

Our ref: A756676

Committee Secretary  
Senate Environment and Communications References Committee  
PO Box 6100  
CANBERRA ACT 2600

Email: [ec.sen@aph.gov.au](mailto:ec.sen@aph.gov.au)

Dear

In December 2019 NOPSEMA was given an opportunity to provide a response to statements made by Mr Prideaux about the validity of NOPSEMA assessments and other matters in his submission to the Inquiry ('A Statement by Geoff Prideaux for OceanCare: Ocean Noise Impact on Fisheries and Wildlife in the Great Australian Bight' dated 21 November 2019). Mr Prideaux's submission contained a range of broad claims and 10 detailed questions. NOPSEMA provided a response to Mr Prideaux's broader claims in writing on 12 December 2019 (ref: A707007). The detailed questions that Mr Prideaux outlined in his written submission subsequently became the subject of detailed discussion at the Senate Inquiry Hearing into the impact of seismic testing on fisheries and the marine environment on 22 September 2020.

Following those discussions at the public hearing and the further statements made by Mr Prideaux about NOPSEMA assessments and the competence of NOPSEMA staff during the hearing, NOPSEMA would like to take a further opportunity to provide a more detailed response to the statements made. In doing so, it is important to note that Mr Prideaux's concerns appear based on what he can see in published NOPSEMA guidance, not what NOPSEMA requires of individual proponents and management of their seismic activities during the Environmental Plan (EP) assessment process.

While individuals who are not familiar with objective based regulation may gain comfort from a more prescriptive regulatory approach, this is not the current regulatory requirement nor the most appropriate approach for high hazard industries (see Attachment 1). While NOPSEMA published guidance contains general advice to suit a broad industry audience, this does not mean that NOPSEMA staff are not requiring specificity from proponents during EP assessments, that NOPSEMA staff have a poor understanding of modelling nor does it mean that environment plans will be approved if the noise modelling is insufficient or inappropriate.

Mr Prideaux's general concerns have been addressed in the first Attachment to this letter and appear to be due to the beliefs expressed in his statement that;

- NOPSEMA's assessments and regulatory decisions lack independence arising from cost-recovery through industry levies;
- NOPSEMA should be prescriptive in its approach; and
- NOPSEMA has been slow to apply the CMS Family Guidelines and is avoiding specific elements of the Guidelines.

Specific responses to each of Mr Prideaux's 10 questions have been provided in the second Attachment to this letter.

Acting Chief Executive Officer

10 March 2021

Att.

## Attachment 1: general concerns

### Cost Recovery

NOPSEMA is an independent statutory authority established under the *Offshore Greenhouse Gas Storage Act 2006* (OPGGS Act) and is fully cost-recovered through levies on the oil and gas industry. Levies are akin to a targeted tax on the industry that are payable to NOPSEMA as a Commonwealth entity. Levies for the assessment of environment plans are fixed amounts imposed through the *OPGGS (Regulatory Levies) Act 2003* and its regulations. These levies become due and payable on submission of an environment plan and must be paid regardless of the outcome of any individual assessment. There is also an ongoing compliance levy payable each year for the duration of an activity. The cost-recovery framework under the OPGGS Act is structured to be a user pays system to ensure that the oil and gas industry is able to be effectively regulated without imposing a tax burden on the Australian public. Payment of levies by the industry through NOPSEMA's legislated cost recovery framework in no way compromises the independence or the technical veracity of the NOPSEMA assessment process.

NOPSEMA must comply with a range of requirements imposed under the OPGGS Act and government policies including the Australian Government Charging Framework administered by the Department of Finance. As part of these requirements NOPSEMA must maintain an up-to-date Cost Recovery Implementation Statement to ensure the levels and methods of cost recovery area appropriate and equitable (which are published). NOPSEMA is subject to independent five yearly operational reviews, as required under the Act, the most recent review was completed late last year. None of these independent operational reviews have identified any issues associated with the cost-recovery framework which would compromise the independence of NOPSEMA's assessments of any permissioning documents (including environment plans, safety cases and well operations management plans).

### Objective based regulation

The OPGGS Act and Environment Regulations establish an objective based environmental management regime, not a prescriptive one. The objective based approach to regulation sets out clear objectives or outcomes that are required to be achieved by industry, but does not prescribe how offshore activities must be conducted in order to achieve those objectives. This allows bespoke environmental management solutions to be developed that best suit the particular activity and environment in which industry is operating, ensure those who create risks are responsible for management of them, promotes the use innovative techniques and drives continual improvement instead of a static prescriptive model.

Regulation of the Australian offshore petroleum regime remained largely prescriptive until changes were implemented following the Piper Alpha disaster in the North Sea in 1988 and subsequent inquiry into the disaster by Hon Lord Cullen recommending the adoption of a objective based regime. This has subsequently been supported as the most appropriate regulatory model for a high hazard industry in Australia in the Productivity Commission Report and Montara Commission of Inquiry in 2010 following the blowout from the Montara Wellhead Platform in 2009.

The objective based approach is supported internationally by regulatory authorities, risk management professionals and academics, as being the most appropriate regulatory framework for major hazard



industries. For example, Hopkins (2012<sup>1</sup>) identifies the four basic features of a successful regulatory regime for oil and gas as:

- impact management and risk management frameworks;
- a requirement to “make a case” to the regulator that the specific controls to manage impacts and risks are sufficient for the unique circumstances of the particular activity and location proposed;
- a competent and independent regulator; and
- a general duty of care being placed on the operator (in this case the titleholder).

The regulatory regime under which NOPSEMA operates provides all of these features and the Environment Plan is where the titleholder makes ‘the case’ that the way they will manage the activity is sufficient by using scientific evidence to support the conclusions that they make and management actions they propose.

### **CMS Family Guidelines**

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) is an environmental treaty under the aegis of the United Nations Environment Programme and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range.

In 2016, at the 12<sup>th</sup> meeting of the Conference of the Parties to CMS Resolution 12.14 on the Adverse Impacts of Anthropogenic Noise on Cetaceans and Other Migratory species was adopted. In its Annex, it contains CMS Family Guidelines on Environmental Impact Assessment for Marine Noise-generating Activities (CMS Guidelines) (Prideaux 2016). The Resolution urges Parties to ensure that environmental impact assessment takes full account of the effects of activities on CMS-listed marine species and their prey and consider a more holistic ecological approach at a strategic planning stage. The CMS Guidelines were endorsed and Parties to the CMS urged to disseminate them. The CMS Guidelines represent contemporary good practice guidance for environmental impact assessment.

The CMS Family Guidelines (Prideaux 2016) are not legislative requirements that must be applied in Australian waters as they have not been formally ratified and adopted by the Australian Government, nor are they mandated through Australia’s ratification of the relevant Convention itself. However, NOPSEMA has regard to the CMS Guidelines and considers that the relevant guidance within the CMS Guideline is implemented in Australia under the Environment Regulations and NOPSEMA’s administration of assessment and decision-making on environment plans. Implementation of the CMS Guidelines in Australia was explained in detail in NOPSEMA’s submission to the seismic inquiry (see section 4.3).

NOPSEMA began regulating environmental management under the OPGGS Act in 2012. Since 2012 NOPSEMA has been ensuring that titleholders conduct thorough environmental impact assessments supported by appropriate tools (such as acoustic propagation modelling) and scientific evidence. It is the responsibility of the proponent to contract a modelling expert, and NOPSEMA, as an objective based

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<sup>1</sup> Hopkins, A. (2012). Disastrous Decisions, the Human and Organisational Causes of the Gulf of Mexico Blowout. Cch Australia Limited. 256 pages.

regulator, does not prescribe the way in which this must be conducted. Given the complexity of the models required to effectively model sound propagation, modelling is generally contracted by proponents to an experienced and technical expert third party provider. NOPSEMA provides an independent review of the independent modelling report and if the modelling is found, during an assessment, to be insufficient or inaccurately interpreted, then proponents are required to change it. NOPSEMA staff are suitably qualified and experienced, with a thorough understanding of sound modelling and underwater noise, to assess the validity of the noise modelling that has been conducted.

In addition to EP specific noise modelling issues raised directly with proponents during an assessment, NOPSEMA also provides general advice to proponents about noise modelling. The advice is not prescriptive, in the sense that these form mandatory rules or expectations that must be met, but does cover the key elements that proponents need to consider when predicting noise impacts from their operations, consistent with the objective based framework under the OPGGS Act. The focus of NOPSEMA written guidance is on topics where industry needs to improve its performance – there is little value in writing guidance about topics that industry are well practiced and competent. During the assessment process, NOPSEMA uses formal mechanisms to provide feedback about the environment plan (and associated noise modelling where relevant) and to request improvements where necessary. These formal requests are not made public during the assessment and therefore not visible to the general public (including Mr Prideaux).



## Attachment 2: Extract of questions from Mr Prideaux's statement.

**Question 1.** Why does NOPSEMA fail to specify the need for peer-reviewed, scientific propagation source models?

**NOPSEMA response:** NOPSEMA expects sound level predictions for seismic activities to be made by suitably qualified experts using appropriate models. NOPSEMA does specify the need for noise modelling conducted by independent experts during the EP assessment process in situations where it is warranted and proponents have not already commissioned that modelling. However, this is not often the case as in most situations proponents have already commissioned appropriate noise modelling using suitable models.

In addition, NOPSEMA's published Information Paper - Acoustic Impact Evaluation and Management, highlights the technical complexity of underwater sound prediction and impact assessment and advises that it should be informed by expert advice. The Information Paper highlights the common deficiencies that NOPSEMA has observed in environment plans during the assessment process and provides detailed considerations for proponents on how to improve. It is not intended to specify or prescribe specific requirements as appropriate in the current regulatory regime.

**Question 2.** Does NOPSEMA have the knowledge of, and experience with, scientific propagation modelling to adequately assess the veracity of the information being presented, or does NOPSEMA rely on the goodwill of each proponent?

**NOPSEMA response:** Yes NOPSEMA does have the knowledge of, and experience with underwater acoustic propagation modelling. NOPSEMA maintains a core staff of highly trained and qualified technical experts with extensive experience in offshore environmental impact and risk management, marine ecology and environmental science. The NOPSEMA team includes a PhD level bio-acoustician with direct experience of underwater noise modelling and several other staff capable of assessing the veracity of noise modelling information presented in EPs.

Where considered appropriate to inform its decision making, NOPSEMA can also access expertise from a range of external sources such as other international, federal and state government agencies or private sector entities which have roles and interests in areas including environmental protection and management, fisheries management, management of threatened and migratory species and scientific research.

**Question 3.** NOPSEMA appears to be at least partially aware that considerable scientific detail is required for propagation modelling, given the very prominent link to the *Report of the Sound Propagation and Cumulative Exposure Models Technical Working Group*, for the New Zealand Department of Conservation, within NOPSEMA's own Information Paper.

Focusing on the detail expected within the scientific propagation modelling, including the need for accurate input data, and the ability to accommodate the activity noise frequencies, the water depth, seabed topography, temperature and salinity, and spatial variations in the environment, and that special

consideration for fiords and deep-water canyons is often necessary for accurate modelling, why does NOPSEMA fail to clearly state that:

- a. calibration figures from the survey vessel to be chartered should be required?
- b. modelling should include geo-acoustic properties?
- c. modelling should include bathymetry mapping?
- d. modelling should include seasonally-relevant Sound Speed Profiles?

**NOPSEMA response:** NOPSEMA does clearly state specific requirements about modelling to proponents as appropriate when deficiencies are identified during EP assessments.

Key considerations to enable proponents to accurately predict underwater sound levels are also provided in the published NOPSEMA Information Paper in a way that is suitable for a variety of activities and environmental settings and an objective based regime. The inclusion of the above information in acoustic modelling exercises is standard practice, NOPSEMA regularly receives this information as part of the EP for noise generating activities and assesses the inputs to the modelling to ensure they are representative of the local environment and proposed acoustic source.

**Question 4.** Modelling should be able to handle very high and very low frequencies. Why is NOPSEMA consistently unclear about the need for the full frequency spectrum to be modelled, enabling industry to continue to restrict the modelling they present to the frequency they are commercially interested in?

**NOPSEMA response:** NOPSEMA's technical experts ensure that modelling outputs are appropriate to inform environmental impact assessment during EP assessments and this includes ensuring all relevant sound frequencies are accounted for.

The NOPSEMA Information Paper highlights the importance of modelling being appropriate for the particular sound source being proposed for use and this includes ability to model the full frequency spectrum.

**Question 5.** Why does NOPSEMA fail to require that model methodologies should be stated?

**NOPSEMA response:** A proponent must make the case in their environment plan that the methods applied to predict and assess impacts to the environment are appropriate for the particular circumstances. It is fundamental to this case that the methodologies are stated and explained. NOPSEMA will not accept an EP where this information is not provided.

**Question 6.** Why does NOPSEMA fail to direct that high-resolution 3D models may be required in complex areas such canyons of fiords?

**NOPSEMA response:** In cases where 3D modelling is required to understand sound propagation within environmentally complex settings and it hasn't already been conducted by proponents, NOPSEMA will require it.

NOPSEMA clearly states in the Information Paper that in circumstances of environmental complexity (including but not limited to canyons) there is a need for more robust underwater sound prediction



methods, with specific reference made to 3D modelling. In fact, the Information Paper also encourages the additional step of received sound level verification in circumstances where high intensity noise generating activities are proposed in areas of environmental complexity.

**Question 7.** NOPSEMA appears to be at least partially aware of what propagation modelling should include. Given this, why:

- a. is NOPSEMA vague about the need to determine propagation loss?
- b. is NOPSEMA not specific that modelling should be seasonally relevant?
- c. does NOPSEMA fail to direct that cumulative exposure data, appropriate to the full range of concurrent noise-generating activities, should be a required, including cumulative exposure over time (ie 24 hours)?
- d. does NOPSEMA suggests some validation data may be important but does not require acoustic ground-truthing of the chosen model (to ensure model credibility)?

**NOPSEMA response:** Most of the items listed above are routinely addressed in environment plans and where they are not and NOPSEMA has determined that they should be, NOPSEMA requires those deficiencies to be addressed.

NOPSEMA's Information Paper was developed in response to a number of common problem areas identified through analysis of findings from the assessment of seismic survey EPs over a period of about 5 years. Some of the items above such as determining propagation loss and seasonal relevance of modelling was not an identified problem area – these aspects are routinely addressed in EPs and are therefore not the focus of our information paper.

In relation to cumulative exposure the Information Paper advises that the outputs of modelling should be comparable with appropriate thresholds for predicting the biological effects and cumulative exposure modelling is routinely undertaken to support EPs and allow comparison with relevant cumulative exposure thresholds. The paper also highlights the importance of considering potential cumulative impacts from the additive effects of other surveys.

Model validation or ground-truthing is specifically referenced in the Information Paper as something that should be applied in circumstances where there is uncertainty in the modelling results and this creates uncertainty as to whether acceptable levels of environmental impact will be achieved and/or control measures will be effective. NOPSEMA routinely reviews information on the ground-truthing of chosen models and in some cases has required model validation to be undertaken before or during seismic survey activities to ensure predictions are accurate and the environment is protected.

**Question 8.** If NOPSEMA's decisions are evidence-based, why does NOPSEMA fail to require:

- a. modelling to a radius where the noise levels generated are close to natural ambient sound levels?
- b. assessment of particle motion propagation when considering the cumulative impact to key species not able to be assessed by the onset of temporary or permanent threshold shift (hearing)?

**NOPSEMA response:**

Acoustic modelling is frequently undertaken to a radius where noise levels are close to ambient levels. NOPSEMA takes a risk-based approach and pays particular attention to this where the noise is potential



propagating into sensitive areas such as Australian Marine Parks. If it becomes evident during assessment of an EP that noise modelling is insufficient, NOPSEMA requires that it be addressed by the proponent.

The Information Paper recognises that particle motion may be more biologically relevant than sound pressure for fish and invertebrates, however further research is required to determine thresholds for effects. Nonetheless, particle motion levels are often predicted as an input to environmental impact assessment for seismic survey activities.

**Question 9.** NOPSEMA highlights that relevant fauna habitat require consideration but does not stipulate that exclusions zones and biologically important areas should be identified and mapped, and that the modelling should demonstrate how noise will not propagate into these areas. What is NOPSEMA justification for failing to articulate this fundamental need?

**NOPSEMA response:** NOPSEMA agrees that BIAs should be identified and mapped and industry already includes this content in EPs. Identifying environmental sensitivities is standard practice in an EP and proponents are required to undertake “a comprehensive analysis of the interaction of activity-generated sound with relevant biota and socio-economic values” as advised in the Information Paper. If deficiencies are identified in environment plans, proponents are required to address them.

It should also be noted that it is not a requirement for modelling to demonstrate that noise will not propagate into biologically important areas (BIAs). If noise is predicted to propagate into a BIA, the EP must evaluate the impacts of this noise exposure and demonstrate they will be of an acceptable level, after application of relevant control measures.

**Question 10.** Finally, why is NOPSEMA's guidance to proponents only presented within an Information Paper, with the disclaimer that the paper “does not provide ‘how to’ guidance on technical aspects of acoustic emissions EIA, monitoring and management”? Isn't defensible scientific propagation modelling a foundation of determining justifiable ‘acceptable levels’ of impact as defined by *Environment plan content requirements* (N04750-GN1344, Revision No 3, April 2016) and, if so, shouldn't NOPSEMA's guidance be presented with more weight and standing—as a requirement?

**NOPSEMA response:** NOPSEMA provides written guidance to industry in various different forms and to suit a variety of purposes including; Policies, guidelines, guidance notes, information papers, environment alerts and environment bulletins. Information papers are regularly used to provide advice about particular topics where industry needs additional support to better manage their activities or environmental impact assessments. It is not appropriate to provide prescriptive requirements in these advice documents nor invent a requirement that does not exist in legislation.