the energy mix,¹²⁸ only projects the collective contribution of gas and diesel to the 2030 energy mix to be 1.3% combined.¹²⁹

94.4. At page 38 of the BAR, the utility of gas is described as follows: "Although the use of hydrocarbons is not fully aligned with other National plans and policies, which identify the need to reduce the reliance on fossil fuels and shift to lower-carbon electricity generation options in order for South Africa to reduce its GHG emissions and meet commitments in this regard, natural gas is included in the energy mix of the country to serve as a transition or bridge on the path to a carbon-neutral goal (as per the Paris Agreement) and provide the flexibility required to complement renewable energy sources". Expert analyses however have shown this narrative to be false and outdated. We refer to some of these findings below:

94.4.1. Evidence shows that gas is not an environmentally friendly technology or fuel source. Meridian Economics' "Hot Air About Gas"¹³⁰ report from 2022 evaluated the economic and environmental case for LNG to replace diesel as the fuel for both existing and new peaking capacity. It discovered that if there is no methane leakage throughout the gas's lifecycle, the gas emits 25% less than diesel. The literature, on the other hand, ranges from 0% to 9% methane leakage over the lifecycle. Diesel and gas emissions are equal if a conservative 3.5% leakage statistic is used. They have stated that the switch from diesel to gas in peaker plants will not be done to reduce emissions. This highlights, again, that gas is in fact not an environmentally friendly fuel source nor technology. Furthermore, The Meridian report found that forcing high-use gas-to-power generation into the energy mix would entail a cost 40% higher than the alternative combination of peaking plant and renewables, with seven-fold higher carbon emissions for the power generation.¹³¹

94.4.2. According to a recent report prepared by Robert W. Howarth titled "Methane emissions and climate warming risk from hydraulic fracturing and shale gas development: implications for policy"¹³² the climate impacts of gas are greater than those of coal per unit of energy produced when evaluated over a 20-year timeframe, the period most relevant for climate change if humans are to avoid catastrophic run-away warming. Though gas emits less carbon dioxide per unit energy than coal, its upstream GHG emissions are more problematic for the climate, as it leaks and vents potent methane throughout its lifecycle; researchers have been able to better detect emissions across the lifecycle of gas ever more accurately thanks to new

¹²⁷ Gas and peaking resources contribute just 1.1% of total electricity generation in 2025, and 2.4% by 2035 according to the same Meridian report.

¹²⁸ Meridian Economics, *Hot Air About Gas: An Economic Analysis of the Scope and Role for Gas-Fired Power Generation in South Africa* (2022), pages 2-3, <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

¹²⁹ 2019 Integrated Resource Plan, page 42.

¹³⁰ <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

¹³¹ Meridian Economics, *Hot Air About Gas: An Economic Analysis of the Scope and Role for Gas-Fired Power Generation in South Africa* (2022), page ii, <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

¹³² Robert W. Howarth, *Gas Lifecycle Methane Emissions, Richards Bay Review* (2022), <https://naturaljustice.org/wp-content/uploads/2021/05/FA-12-Howarth-RichardsBayReview.pdf>.

methodologies and technologies (particularly "top-down" measurements using satellite and aerial assessments).

- 94.5. The use of fossil fuels must be phased out quickly due to the urgent need to address global warming. A recent study published in *Nature*, the world's leading multidisciplinary science journal, discovered that "by 2050, we find that nearly 60% of oil and fossil methane gas, and 90% of coal, must remain unextracted to stay within a 1.5 °C carbon budget." According to the study, "most regions must reach peak production now or within the next decade, making many operational and planned fossil fuel projects unviable."¹³³ Therefore exploration projects whose objectives are to locate gas deposits for energy companies to exploit through the construction and production of fossil fuels, run the risk of creating risks for such infrastructure to become stranded assets which invariably impacts on the development potential of South Africa in achieving its climate goals. With no economic justification for large-scale gas use in power, such a strategy would result in assets that are stranded before their first kWh of power is generated.¹³⁴ Even a recent report from the National Business Initiative, of which many multinational oil and gas companies are members, emphasized the risk of stranded assets that would inevitably accompany any investment in gas-to-power infrastructure.¹³⁵
95. Furthermore, impeding global north carbon border adjustment mechanisms will impose restrictions on the export of products with a high carbon footprint, putting South Africa's economy at greater risk of developing gas to power rather than clean renewable alternatives. This invariably diminishes the need and desirability for promoting new gas development projects, particularly with the impeding risk this places on investing in fuel sources which will no longer represent a viable solution for South Africa's ambitions to address development whilst respecting universal and regional climate change obligations.
96. The outcome of the need and desirability assessment should not be centred on the determination of whether gas technology will ensure security of supply for electricity, but rather should -due to the climate crisis- be centred on whether South Africa needs, or should rely on, gas to provide security of supply of electricity and whether there are alternative technologies that could meet the same supply objectives but with less harm and risk. Renewable energy and/or storage can replace gas to provide reliable and cost-effective generating capacity while greatly reducing the environmental and health risks associated with gas.¹³⁶
97. The call for gas as part of the energy mix set forth in the 2019 IRP does not excuse the decision-maker from taking climate change impacts into account, including as part of the need and desirability assessment. The case for need and desirability must address climate impacts and cannot simply rest on the 2019 IRP as evidence of need or desirability as relied upon by the EAP in the BAR.
98. The Green Connection and Natural Justice submit that exploration for new gas reserves by way of reconnaissance is not needed or desirable and is not in the public interest nor aligned with the Constitution and other applicable laws. This is due to the unacceptable likely risks of harm that will

¹³³ Welsby, D., Price, J., Pye, S. et al. Unextractable fossil fuels in a 1.5 °C world. *Nature* 597, 230–234 (2021). <https://doi.org/10.1038/s41586-021-03821-8>.

¹³⁴ Meridian Economics, *Hot Air About Gas: An Economic Analysis of the Scope and Role for Gas-Fired Power Generation in South Africa* (2022), page iv, <https://meridianeconomics.co.za/wp-content/uploads/2022/06/Hot-Air-About-Gas.pdf>

¹³⁵ National Business Institute, *The Role of Gas in South Africa's Path to Net-Zero* (2022), https://www.nbi.org.za/wp-content/uploads/2022/02/NBI-Chapter-3-The-role-of-Gas-in-South-Africas-path-to-net-zero_vFinal.pdf

¹³⁶ See, e.g., Union of Concerned Scientists, *Turning Down the Gas in California* (13 July 2018), https://www.ucsusa.org/resources/turningdown-gas-california?_ga=2.79265367.2135392956.1587590973-34786515.1587590973#ucs-report-downloads

arise from activities that contribute towards increasing climate disaster thereby significantly reducing resilience against impacts to human health and the environment more broadly, as well as the inordinately high costs involved in gas power generation for energy.

Insufficient consideration of the environmental and social impacts on the small-scale fishing industry

99. The planned activities are expected to significantly harm the fishing sector particularly the small-scale fishing sector, a factor that was not sufficiently addressed by the EAP when assessing socioeconomic consequences and project desirability. Often fishing vessels are required to steer clear of the survey area during the operational phase of the project, resulting in the exclusionary effect of fishing activities being severely restricted as the noise and disruption can make it unsafe or unproductive for fishing activities for long durations.
100. Furthermore, the suggested survey region overlaps with numerous crucial fishing spawning and migration routes, which will undoubtedly affect the local small-scale fishing industry substantially due to seismic sounds affecting breeding. A significant percentage of South Africa's national catch for five fisheries lies within the survey area, including demersal trawl, midwater trawl, hake-directed demersal longline, large pelagic longline, and South Coast rock lobster.¹³⁷ Additionally, the survey area coincides with the kingklip spawning zone, potentially disrupting vital spawning and breeding events and impacting multiple fisheries. The combined effect of restricted fishing grounds and reduced fish populations will significantly harm the area's commercial and small-scale fishery industry, ultimately influencing consumer fish prices and regional food security—factors inadequately considered or addressed by the EAP while evaluating both socio-economic impacts and project desirability.¹³⁸
101. Recent research (2017) has shown significant mortality in zooplankton up to 1.2 km from a seismic survey array. Zooplankton forms the base of many important food webs in the marine environment.¹³⁹ Depletion of zooplankton could thus have an impact on food for their predators (such as fish) as well as impact fish eggs and larvae (ichthyoplankton) with potential local impacts on species important in both commercial and small-scale fisheries. The reason for this is zooplankton is a key food source for fish, which transfer energy from primary producers to higher trophic levels. Therefore, this damage to zooplankton over 1km away from the survey array raises concern that a 500m buffer for other animals that are unable to move away from the sound, is far too small to ensure that damage is not inflicted (even if they were able to evade it).
102. The knock-on effect of this would result in broader indirect socio-economic impacts on local communities. For example, small-scale fishermen may be part of a larger fishing network that includes fish processors, wholesalers, and retailers. If the fishermen are unable to catch as much fish or squid due to the closure of fishing grounds, this will have a ripple effect throughout the entire network, leading to job losses and reduced economic activity. An example of the loss of fishing grounds that has had broader socioeconomic impacts on local communities along the Eastern Cape Coastline is the temporary closure of the squid fishery who feast on zooplankton in Algoa Bay in 2019.¹⁴⁰ This closure was due to seismic surveys being conducted by an oil and gas exploration company in the area. The squid fishery in Algoa Bay is an important source of income

¹³⁷ FBAR p. 226.

¹³⁸ Refer to annexure A (Wild Trust Comments) at page 3.

¹³⁹ McCauley, Robert & Day, Ryan & Swadling, Kerrie & Fitzgibbon, Quinn & Watson, Reg & Semmens, Jayson. (2017). Widely used marine seismic survey air gun operations negatively impact zooplankton. *Nature Ecology and Evolution*. 1. 10.1038/s41559-017-0195.

¹⁴⁰ Catherine Horsfield, Romy Chevallier, and Kirtanya Lutchminarayan. 2020. The impact of oil and gas exploration on fishing communities in South Africa: Algoa Bay case study. South African Institute of International Affairs <https://www.saiia.org.za/research/the-impact-of-oil-and-gas-exploration-on-fishing-communities-in-south-africa-algoa-bay-case-study/>

for small-scale fishermen and the broader fishing network, including fish processors, wholesalers, and retailers. The closure of the fishery resulted in a significant reduction in the catch of squid, leading to a loss of income for fishermen and job losses in the fishing network. According to a report by the South African Institute of International Affairs, the closure of the squid fishery in Algoa Bay had significant economic and social impacts on local communities.¹⁴¹ It estimated that the closure resulted in a loss of income of approximately R8 million (about USD 556,000) for small-scale fishermen, and a further loss of income of approximately R26 million (about USD 1.8 million) for fish processors, wholesalers, and retailers.

103. In addition, the impact on fish assemblages is difficult to interpret, due to multiple factors at play including but not limited to the ability of a species to move from an area as well as the receiving habitat. A global review of the effect of seismic activities on fish and invertebrates acknowledged the limits of the current research due to experimental designs used or due to the focus on single species during investigations.¹⁴² A key concern is a lack of research focused on confounding effects and multiple stressors, therefore potential impacts of seismic surveys that have been previously identified may be reflective of underestimation or overestimation and would depend on the type of interaction (synergistic, additive, or antagonistic).
104. In the need and desirability analysis, the BAR indicates that the reconnaissance activities can be used “more generally for providing more insight and understanding into the regional geology of the area for scientific purposes” and that “[t]his project can also provide an opportunity to conduct independent research on how fish species on the West Coast such as snoek respond to seismic surveying. Bearing in mind that the location of this particular survey is far offshore and impacts on the biophysical environment are expected to be relatively low, the FBAR concludes that this project is seen as a good opportunity to obtain local data and conduct local research which could be useful for similar projects and applications that may take place in the future.”¹⁴³ Reconnaissance activities, which will likely have significant impacts on the marine ecosystem, cannot be justified for research purposes, and the existence of a significant gap in information cannot justify the authorisation of the activity for the purpose of obtaining data. It is opposite – appropriate scientific information should first be available to inform a comprehensive assessment of impacts, before a decision can be made whether to authorise a harmful activity.
105. Section 2(4)(a)(vii) of NEMA provides that sustainable development requires the consideration of all relevant factors, including “that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions”. In *WWF South Africa v Minister of Agriculture, Forestry and Fisheries and others*, the Court found that “[p]otential errors are ‘weighted in favour of environmental protection’, the object being ‘to safeguard ecological space or environmental room for maneuver.’”¹⁴⁴ Here, in weighing the relative reliability of two studies which suggest different degrees of harm to zooplankton, the decision-maker should err in favour of an interpretation that protects the environment.
106. This approach was confirmed by the court in *Sustaining the Wild Coast NPC and others v Minister of Mineral Resources and others*.¹⁴⁵

¹⁴¹ See note above

¹⁴² Weir, C. R., & Gervais, C. R. (2018). A global review of the effects of seismic surveys on marine fishes and invertebrates. *ICES Journal of Marine Science*, 75(3), 1013-1025.

¹⁴³ FBAR p. 38.

¹⁴⁴ *WWF South Africa v Minister of Agriculture, Forestry and Fisheries and Others* (11478/18) [2018] ZAWCHC 127; [2018] 4 All SA 889 (WCC); 2019 (2) SA 403 (WCC) (26 September 2018) at para 104.

¹⁴⁵ *Sustaining the Wild Coast NPC and Others v Minister of Mineral Resources and Others* (3491/2021) [2022] ZAECKHC 55.

“on a proper application of the precautionary principle, the court should find that the threat of harm to marine and bird life justifies a cautious approach, which was not given heed to when the exploration right was granted”¹⁴⁶

“Because of the apparent dispute between the experts as to the adequacy of the mitigation measures minimising the known effects of seismic surveys, it would have been incumbent on the decision-maker to invoke the precautionary principle.”¹⁴⁷

107. A precautionary approach requires that in the absence of sufficient evidence to allay risks of significant harm, protective action should be taken such that authorisation for the seismic testing is not granted.
108. This precautionary approach should also be applied in respect of the broader ecosystem impacts from seismic surveys. For example, zooplankton are the basis for the marine ecosystem by providing food and nutrients for other species. As set out above, experts advise that seismic testing is very likely to significantly impact zooplankton populations. This will have unacceptable knock-on impacts in the food chain and ecosystems, with impacts on *inter alia*, juvenile fish and rock lobsters and squid. Noise impacts should therefore be assumed to be unsafe in the absence of credible scientific data showing that the impacts on zooplankton are not significant.
109. Given the fact that the workforce required for the exploration activities is expected to be only 100 persons in total, with the majority of these positions needing to be filled by international experts employed by the seismic contractor, there will be negligible benefit to the local economy and to job growth in the area with likely impacts greatly aggravating the prominent livelihoods of small scale fishers in addition to jeopardising food security for many local communities residing along the Eastern Cape coastline.

Failure to assess alternatives

110. Good planning and impact assessment should clearly identify and select those alternatives that offer the greatest overall benefits and avoid undesirable impacts for the good of society. Decision making, too, should strive to this end. That is, the evaluation of alternatives is an essential part of impact assessment and decision making.
111. The EIA Regulations require that a basic assessment report contain “a full description of the process followed to reach the proposed preferred activity...”, including¹⁴⁸—
- (iii) details of all the alternatives considered
 - (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects
 - (v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be avoided, managed or mitigated

¹⁴⁶ Para 31.

¹⁴⁷ Para 109.

¹⁴⁸ EIA Regulations, Appendix 1, Regulation 3(1)(h)

(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.

112. Therefore, the BAR must contain a full description of the process followed to reach the proposed preferred activity—offshore oil and gas reconnaissance that will likely lead to exploratory drilling and production—including the positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected; focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.
113. Where relevant, different operating scenarios (as well as probability of occurrence) should be provided including normal and worst-case scenarios to ensure that these are taken into account in the impact assessment and decision making. Furthermore, key swing variables (i.e. those key variables that influence project feasibility and the consideration of project alternatives) should be identified and defined well upfront and in clear language throughout this report, and not merely left for subsequent reports. This will ensure that all relevant scenarios are accounted for and addressed throughout the entire impact assessment phases.
114. Furthermore, the BAR ought to have factored into its assessment of alternatives whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development or activity is consistent with the purpose for establishing and protecting those areas.¹⁴⁹ In doing so, the EAP would have actively considered alternative options which would factored in the appropriateness of seismic survey technologies and whether such activities would be consistent with the purpose of establishing protective zones within those areas. In that instance, Natural Justice submits that identifying location alternatives is feasible, particularly in those parts of the proposed seismic survey area that do not overlap with 13.4% of Critical Biodiversity Area 1 (CBA1) and CBA2 areas and a 6.5% overlap with Ecological Support Areas (ESA), including the buffer around the Port Elizabeth Corals MPA.
115. Irrespective of their commercial significance, all species inhabiting critical biodiversity zones and ecological support regions hold a crucial position within ecosystem value chains. Given the uncertainty surrounding the implications of seismic surveys in South Africa, it is essential to assess the adoption of alternatives, such as renewable technology implementations, while also evaluating the unknown risks associated with the upstream component of the hydrocarbon industry - a forerunner to extraction and consumption. This effort is vital to mitigating potential disturbances within marine ecosystems.
116. In the BAR, the issue of the no-go option is not suitably discussed nor supported by any credible findings, and no project alternatives are offered which ought to be substantiated by the consideration of normal and worst-case scenarios, particularly as they relate to issues pertaining to project feasibility.
117. The vague assessment of the no development option does not meet the requirements for impact assessment as contained in the EIA Regulations and associated guidelines. Other than being vague and devoid of sufficient detail, the no-go option is assessed only from the negative impact of the project not going ahead perspective,¹⁵⁰ and fails to assess positive impacts associated with the no-go option. The long-term benefits of not carrying out the seismic surveys has also not been considered.
118. A thorough assessment of the no-go option should consider and evaluate the potential ecological and socio-economic benefits, taking into account the rights of small-scale fishers and

¹⁴⁹ Section 63 of the ICMA.

¹⁵⁰ This would necessarily include the economic and social costs of GHG emissions that would result from future oil and gas development, as well as the social and economic costs that would result from a major oil spill arising from an uncontrolled wellhead blow-out (during any subsequent exploration or production well drilling).

fishing-dependent communities. Such an assessment would weigh the prospective benefits of proceeding with development against the possible negative impacts on the environment and people's rights.

Failure to assess submarine instability

119. Submarine instability¹⁵¹ refers to the potential instability or susceptibility of the seabed or underwater terrain to movement or failure. It primarily relates to the stability of sediment layers, slopes, or geological formations beneath the water's surface. Submarine instability can manifest in various forms, such as submarine landslides, slumping, or erosion of sediment layers.
120. Seismic surveys have been known to reduce or contribute to instability of the seabed by way of submarine instability. This has occurred through three instances:
 - 120.1. Through vibrations and energy propagation which have resulted in the destabilization of the seabed and the triggering of movement such as underwater landslides or slumping
 - 120.2. Disruption of natural equilibrium within seabed sediments through the generation of intense pressure pulses from air guns triggering sediment movements
 - 120.3. Redistribution of sediment caused by energy transmitted by seismic surveys, which alters sediment dynamics and increases submarine instability.
121. The entire 3D seismic survey area falls within the area of the Agulhas Slump (Dingle 1997).¹⁵² The slump represents the largest known submarine and terrestrial slump feature on the planet and covers an area of almost 80 000km² and is situated along the east coast of South Africa, extending from Plettenberg Bay in the south to north of East London. The post-Pliocene feature lies on two major fault zones that are known to be active, namely the Cape Fold Belt and the Agulhas marginal fracture zone. All of these features are thought to be a result of its structural setting along a sheared continental margin.¹⁵³
122. A recent review by Fan *et al.* examined a similar but smaller submarine slumps in the Gulf of Mexico. Out of the 85 recorded landslides, 75 were found to have been triggered by distant seismic activity between 2008 and 2015. The triggering events were earthquakes ranging in magnitude from Mw 4.9 to 7.3, originating as far as 1000km away.¹⁵⁴
123. It is apparent that the current application is intended to conduct a 3D seismic survey over the area and that no drilling or other means of exploration are considered. It is however, significant to note that reactivation of subterranean slumps and turbidity currents may occur due to shear failure, causing plastic strain and excessive shear induced pore fluid pressure, causing reduced material strength and landslides.
124. The proposed seismic survey, involving the blasting of seismic energy into marine sediments, has the potential to induce various failure mechanisms described earlier. However, the BAR and the EMPr fail to address the potential risks associated with landslides, turbidity currents, and

¹⁵¹ Lenz, Brandi L., Derek E. Sawyer, Benjamin Phrampus, Kathy Davenport, and Ashley Long. 2019. "Seismic Imaging of Seafloor Deformation Induced by Impact from Large Submarine Landslide Blocks, Offshore Oregon" *Geosciences* 9, no. 1: 10. <https://doi.org/10.3390/geosciences9010010>

¹⁵² Dingle, R.V., 1977. The anatomy of a large scale submarine slump on a sheared continental margin. (SE Africa). *Jl geol. Soc. Lond.* Vol. 134, pp. 293-310.

¹⁵³ Dingle, R.V., 1977. The anatomy of a large scale submarine slump on a sheared continental margin. (SE Africa). *Jl geol. Soc. Lond.* Vol. 134, pp. 293-310.

¹⁵⁴ Fan, W., McGuire, J., & Shearer, P. M. (2020). Abundant spontaneous and dynamically triggered submarine landslides in the Gulf of Mexico. *Geophysical Research Letters*, 47, e2020GL087213. <https://doi.org/10.1029/2020GL087213>

reduced seabed stability. Furthermore, BAR and EMPR lack identification and prescription of mitigation measures during the pre-planning, operational, and demobilization phases to address the risks of landslides, slumping, and seabed. This is clear in the following ways:

- 124.1. the BAR and EMPR does not mention of the importance of developing appropriate survey designs based on the identification and consideration of the geological characteristics of the survey area during pre-planning. Such considerations are essential to avoid surveying sensitive or unstable areas.
- 124.2. the BAR and EMPR does not address the importance of pre-survey assessments during the pre-planning phase. These assessments, including geotechnical investigations and geophysical surveys, are necessary to identify areas of potential instability and evaluate the geological conditions. Incorporating such mitigation measures would enable the selection of appropriate survey methodologies and equipment.
- 124.3. the BAR and EMPR lacks any mention of mitigation measures specifically addressing the monitoring, analysis, and management of real-time changes or disturbances to the seabed resulting from the noise and energy levels generated by seismic surveys. Such measures would enable immediate response and adjustments in the presence of instability indicators. They are crucial for managing and minimizing the potential impact of seismic sound waves and energy blasts on submarine stability. The focus seems to be solely on mitigation measures related to marine faunal management, with no consideration given to managing the impact to the seabed.
- 124.4. The BAR and EMPR do not include any mention of mitigation measures aimed at identifying and establishing buffer zones with appropriate radii, based on best practices, around areas known or suspected to have submarine instability. The purpose of these buffer zones would be to protect vulnerable regions from destabilization or disturbance caused by the impacts of seismic surveys.
125. The absence of a dedicated adaptive management approach addressing the risk of submarine instability, including ongoing monitoring, evaluation, and adjustment of mitigation measures based on new data, is a notable deficiency in both the BAR and the EMPr.

Inadequate cultural and heritage impact assessment

126. South Africa's National Heritage Resources Act ("NHRA") protects heritage resources of "cultural significance", being an object or activity's aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. The protection of cultural heritage resources is one of the factors that influences a person's perception or experience of his or her state of well-being. This is also the case in South Africa, where the section 24 environmental right in the Constitution explicitly encompasses peoples' "well-being."
127. Similarly, natural resources may have cultural meaning for a particular community or may be at the centre of certain cultural practices. The conservation of such natural resources is necessitated, for example, by the important role they play in the survival of particular cultural practices. The Act defines "heritage resources" as any place or object of cultural, social, and spiritual significance. It can therefore be deduced that culturally relevant places and objects fall within the purview of its protection and therefore requires significant consideration throughout the assessment process.
128. The NHRA also defines "living heritage," which refers to the intangible aspects of inherited culture, which may include cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems, and the holistic approach to nature, society and social relationships. Section 5 of the Act outlines the principles for the management of heritage resources in South Africa, and the following sections are of specific importance:

128.1. Section 5(4): "heritage resources form an important part of the history and beliefs of communities and must be managed in a way that acknowledges the right of affected communities to be consulted and to participate in their management"

128.2. Section 5(7): The identification, assessment and management of the heritage resources of South Africa must-

- (i) take account of all relevant cultural values and indigenous knowledge systems;
- (ii) take account of material or cultural heritage value and involve the least possible alteration or loss of it;
- (iii) promote the use and enjoyment of and access to heritage resources, in a way consistent with their cultural significance and conservation needs
- (iv) contribute to social and economic development;
- (v) safeguard the options of present and future generations;
- (vi) be fully researched, documented and recorded.

129. Apart from the Constitution, NEMA defines "environment" to mean the surroundings within which people exist, which are made up *inter alia* of "aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being". This definition of the environment links environmental factors with cultural heritage, which international cultural law principles require states to consider in reaching decisions regarding sustainable development. Section 2(b) of NEMA provides that environmental management must be integrated, acknowledging that all elements of the "environment" (with links to cultural heritage) are "linked" and "interrelated," and it must take into account the effects of decisions on all aspects of the "environment" and all people in the "environment" by pursuing the selection of the best practicable environmental option. Therefore, measures and governance in furtherance of environmental protection can be extended to issues of culture and heritage impacts, in the sense that due consideration must be given to issues of culture when applying measures and governance in furtherance of environmental protection.

130. The EIA Regulations require that the person conducting the public participation process ensure that "(a) information containing all relevant facts in respect of the application or proposed application is made available to all potential interested and affected parties."¹⁵⁵

131. The BAR fails to adequately describe the methodology that was chosen and adopted for undertaking the heritage impact assessment and consultation process with local and indigenous communities. Because of the BAR's insufficiency in this regard, it is unclear whether the envisaged heritage assessment process included comprehensive and inclusive consultation of various indigenous and local coastal communities and small-scale fisher communities, particularly in identifying specific and or unique deep cultural and traditional knowledge about their heritage resources and landscapes connections and the potential impacts of the project on these resources and landscapes. Furthermore, neither the BAR within the context appendix 4 of public participation nor the cultural heritage assessment describe or document a robust, inclusive and transparent consultation process. There is insufficient evidence of robust and inclusive community meetings, public hearings, consultation workshops, or other formal mechanisms where comments/responses were recorded for the purposes of soliciting meaningful stakeholder input. This suggests there is a gap in engagement.

¹⁵⁵ Regulation 41(b) of the Environmental Impact Assessment Regulations, 2014

132. Where the BAR and the cultural and heritage impact assessment fail to address or adequately respond to stakeholder concerns and feedback, the reasonable conclusion to be drawn is that inadequate and meaningful stakeholder engagement was undertaken. Meaningful engagement requires acknowledging and considering the concerns, values, and interests of stakeholders, even if they may challenge or impact the project's outcomes. There is no evidence provided within the BAR nor the cultural and heritage impact assessment that supports the notion that the concerns, values, and interests of stakeholders were discussed, addressed and responded to.
133. In light of the comments above, the findings set out within the BAR and in the Heritage Impacts are questionable to the extent that the reports does not comprehensively take into account all relevant "heritage resources" as contemplated by section 5 of the Heritage Resource Act, and as encompassed by all relevant cultural values and indigenous knowledge systems pertaining to natural resources and tangible and intangible heritage intimately connected to sacred sites and living cultural artifacts and practices.
134. Furthermore, the BAR fails to adequately assess the suitability of proposed mitigation measures aimed at mitigating the impacts on culture and heritage. The current draft of the BAR seemingly provides a cursory overview of cultural and heritage impacts focusing primarily on the most obvious or immediate effects. This has resulted in a limited assessment which is incapable of assessing and making provision for mitigation measures that identify a full range of potential impacts to heritage and culture including indirect, cumulative and long-term effects on heritage and culture. At pages 53 and 57 of the heritage impact assessment report for example, for both normal operations and unplanned events, it is recorded that impacts are partially reversible. This suggests that there exists a substantial risk to the erosion of intangible heritage that will either be lost or significantly disrupted by the exploration activities with an increased risk that these heritage resources or connections will not recover in significance or importance. Therefore, the collective mitigation measures for normal and unplanned events are extremely unlikely to protect against the erosion of intangible heritage which will lead towards the loss of traditional knowledge cultural expressions, and community identities. Once intangible heritage is disrupted or lost, it can be challenging, if not impossible, to fully recover or revive.
135. The heritage specialist, on page 57, highlights that the project's activities are expected to result in cumulative impacts on cultural heritage. These impacts will arise due to the deteriorating health of the ocean caused by noise pollution from seismic survey sound wave blasts, ocean traffic, and other coastal marine activities. Furthermore, the negative effects on marine biodiversity will directly and indirectly affect cultural heritage. This supports the notion that both the regular operations and unforeseen incidents associated with seismic survey activities are unlikely to prevent the displacement or disruptions of coastal and traditional communities deeply connected to the affected areas and affected marine biodiversity. However, the proposed mitigation measures fail to address the risks of cultural fragmentation or loss of identity.

Inadequate public participation

136. The public participation process has so far failed to achieve adequate and meaningful participation of interested and affected parties, particularly small-scale fishers in coastal communities. Notices of meetings did not reach smaller communities, who are also unable to afford to travel to meetings or access documents in libraries in towns and cities far from where they live. They have not been meaningfully consulted.

PASA's acceptance of CGG's Reconnaissance Permit application was unlawful; No statutory basis for speculative multi-client seismic surveys

137. The Green Connection and Natural Justice submit that the acceptance of CGG's reconnaissance permit application in circumstances where exploration rights are held by another person/s over the area, is unlawful.
138. The draft BAR indicates that PASA accepted CGG's reconnaissance permit application on 23 January 2023 in terms of section 74 of the MPRDA, and that the application 'provides for the undertaking of a multiclient speculative three-dimensional (3D) seismic survey in the Algoa/Outeniqua basin...'.¹⁵⁶
139. In terms of s74 of the MPRDA, 'any person' who wishes to apply to the Minister for a reconnaissance permit must lodge the application as indicated in subsection (1)(a) to (c), and PASA must within 14 days accept an application for a reconnaissance permit if, among other things, 'no other person holds¹⁵⁷ a technical co-operation permit, exploration right or production right for petroleum over any part of the area' (emphasis added).¹⁵⁸ If the application does not comply with the requirements of this section, the designated agency must notify the applicant in writing within 14 days of the receipt of the application and provide reasons.¹⁵⁹
140. In the Searcher 3D seismic survey urgent interdict judgment¹⁶⁰ (which Searcher did not seek leave to appeal against), Thulare J interpreted the meaning of the wording in s75(1)(c) of the MPRDA. While dealing with the issuing of a reconnaissance permit, the wording of s75(1) is similar to the wording used in s74(2): s75(1) provides that the Minister must issue a reconnaissance permit if the provisions of s75(1)(c) are met, namely that the reconnaissance will not result in unacceptable pollution, ecological degradation or damage to the environment and that an environmental authorisation is granted. Thulare J explained what is required as follows: There must be evidence that the proposed reconnaissance will not result in unacceptable pollution, ecological degradation or damage to the environment, an environmental authorization is mandatory and the Minister would act unlawfully in granting a reconnaissance permit where section 75(1)(c) was not satisfied.¹⁶¹
141. Applying the reasoning of Thulare J to section 74(2) of the MPRDA, it follows that there must be evidence that no other person holds an exploration right for petroleum over any part of the area, and that PASA would be acting unlawfully if it accepted a reconnaissance permit application where section 74(2)(b) was not satisfied.
142. It is noted that the CGG draft BAR states that the reconnaissance permit application area includes a number of licence blocks off the Southeast Coast of South Africa, as depicted in Table 6-1:¹⁶²

¹⁵⁶ Draft BAR, p 1.

¹⁵⁷ Section 1 of the MPRDA defines the 'holder' in relation to *inter alia* a reconnaissance permit or exploration right as meaning 'the person to whom such right or permit has been granted or such person's successor in title'

¹⁵⁸ MPRDA, s74(2)(b).

¹⁵⁹ s74(4).

¹⁶⁰ *Christian John Adams & Others v Minister of Mineral Resources and Energy & Others*, Western Cape Division, Cape Town (Case No. 1306/22).

¹⁶¹ *Ibid*, at para 17.

¹⁶² Draft BAR, p41.

Table 6-1: List of Right Holders in the Reconnaissance Permit Application area boundary

NO.	RIGHT HOLDER	Block
1.	New Age Algoa / RIFT Petroleum	Algoa Inshore – Exploration Right 201ER
2.	BG International / Impact Africa	Exploration Right 252ER
3.	Impact Africa / Silver Wave Energy	Area 2 – Exploration Right 276ER
4.	Total Energies	Block South Outeniqua – Exploration Right 231ER
5.	TotalEnergies / Qatar Petroleum / CNR / Main Street	Block 11B/12B – Exploration Right 067ER
6.	Sungu Sungu	Outeniqua Inshore – Exploration Right 322ER

143. This table clearly indicates that six exploration rights have been granted in respect of various Petroleum License Blocks covered by the application area. These exploration rights are held by other persons, not CGG.

144. Applying the reasoning of Thulare J to s74(2), it is submitted that PASA acted unlawfully in accepting CGG's reconnaissance permit application (given that other persons hold exploration rights for petroleum over a substantial part of the application area).

145. The Green Connection and Natural Justice submit further that there is no statutory basis in the MPRDA for the granting of reconnaissance permits to seismic survey companies to conduct speculative multi-client seismic surveys in Blocks where exploration rights are held by other persons, and that the Minister would be acting ultra vires the enabling provisions of the MPRDA should he grant a reconnaissance permit to CGG.

146. The absence of enabling provisions in the MPRDA relating to non-exclusive multi-client speculative surveys is highlighted by proposed new enabling provisions included in the Upstream Petroleum Resources Development Bill¹⁶³ (which has not yet been enacted and thus does not have the force of law). For example:

146.1. In terms of section 10(b) of the Bill, PASA must formulate [an] exploration strategy that includes acquisition of seismic data through non-exclusive multi-client speculative surveys in frontier or under explored areas ahead of licensing rounds;

146.2. Section 16(1) of the Bill provides that the Minister may, by notice in the Gazette, invite applications for a reconnaissance permit from seismic companies to acquire data on a non-exclusive multi-client speculative business model in respect of a block or blocks, or in respect of a wide regional area comprising multiple blocks or areas as specified in the notice. Section 16(2) specifically provides that such a notice may be in relation to multiple blocks or areas which are encumbered by (among other things) exploration rights for purposes of enabling the State to assess the geological potential and establish prospectivity of a wider regional area. Section 16(4) empowers the Minister to grant a reconnaissance permit over an area encumbered by (among other things) exploration rights subject to various conditions. Section 16(5) provides further that, notwithstanding the provisions of subsection 16(1), applications for reconnaissance permits may be lodged in terms of section 34 in the prescribed manner with the Petroleum Agency at any time;

146.3. Furthermore, section 38(2)(b) of the Bill provides that PASA must accept an application for a reconnaissance permit if (among other things) no other person holds an exploration right over the same block or blocks. Section 38(3) of the Bill provides that PASA may accept an application for a reconnaissance permit over any part of an area subject to (among other things) an exploration right, subject to the applicant furnishing written consent from the holder of the exploration right

¹⁶³ B13-2021.

giving PASA consent to accept and process the application, while section 38(4) provides that notwithstanding the provisions of subsections (2)(b) and (3), PASA may accept an application for a reconnaissance permit over an area encumbered by a permit or a right if the proposed seismic data acquisition will promote and facilitate the acquisition of petroleum geo-technical data as contemplated in section 2(l).

147. In summary, the Green Connection and Natural Justice submit that the acceptance of CGG's reconnaissance permit application in circumstances where exploration rights are held by another person/s over the area, is unlawful. The Green Connection and Natural Justice submit further that there is no statutory basis in the MPRDA for the granting of reconnaissance permits to seismic survey companies to conduct speculative multi-client seismic surveys, and that the Minister would be acting ultra vires the enabling provisions of the MPRDA should he grant a reconnaissance permit to CGG.

Failure to consider relevant coastal management considerations or to comply with the National Environmental Management: Integrated Coastal Management Act 24 of 2008 ("NEM:ICMA")

148. Section 63(1) of NEM:ICMA requires a competent authority to take account of specific factors when deciding whether or not to grant an environmental authorisation under NEMA for "coastal activities". Section 12 and 21 set out the State's obligation in relation to the management of the coastal zone, which must be taken into account in taking a decision in respect of this zone.
149. The draft BAR contains no evidence that the factors set out in section 63 have been considered or assessed. The BAR does not, at any point, consider the interests of the affected human and non-human communities in any collective way. Consequently, the interests of the whole community¹⁶⁴ have not been considered.
150. The BAR has also not factored within its assessment that the purpose for which coastal public property is established (by NEM:ICMA) within the mapped critical biodiversity areas and ecological support areas, including protecting sensitive coastal ecosystems (section 7A(1)(b)) and to facilitate the achievement of the objects of the ICMA (section 7A(1)(e)). To commence with seismic surveys (which effectively serve as precursors to hydrocarbon extraction and production) within these important biodiversity areas, would be diminish the resilience of marine ecosystems to climate change impacts thereby leading to shifts in marine life size structure, spatial range, seasonal abundance, community structure and ecosystem function.

¹⁶⁴ In terms of the National Environmental Management: Integrated Coastal Management Act 24 of 2008 (NEM:ICMA), the '**interests of the whole community**' is defined as meaning the collective interests of the community determined by:

- (a) prioritising the collective interests in coastal public property of all persons living in the Republic over the interests of a particular group or sector of society;
- (b) adopting a long-term perspective that takes into account the interests of future generations in inheriting coastal public property and a coastal environment characterised by healthy and productive ecosystems and economic activities that are ecologically and socially sustainable; and taking into account the interests of other living organisms that are dependent on the coastal environment.