From: [redacted]
Sent: Sat, 5 Jul 2025 05:32:43 +0000
To: [redacted]
Cc: [redacted]
Subject: Re: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]
Attachments: OMR #2 - Meeting Prep for 9 July 2025 - Sent to NOPSEMA.pdf

OFFICIAL

Hi [redacted]

I hope you have enjoyed your trip. As promised, please find attached some preparatory materials for the Regia MSS EP meeting on Wednesday.

Please forward this on to the relevant NOPSEMA staff.

I think there will be 5 of us in person so we might be snug in the room you've booked. There will be a couple of us online too.

We would like to address the items in the order below to make sure we get through everything.

Regards,
[redacted]

NOPSEMA Letter Item #
4.1
1.1
1.2
3.1(1)
3.2 (2)
3.2 (c)
3.2 (a & b)
5.1 (a & b)
2.4
2.5 (1-4)
2.1
2.2
2.3(2)
2.3(1) a
2.3(1) b & c

OFFICIAL

From: [redacted]@nopsema.gov.au>
Sent: Wednesday, June 25, 2025 09:26
To: [redacted]@klarite.com.au>
Cc: [redacted]@cgg.com>; [redacted]@nopsema.gov.au>; [redacted]ino@nopsema.gov.au>
Subject: RE: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Thanks [redacted] appreciated.

I think I have included everyone from CGG and Klarite's side but please forward to anyone I might have missed.

The room has capacity for 8 people and I expect there will be 4 people in total joining from our team. Please let me know if we are likely to exceed capacity and we may need to utilise Teams for some people.

See you then.

Kind regards,
[redacted]

[redacted]
Regulatory Operations | Geophysical Survey and Installation
NOPSEMA | Australia's offshore energy regulator
National Offshore Petroleum Safety and Environmental Management Authority
T: [redacted] | E: [redacted]@nopsema.gov.au | W: nopsema.gov.au

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OFFICIAL

From: [redacted]@klarite.com.au>
Sent: Wednesday, 25 June 2025 9:14 AM
To: [redacted]@nopsema.gov.au>
Cc: [redacted]@cgg.com>; [redacted]@nopsema.gov.au>; [redacted]@nopsema.gov.au>

Subject: Re: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Hi [redacted]

Let's lock that timing in. I'll provide a detailed agenda and discussion points to assist preparation for a productive meeting by the end of next week.

Enjoy your time overseas.

Thanks,
[redacted]

OFFICIAL

From: [redacted]@nopsema.gov.au>
Sent: Wednesday, June 25, 2025 08:55
To: [redacted]@klarite.com.au>
Cc: [redacted]@cgg.com>; [redacted]@nopsema.gov.au>; [redacted]@nopsema.gov.au>
Subject: RE: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Hi [redacted]

How does 14:00-15:30 on Wednesday 9th July sound?

[redacted]
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NOPSEMA | Australia's offshore energy regulator
National Offshore Petroleum Safety and Environmental Management Authority
T: [redacted] | E: [redacted]@nopsema.gov.au | W: nopsema.gov.au

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OFFICIAL

From: [redacted]@klarite.com.au>
Sent: Wednesday, 25 June 2025 8:10 AM
To: [redacted]nopsema.gov.au>
Cc: [redacted]@cgg.com>; [redacted]
[redacted]@nopsema.gov.au>; [redacted]@nopsema.gov.au>
Subject: Re: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Thanks [redacted]

We'll make the redactions and inform you when the letter is published.

For the meeting, unfortunately I am in workshops all day on the 8th in Brisbane. Would we be able to schedule something in for later in that week?

Regards,
[redacted]

OFFICIAL

From: [redacted]@nopsema.gov.au>
Sent: Tuesday, June 24, 2025 15:45
To: [redacted]@klarite.com.au>
Cc: [redacted]@cgg.com>; D[redacted]
[redacted]@nopsema.gov.au>; [redacted]kino@nopsema.gov.au>
Subject: RE: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Hi [redacted]

Thanks for checking with us again regarding the publishing a redacted version of the letter. In addition to the redactions already made, please redact details in the header of the letter, as you have with previous letters. Subject to those additional redactions, and based on our review of the redactions applied to NOPSEMA's own information, we have no objections to CGG making the redacted letter public. Please notify us and provide a link once the letter has been published.

Regarding a meeting, our team currently has availability between 12:30 and 16:00 on Tuesday 8 July, if a time in that window would suit your team? Would 1 - 1.5 hours be sufficient? I will be overseas from later this week until that week, so I'm unable to meet before.

If that works, please can you send through an agenda of the specific items you want to discuss by the end of next week?

Thanks and kind regards,
[redacted]

[redacted]
Regulatory Operations | Geophysical Survey and Installation
NOPSEMA | Australia's offshore energy regulator
National Offshore Petroleum Safety and Environmental Management Authority
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OFFICIAL

From: [redacted]klarite.com.au>
Sent: Tuesday, 24 June 2025 9:02 AM
To: [redacted]@nopsema.gov.au>
Cc: [redacted]@cgg.com>; D[redacted]@nopsema.gov.au>; [redacted]@nopsema.gov.au>
Subject: Re: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Dear [redacted]

Thank you for the letter. As per previous letters, we have the intention of publishing a redacted version of the letter on the Regia MSS website. I have attached a copy of the redacted letter we would like to publish with our next newsletter within the next fortnight. We would appreciate if you could provide any objection to our publication of this redacted letter by the 30 June.

We would like to schedule a meeting with the assessment team and the representative of NOPSEMA in the coming fortnight. Could you propose suitable times on your end and we'll make time available our end.

Regards,
[redacted]

OFFICIAL

From: [redacted]@nopsema.gov.au>
Sent: Friday, June 20, 2025 16:33
To: [redacted]klarite.com.au>
Cc: [redacted]@cgg.com>; [redacted]@nopsema.gov.au>; [redacted]@nopsema.gov.au>
Subject: CGG Regia MSS EP - Not reasonably satisfied - Opportunity to modify and resubmit #2 [SEC=OFFICIAL]

OFFICIAL

Dear [redacted]

Following NOPSEMA's assessment of the CGG Regia MSS EP (Document No.REG-EP-030-F1, Revision 3, dated April 2025), the attached letter provides notice that NOPSEMA is not reasonably satisfied that the EP meets the environment plan acceptance criteria set out in the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023. The reasons are provided in Attachment 1 of the letter.

NOPSEMA is giving CGG an opportunity to modify and resubmit the EP.

Please also find attached, advice requested by NOPSEMA from the Science Branch (marine mammal team) at the Australian Antarctic Division in DCCEEW. The scientific advice has been provided to NOPSEMA in relation to the effectiveness of acoustic detection methods for blue whales and southern right whales. The advice does not cover other considerations under the Regulations or NOPSEMA guidance that the Regia MSS EP assessment team has also taken into account during the assessment and making the conclusions outlined in the OMR letter. AAD's advice contains detail which may be relevant and useful to CGG for the purpose of evaluating the effectiveness of acoustic detection monitoring systems.

If you have any questions, please let me know.

Kind regards,
[redacted]

[redacted]
Regulatory Operations | Geophysical Survey and Installation

NOPSEMA | Australia's offshore energy regulator

National Offshore Petroleum Safety and Environmental Management Authority
T: [redacted] **E:** [redacted]@nopsema.gov.au | **W:** nopsema.gov.au

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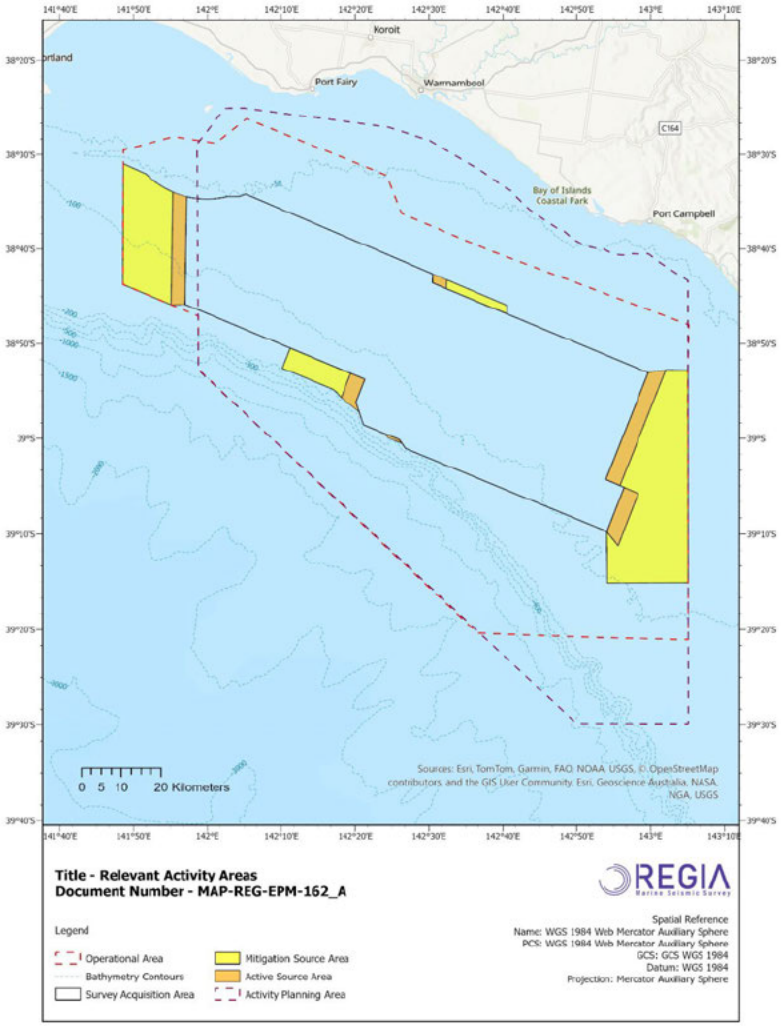
OFFICIAL

NOPSEMA Meeting Prep

OMR #2 – Regia MSS EP

Item 1.1

NOPSEMA Finding
Issue: The EP should include a suitable description of the activity and how it may affect the environment, including the scope and bounds of the activity (GL1721: Section 6.3). The Activity Description in Appendix A2 provides definitions of the Operational Area (OA), Active Source Area (ASA), Survey Acquisition Area (SAA), and a newly defined Mitigation Source Area (MSA). **However, the description of activities in Appendix A2 create uncertainty about where the sound source will be operated.**



Context

Based on NOPSEMA feedback, CGG instituted a new Mitigation Source Area (MSA) defined as: **an area at the end and beginning of the sail lines where a very small source (~ 70 cu in) will be discharged during line changes to alert marine fauna to the presence of the activity.** The definition above and map in figure A2-2 clearly shows areas of the Mitigation Source Area, without any doubt.

Question

1. Given the clarity in the definition provided how can NOPSEMA justify a finding that there is "uncertainty about where the sound source will be operated"?

2. Will these seven words provide the information necessary to close NOPSEMA's uncertainty gap.

Proposed Changes
Minor edit to A2: s3.2.1

> If the survey vessel leaves the Active Source Area the sound source must not be activated, tested, or in any way discharged at full power. When any contracted vessel is outside the Operational Area, they are subject to all maritime laws but not the OPGGS Act and Environment Regulations.

Minor edit to A2: s3.4

> - **Operational Area (OA):** an area in which survey vessel activities can occur including equipment maintenance and deployment/recovery, crew change and resupply. The sound source cannot be active in the Operational Area, outside of the Active Source Area and Mitigation Source Area.

Item 1.2

NOPSEMA Finding
The EP does not clearly and consistently evaluate all impact and risk pathways to First Nations cultural features and values as required by regulation 21(5)(6).

ISSUE
The EP does not link all relevant risk pathways to each identified cultural feature of the environment. For example, Native Title Areas as cultural features are not linked to the accidental release of fuel risk pathway in Appendix F3 (Further Assessment of Key Values and Sensitivities) or considered in Appendix D4 (Risk Assessment – Accidental Release of Fuel). It is noted that the Environmental Planning Area (EPA) includes shoreline contact within identified Native Title Areas in the event of a worst-case unplanned release of fuel.

Proposed changes: See proposed changes attached. Map MAP-REG-EPM-092 to be amended to reflect updates.

Question: Are the proposed editorial changes provided appropriate?

F3: Accidental release of fuel text added as a cause/effect pathway

Cultural Features	Description	Source	Cause and Effect Pathway	Reference to Evaluation
Native Title Areas	In July 2011 the Eastern Maar and Gunditjmara peoples were recognised as the native title holders for an area of their Traditional Country in south-west Victoria between the Shaw and Eumerella Rivers and from Yambuk in the south to beyond Lake Linlithgow in the north. For the Gunditjmara People, their recognised native title rights and	https://easternmaar.com.au/about/ https://www.gunditjmirring.com/nativetitle	**Planned:** Light Emissions Physical Presence **Unplanned:** Accidental release of materials or waste overboard Accidental release of fuel	Light Emissions, Appendix E9. Physical Presence, Appendix E1 Release of materials or waste overboard, Appendix D1 Accidental release of fuel, Appendix D4

D4: Native Title wording added to 9.5.4.

9.5.4 Indigenous Culture

Indigenous Culture	
Sensitivity Rating	**High**
Predicted Level of Risk	**Medium**
Environmental Planning Area Existing Environment	

The information provided below has been sourced from publicly available information and from consultation undertaken in preparing the EP.

The Environmental Planning Area overlaps King Island which was part of a land bridge linking Tasmania with the Australian Mainland and was submerged around 12,000 years ago with rising sea levels. While uninhabited at the time of European discovery by Captain Reed in 1799 the first Tasmanians were a very mobile people, especially by water. They had a wide-ranging territory, travelling in season for hunting, gathering and ceremonial purposes. They built and used several different types of seaworthy boats and research suggests that they passed through but did not permanently inhabit King Island (KIC 2023).

The Environmental Planning Area overlaps with the following Native Title determinations (Appendix B12 MAP-REG-EPM-092):

Gunditj Mirring Traditional Owners Aboriginal Corporation (GMTOAC) on behalf of the Gunditjmara people.

Eastern Maar Aboriginal Corporation (EMAC) on behalf of the Eastern Maar people.

The Environmental Planning Area overlaps with the following Registered Aboriginal parties' coastal areas in Victoria:

Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) on behalf of the Wadawurrung people.

Bunurong Land Council Aboriginal Corporation (BLCAC) on behalf of the Bunurong people.

Within the Environmental Planning Area key values and sensitivities in relation to First Nations have been identified and described, through consultation and desktop research, documented in Appendix F3, Section 3.16. These include both tangible and intangibles, for example, Deen Maar, Point Nepean, Southern Right Whales, Glass Eel, kelp and songlines.

Item 2.1

NOPSEMA Finding

REASONS: CGG has not adequately considered the NMFS (2024) technical guidance updates and, therefore, the EP does not demonstrate with sufficient confidence for NOPSEMA to be reasonably satisfied, that impacts and risks to protected matters will be managed to acceptable levels. The EP has not accounted for updates to marine mammal weighting functions and, therefore, overlooks the most relevant metric for the assessment of TTS in low-frequency cetaceans (SEL24h), including blue whales and southern right whales. The EP's impact assessment and control measures (e.g. shut down zones) for blue whales and southern right whales are also based on animat modelling predictions for TTS. As advised (12 March 2025), it is unclear to NOPSEMA whether an analysis of propagation differences between NMFS (2018) and NMFS (2024) can be reliably applied to the animat model results.

CGG View

This matter was raised previously by NOPSEMA and was directly addressed by conducting further analysis (SLR Report 2025, Appendix B7c). To be clear though, NOPSEMA concern is about the accuracy of the prediction of impacts at the extremity of the TTS range (14.2 km) where the modelling predicted a 1% probability of exposure.

Notwithstanding, hearing groups where thresholds changed were re-modelled using the NMFS S 2024 User Spreadsheet Tool, which included a Weighting Factor Adjustment (WFA) assessment. This is a recommendation by NMFS. The LF TTS (SEL24h) threshold did not change and was not included in this assessment.

Questions

1. How did NOPSEMA consider the commitment to further sound propagation modelling in s5.2.5 of Appendix B3 in not being reasonably satisfied?
2. Can NOPSEMA please explain what deficiency there is that:
   a) was not adequately covered by the SLR work which was specifically focused on updating our predictions of impacts to conform with NMFS 2024.
   b) What evidence does NOPSEMA have to show that:
      i. If the SLR report is insufficient, that the Regia MSS EP has underestimated impact?
      ii. Any remaining deficiency would lead to unacceptable impacts on LF cetaceans?

Appendix B7b

Table 28. Summary of animat simulation results for PTS, TTS and SPL behavioural response criteria for pygmy blue whales and southern right whales Maximum exposure ranges show $ER_{95\%}$ (km) first and associated probability of exposure of animats travelling within maximum $ER_{95\%}$ (P_{exp} (%)) in parentheses.

Species	Scenario	Behavioural response (SPL)[4]	TTS (SEL_{24h})[3]	PTS (SEL_{24h})[3]
		160[2]	168[1]	183[1]
Pygmy blue whale	A	9.83 (76%)	22.5 (56%)	1.98 (58%)
	B	9.54 (77%)	18.9 (57%)	1.73 (50%)
	C	8.38 (45%)	10.8 (35%)	0.83 (36%)
	D	6.69 (63%)	8.85 (59%)	0.37 (59%)
Southern right whale	A	9.51 (83%)	14.2 (1%)	1.40 (52%)
	B	8.97 (73%)	11.3 (64%)	1.22 (44%)
	C	7.39 (47%)	7.10 (35%)	0.69 (26%)
	D	6.84 (63%)	6.23 (58%)	0.24 (51%)

[1] LF-weighted SEL_{24h} ($L_{E,24h}$; dB re 1 $\mu Pa^2 \cdot s$)
[2] SPL (L_p; dB re 1 μPa^2)
[3] Southall et al. (2019) criteria for marine fauna.
[4] NOAA (2019) recommended unweighted behavioural threshold for marine mammals.

NMFS Guidance 2024

The Updated Technical Guidance's criteria reflect the current state of scientific knowledge regarding the characteristics of sound that have the potential to impact marine mammal hearing sensitivity. NMFS recognizes that the implementation of marine mammal weighting functions and the weighted SEL_{24h} criteria may extend beyond the capabilities of some action proponents. Thus, NMFS has developed an optional, alternative tool for those who cannot fully incorporate these factors into their own analyses (See Updated Technical Guidance's companion optional User Spreadsheet tool[1]).

These criteria do not represent the entirety of a comprehensive analysis of the effects of a proposed action, but rather serve as one tool (along with, e.g., behavioral disturbance criteria, auditory masking assessments, evaluations to help understand the ultimate effects of any particular type of impact on an individual's fitness, population assessments, etc.) to help evaluate the effects of a proposed action and make the relevant findings required by NOAA's various statutes. The Updated Technical Guidance may inform decisions related to mitigation and monitoring requirements, but it does not mandate any specific mitigation measures. The Updated Technical Guidance does not address or change NMFS's application of these criteria in the regulatory context under applicable statutes and does not create or confer any rights for or on any person, or operate to bind the public. It only updates NMFS's criteria based on the most recent science.

SLR Advice – Appendix B7c (extract)

Weighting Factor Adjustment (WFA)

The potential noise effects on animals depend on how well the animals can hear the noise. Frequency weighting is a method of quantitatively compensating for the differential frequency response of sensory systems (Southall et al. 2019). For broadband sources, such as airgun sources, NMFS recommends using weighting factor adjustments (WFAs) that include the source's frequency spectra to achieve more realistic results.

For this assessment, the notional signature of the 2820 in^3 airgun array was modelled using the Gundalf Designer software package (version 8.3, 2024). The frequency spectra was then obtained (see Figure 1) to incorporate the entire broadband spectra and calculate the WFAs for each marine mammal hearing group.

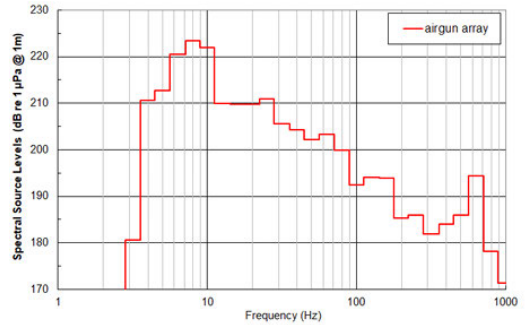


Figure 1: One-third octave band source level for a 2820 in^3 seismic array

Table 4 provides a comparison of the dB adjustment between using a single frequency of 1 kHz (typical of seismic airguns) versus the broadband frequency spectra of a 2820 in^3 airgun array.

Table 4: Comparison of different WFA applied to each marine mammal hearing group

Weighting	Low-Frequency Cetaceans (LF)	High-Frequency Cetaceans (HF)	Very-High Frequency Cetaceans (VHF)	Otariid Pinnipeds (OW)
Default WFA (1 kHz)	-0.03	-9.00	-33.84	-12.38
Airgun 2820 in^3 spectra	-23.8	-49.2	-79.5	-53.4

Item 2.2

NOPSEMA Finding
Issue: The EP does not demonstrate that the activity can be undertaken in a manner that is consistent with the National Recovery Plan for the Southern Right Whale. In particular, the EP does not demonstrate that the Regia MSS will not prevent any southern right whale (SRW) from utilising the reproduction BIA (habitat critical to survival), or that the risk of behavioural disturbance is minimised.

Reasons: The EP does not adequately demonstrate that the activity will be undertaken in a manner that is not inconsistent with the National Recovery Plan for the Southern Right Whale.Southern right whales are particularly vulnerable during breeding, calving and nursing,

and there is significant scientific uncertainty associated with behavioural responses

of southern right whales to seismic or other similar sound disturbance during these critical life stages.

The thresholds used in the EP to predict acoustic impacts to southern right whale reproduction behaviours are not sufficiently low enough,

to ensure that all impacts and risks are adequately evaluated or managed to meet the requirements of the recovery plan. The Regia MSS is proposed to avoid the period of peak SRW abundance (July and August).

However, avoidance of July and August does not demonstrate that it will prevent any southern right whale from utilising the reproduction BIA and HCTS. This is because female SRWs accompanied by a calf generally occupy the calving grounds for 2 to 3 months, with the majority of first sightings in coastal waters occurring in May or June,

with last sightings occurring in September or into October.

There remains the potential for some females and calves to experience several weeks of repeated or sustained exposures to elevated levels of underwater sound

during either of the proposed Regia MSS survey windows. Consequently, the EP does not demonstrate that the Regia MSS will not prevent any SRW from utilising the reproduction BIA or that the risk of behavioural disturbance is minimized.

The sources of scientific uncertainty have been acknowledged in the Regia MSS EP and precautionary decisions made in the accuracy of predictions and selection of mitigation thresholds.

We have followed NOPSEMA's own guidance to apply the NMFS Criteria in all cases. To suggest this isn't low enough is confusing.

Further, in the last meeting, NOPSEMA was relying on Southall 2021 which states that "*The combined data strongly suggest that efforts to derive simple all-or-nothing thresholds for single noise exposure parameters (e.g., received noise level) and behavioral responses across broad taxonomic and sound categories can lead to significant errors in predicting effects that are fundamentally inconsistent with the probabilistic nature of responses.*" invalidating NOPSEMA's proposition here.

Question: Can NOPSEMA provide scientific evidence to support using a lower threshold than recommended through the NMFS guidance (160db). Southall (2024) and Ellision (2012) emphasize the need to move away from using thresholds for behavior disturbance.

This is a narrow and incorrect finding. Activity limitations in s8.1 of Appendix E7, repeated in Appendix A2, effectively extend the avoidance to September and October.

Question: How was this considered by NOPSEMA in this finding?

This finding is too simplistic. Based on CGG's analysis of the data which shows no observed SRW in October in the last 6 years and is further nullified given our commitment to not survey the lines (1-20) that are potentially causing low level behavioural disturbance (even if one was to apply the 120 dB thresholds) should any SRW remain in the reproduction BIA.

Based on the content of the Regia MSS EP, this is a demonstrably false statement.

Question: What evidence does NOPSEMA have, based on the Regia MSS EP, that would make this statement true?

Item 2.3 (1)(a)

NOPSEMA Finding:
Issue: As outlined in OMR#1, letter point 3.5, it is not evident from the EP whether the proposed combination of methods for detecting blue whales and southern right whales will be effective to inform decision making for timely implementation of control measures to prevent the activity from having an unacceptable impact or an impact that is inconsistent with the recovery plans.
Reasons: CGG has proposed a combination of visual and acoustic detection methods. The EP acknowledges the limitations associated with the various detection methods and notes the importance of a multifaceted approach to whale detection. However, it is currently unclear that the combination of detection methods proposed will have sufficient spatial coverage and detection rates to ensure the suite of control measures can be effectively implemented.

NOPSEMA Finding

1. "In relation to acoustic detection:

a. The ADM is a necessary component of the detection strategy.

However, the EP (including EPSs in Appendix G1) still states that deployment of the ADM array is subject to a successful trial.

The EP needs to include a clear commitment to the implementation of ADM as part of the overall suite of detection measures."

Question:
1. Could NOPSEMA please advise where in the EP documentation that this conclusion has come from?

CGG has never relied on one single method of detection and has always committed to a multiple lines of evidence approach. See excerpt from FMP

Appendix G2: Fauna Management Plan (Excerpt)

This variability underscores the importance of our multifaceted approach to whale detection. While acoustic detection adds a valuable dimension to detection capabilities, it is inherently dependent on whales vocalising. Consequently, the use of multiple detection methods, including visual and aerial observations and acoustic detections systems, enhances overall confidence in detecting whales, both above and below the water surface, regardless of their vocalisation patterns.

CGG cannot and will not make the commitment NOPSEMA has mandated for until a trial has been successful.

Question: What is the gap in environmental management that needs to be filled. CGG, as the titleholder, will consider how best to fill this gap.

Item 2.3 (1)(b)&(c)

NOPSEMA Finding

"In relation to acoustic detection:

b. The particular ADM system being trialled by CGG is not yet demonstrated to be effective in detecting low-frequency cetaceans like blue whales and southern right whales. The EP does not set out measures of the level of performance to be implemented in order to have effective spatial coverage and the ability to detect low-frequency cetaceans in the presence of sound produced from the activity. Measure requirements include:

i. Minimum detection range and the effective vocalisation detection rate (e.g. >50% detection of vocalisations at 10 km range) when accounting for the signal-to-noise ratio under a range of representative background noise levels that may occur during an activity.

ii. Commitment to hydrophone/receiver operating frequencies (and sensitivity) that cover the frequency range of the marine mammal species of interest; use of species-specific detection software; and data relay rates that are appropriate to inform a timely mitigation response."

c. The EP needs to identify the relevant factors and decision-making criteria that will be considered to determine the final number, locations and configuration of the ADMs needed to detect and localise blue whales and southern right whales, and achieve the required spatial coverage.

CGG View

We are deeply concerned that NOPSEMA's decision to refer core elements of the EP assessment to the Australian Antarctic Division (AAD)—without first requesting clarification or additional evidence from the titleholder—represents a failure of independent, objectives-based regulation. This approach undermines procedural fairness, mischaracterises the role of the regulator, and risks chilling future innovation.

Despite clear and detailed explanation in the EP, NOPSEMA failed to properly account for the role and function of the Acoustic Detection Monitoring (ADM) system within our mitigation strategy. The ADM was never intended to operate as a long-range passive detector alone, but as a strategically positioned, real-time monitoring system designed to provide presence and exposure data between the survey and key whale habitat. NOPSEMA's fixation on theoretical detection range entirely missed the point—and purpose—of the mitigation.

CGG has never stated it would be relying on this measure as the cornerstone of its program. It is a complimentary detection method which, if successfully trialed, could be added to a suite of measures. Any decisions on the final number, location and configuration of the ADM systems will be based on the outcomes of the trial.

Questions

1. Why did NOPSEMA choose to seek speculative, third-party *scientific* opinion on a proprietary mitigation *technology* rather than ask the titleholder to provide additional information as required under Regulation 32?
2. How does NOPSEMA reconcile its obligations under an objectives-based regulatory regime with its decision to bypass the proponent in favour of AAD, an entity with no responsibility for development, implementation, or justification of the proposed control measure?
3. How can CGG prove 50% of detection rates at 10km, how will we know the 50% of detections that were missed?
4. Are NOPSEMA stating the ADM need only be 50% effective?
5. Can NOPSEMA advise on how this may be possible or any other alternatives?
6. Can NOPSEMA please provide more information regarding references to species-specific software and data relay rates.

Item 2.3 (2)

NOPSEMA Finding

"2. In relation to the overall integration of visual and acoustic methods:

a. The EP does not currently demonstrate that visual detection methods and acoustic detection methods will be effective independently of each other...

...over the required detection ranges...

...so that the activity can be managed in a manner that is not inconsistent with the recovery plans.

In particular recognising the limitations of acoustic detection, the EP does not demonstrate that visual detection methods will have sufficient coverage over the required detection area."

Questions:
1. How have NOPSEMA considered CGG's onshore monitoring program?
2. Would NOPSEMA agree no detection method (MMO and PAM) are effective independently of each other over in any project given MMO's are 50% effective and PAM requires cetaceans to vocalise?

Questions:
1. How did NOPSEMA consider the utility/effectiveness of the spotter vessel?
2. How did NOPSEMA consider the utility/effectiveness of MMO's on the spotter vessel?
3. How did NOPSEMA consider the utility/effectiveness of PAM on the spotter vessel?

Questions:
1. What part of the recovery plan mandates how an impact is managed?

Questions:
1. Why are NOPSEMA assuming here that acoustic detection has no value?
2. Why would visual detection have some elevated standing given its own limitations during night and low-vis conditions?

Item 2.4

NOPSEMA Finding

Issue: The assessment of underwater sound impacts does not demonstrate that impacts and risks to foraging little penguins during the chick rearing and provisioning stage will be managed to acceptable levels. **Reasons:** In response to OMR#1, letter item 3.3, CGG has made revisions to the impact assessments for little penguins. However, while it is noted from the revisions that little penguins have some foraging flexibility to compensate for variability in food availability, the EP does not demonstrate with clear and supported evidence that the level of flexibility in their foraging will be sufficient for foraging little penguins to tolerate potential disturbance and avoidance, noting that there remains uncertainty regarding the distances and sound levels that may result in behavioural avoidance.

CGG Response

NOPSEMA's assessment of our response to questions raised around Little Penguins ability to forage effectively if the Regia MSS occurs, appears to have either not understood or dismissed **our inclusion of clear and supported evidence**. We provide extracts of evidence from our last response from which we see no discussion or examination of from NOPSEMA as evident in their response.

Food Source

A key reference that is cited to support seismic effects on penguins (Pichegru et al 2017) found there were no significant changes in distribution and/or abundance of small pelagic fish in the region compared to a few months prior to or after the seismic operations (Pichegru et al 2017). An even more targeted study that exposed herring schools to a full-scale 3D seismic survey off Northern Norway found no changes in the behaviour of herring schools from a transmitting seismic vessel as it approached from a distance of 27 km to as close as 2 km (Pena et al 2013). The schooling behaviour of sardines is complex and varies within and among locations, days, months and years at both spatial and temporal scales (Ward et al 2011). This variability is clearly intrinsic to their behaviour and would influence feeding strategies and adaptability of those species that target them as a food source.

Recent work by Ward et al (2023) has discovered that sardine stocks in the SE Region which includes the EMBA for the Regia MSS have been underestimated by degrees of magnitude. There exists significantly greater stocks of the key food resource for Little Penguins than has ever previously been estimated. They considered that 76,617 km2 is likely to be a conservative estimate of the total spawning area of the South-eastern stock and that 346,388 t (95%CI = 143,936–548,840 t) is also likely to be a conservative estimate of the total spawning biomass.

Feeding Behaviour

A subsequent tagging study conducted on breeding colonies at Gabo Island and London Bridge confirmed little penguins are shallow divers and inshore foragers at these study sites (Camprasse et al. 2017). This study found a lack of short-term consistency in bearings to maximum distance, indicating that over subsequent days, little penguins foraged in different locations within their home range. These findings confirm that little penguins are behaviorally highly plastic (Camprasse et al. 2017). The study also found individual consistency in foraging metrics was only present over subsequent foraging trips, with no consistency detected for longer timescales. This suggests that little penguins are adapted to feed on prey that is temporally unpredictable on timescales longer than multiple consecutive days. This study concluded, although little penguins have a limited foraging range during their breeding season, foraging behaviour and its consistency varied extensively across sites, years, breeding stages and clutches, showing that little penguins are highly plastic and have high flexibility in foraging behaviour (Camprasse et al. 2017).

A dedicated study of little penguin diving behaviours during nesting season and across their whole distribution range, clearly shows that they prefer to constrain their diving to shallow water **(Chiaradia et al 2007).** Across 4 widely separated colonies they found almost all Little Penguin dives were less than 50m deep with the overwhelming majority less than 30m deep (Figure F3- 6). When the bathymetry of the Otway coastline is examined, it can be seen that the 50m contour line lies within 15km of the coast and the 30m contour line lies within 5km of the coast. While studies into daily feeding range limits for nesting penguins have found forays out to 30+ km the vast majority of feeding during this period is occurring within 15-20 km of their nesting sites and this has been confirmed across multiple studies from multiple locations (e.g. Montague and Cullen, 1988; Hoskins et al. 2008; Berlincourt and Arnould, 2014; Pelletier et al. 2014; Phillips et al. 2019, 2022).

CGG View

- We have provided evidence that there is an abundance of their preferred food at levels previously not realized to exist along with evidence that baitfish species have been shown to have little reaction to seismic.
- We have provided evidence that their feeding and foraging behaviour is plastic and highly variable in space and time.
- We have provided evidence that the overwhelming majority of foraging occurs in water depths less than 30m deep which translates to within 5km of the coastline along the Otway Coast.

Questions

1. Can NOPSEMA please explain how the peer-reviewed literature that is described here does not provide clear, supporting evidence for Little Penguin colonies being insufficiently hindered in their daily (highly plastic and variable) behaviours such that they will be capable of accessing food and provisioning for their young without jeopardizing colony survival?

Item 2.5 (1)

NOPSEMA Finding
Issue: To demonstrate that an acceptable level of impact or risk has been met, the evaluation needs to demonstrate that the defined acceptable level has been met and that the EPO can be achieved (GN1344, Section 3.5). It is not clearly demonstrated whether some defined acceptable levels of impact in Appendix E have been or can be met.

NOPSEMA Reasons
1. Plankton communities should not be exposed to peak sound levels of >210dB SELcum24hr (Appendix E2) – Predictive modelling indicates that plankton communities will be exposed to levels that exceed the selected threshold. Please also note that it is unclear whether the SEL24h threshold is the correct threshold to be referenced in this instance given that the text refer to 'peak sound level' and it is the peak pressure criterion that CGG has used to determine the extent of the aspect and references in the evaluation of impacts to zooplankton.

Questions

1. Can NOPSEMA confirm whether the original concern relates primarily to the use of the SEL24 hr metric to describe a "peak" exposure, and whether clarifying that the acceptable level is based on SELcum 24hr resolves this ambiguity?
2. Does NOPSEMA agree that defining the acceptable level in terms of exposure as being "over a spatial and/or temporal scale likely to result in significant disruption to population dynamics" provides a more appropriate and assessable impact threshold for plankton communities?
3. Is it NOPSEMA's expectation that the EP explicitly demonstrate that any predicted exceedance of the 210 dB SELcum 24hr threshold is restricted to a small enough area or duration that plankton populations are not meaningfully affected at a population scale?
4. Is the proposed change sufficient to address the NOPSEMA finding (change also made to Table E2-1)?

Table E2-1 Appendix E3 (pg29) (Extract)

Defined Acceptable Level (From Table E2-1)	Environmental Performance Outcome	Rationale
Sound exposure to plankton communities does not compromise ecological integrity of the pelagic food web.	**As a result of complying with the sound source volume and activity limitations, sound emissions will not disrupt the ecological integrity of plankton communities.**	This EPO can be supported through spatial and temporal management of sound exposure through compliance with the activity limitations. Doing so will ensure impacts are within the modelled predictions. This method of monitoring the source of the impact is the only way to determine whether impacts will be of an acceptable level given the conclusion that the nature of the impacts to plankton communities are immeasurable.
Plankton communities should not be exposed to ~~peak~~ sound exposure levels of >210dB SELcum24hr over a spatial or temporal scale likely to result in significant disruption to population dynamics.	**As a result of complying with the sound source volume and activity limitations, no impacts to plankton communities beyond 230 metres from the sound source.**	This is an appropriate EPO because impacts at these distances are the foundation of the acceptable levels' demonstration and sound discharges can be measured and verified to conform with modelled predictions.

Item 2.5 (2)

NOPSEMA Finding
Issue: To demonstrate that an acceptable level of impact or risk has been met, the evaluation needs to demonstrate that the defined acceptable level has been met and that the EPO can be achieved (GN1344, Section 3.5). It is not clearly demonstrated whether some defined acceptable levels of impact in Appendix E have been or can be met.

NOPSEMA Reasons
2. No fish should be exposed to sound at or exceeding threshold levels for greater than 24 hrs for a TTS set at 186 dB SEL24hr (Appendix E3) – Predictive modelling and the impact evaluation in Appendix E3 indicates that fish may be exposed to levels that exceed the selected threshold (particularly (sic) demersal and benthic fish species). The intent or appropriateness of referencing exposure to a SEL24h threshold for greater than 24 hours is not explained.

Questions

1. Can NOPSEMA clarify whether the concern is with the phrase "exposed for more than 24 hours" and how it applies to the SEL24hr threshold? (Is this response semantic or technical in nature?)
2. Is it NOPSEMA's expectation that no fish should exceed the 186 dB SEL24hr threshold in any 24-hour period, even if the exposure occurs only once?
3. How did NOPSEMA consider information in the EP that demonstrates how fish will avoid or be otherwise protected from repeated or prolonged exposure above the SEL24hr threshold?
4. Is the proposed change sufficient to address the NOPSEMA finding (change also made to Table E3-1)?

Table E3-1 Appendix E3 (pg24) (Extract)

Category	Defined Acceptable Levels (General)	Defined Acceptable Levels (Aspect Specific)	Rationale
Biological	Impacts and risks to biological features will be temporary / reversible, small scale, and/or low intensity environmental damage at population levels.	No fish should be exposed to sound at or exceeding threshold levels ~~for greater than 24 hrs~~ for ~~a~~ TTS set at 186 dB SEL24hr.	In fish with no swim bladder, TTS is a temporary reduction in hearing sensitivity caused by exposure to intense sound. After termination of the sound source normal hearing ability returns over a time that is variable, depending on the intensity and duration of sound exposure (Popper et al. 2014). Sound exposure guidelines proposed in Popper et al. (2014) use a cumulative sound exposure level of 24 hrs (SELcum24hrs) for TTS. Recoverable Injury: 216 dB SELcum24hr. TTS: 186 dB SELcum24hrs. In fish with a swim bladder not involved in hearing, pressure-related injuries may occur, but recovery is possible. TTS for this group is also set at 186 dB SELcum24hr, and recoverable injury at 203 dB SELcum24hr.

Item 2.5 (3)

NOPSEMA Finding
Issue: To demonstrate that an acceptable level of impact or risk has been met, the evaluation needs to demonstrate that the defined acceptable level has been met and that the EPO can be achieved (GN1344, Section 3.5). It is not clear demonstrated whether some defined acceptable levels of impact in Appendix E have been or can be met.

NOPSEMA Reasons
3. Sound exposure to invertebrates must be below mortality/ mortal injury at thresholds in exceedance of 202 dB PK-PK (Appendix E4) – Predictive modelling and the impact evaluation in Appendix E4 indicates that invertebrates will be exposed to levels that exceed the selected threshold.

Questions

1. Can NOPSEMA confirm whether the concern relates to the original framing implying that any exceedance of 202 dB PK-PK is inherently unacceptable, rather than being assessed based on ecological consequence?
2. Would NOPSEMA consider it acceptable to reframe the defined acceptable level to acknowledge that individual invertebrates may be exposed above the 202 dB PK-PK threshold, provided this does not result in population-level or functional community impacts?
3. Does the proposed revised definition — which links acceptability to abundance, distribution, and reproductive capacity of affected invertebrates — meet NOPSEMA's expectations for demonstrating that an acceptable level of impact can be achieved?
4. Is the proposed change sufficient to address the NOPSEMA finding (change also made to Table E3-1)?

Table E4-3 Appendix E4 (pg28) (Extract)

Defined Acceptable Level (From Table E4-2)	Environmental Performance Outcome	Rationale
Fish and aquaculture stocks continue to be assessed as the same stock status they held prior to commencement of the activity.	**There will be no measurable change to biomass attributable to the activity as measured through annual VFA or AFMA Stock Assessment Reports.**	This EPO is supported through alignment with fisheries science reporting and stock assessments, allowing external verification of biomass trends. It provides a clear threshold for biological consequence and supports cumulative impact management.
Exposure of individual invertebrates to sound levels exceeding 202 dB PK-PK may occur, but is acceptable provided that the affected species or functional groups have sufficient abundance, distribution, or reproductive capacity to maintain population viability and ecological function. ~~Sound exposure to invertebrates must be below mortality/ mortal injury at thresholds in exceedance of 202 dB PK-PK.~~		
Sound exposure to molluscs		

Item 2.5 (4)

NOPSEMA Finding

Issue: To demonstrate that an acceptable level of impact or risk has been met, the evaluation needs to demonstrate that the defined acceptable level has been met and that the EPO can be achieved (GN1344, Section 3.5). It is not clear demonstrated whether some defined acceptable levels of impact in Appendix E have been or can be met.

NOPSEMA Reasons

4. Sound exposure to any blue whale / southern right whale must be below the behavioural effect threshold of 160 dB SPL (Appendix E7) – The intent of this defined acceptable level seems to be about having control measures in place to prevent a level of behavioural disturbance that may constitute displacement / utilisation within a BIA. However, by referencing the threshold, when a blue whale / southern right whale is detected within the predicted effects range, exposure will have already exceeded this (single impulse) threshold. Please also note letter item 3.2 above in relation to the application of the 160 dB threshold for southern right whale reproduction behaviours.

CGG Response

- CGG notes NOPSEMA's concern that defining the 160 dB SPL threshold as a behavioural exposure limit may be inappropriate on the basis that mitigation cannot be applied until after a whale has already entered the predicted effects range.
- This concern does not reflect the actual mitigation capability described in the EP. As clearly outlined in the Fauna Management Plan and Appendix E7, CGG's detection system enables the presence of blue and southern right whales to be identified out to 23 km from the source — a distance which notably exceeds the modelled 160 dB SPL isopleth boundary (~10 km).
- This invalidates the basis of NOPSEMA's assertion, as it overlooks the fact that CGG can and does implement mitigation measures proactively, well before an individual whale is exposed to 160 dB SPL. In effect, exposure to the behavioural threshold is not an inevitable outcome, as the mitigation system is specifically designed to prevent it.
- Accordingly, the defined acceptable level — that blue and southern right whales must not be exposed to sound levels exceeding 160 dB SPL — is not only achievable, but directly supported by the pre-emptive detection and response mechanisms in place.

Questions

1. Can NOPSEMA clarify whether its finding assumed that whale detection cannot occur until individuals are already within the 160 dB SPL zone — and if so, whether this assumption remains valid considering CGG's demonstrated detection range of up to 23 km?
2. In circumstances where detection capability clearly exceeds the extent of the predicted behavioural effects zone, does NOPSEMA accept that a defined acceptable level based on the 160 dB SPL threshold can be achieved and enforced through proactive mitigation?
3. Does NOPSEMA still consider this finding to be valid given that mitigation is demonstrably triggered before behavioural threshold exceedance occurs, or will this point be reconsidered once the relevant detection range and mitigation sequencing are clarified in the EP?

Item 3.1(1)

NOPSEMA Findings
Issue: The EP contains EPOs that are not demonstrated to be achievable or cannot be easily monitored for compliance (GL1721: Section 9.2). The EP also contains EPOs that are inconsistent or not clearly linked to acceptable levels (GL1721: Section 9.2).

NOPSEMA Reasons
1. There are EPOs in Section 11 of the various impact assessments in Appendix E that are not included or contain different wording from those presented Appendix G1. While it is noted that differences between the appendices may be the artefact of the process that CGG has used to develop the EP, it is also noted that some EPOs in Appendix E have been revised since to previous submission in order to be consistent, but others haven't. It is also noted that the wording of some of the EPOs in Appendix E may be more appropriate and for monitoring compliance than EPOs in Appendix G1. For example:

a. Appendix E2, Section 11 includes EPOs "As a result of complying with the sound source volume and activity limitations, sound emissions will not disrupt the ecological integrity of plankton communities" and "As a result of comply[ing] with the sound source volume and activity limitations, no impacts to plankton communities beyond 230 metres from the sound source", **which are not included in Appendix G1.**

b. Appendix E9, Section 11 includes EPO "Light emissions are managed to avoid displacing turtles or disrupting nesting, foraging, or migratory behaviours within or near biologically important areas", **which is not included in Appendix G1.**

From the EP: Table E2-2 Appendix E2 (pg29)

11 Environmental Performance Outcomes

CGG is required to set environmental performance outcomes (EPOs) to ensure that impacts are of an acceptable level.

Table E2-2 - Environmental Performance Outcomes and Justifications

Defined Acceptable Level (From Table E2-1)	Environmental Performance Outcome	Rationale
Sound exposure to plankton communities does not compromise ecological integrity of the pelagic food web.	**As a result of complying with the sound source volume and activity limitations, sound emissions will not disrupt the ecological integrity of plankton communities.**	This EPO can be supported through spatial and temporal management of sound exposure through compliance with the activity limitations. Doing so will ensure impacts are within the modelled predictions. This method of monitoring the source of the impact is the only way to determine whether impacts will be of an acceptable level given the conclusion that the nature of the impacts to plankton communities are immeasurable.
Plankton communities should not be exposed to peak sound levels of >210dB SELcum24hr	**As a result of comply with the sound source volume and activity limitations, no impacts to plankton communities beyond 230 metres from the sound source.**	This is an appropriate EPO because impacts at these distances are the foundation of the acceptable levels' demonstration and sound discharges can be measured and verified to conform with modelled predictions.

From the EP: Table E9-3 Appendix E9 (pg30)

11 Environmental Performance Outcomes

Environmental Performance Outcomes (EPOs) are measurable and activity-specific outcomes that describe the environmental performance the titleholder must achieve to ensure impacts and risks are managed to acceptable levels. EPOs are critical to the structure of an Environment Plan because they form the clear link between the defined acceptable level of impact and the predicted level of environmental consequence. Each EPO must be measurable, achievable, and within the control of the titleholder to implement, providing a transparent and enforceable statement against which performance can be assessed.

Table E9-3 - Environmental Performance Outcomes and Justifications

Defined Acceptable Level (From Table E9-2)	Environmental Performance Outcome	Rationale
Artificial light will be managed so wildlife is not disrupted within, nor displaced from, important habitat, and is able to undertake critical behaviours such as foraging, reproduction and dispersal.	**Biologically important behaviours within a BIA or outside a BIA can continue while the activity is being undertaken.**	These EPOs are supported through adherence to the Vessel Light Management Plan, which includes documented procedures for minimising light intensity and optimising directional control. Evidence of performance may include lighting audits, crew training records, absence of wildlife disturbance incidents and verification that lighting is consistent with safe navigational standards while minimising ecological risk.
Artificial light exposure to fish, invertebrates, and zooplankton will not exceed those produced by other marine users during nighttime operations in the region and will not cause impacts at a population level.	**Light emissions will be reduced to minimum levels for safe operations and navigation in accordance with the Vessel Management Plan**	
Turtles continue to utilise the area without disruption to critical life-cycle behaviours.	**Light emissions are managed to avoid displacing turtles or disrupting nesting, foraging, or migratory behaviours within or near biologically important areas.**	

Context
The requirement is that "The EP must set out the environmental performance outcomes for the activity against which the performance of the titleholder in protecting the environment is to be measured." Based on the extracts, "the EP" has clearly set out the EPO's reference.

Questions
1. Given this is OMR#2 in the process can NOPSEMA confirm that what appears to be a simple editing event is grounds for preventing acceptance?
2. If so, can you provide clarity as to how this response will provide material improvement to the environmental management of the project?

Item 3.1(2)

NOPSEMA Finding
"A number of EPOs relevant to managing the impacts of underwater sound are either not clearly linked to CGGs defined acceptable levels, do not demonstrate that they will be achievable or easily monitored for compliance, are ambiguous, or contain errors."

Comparison of Regulatory Requirement to EP Content

Regulation 21(7)(b): The EP must set out the environmental performance outcomes for the activity against which the performance of the titleholder in protecting the environment is to be measured.

Where:

Regulation 5: ***environmental performance outcome***, for an activity, means a measurable level of performance required for the management of environmental aspects of the activity to ensure that environmental impacts and risks of the activity will be of an acceptable level.

Context
The 4 EPOs deemed 'inconsistent' or 'not clearly linked to acceptable levels' were included in Table E7-8 along with 7 others which were similarly framed. They are clearly linked to the defined acceptable level. The statements demonstrably have every important feature of an EPO.

Questions
1. Notwithstanding the editorial error, given the above, how can the NOPSEMA findings be explained?

Table E7-8 Appendix E7 (pg48) (Extract)

Defined Acceptable Level (From Table E7-1)	Environmental Performance Outcome	Rationale
Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that it minimises behaviour disturbance.	As a result of the implementation of real-time monitoring and activity limitations, SRW are not exposed to sound levels that cause sustained behavioural disturbance within or adjacent to BIAs or HCTS.	This EPO can be achieved through the application of conservative behavioural disturbance thresholds (e.g. 160 dB SPL), exclusion zones based on modelled sound fields, and operational controls (e.g. shutdowns, delays) when whales are detected near sensitive areas. It ensures behavioural integrity is maintained during critical life-cycle periods.
Sound exposure to blue whales must be below a TTS per pulse and TTS 24 hr SEL thresholds of 216 dB and 168 dB respectively.	As a result of implementing shutdown or relocation procedures when a blue whale remains within the 23 km ensonified area for more than 12 hours, blue whales will not be exposed to physical injury from sound exposure.	This EPO reflects a measurable acoustic exposure limit based on peer-reviewed scientific criteria and can be verified through comparison of sound source discharges to modelled exposure contours with observed blue whale presence data. Applying this limit ensures consistency with published risk criteria and supports species protection goals under environmental regulations. Although the defined acceptable level references a 24-hour duration, using a 12-hour trigger introduces a precautionary buffer to limit cumulative exposure for blue whales that may be foraging or resting in the area, providing greater assurance that TTS will be avoided.
Sound exposure to southern right whales must be below a TTS per pulse and TTS 24 hr SEL thresholds of 216 dB and 168 dB respectively.	As a result of implementing shutdown or relocation procedures when a SRW remains resident in the 15 km ensonified area for more than 12 hours, SRW will not be exposed to auditory impairment.	The 15 km radius is based on the modelled TTS distance (14.2 km) and allows a precautionary spatial buffer. This EPO is supported by real-time visual and acoustic monitoring to detect presence and duration of SRW occupancy. The 12-hour threshold ensures that individuals are not exposed to cumulative levels that could cause TTS, reinforcing compliance with the SRW Recovery Plan. While the defined acceptable level refers to 24-hour exposure, applying a 12-hour criterion provides a more protective buffer, limiting cumulative dose for whales exhibiting site fidelity or slow transit through the ensonified area.
Exposure of marine mammals to impulsive sound will not result in population-level effects.	As a result of the implementing the suite of mitiation measures, marine mammals ***will not*** experience auditory injury or sustained behavioural disturbance affecting survival, reproduction, or population distribution.	This EPO is supported through the acoustic modelling, use of scientifically defined injury and behavioural thresholds, implementation of visual and acoustic monitoring, and shutdown protocols. All other EPO's also support the delivery of this EPO. It provides a clear linkage between the suite of mitigation actions, ensuring that exposure remains below levels of ecological significance.

Item 3.2(a)

NOPSEMA Finding *(EPS cannot be easily monitored for compliance)*
"Shutdown procedures include EPSs with shutdown criteria such as 'Shutdown the sound source if a [Blue Whale / Southern Right Whale] remains resident in the [23 km / 15 km] ensonified area for more than 12 hours'. It is not clear how this demonstrates that the desired environmental performance (i.e. no TTS) is being met, or how these EPSs can be monitored for compliance; specifically, how will CGG ascertain that an individual whale is tracked and remains resident within the ensonified area for 12 hours. It is also possible that an individual whale could experience TTS within shorter timescales than 12 hours, depending upon its proximity to the seismic source."

Context
The deficiency raised is that this EPS cannot be easily monitored or demonstrate that the desired environmental performance is being met.

The EPS is measurable and practical within the limits of current technology	The EPS is aligned with the goal of preventing TTS and thus demonstrates environmental performance	The EPS supports compliance monitoring and auditability	The EPS is consistent (And more precautionary) with international and accepted Australian guidance

• The EPS is founded on a definable spatial threshold (the ensonified area derived from validated acoustic modelling) and a temporal threshold (12 hours).
• Both spatial and temporal components are objectively verifiable:
  • Spatial boundaries are georeferenced using real-time vessel GPS and pre-modelled sound exposure zones.
  • Temporal presence is monitored using real-time detection data
  • Time-stamped logs (from PAM detections and visual sightings) enable tracking of potential whale presence in the defined zones.
	• The 12-hour residency threshold is a precautionary and conservative proxy for cumulative sound exposure, which is the scientifically recognised cause of Temporary Threshold Shift (TTS) in marine mammals.
	• The regulatory concern suggests that TTS may occur within shorter durations depending on proximity—but this is precisely addressed by the multi-zone, proximity-based mitigation hierarchy in the Fauna Management Plan
	• By combining both proximity-based triggers and cumulative residency triggers, the EPS actively prevents both acute and chronic acoustic exposure, thereby achieving the desired outcome of no TTS.
		• Compliance can be monitored in real-time using an integrated system outlined with multiple detection methods explained in the EP.
		• The 12-hour threshold is not based on certainty of identity (i.e., knowing it is the exact same whale), but on the precautionary assumption of residency based on persistent or recurring detections within a defined temporal-spatial zone.
		• Conservative assumptions are applied in ambiguous cases: e.g., if a whale is observed in the zone for 6 hours and then redetected in the same zone 7 hours later, it is presumed resident unless movement outside the zone is confirmed.
			• The 12-hour criterion was derived using best available science and application of precaution.
			• It aligns with the NMFS 2018 and 2024 Technical Guidance on cumulative sound exposure, which uses sound exposure level (SEL) thresholds integrated over time to assess risk of TTS.
			• The 12-hour window is a practical implementation of this concept within an operational context.

Questions
1. Based on the above, all of which was considered in the EP, how can NOPSEMA justify this finding?

Item 3.2 (b)

NOPSEMA Finding *(EPS cannot be easily monitored for compliance)*
"The seismic source will only be discharged in the Pygmy Blue Whale foraging BIA off Otway when the presence and distribution of Pygmy Blue Whales and other foraging whales have been assessed by CGG and confirmed to be compatible with the activity proceeding without causing unacceptable disturbance.' It is also unclear what information will be available to CGG to enable the determination of presence and distribution of pygmy blue whales and other foraging whales off Otway prior to commencement of the survey."

Context
The deficiency raise is that this EPS cannot be easily monitored or demonstrate that the desired environmental performance is being met.

The EPS is clear and precautionary	The EPS can be monitored and enforced using multiple data sources	The EPS is directly linked to the desired environmental performance outcome	Auditability and objective compliance pathway

• This EPS is clear in intent and structure. It establishes:
  • A defined geographic constraint (the Otway BIA);
  • A condition precedent to source discharge (assessment and confirmation of compatibility); and
  • An objective performance goal (no unacceptable disturbance to foraging whales).
• It provides a decision threshold: unless CGG can confirm compatibility between whale presence/distribution and the proposed activity, discharge will not occur. This is a definitive operational constraint that is both measurable and enforceable.
	• The EPS is supported by a multi-modal pre-survey assessment program that enables CGG to detect whale presence and assess risk before seismic operations commence in the Otway BIA. These include:
	  • Dedicated Aerial Surveillance Flights
	  • Acoustic Detection Moorings (ADM)
	  • Historical and Seasonal Distribution Data
	  • PAM and MFO integration
	  • Whale Expert Panel Oversight
	• These sources enable a composite, scientifically defensible judgment on presence and risk before discharge begins—creating a clear, auditable basis for compliance with the EPS.
		• The desired environmental performance outcome is to avoid unacceptable disturbance to pygmy blue whales while foraging. The EPS achieves this through the application of:
		  • A "no discharge without compatibility confirmation" rule, and
		  • A pre-survey assessment process using conservative triggers.
		In effect, the EPS:
		• Avoids foraging disturbance altogether if high concentrations of pygmy blue whales are detected
		• Ensures that if any whales are in the area, but at distances, densities, or behavioural states unlikely to result in disturbance, then the activity may proceed with mitigations
		• Allows for full discharge only when there is evidence of no or minimal ecological risk, consistent with ALARP and acceptable level determinations in Appendices F2 and F4.
			• Operational records (from aerial flights, ADM data, detection logs) are stored and reviewable.
			• The Whale Expert Panel's recommendations are documented and logged before any source activation.
			• If whales are detected and the panel advises against proceeding, the source remains off. If the panel advises compatibility, this justification is entered into the Environmental Officer's assessment report, providing a clear audit trail.
			• The performance standard is binary—either the assessment is completed and confirms compatibility (and seismic commences), or it does not (and seismic is deferred or relocated).

Questions
Based on the above, all of which was considered in the EP, how can NOPSEMA justify this finding?

Item 3.2(c)

NOPSEMA Finding
Issue: The EP does not demonstrate that it provides clear EPSs and measurement criteria that can be easily monitored for compliance and demonstrate that the desired environmental performance is being met (GL1721: Section 9.3).
Reason: The EP includes EPSs and/or measurement criteria that cannot be easily monitored for compliance or demonstrate that the desired environmental performance is being met. For example:
c. The EPS related to the Otway Adjustment Protocol control measure states that, "A claim can be lodged up to 180 days after the completion of the activity". This is inconsistent with the claim period stated in Appendix G4 (i.e., 183 days). Additionally, the Implementation Strategy interchangeably refers to this claim period as 6 months and 183 days

Context

NOPSEMA has claimed inconsistencies in other documents with ***higher timeframes*** for lodgement (183 days or 6 months) make compliance monitoring difficult. CGG does not view them as inconsistent.

Whilst different, these times are higher, ***clearly showing that they are delivering on the EPS*** commitment of 180 days. In this circumstance a higher timeframe is more beneficial to claimants as they have longer to claim.

Questions

1. Given the acceptance criteria is for there to be "appropriate….performance standards," can NOPSEMA explain why an EPS for lodgement of a claim within 180 days is inappropriate.
2. NOPSEMA's claim is that the EPS "cannot be easily monitored for compliance," given the clearly measurable timeframe in the EPS can NOPSEMA explain why the 180 days units are not measurable?

Item 4.1

NOPSEMA Finding
"EPS "Conduct weekly audits to assess the effectiveness of the environmental performance outcomes and standards, the activity limitations, the implementation strategy and identify areas for improvement" is not described in the scheduled audits and inspections section of the implementation strategy (Appendix B3, Section 5.6.3)"

Appendix G1 – Environmental Performance (pg5)

Environment Management System	Maintain comprehensive and up-to-date documentation of all processes, procedures, and records.	An audit shows compliance with documentation requirements and timely updates.
	Ensure all employees receive an activity specific induction on the environmental performance required for the activity and their environmental responsibilities.	Training records indicating that of employees and contractors have completed required induction.

Control Measures	Environmental Performance Standards	Measurement Criteria
	Establish clear communication channels for reporting environmental performance and incidents.	Daily and monthly reports demonstrate timely and accurate dissemination of information.
	Emergency response procedures are tested and shown to be capable of containing and mitigating potential environmental impacts in accordance with OPEP/OSMP requirements.	Pre-survey deployment exercises confirm that response resources can be deployed within response timeframes specified in the OPEP, with records showing containment of a simulated release scenario within acceptable limits.
	Conduct weekly audits to assess the effectiveness of the environmental performance outcomes and standards, the activity limitations, the implementation strategy and identify areas for improvement.	Audit reports showing completion of scheduled audits and implementation of corrective actions.
	Perform annual management reviews to evaluate the environmental performance outcomes and standards and make necessary improvements.	Meeting minutes and action plans from management reviews demonstrating continuous improvement.
	Ensure that suppliers and contractors comply with the organization's HSE requirements.	Supplier audits and compliance reports showing adherence to EMS standards.

Questions

1. What is the regulatory requirement to copy EPSs into the Implementation Strategy?
2. Given the above evidence from the EP, what is the gap that would prevent acceptance of the Regia MSS EP?

Appendix B3 – Implementation Strategy (pg32)

Compliance Check	Compliance Activity	Scope and Purpose	Occurrence
Audit	Daily report review	The purpose of auditing daily seismic and HSE reports is to verify that they accurately document survey activities, environmental monitoring, and safety performance, and that they meet regulatory, contractual, and internal reporting obligations. These audits help ensure the reports are suitable for compliance tracking, stakeholder communication, and operational oversight. The scope of the audit includes reviewing a sample of reports to confirm they consistently cover: • Operational data: acquisition activity, production figures, vessel and equipment status. • Environmental monitoring: marine fauna detections, mitigation actions, weather and visual effort. • HSE performance: crew exposure hours, incidents, toolbox talks, drills, and observations. • Technical quality: seismic data integrity, equipment performance, and navigation accuracy. • Structure and presentation: clarity, completeness, and readiness for integration into broader reporting. Audits use a structured checklist to assess completeness and traceability, with outcomes supporting continuous improvement and assurance that the reports meet their intended purpose.	At least weekly or on request.

Item 5.1(a)

Proposed additions to EP:

- Addition of consideration of reasonable buffer (see below) to E1 section 8.1 and Titleholder response to feedbacks **4124, 4125 & 4305**

Question: Is the proposed addition appropriate?

No sound source discharges within the Orange Roughy research program areas.

During consultation (Event IDs 2002, 3350, 1649, 2003, Feedback IDs 4125, 4305, 4124, 4337) claims were raised by a fishing association to avoid interference with an Orange Roughy Research Program by ensuring there was no data acquisition, or turns, over the sample collection areas, with a buffer between the acquisition and sample areas, with preferred non-acquisition months to be April to October. As shown in map MAP-REG-EPM-050_B (Appendix B12), the activity was reduced to ensure there is no overlap of sampling areas with the active source area, including turns.
There are no specific studies focused on seismic effects on Orange Roughy, however, inferences can be drawn from research on other species. In particular, multiple studies have investigated the impact of seismic surveys on the spawning behaviour of cod, given this is a period in the life cycle when individuals gather in large numbers (Mcqueen et al 2022, Mcqueen et al 2023). Both studies found cod were not significantly disrupted from their spawning behaviour after exposure treatments representative of a full seismic survey at distances ranging from 5-40km. These distances closely align with the proximity between the Regia MSS acquisition area and the Orange Roughy Study central sampling area, 5.27 km at its nearest point (see Appendix B12, map MAP-REG-EPM-050_B). Based on this, we do not anticipate any significant level of disturbance to Orange Roughy in the sampling area.
A small portion of the central sampling area overlaps with the operational area; however, this will not have a greater impact than any other vessel transiting the area. Therefore, there is no break to

NOPSEMA Finding: The previous OMR #1 letter point 7.1 (Reason #4) stated that no consideration was provided in the EP to avoiding the western orange roughy data collection(research) program (WORDaC) Central Sampling Area despite this being a key concern raised in consultation by SETFIA /Atlantis Fisheries, requesting “that no MSS collection or turning overlaps these areas and further that there be a reasonable buffer to ensure that fish are not disturbed” (Event ID 1649).The revised EP has addressed most concerns (e.g., adding a new activity limitation, "No sound source discharges within the Orange Roughy research program areas"). However, it is unclear if a reasonable buffer to ensure no acoustic disturbance to the research program areas has been considered in CGG’s assessment of merit, activity limitations or controls adopted, or subsequent responses to SETFIA/Atlantis Fisheries.

4124, 4125 & 4305	Interference with Orange Roughy Research Program: request for no data acquisition, or turns, over the sample collection areas, with buffer between the acquisition and sample areas.	As shown in map MAP-REG-EPM-050_B (Appendix B12), the activity was reduced to ensure there is no overlap of sampling areas with the active source area, including turns. There are no specific studies focused on seismic effects on Orange Roughy, however, inferences can be drawn from research on other species. In particular, multiple studies have investigated the impact of seismic surveys on the spawning behaviour of cod, given this is a period in the life cycle when individuals gather in large numbers (Mcqueen et al 2022, Mcqueen et al 2023). Both studies found cod were not significantly disrupted from their spawning behaviour after exposure treatments representative of a full seismic survey at distances ranging from 5-40km. These distances closely align with the proximity between the Regia MSS acquisition area and the Orange Roughy Study central sampling area, 5.27 km at its nearest point (see Appendix B12, map MAP-REG-EPM-050_B). Based on this, we do not anticipate any significant level of disturbance to Orange Roughy in the sampling area. A small portion of the central sampling area overlaps with the operational area; however, this will not have a greater impact than any other vessel transiting the area. Therefore, there is no break to the time series of the data, due to lack of overlap with the active source area. An activity limitation of No sound source discharges within the Orange Roughy research program areas, is in place.	1649, 2002 & 3350

Item 5.1(b)

NOPSEMA Finding: The EP states that equipment deployment and towing may occur anywhere at any time before petroleum activity commencement (Appendix A2, Section3.2.1). This does not appear to be appropriately reflective of outcomes of consultation with the Director of National Parks (DNP), which provided that transit through a marine park with gear deployed is allowable only in emergency situations where safety of life at sea is a priority (Event ID 6887). The joint NOPSEMA / Parks Australia Petroleum Activities and Australian Marine Parks guidance stipulates that DNP considers mining activities to encompass(but not be limited to) equipment maintenance, deployment and recovery, crew change and resupply. Consistent with DNP expectations and text elsewhere in the EP stating, "There will be no petroleum activities within an AMP", text in Appendix A2, Section 3.2.1 should be clarified to ensure towing of equipment outside of the Operational Area does not occur within an AMP except for during emergency conditions.

3.2.1 Design Envelope

Prior to the activity the vessels contracted by CGG are not part of any petroleum activity. During this time, the vessels are subject to all maritime laws but not the OPGGS Act and Environment Regulations. As such, pre-survey vessel activities such as movements to the region, equipment deployment, water depth monitoring, pre-start whale monitoring, towing equipment and weather avoidance may occur anywhere at any time before the petroleum activity commencement. However, consistent with consultation outcomes with the Director of National Parks (Event ID 6887), towing of equipment outside of the Operational Area must not occur within an Australian Marine Park (AMP) unless under emergency conditions where safety of life at sea is a priority. Prior to the activity the sound source can be in the water but must not be activated, tested, or in any way discharged.

Proposed changes: See excerpt above for editorial changes proposed.

Question: Are the proposed editorial changes provided appropriate?