Impact/Titleholder Report on Public Comment

CGG Services Australia (CGG) is proposing to undertake the Regia three-dimensional (3D) marine seismic survey (MSS) in Commonwealth waters of the Otway Basin. The purpose of the Regia 3D MSS is to collect high-quality geophysical data about rock formations and structures beneath the seabed and assess potential for new oil and gas discoveries.

The Regia 3D MSS is a typical 3D survey using methods and procedures like others conducted in Australian waters. No unique or unusual equipment or operations are proposed. The active source area comprises the area within which 3D seismic acquisition will be undertaken and has a maximum sail line distance of 1,700 km. The active source area is surrounded by a larger operational area (approximately 4,000 km^2), for the purpose of line turns, run-ins, run-outs, seismic testing, and support activities. The operational area at its closest is approximately 12 km south of Port Fairy. The seismic survey will be undertaken in water depths no shallower than 50 m, and no deeper than 200 m.

The Regia 3D MSS will take a maximum of 90 days to acquire, and may be undertaken in any month except January, February, and March. The precise timing of the survey is subject to vessel availability, weather conditions and other operational considerations, and will consider the seasonality of environmental sensitivities, where practicable.

The following Titleholder's Report on Public Comment applies to the Regia 3D MSS Environment Plan (EP), as required after completion of the public comment process. The Regia 3D MSS EP was submitted to NOPSEMA for completeness check and accepted as complete on 25 January 2024. Following acceptance, the EP was published on the NOPSEMA website for a 30-day public comment period. The EP was available for public comment from 25 January to 26 February 2024. CGG would like to thank the submitters for their responses pertaining to the Regia 3D MSS EP. A total of 14,879 public submissions were received from NOPSEMA.

The following report details the issues or themes raised from the received public comments grouped by key matters and matters. CGG has identified the sections of the EP that correspond to the matters raised, where the matters have been accounted for in the EP. Where applicable, CGG has indicated (by underlining), where updates have been made to the EP in response to the submissions received.

The titleholder and nominated liaison person contact details for the Regia 3D MSS EP are provided below.

Details of titleholder and liaison person

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1. Impact and Risk Assessment and Mitigations

	THEME	IMPACT AND RISK ASSESSMENTS AND MITIGATIONS (I)
#	*Comments received*	*Titleholder response*
Key Matter: Assessment and mitigation (general)		
I01	**Matter**: Inadequate assessment and mitigation measures (general) **Claim**: This EP needs to be refused outright as the impacts to our ocean environment and marine life have not been adequately considered, and measures to mitigate impact have not been detailed to a degree sufficient to demonstrate that marine life will not be harmed; and the continued existence of species not jeopardized. **Claim**: This Environmental Plan needs to be stopped as the impact on our oceans and marine life which have not been adequately reported on and mitigation procedures to our ocean environment and marine life have not been adequately considered, and measures to mitigate impact are not able to guarantee that marine life will not be harmed. **Claim**: CGG's assessment of risks and mitigation measures is questionable, lacking transparency and public consultation. **Claim**: The proposed Environment Plan (EP) does not include adequate measures to mitigate the impact of such an activity on the ocean environment and the marine life. **Claim**: Within the environment plan numerous threatened, endangered and critically endangered species are identified. The measures proposed to mitigate impacts on these species are acknowledgement of the dangers associated with seismic blasting, and at the same time fail to provide any assurance that these impacts will be adequately mitigated. **Claim**: The EP has failed to offer adequate mitigation strategies to protect cetaceans, seals and sea lions, or invertebrates. **Claim**: The Risk Management Plan and risk mitigation strategies are not fit for purpose. **Claim**: CGG\'s environmental plan lacks any proper harms it will cause and how these will be mitigated. **Claim**: It is the submitters view that the proposal to conduct seismic blasting in the location off the coast of Victoria outlined in the CGG Regina MSS proposal will cause significant harm to marine wildlife that is not adequately accounted for nor mitigated for in the CGG Environment Plan (EP). **Claim:** There is nothing in the EP that proposes a solution to the likely impacts that this operation will have on the range of marine species within the OA or the EMBA. **Claim:** The blast of an airgun of the type used in seismic surveys can reach a distance of up to 300,000kms and raise the background decibel level of the ocean by as much as 100 times (Torres, Klinck, Geospatial Ecology of Marine Megafauna Laboratory, 20174). The EP provided by Klarite for this project only considers an EMBA envelope of 150km beyond the operating area. Despite falling well short of the reach of the blasts from the airguns used to undertake seismic surveys, the environment planning area still takes in several sensitive marine ecosystems – including four RAMSAR listed areas - which sustain numerous threatened, endangered and critically endangered species.	CGG acknowledges claims regarding the identification, assessment and reduction of impacts and risks associated with the Regia MSS and has reviewed the Environment Plan (EP) in response to these claims. The environmental impact and risk assessment methodology is comprehensively described in EP Appendix B9 (Environmental Assessment Methodology) and is consistent with International Standards Organization (ISO) 31000:2009 Risk Management – Principles and Guidelines and NOPSEMAs guidelines and guidance notes, as described in Sections 1.1 and 2. CGG published its Environmental Assessment Methodology on the Regia MSS Consultation Hub website on 4 April 2023 so that identified relevant persons, and unidentified relevant persons in the community, could understand and comment on the quality of the methodology. Further, the methodology was adapted over time to reflect relevant person feedback and information discovered through the impact and risk assessment process. CGG has provided extensive information on: - Environmental impacts and risks associated with the proposed Regia MSS (EP Appendices D1-4 and E1-10) - Decision-making processes (including the ALARP, Acceptability and ESD assessments) (Appendix F1-4), and - Environmental performance and treatments (mitigation and management measures) that will be implemented and monitored for the duration of the Regia MSS to ensure control measure consistently perform to reduce impacts and risks to ALARP and Acceptable Levels (EP Appendix G1-5). CGG has considered these claims and is satisfied that the potential impacts and risks, and mitigation measures have been adequately addressed in the EP Appendices outlined above. As a result, the EP has not been updated in response to these claims.
I02	**Matter**: Impacts on local/ international ecosystems and migratory species	CGG acknowledges claims regarding impacts on regional ecosystems and migratory species and has reviewed the Environment Plan (EP) in response to these claims. Claims regarding impacts on international ecosystems are not considered credible given the spatial extent of predicted impacts and risks does not extend into international waters.

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#	***Comments received***	***Titleholder response***
	Claim: The full levels of impacts on local and International ecosystems and migratory animals has not been sufficiently modelled or understood or accounted for in the Environment Plan (EEP).	As explained in Appendix F1 Section 5.3.3 (Compliance with the EPBC Act), the primary environmental legislation within Australia is the Environmental Protection and Biodiversity Conservation Act 2002 (EPBC Act). NOPSEMA's authorisation processes have a Part 10 approval that applied to offshore petroleum activities as per the NOPSEMA EPBC Act Program. This program ensures that impacts on matters protected under Part 3 of the EPBC Act are not unacceptable. Matters protected by the EPBC Act, and considered in this EP, relevant to the stated claim include 'listed threatened species and ecological communities' and 'listed migratory species'. These are identified using the Commonwealth government's Protected Matter Search Tool (PMST), as documented in EP Appendix B5 (PMST Reports). Each impact and risk assessment (EP Appendices D1-4 and E1-10) has considered these matters and provides evidence that the proposed activity is not in conflict with any recovery plans or threat abatement plans for listed threatened/ migratory species or ecological communities, and show that the activity will not have unacceptable impacts on the values of these protected areas, nor on threatened/ migratory species. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, as outlined above. As a result, the EP has not been updated in response to these claims.
I03	**Matter**: Failure to acknowledge the mobile and unrestricted nature of ocean dynamics. **Claim**: The proposal by CGG explicitly states the extent of their operational areas. With respect to this, they submit that the entire extent of their activities, and the impacts, will be confined within these areas. The EP states that survey vessel navigation lines will follow GPS systems to ensure that they navigate accurately within the permit areas. Submitter submits that this amounts to a disconnect between the alleged impact and the actual environmental impact. Large bodies of water are subjected to widespread water movements (currents and tides, resulting in different volumes of water being impacted by each seismic blast, all determined by the direction and speed of oceans currents and tides present at each specific time at each specific location. The currents in the operational areas vary from <0.1 m/s up to approximately 0.8m/s or more. A current running at 0.8m/s is moving at 2.88km/h. See: <http://www.bom.gov.au/oceanography/forecasts/idyoc300.shtml?region=VICTAS&forecast=Current#>. In other words, the sub-benthic surveys Regia wish to conduct are static, but the environment above them is not static. It is therefore not possible for Regia to accurately claim that the impact of their proposal will be restricted to the zones they identify. Regia have failed to acknowledge that the environment in which they intend to operate is a mobile one. And that the effects of that operation are also mobile; they are not restricted. As large bodies of water are continuously in motion, the environmental impact of CCG's proposal is potentially thousands of times larger than the defined operational areas – thousands of times greater than their EP attests.	CGG acknowledges the claims regarding the mobile and unrestricted nature of ocean dynamics and has reviewed the Environment Plan (EP) in response to these claims. We concur that ocean dynamics are central to performing a rigorous impact assessment. Ocean dynamics are an input into independent sound modelling reports and have been considered within the impact assessments (Appendices E1-10). Based on the assessment conducted for the EP and feedback from consultation with marine scientists and environmental experts, we understand that the natural dynamics of ocean currents and tides plays a crucial role in the ocean's resilience to anthropogenic impacts, including those from seismic surveys. When assessing the impacts of seismic surveys on marine environments, it is crucial to avoid the assumption that such effects equate to destruction or are ubiquitous within the ocean environment. A proper evaluation of impacts is far more nuanced and involves a comprehensive understanding of the resilience, sensitivity, and recoverability of marine species and habitats to such activities. Ocean dynamics play a significant role in the assessments. For instance, the resilience of a species—or its ability to withstand disturbances—helps determine how impactful a seismic event might be. This resilience is often enhanced by the very mobility of water, which can help disperse and dilute energy. Additionally, the sensitivity of different species to specific disturbances varies greatly, with some capable of rapid recovery and adaptation in the face of temporary changes to their environment. Finally, the potential for recovery post-impact is a relevant consideration where we find the natural regenerative processes of the ecosystem, which are often aided by water currents, facilitate the return of ecological balance. Ocean currents and tidal movements are essential in dispersing and diluting effects from a range of pressures on the marine environment. These large-scale natural processes reduce (not increase) the overall severity of any potentially harmful effects. The continuous movement of water facilitates the recovery of marine environments by replenishing nutrients and oxygen levels and removing pollutants. This dynamic ensures that the affected areas are not isolated, allowing for faster natural rehabilitation and resilience against disturbances. The flow of ocean currents supports ecological connectivity by enabling the migration of species and the dispersal of larvae and nutrients, which are vital for maintaining healthy marine populations and ecosystems. This connectivity helps ensure that any localised impacts from the Regia MSS would not lead to long-term detrimental effects on marine biodiversity. The environmental planning and impact assessments incorporate these oceanic dynamics, both in modelling reports and impact assessments. The EP development process has adhered strictly to regulatory frameworks that mandate comprehensive assessments and minimise environmental footprint. The adopted strategies include seasonal and temporal adjustments to operations to avoid critical periods for marine fauna and technological enhancements in equipment to reduce sound levels and physical disturbances. These measures ensure that impacts from the survey remain within acceptable limits and do not exceed modelled predictions. While we acknowledge that the ocean's dynamic nature means that impacts can be spread over a larger area, the same dynamics also contribute to reducing the intensity and likelihood of significant adverse effects. The resilience of ocean ecosystems, supported by their inherent mobility, is a crucial factor that helps buffer and mitigate the impacts of offshore operations. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, as outlined above. As a result, the EP has not been updated in response to these claims.
I04	**Matter**: Flawed argument regarding animals moving away	CGG acknowledges claims regarding impacts to species associated with movement away from the Regia MSS and has reviewed the Environment Plan (EP) to ensure these impacts were appropriately assessed.

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	Claim: CGG has consistently presented the argument that animals (cetaceans, fish, birds) will move away from the seismic source during acquisition. CGG conclude that by moving away from the seismic source, the impact of seismic to these animals will be minimised. This argument holds significant flaws. For example: • Animals will undergo increased energy expenditure to move away from their preferred foraging/breeding grounds. • Animals will undergo increased energy expenditure to find alternative food sources and breeding locations. • By foraging and breeding in other regions, there is a displacement of foraging pressure, resulting in detrimental impacts to surrounding foraging/breeding areas. • The spatial scale CGG intends to create an acoustic disturbance is extensive, resulting in cetaceans, fish and seabirds having to move up to (or more than) 350 kms away before they are out of the OA. • Increased energy expenditure to avoid disturbances are known to result in decreased reproductive success for many species (Thorne et al., 2015).	CGG acknowledges that displacement is a possible consequence for some marine fauna exposed to underwater seismic survey noise. These consequences are discussed in EP Appendices: - E3 (Underwater Sound (Fish)) where impacts are not predicted to be distinguishable from annual variability in recruitment and catch rates. - E5 (Underwater Sound (Birds)) where the temporary increase in foraging distances associated with a seismic survey is considered unlikely to have a significant impact on individual penguins or the population. - F3 (Acceptable Levels of Impact and Risk), for example, Section 5.2.1.2 (Magnitude of Effect) which describes the potential for disturbance of migrating southern right whales mother which could increase their energy expenditure and result in a reduction of energy available for their calf and for their return migration (Christiansen et al 2014). Based on an average swim speed of between 3 – 3.3 km / hr (Charlton 2017) and a distance to the behavioural effect criteria of 9.51 km, the energetic costs would be extremely low if avoidance behaviour occurred. CCG will implement the requirements of EPBC Act Policy Statement 2.1— interaction between offshore seismic exploration and whales (for which the Regia MSS will implement all Part A and all Part B measures). These measures have been deemed as an effective mitigation within the updated draft National Recovery Plan for Southern Right Whales (DCCEEW 2023) to minimise the risk of acoustic injury to whales in vicinity of seismic survey operations and to minimise the risk of biological consequences from acoustic disturbance from seismic survey sources to whales in biologically important areas (e.g., breeding, calving, resting areas or confined migratory routes or feeding areas) or during critical behaviours (e.g., breeding, feeding, and resting). Based on the detailed assessment provided in the EP, displacement of individuals over long distances (≥ 350 km as claimed by submitter/s) is not predicted; however, CGG recognises that displacement may occur over tens of kilometres for some species and that the acoustic source may be audible beyond these distances. **CGG has considered these claims and has updated the EP Appendices E2 -E7, F1 and F3 to clarify that, while some displacement is expected from mobile taxa during the Regia MSS, the survey will not preclude animals from the Operational Area in its entirety. Instead, animals are expected to temporarily move away from the active acoustic source, but once the source passes, animals will be free to move back into the habitat that they departed from.**
I05	**Matter**: Aligning key threats with risk assessment **Claim**: Submitter recommends aligning key threats stipulated within the risk assessment with the protection laws for protected species.	CGG acknowledges claims regarding the importance of aligning the impact and risk assessments with the EPBC Act management plans for protected species and has reviewed the Environment Plan (EP) to ensure that this was done. CGG has aligned legislative and other requirements in Annexes for impact and risk assessments where threatened species have been identified with relevant management plans in place, i.e. EPBC Act Conservation Management Plans, Recovery Plans and Conservation Advice. For example, Annex 1 (Legislative and Other Requirements Relevant to Sound Emissions and Marine Mammals) of EP Appendix E7 (Impact Assessment – Underwater Sound (Marine Mammals)), provides the name of the relevant plan for each threatened species, a description of the requirements of the plan, an overview of the relevance of the plan to the environmental management of the Regia MSS, and information on how the requirements will be met. CGG has considered these claims and is satisfied that impact and risk assessments have been aligned with EPBC Act management plans for protected species, as outlined above. As a result, the EP has not been updated in response to these claims.
Key Matter: Assessment and demonstration of ALARP (as low as reasonably practicable) and acceptability		
I06	**Matter**: Compliance with Environment Regulations **Claim**: The EP is not appropriate for the nature and scale of the activity, it does not demonstrate that the environmental impacts and risks of the activity will be reduced to as low as reasonable practicable and it does not demonstrate that the environmental impacts and risks of the activity will be of an acceptable level, as is required by regulation 34(a), (b) and (c) of the Regulations. **Claim**: The Environmental Plan provided does not meet criteria for NOPSEMA's acceptance, set out under regula3on 10A of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth), sub-clauses (a) - (f). The EP does not sufficiently demonstrate the environmental impacts, or that the impacts will be of an acceptable level, with appropriate outcomes.	CGG acknowledges claims regarding compliance with the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 and has reviewed the Environment Plan (EP) to ensure these impacts were appropriately assessed. CGG has provided an assessment against each of the acceptance criteria for EPs as follows: - EP Section 5.1 (The EP is appropriate for the nature and scale of the activity). - (Appendices D1 – D4 and E1 – E10), and in the proposed management of environmental impacts and risks associated with the activity (Appendix G1 – G5). - EP Section 5.2 (The EP demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable). - EP Section 5.3 (The EP demonstrates that the environmental impacts and risks of the activity will be of an acceptable level). The environmental impact and risk assessment methodology is comprehensively described in EP Appendix B9 (Environmental Assessment Methodology) and is consistent with International Standards Organization (ISO) 31000:2009 Risk Management – Principles and Guidelines

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	Claim: The CGG EP submission presents several areas of concern, particularly regarding the project's potential cumulative impacts, adherence to environmental principles, and methodological transparency. In line with these concerns, this submission recommends a comprehensive review and adjustment of the project's environmental plan to ensure ecological sustainability and adherence to regulatory standards.	and NOPSEMAs guidelines and guidance notes, as described in Sections 1.1 and 2. CGG published its Environmental Assessment Methodology on the Regia MSS Consultation Hub website on 4 April 2023 so that identified relevant persons, and unidentified relevant persons in the community, could understand and comment on the quality of the methodology. The methodology was then adapted to reflect relevant person feedback and information discovered through the impact and risk assessment process. Further, to demonstrate methodological transparency, drafts of the full impact and risk assessments were published as soon as they were complete (Appendices D1 – D4 and E1 to E10), and Appendix E10 – Cumulative Impact Assessment was prepared in response to requests from relevant persons and will be published alongside submission of the EP for public comment. CGG has considered these claims and is satisfied that the EP demonstrates compliance with the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023, as outlined above. As a result, the EP has not been updated in response to these claims.
I07	**Matter**: The explanation of ALARP is unhelpful **Claim**: Relevant person notes that while CGG included a chapter in the EP addressing ALARP and the setting of 'acceptable/unacceptable' levels, the explanation presented remains unintelligible and unhelpful to lay audiences seeking to understand the decision making process surrounding activities that impact iconic Australian biodiversity and habitats.	CGG acknowledges claims regarding the complexity of 'ALARP' and has reviewed the Environment Plan (EP) to ensure that this requirement was appropriately explained. The decision-making criteria for the Regia MSS are comprehensively described in EP Appendix B1 (Decision Making Criteria) which introduces the concepts of managing environmental impacts and risks to As Low As Reasonably Practicable (ALARP) and Acceptable Levels, in consideration of the principles of ecologically sustainable development, features of the existing environment, legislative and other requirements, and internal and external context. Decision Making Criteria were published on the Regia MSS Consultation Hub website on 31 March 2023 so that identified relevant persons, and unidentified relevant persons in the community, could understand and comment on the quality of the criteria. No feedback on this document or the criteria themselves was received despite promotion of the importance of these documents at community information sessions, webinars, and during consultation activities (See Appendix C1). The lack of comment has not been used to assume relevant persons tacitly agree with these criteria. Notwithstanding, the criteria were derived from industry standards and from previously accepted Environment Plan thus giving them sufficient credibility to be used for this activity. CGG has considered these claims and is satisfied that the decision-making criteria for the Regia MSS are appropriately described, as outlined above. As a result, the EP has not been updated in response to these claims.
I08	**Matter**: The definition of ALARP conveys an unwillingness to comply **Claim**: CCP (sic) explains ALARP as an assessment of " assessing the level of impact or risk in relation to the sacrifice involved in adopting measures to avert an impact or risk. In weighing the two sides of an ALARP assessment measures that provide a level of impact or risk reduction that is commensurate to the sacrifice must be adopted." The use of the term "sacrifice" is an odd use of language, and conveys a concept of unwilling compliance, rather than proactively seeking to minimise environmental harm.	CGG acknowledges claims regarding 'ALARP' and has reviewed the Environment Plan (EP) to ensure that this concept and the language used to describe this concept was appropriate. The term 'sacrifice' is provided in NOPSEMA's guideline: Environment plan decision making guideline.pdf (nopsema.gov.au), which explains that "Reducing impacts and risks to ALARP is based on the concept of reasonable practicability; the weighing up of the magnitude of impact or risk reduction against the cost of that reduction. The 'cost' in this context means the sacrifice associated with implementing a control measure which includes an evaluation of the benefits versus the impost such as money, time and/or effort required to implement a particular control measure. The titleholder must adopt additional control measures or increase effectiveness of existing control measures if the cost of doing so is not grossly disproportionate to the environmental benefit gained. An EP needs to demonstrate, through reasoned and supported arguments, that there are no other practical measures that could reasonably be taken to reduce impacts and risks any further." The decision-making criteria for the Regia MSS, comprehensively described in EP Appendix B1 (Decision Making Criteria) were published on the Regia MSS Consultation Hub website on 31 March 2023 so that identified relevant persons, and unidentified relevant persons in the community, could understand and comment on the quality of the criteria. No feedback on this document or the criteria themselves was received despite promotion of the importance of these documents at community information sessions, webinars, and during consultation activities (See Appendix C1). The lack of comment has not been used to assume relevant persons tacitly agree with these criteria. Notwithstanding, the criteria and definitions of those criteria, were derived from industry standards, NOPSEMA guidelines and from previously accepted Environment Plan thus giving them sufficient credibility to be used for this activity. CGG has considered these claims and is satisfied that the definition of ALARP is consistent with NOPSEMA's guideline, as outlined above. As a result, the EP has not been updated in response to these claims.
I09	**Matter**: Decisions to reject mitigation measures **Claim**: CGG can decide not to implement a mitigation measure if it is deemed 'grossly disproportionate', meaning it is too expensive. However, this does not mean that the impacts of the activity have been fully mitigated, only that CGG has decided it has spent	CGG acknowledges claims regarding decisions to adopt or reject mitigation measures and has reviewed the Environment Plan (EP) to ensure that these decisions are appropriately evaluated. The concerns raised in some claims suggest that any level of environmental impact from petroleum activities is unacceptable and that impacts should be 'fully mitigated'. However, it is important to clarify that the legal and regulatory framework in Australia does not require a no-impact standard for petroleum activities. Instead, operators like CGG are mandated to establish an acceptable level of impact based on

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	enough money to lower the impact level and will not spend any more to decrease the impact further. **Claim**: In the EP, these decisions to forgo mitigation measures are made without placing the cost in context of total project costs, or its projected profits, because "disclosing project costs and assumptions in publicly available documents is not in CGG's overall best interests, nor is it a legislative requirement." (p.3101). This makes it impossible for NOPSEMA and the public to understand the process by which CGG deemed a mitigation measure to be 'grossly disproportionate', as there is no requirement to prove that the cost may negatively affect CGG at all. This lack of transparency must be explained, if not in publicly available documents, then directly to NOPSEMA as part of the approvals process. **Claim**: Noting that impacts on the environment that may be affected (EMBA) are required to be kept as low as reasonably practicable (ALARP), there is nothing in regulation that defines "low", "reasonably" or practicable, although we are given to understand from industry led consultations that "practicable" emphasises cost effectiveness. Members of the general public could be forgiven for imagining that practicable instead refers to preferring technology that is minimum impact, irrespective of cost considerations. These failures to define key considerations for the purposes of the consultation process can result in public confusion around the scope of what the proponent is prepared to consider for a project under consultation. **Claim**: Disappointingly, but not surprisingly, the management of risks and impacts appears to have a guiding criteria of maximising financial gain for CGG, rather than genuinely managing the risks of harm to marine creatures. Whilst risks may be reduced using management strategies if there was a genuine desire to do so, they cannot be eliminated. The potential harm from seismic blasting therefore poses an unacceptable risk to animals and this proposal must be rejected. Submitter recommends - Ensure that the guiding principles for the development of management plans are animal welfare rather than profit.	comprehensive, up-to-date technical and scientific studies, informed government advice, and extensive consultations. Then, as an additional and separate test, consider additional, alternative, and improved measures to reduce impacts and risks further. Therefore, the ALARP test is a test that is already driving impacts and risks below what has already been demonstrated to be of an acceptable level. This process is clearly described in the CGG assessment process and decision-making criteria document. In our operations, CGG carefully predicts potential environmental impacts and compares these predictions against predefined acceptable levels. This rigorous assessment process is scrutinized by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) to ensure that our Environmental Plan (EP) demonstrates that the environmental impacts and risks are reduced to a level that is As Low As Reasonably Practicable (ALARP) and that they meet the standards outlined in the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023. Appendix F2 of the EP, which is dedicated to the ALARP Assessment, provides a thorough explanation of the ALARP principle, detailed in Section 4, and elaborates on how decisions regarding what is considered 'grossly disproportionate' are reached, as discussed in Section 4.1. The document emphasizes that cost consideration is multifaceted, involving not just the financial expenditure but also evaluating the broader implications such as time, effort, and the potential disruption to operations. The criteria for deeming a cost 'exorbitant' involve a comprehensive evaluation of these factors against the scale of environmental benefit achieved. Furthermore, NOPSEMA's guidelines, as detailed in the 'Environment Plan Decision Making Guideline' available on their website, outline that reducing impacts and risks to ALARP involves a balance of impact or risk reduction against the sacrifices necessary to achieve these reductions. The 'cost' in this context is broadly defined to include all sacrifices related to implementing a measure, such as financial costs, time, and effort. It is incumbent upon the titleholder to implement additional control measures or enhance the effectiveness of existing measures unless the cost is grossly disproportionate to the environmental benefits derived. The EP must demonstrate, through reasoned and supported arguments, that no other practical measures could reasonably be taken to further reduce impacts and risks. This framework ensures that environmental management is both effective and feasible, balancing ecological integrity with practical operational considerations. CGG is committed to continuous improvement and transparency in this process, striving to achieve the highest standards of environmental stewardship. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***Reference:*** *Environment plan decision making guideline.pdf (nopsema.gov.au)*
I10	**Matter**: Disclosure of project costs to weigh ALARP **Claim**: Appendix F2 uses the concept of a baseline where a 1.0x "sacrifice factor" represents implementing mitigation measures that meet, but do not exceed, compliance with relevant legislation. Additional measures are then accepted or rejected on the basis of additional imposition of sacrifice over this baseline measure. Given we do not know the absolute costs of proposed control measures and only understand the costs in terms of a baseline comparison to (ostensibly) legislative compliance, the public, nor the regulator, can be certain that such cost/sacrifice measures are of appropriate size to the environmental benefit. Submitter requests that project costs are not kept commercial-in-confidence and are instead made transparent to the public and the regulator so that objective assessment of "Gross disproportion" can be made.	CGG acknowledges claims regarding the disclosure of project costs and has reviewed the Environment Plan (EP) in response to these claims. In response to concerns regarding the necessity for NOPSEMA to know the absolute costs of proposed control measures to make informed decisions on Environmental Plans, it's important to clarify the regulatory focus and assessment methodology. It is critical to understand that the disclosure of total project costs, while transparent, would not substantially influence the assessment of whether environmental risks and impacts have been reduced to ALARP. In the context of the ALARP principle, the 'cost' considered is specifically about the feasibility and proportionality of implementing each specific mitigation measure relative to the environmental benefit it provides. In accordance with regulatory requirements and best practice, CGG is obligated to adopt any mitigation measure that provides a significant environmental benefit, irrespective of its impact on overall project costs. This is why the approach of establishing a baseline cost factor for environmental protection was used and not the total project cost. The decision to implement a control measure is based on its ability to effectively reduce impacts and risks and its practicability, which includes considerations of cost, time, and effort. However, if a mitigation measure is deemed necessary to significantly reduce environmental impacts, it must be adopted even if it renders the project less economically favourable. This principle ensures that essential environmental protections are not bypassed merely due to their cost implications. NOPSEMA's guidelines are clear: the focus is on whether any additional reasonable and practicable measures could further reduce risks. This does not imply maintaining economic efficiency at the expense of environmental protection. Thus, while total project costs provide a broader financial context, they do not have a direct bearing on the evaluation of whether specific mitigation measures should be implemented under the ALARP criteria. Furthermore, in addressing concerns about need for absolute cost information in evaluating Environmental Plans, it's essential to highlight the regulatory focus and assessment methodology. NOPSEMA primarily conducts a comparative analysis, assessing whether proposed

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#	***Comments received***	***Titleholder response***
		mitigation measures are proportional to impacts/risks reductions achievable in the context of legislative requirements (which have a mandatory cost) and the additional measures proposed by CGG. In addition, this approach ensures decisions are economically viable and effective without requiring detailed financial disclosure. If CGG were to disclose the full financial cost of the project we risk influencing NOPSEMA with irrelevant information that might undermine the administrative quality of their decision making. CGG has undertaken to consider and evaluate all reasonable control measures that are relevant to the evaluation of impacts and risks using a systematic approach throughout the impact and risk assessments. There is an incorrect assumption that this principle relates to the public having the ability to assess whether the principles of ESD have been adequately prioritised. The public are not the appointed assessor, nor decision maker for EP's and the document has not been prepared for this purpose. CGG has considered these claims and is satisfied that the demonstration of ALARP is appropriate, as outlined above. As a result, the EP has not been updated in response to these claims.
I11	**Matter**: An independent assessment of ALARP should be undertaken. **Claim**: The assessments of what constitutes ALARP, and the binary decision making process of 'acceptable/unacceptable' appear to be measured on what the proponent considers to be an acceptable level of probability of a threat (such as a hydrocarbon spill) taking place, measured against what they consider an acceptable amount of money spent to avoid that threat, rather than what should be the standard measurement of what the harm would be to the environment, EPBC listed species, Key Ecological Feature (e.g. Marine Parks), social, cultural and associated industries (e.g. fisheries and tourism) should the threat occur. From that baseline, an independent assessment should be undertaken of the decision of what is 'acceptable' or 'unacceptable' and if ALARP has been met.	CGG acknowledges claims regarding the assessment of ALARP and has reviewed the Environment Plan (EP) in response to these claims. CGG's assessment of ALARP is scrutinised by NOPSEMA who determine if the EP demonstrates that the environmental impacts and risks of the activity will also be of an acceptable level and that the EP meets the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023. NOPSEMA is Australia's independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA's regulatory processes have long been regarded as world-class. CGG is required to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999, among other considerations and requirements. While public consultation is a crucial component of the environmental planning process, the final determination of whether an EP has satisfactorily demonstrated that environmental impacts and risks have been reduced to ALARP rests with NOPSEMA. This approach is grounded in the necessity for a highly technical and scientifically rigorous evaluation that leverages expert knowledge in environmental science, engineering, risk assessment, and compliance with stringent regulatory standards. The complexities of such assessments require a level of technical expertise that goes beyond the scope of public knowledge. NOPSEMA's assessors are professionals with extensive experience in offshore petroleum operations, environmental protection, and risk management. Their role ensures that all decisions are made based on sound scientific principles, detailed analysis, and adherence to established laws and regulations designed to protect the environment. By incorporating public feedback, NOPSEMA considers community concerns and values in its decision-making process, but it maintains the necessary objectivity and technical scrutiny required to ensure that all activities meet the high standards of safety and environmental care expected in the industry. This structured process ensures a balanced and informed approach, integrating public input with expert assessment to achieve the best possible outcomes for environmental management and public safety. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I12	**Matter**: Claims of unacceptable impacts **Claim**: CGG will not deny that their actions will have a negative effect on the marine life to some degree, but they will see it as being acceptable as long as the different species as a whole will recover eventually, even if millions of individual marine animals are killed, stressed or hurt in the process. This is not okay to me. **Claim**: Seismic blasting causes extremely significant damage to the marine environment. **Claim**: The proposal to conduct seismic blasting for oil and gas is aborrant and is set to destroy the ocean ecosystems in the area.	CGG acknowledges claims regarding unacceptable impacts associated with the Regia MSS and has reviewed the Environment Plan (EP) to ensure that predicted impacts were adequately described and assessed. In accordance with the applicable regulatory requirements, CGG has prepared an evidence-based case that the impacts and risks arising from the Regia MSS can be managed to below an acceptable level. A similar evidentiary burden would be required to influence CGG's position away from the effects of this activity being anything other than short-term, localised, and recoverable, as detailed in EP Appendix E (Environmental Impact Assessments). Some claims relate to a believe that no impact is acceptable from these activities. This is not the legal standard in Australia and it not a reasonable standard to apply. Petroleum activities do not operate to a no-impact standard. Instead, titleholders are required to define the acceptable level of impact and work below that level. Acceptable levels of impact are established based on relevant up-to-date technical and scientific studies, government advice, and are considerate of the information gathered through the consultation process. CGG predicts the levels of impact expected to occur and compares that to the previously defined acceptable levels. This assessment is then scrutinised by NOPSEMA who will determine if the EP demonstrates that the environmental impacts and risks of the activity will be of an acceptable level and that the EP meets the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023.

	THEME	IMPACT AND RISK ASSESSMENTS AND MITIGATIONS (I)
#	***Comments received***	***Titleholder response***
		CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
Key Matter: Insufficient /inadequate/ inappropriate information		
I13	**Matter**: Insufficient information (general) **Claim**: The current information provided on ecological, cultural, and economic impacts of the proposed activity is insufficient, and NOPSEMA should enforce that the proponent supply clear, comprehensive and comprehensible information on these environmental areas of relevance to allow fully informed public comment on the EP. Furthermore, the proposed survey poses an unnecessary and unacceptable risk to these sensitive features with very little benefit. **Claim**: There is a common theme that this submission has identified regarding the identification and evaluation of environmental impacts and risks as discussed in the EP, which is that in many areas there is simply not enough information available. This lack of information has the flow on effect that risk management and mitigation plans cannot be adequately designed, as they are being developed using incomplete information. Therefore as further information is gathered, these strategies may need to be comprehensively overhauled **Claim**: Approving this proposal and allowing seismic testing to commence based on insufficient and inadequate information and directly flouting evidence of known negative and even unlawful impacts on wildlife, is not only irresponsible, but potentially criminal. **Claim:** Producing evidence of whole of marine ecosystem impacts is hard. Nearly every single peer reviewed study mentions the lack of research into broad based consequences of seismic blasting on marine environments. Each study mentions that they are just looking at the one species or genus and that none of these species exist in isolation from the ecosystem of their habitats and beyond. Environment Plans such as the behemoth produced by Klarite on behalf of CGG Regia can only rely on selectively gathered information, isolated data and information opacity to paint an incomplete picture of the impacts of this industry.	CGG acknowledges claims regarding the provision of information associated with the Regia MSS and has reviewed the Environment Plan (EP) to ensure that adequate information was provided. The environmental impact and risk assessment methodology described in EP Appendix B9 is a systematic, evidence-based approach to evaluate and interpret the impacts and risks associated with the Regia MSS activity. The methodology is consistent with international standards and NOPSEMAs guidelines, as described in Sections 1.2 (Overview). Extensive information on the identification of values and sensitivities that may be affected by relevant aspects of the Regia MSS is provided within each impact and risk assessment, in Appendices to the EP. For example, marine mammals that may be present within the area affected by underwater sound are extensively described in EP Appendix E7, Section 4 and the predicted levels of impact to these species is detailed in Section 6; fish species that may be present within the area affected by underwater sound are extensively described in EP Appendix E3, Section 4, etc. CGG commissioned independent studies on the effects of seismic sound on the environment prior to completing the analyses found in Appendices E2 to E8 in recognition that these assessments are historically one of the higher order impacts for seismic survey environment plans. The first study used to inform the analysis were a quantitative modelling report to establish the most appropriate sound exposure thresholds and effect level distances. This study focused on a highly prospective area that was critical to meeting the geological objectives of the study. The second study was a literature review of relevant peer reviewed papers in relation to the effects of sound on various environmental components. Both studies were extensively referenced using peer reviewed published literature and were published as soon as CGG received them to support the provision of sufficient information to relevant persons. The impact analyses of underwater sound found that there were no major or catastrophic levels of effect identified to any environmental component. The effects to different species ranged from no effect, through to some effect levels that were ranked as moderate, meaning additional management and mitigation measures are required to ensure impacts are of an acceptable level. The analyses also considered the uncertainty in the predictions of impact and found that after the application of quantitative modelling from an independent expert there was generally low levels of uncertainty in the predictions of impact. However, in some cases the level of uncertainty was rated as medium, meaning there were still gaps or uncertainties that need to be addressed. Further assessment was conducted for key environmental values and sensitivities which allowed for the ongoing assessment of these higher order impacts and provided increase in confidence in the assessment process. CGG considered that cumulative impacts were properly considered because the overview of the existing environment step in each analysis was carried out considering the existing and future pressures on the environment. However, CGG also recognised that there was insufficient transparency given the scale of proposed future activities in the Otway region. This lead CGG to work with other titleholders known to be proposing petroleum activities in the region to prepare the Cumulative Impact Assessment (Appendix E10). CGG has considered these claims and is satisfied that the information provided in the EP is sufficient, comprehensive, and comprehensible for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
I14	**Matter**: Insufficient information/ mapping on areas of conservation value **Claim**: The EP by CGG must be refused based on the failure to provide adequate information in the form of a map outlining the Ramsar areas, National Parks, Indigenous Protected Areas, Wilderness Zone, and World Heritage Areas relevant to the Environment Planning Area. The entire footprint of the Environment Planning Area contains Biologically Important Areas for EPBC-listed species and this must be provided for public consultation and comment. **Claim**: The Environmental Plan has failed to adequately map and consider the impacts of seismic surveying on important environmental areas. **Claim:** REGIA has failed to identify and describe key environmental features in the Environmental Plan, there is a clear lack of detail provided and therefore lack of understanding of the environment of the Operational Area and surrounding zone.	CGG acknowledges claims regarding information and mapping for areas of conservation value and has reviewed the Environment Plan (EP) to ensure that adequate information and maps were provided. Extensive information on the identification of values and sensitivities that may be affected by relevant aspects of the Regia MSS is provided within each impact and risk assessment, in Appendices to the EP. For example, marine mammals that may be present within the area affected by underwater sound are extensively described in EP Appendix E7, Section 4 and the predicted levels of impact to these species is detailed in Section 6; fish species that may be present within the area affected by underwater sound are extensively described in EP Appendix E3, Section 4, etc. Extensive mapping has been provided in EP Appendix B12 (Regia MSS Maps). In total, 83 figures have been provided in support of the EP showing locations of, and overlap of the operational area and the environment that may be affected (EMBA) with a range of values and sensitivities and aspects including: • MAP-REG-EPM-001, 2, 57, 59-69, and 71-77 – Biologically Important Areas • MAP-REG-EPM-078: Australian Marine Parks

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#	***Comments received***	***Titleholder response***
	Claim: It is imperative that all potentially impacted features are identified and discussed, or the resultant environmental plan is incomplete and thus void. Submitter recommends CGG ensure all environmental features are included in the development of the Environment Plan. **Claim:** The proposed Operational Area overlaps with sensitive ecological zones and lacks comprehensive mapping.	• MAP-REG-EPM-047 and 79: State Protected Areas • MAP-REG-EPM-003, 4 and 81: Key Ecological Features • MAP-REG-EPM-030, 32-39, 50, 54, 55: Fisheries data Additional figures are provided through-out the EP Appendices. CGG is not required to provide a description of the environment for parts of the environment which are not affected. CGG has considered these claims and is satisfied that the provision of information and mapping for areas of conservation value has been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
I15	**Matter**: Inappropriate information **Claim:** Regia's application represents a wilful misapplication of the relevant science with citations of unpublished material and references to entirely incorrect literature. **Claim**: Were we to exclude the industry funded material to which they have referred, the argument to support their application becomes extremely difficult to sustain. Further, we cannot find any published, scientific literature that supports their position. **Claim:** The work relied on in the Regia proposal has lost credibility as it was funded by Australian Petroleum Production and Exploration Association (APPEA) and the majority of sources involved are employees of that organisation. It is not a truly unbiased scientific report. **Claim:** It is obvious that Regia and the gas industry deliberately ignore the papers quoting genuine scientific evidence against seismic surveys and the need for change that were expressed in our previous responses. **Claim**: The Environmental Plan submitted by Regia MSS ignores reputable and published scientific studies, from around the world and in Australia, that have been done in recent years. Those studies show widespread harm from seismic testing. The studies cited by Regia are not based on real-life scientific studies but are based on modelling which Regia themselves say is not a reliable way to source data. **Claim**: The Environment Plan submitted by CGG is an inadequate, deficient, inaccurate evaluation of the mounting scientific evidence about the destruction caused by seismic surveys. **Claim**: The Environment Plan is deeply flawed from a scientific perspective failing to acknowledge the science around the impacts seismic blasting has on whales and other marine life. **Claim**: It is important that rigorous scientific research isn't misrepresented by seismic survey companies and gas drilling companies to further their means. One can't assume that they will choose the morally correct path, if left unchecked.	CGG acknowledges claims regarding the interpretation and use of information/ scientific research in the preparation of the Environment Plan (EP) and has reviewed the EP to ensure that relevant information sources were appropriately identified and referenced. The information presented in the EP and pertaining to the existing environment has been amassed via published and unpublished sources (studies, data, and reports) to produce a comprehensive baseline understanding of the environmental sensitivities in the region. In all instances, the source of the information presented throughout the EP is fully referenced to ensure transparency of the information that has been relied upon. Any uncertainty, bias, or unreliability that has been identified has been duly identified and discussed. EP Appendix B8 (Seismic Studies Report) provided a comprehensive evaluation of the available literature that was used to inform the acoustic impact assessments and included over 16 pages of references specific to the impacts of seismic surveys on relevant marine fauna and other marine users. CGG acknowledges that, as with all activities, there are data gaps and a level of uncertainty within the science relating to the potential effects of seismic surveys on the marine environment and marine species. However, based on scientific literature that has been carried out on the impacts of seismic surveys, including the most up to date published literature, CGG does not believe that the data gaps and level of uncertainty around potential effects of marine seismic surveys is such that reasonable conclusions and decisions regarding such impacts and the level of risk involved cannot be made. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I16	**Matter**: Geographic range and all species need to be defined and considered **Claim**: The area that is considered under this proposed seismic testing plan contains a diverse range of species, all of which need to be considered when risks and impacts are being assessed. Considering that even the geographical range that needs to be considered is still not adequately defined, it becomes even more difficult to compile an exhaustive list of potentially affected species. **Claim**: Submitter recommends: 1. Evaluate the quality of data on risks and impacts on all species within the OA and determine where there is a need for additional data. 2. Ensure studies on risks are of research grade quality and have been subjected to peer review.	CGG acknowledges claims regarding the extent of the relevant geographical range and the evaluation of impacts and risks on relevant species within that area and has reviewed the Environment Plan (EP) to ensure that these were adequately addressed. CGG acknowledges that we will never be in a position to characterise every species that may be present in the area, but rather we rely on published peer-reviewed literature, government advice (including relevant management plans, conservation management plans, recovery plans and conservation advice established under the Environment Protection and Biodiversity Conservation Act 1999, among others), and feedback from the consultation process to inform our understanding of the existing environment and potential impacts and risks. Information on the environmental values and sensitivities that may present within relevant areas is publicly available and can be accessed via the Commonwealth government's Protected Matter Search Tool (PMST). PMST's provide information on the likely/known presence of a species within an area, as well as information on their protection status, Biologically Important Areas (BIAs) and behaviours and are provided in full in EP Appendix B5. Additional information, for example, on proposed changes or additions to BIAs, can be obtained through the review of draft plans and through federal government consultation processes and are referenced within the EP. The peer review process for publication is

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	3. Establish an independent panel to review the quality of studies to date and to create a comprehensive list of where the gaps in knowledge exist.	considered to provide for an appropriate level of independent review. Titleholders are also required to take newly published peer reviewed literature into consideration, where relevant, for the duration of the activity. Regarding claims about the geographical range that needs to be considered, the geographical range of impacts and risks is described in EP Appendix A2 (Description of Activity), which includes a description of the Environmental Planning Area used to frame initial studies and community consultation effort. Figure B4-1 shows the Activity Planning Area which was established to frame the maximum geographical limits of the activity. Further, aspect specific geographic extents are defined in each of the impact and risk assessments (Appendices D and E), typically based on quantitative assessment outcomes. CGG commissioned an environmental services company with relevant expertise to prepare EP Appendix B8 (Seismic Studies Report) which provides a comprehensive evaluation of available published, peer reviewed literature that was used to inform the acoustic impact assessments. This report includes over 16 pages of references specific to the impacts of seismic surveys on relevant marine fauna and other marine users. CGG acknowledges that, as with all activities, there are data gaps and a level of uncertainty within the science relating to the potential effects of seismic surveys on the marine environment and marine species. However, based on scientific literature available on the impacts of seismic surveys, including the most up to date published literature, CGG does not believe that the data gaps and level of uncertainty around potential effects of marine seismic surveys is such that reasonable conclusions and decisions regarding such impacts and the level of risk involved cannot be made. **CGG has considered these claims and has rerun the PMST reports to ensure that all information on the likely/known presence of relevant species within the area, as well as information on their protection status, Biologically Important Areas (BIAs) and behaviours is up to date. The updated PMST reports are provided in full in EP Appendix B5.**
I17	**Matter**: Lack of detail on EPBC-listed species and enforceable measures **Claim**: The Environment Plan (EP) submitted to NOPSEMA by CGG is a convoluted and incomprehensible 3,332 page document that is nonetheless lacking in sufficient detail on the impacts of seismic blasting on noted species in the area. In particular, there is a lack of detail on the presence of several EPBC-listed species, including Endangered southern right whales and Endangered Australian sea lion, and what enforceable measures will be taken to ensure that the key ecological features and threatened species in the proposed project areas will not be harmed. **Claim**: The Environment Plan submitted by CGG lacks sufficient detail on the potential impacts of seismic blasting on marine life and ecosystems. Despite its convoluted and incomprehensible 3,332-page length, the plan fails to provide adequate information on the presence of endangered area and the enforceable measures that will be taken to protect them. **Claim**: It fails to clearly state what enforceable measures will be taken to ensure that the threatened species in the proposed project areas and the key ecological features of the area will not be harmed. **Claim**: At present Australia leads the world in species extinction and yet here is another submission with little regard for endangered animals such as the Southern Right Whale ,the pygmy blue whales the Australian Sea Lion. There is not sufficient detail here to ensure that proper research and safe guard mechanisms will be enacted. **Claim**: It fails to demonstrate management practices that would guarantee the health and wellbeing of whales and other marine life.	CGG acknowledges claims regarding the level of detail provided on EPBC-listed species and mitigation and management measures to protect these, and has reviewed the Environment Plan (EP) to ensure that these were adequately addressed and detailed. EPBC-listed species were identified using the Commonwealth government's Protected Matter Search Tool (PMST), as documented in EP Appendix B5 (PMST Reports). Detail on listed species that were identified as sensitive to aspects of the Regia MSS, for example species sensitive to underwater sound, are included in the relevant impact and risk assessments in EP Appendices D and E. The level of detail provided for species that were identified as sensitive to aspects of the proposed Regia MSS is dependent on the level of sensitivity and the legislative requirements specific to the aspect identified. Significant detail is provided on southern right whales and the Australian sea lion in EP Appendix E7 (Impact Assessment – Underwater Sound), including a description of their presence within the region, relevant sound effect criteria, the predicted level of impact based on acoustic modelling and comparison to the defined acceptable levels, the identification of mitigation and management measures and demonstration of ALARP. EP Appendix F2 also identified that, while there is literature about the effects of seismic on marine mammals there has been a high level of concern throughout the consultations with relevant persons, particularly regarding the effects of seismic sound on Southern Right Whale and Pygmy Blue Whale as the Operational Area are area affect by sound overlap BIAs associated with both species. Consequently, CGG undertook additional assessment looking at the effects of the activity and the level of uncertainty on these species in EP Appendix F3 (Acceptable Levels Assessment). **CGG has updated EP Appendix F3 (Acceptable Levels Assessment) to include an assessment for the Australian sea lion in response to these claims and has rerun the PMST reports to ensure that all information on the likely/known presence of relevant species within the area, as well as information on their protection status, Biologically Important Areas (BIAs) and behaviours is up to date. The updated PMST reports are provided in full in EP Appendix B5.**
I18	**Matter**: Lack of specific information on impacts of seismic on marine species **Claim**: The submitted Environment Plan (EP) , a 3,332 page document has arguably been created to obfuscate and confuse those who oppose this seismic exploration and gas and oil extraction. While overly long, it lacks specific and sufficient detail of the known impacts of seismic blasting on marine species in the marked areas for testing.	CGG acknowledges claims regarding the detailed information/ scientific research on impacts of seismic on marine species and has reviewed the Environment Plan (EP) to ensure that predicted impacts were adequately described and assessed. EP Appendix B8 (Seismic Studies Report) provided a comprehensive evaluation of the available literature that was used to inform the acoustic impact assessments and included over 16 pages of references specific to the impacts of seismic surveys on relevant marine fauna and other marine users. CGG acknowledges that, as with all activities, there are data gaps and a level of uncertainty within the science relating to the potential effects of seismic surveys on the marine environment and marine species. These uncertainties have been considered in each impact assessment E1-E9. As stated in those documents, based on scientific literature available on the impacts of seismic surveys, including the

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	Claim: The Environment Plan (EP) submitted to NOPSEMA by CGG contains 3,332 pages, but it lacks of sufficient details about the impact of seismic blasting on the sea life. **Claim**: The EP lacks detail on the impacts of seismic blasting on endangered species and fails to provide adequate mitigation measures. **Claim:** There is no evidence to support claims that seismic blasting can be conducted in a way that has minimal impact on marine life. **Claim**: Not enough independent scientific research has been done in relation to how seismic blasting affects marine species and ecosystems as a whole to inform us as to whether it is a sensible idea. **Claim:** More independent scientific study needs to be done on the effect of seismic blasting on marine species and ecosystems before allowing it to be conducted in our oceans. **Claim**: There have been insufficient studies performed on the potential impacts of seismic testing on marine and other animals to be confident that any proposed mitigations to keep them safe from harm will be sufficient. **Claim:** No more seismic blasting should be done until there is an understanding of the broader impacts of seismic testing on marine ecosystems. **Claim:** NOPSEMA should reject the use of seismic blasting as proposed by CGG as it will harm marine life and ecosystems. There is not enough independent scientific research done to prove otherwise. **Claim:** Until extensive scientific research is done to prove to that the effects of seismic serveys does not have a huge, detrimental effect on the marine environment.	most up to date published literature, CGG does not believe that the data gaps and level of uncertainty around potential effects of marine seismic surveys is such that reasonable conclusions and decisions regarding such impacts and the level of risk involved cannot be made. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I19	**Matter**: Additional studies needed **Claim**: Submitter recommends: 1. Conduct comparative research into all studies on the impacts of seismic blasting to determine the range to which impacts have been observed. Noting the limitations of many of these studies, apply the precautionary principle to determine a correction factor which will create a safety buffer zone around that distance. **2.** Conduct thorough observational studies at varied times of day and across all seasons to determine all species found in this impact area. A minimum of a full 12 months of data is especially important to ensure data on migratory species is captured. **3.** Compare data against reputable citizen science sites such as E-bird and I-naturalist. Ensure all listed species are included.	CGG acknowledges claims regarding additional studies and has reviewed the Environment Plan (EP) to ensure that predicted impacts were adequately described and assessed. CGG commissioned an environmental services company with relevant expertise to prepare EP Appendix B8 (Seismic Studies Report) which provides a comprehensive evaluation of available published, peer reviewed literature that was used to inform the acoustic impact assessments. This report includes over 16 pages of references specific to the impacts of seismic surveys on relevant marine fauna and other marine users. CGG acknowledges that, as with all activities, there are data gaps and a level of uncertainty within the science relating to the potential effects of seismic surveys on the marine environment and marine species. However, based on scientific literature available on the impacts of seismic surveys, including the most up to date published literature, CGG does not believe that the data gaps and level of uncertainty around potential effects of marine seismic surveys is such that reasonable conclusions and decisions regarding such impacts and the level of risk involved cannot be made. Regarding claims recommending observational studies and citizen science, information on the environmental values and sensitivities that may present within relevant areas is publicly available and can be accessed via the Commonwealth government's Protected Matter Search Tool (PMST) and Species Profile and Threats (SPRAT) database, as well as the Atlas of Living Australia (ALA) and South-East Commonwealth Marine Reserves Network Management Plan 2013-23 (DNP 2013). PMST's provide information on the likely/known presence of a species within an area, as well as information on their protection status, Biologically Important Areas (BIAs) and behaviours and are provided in full in EP Appendix B5. Additional information, for example, on proposed changes or additions to BIAs, can be obtained through the review of draft plans and through federal government consultation processes and are referenced within the EP. The peer review process for publication is considered to provide for an appropriate level of independent review. Titleholders are also required to take newly published peer reviewed literature into consideration, where relevant, for the duration of the activity. Note: The Atlas of Living Australia (ALA) is a collaborative, digital, open infrastructure that pulls together Australian biodiversity data from multiple sources, including citizen science data. For example, the ALA manages the Australian node of iNaturalist and harvests observations made in Australia on a weekly basis. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

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#	*Comments received*	*Titleholder response*
Key Matter: Cumulative impact assessment		
I20	**Matter**: Failure to address cumulative impacts of this proposal **Claim**: Submitter does not consider that the EP has adequately or comprehensively considered the cumulative impacts of this proposal, nor demonstrated that efforts to meet ALARP have been undertaken. Submitted does not consider the cumulative impacts of this repeated seismic blasting exploration on the marine environment and marine life to be Acceptable, and urges NOPSEMA to reject this EP. **Claim**: The EP as put has not considered whole of marine impacts, although these will certainly exist. **Claim**: Multiple projects have been, and are, submitted by proponents to be assessed by NOPSEMA in isolation. The figures provided above demonstrate that the impact of each project should not be considered in isolation from others but viewed as a single, ongoing process. When viewed in this manner, the scale of potential impact and ecosystem damage is much more evident. **Claim**: The EP fails to address the cumulative impact of seismic blasting and marine noise on marine life. **Claim**: There is no whole-of-ecosystem assessment of the full range of impacts of seismic blasting. **Claim**: Considering the failures of the EP to consider the full scope of the impacts presented by this project under proposal we urge the Authority to request that the EP be resubmitted and then to reject the EP and refuse a title to the proponent if the titleholder is unable to satisfy the reporting requirements within their EP. **Claim**: We believe that the company underestimates the level of anthropogenic noises during the proposed timeframe for their seismic testing. The decibels ranges will vary but will likely run between 180 dB and up. Therefore the impact of each EP should not be considered in isolation. When all EP plans are viewed as a whole the potential damage to our marine environments becomes even more evident and alarming. **Claim:** Please consider carefully the longterm damage you might wreck with this decision. Besides the arguments below there is much unknown about the effects of seismic blasting on delicate ecosystems that have an intimate interaction with all else.	CGG acknowledges claims regarding cumulative impacts and has reviewed the Environment Plan (EP) to ensure these were appropriately identified and assessed. Consideration of cumulative effects of multiple historic seismic surveys is provided in EP Appendix F3 (Acceptable Levels of Impact and Risk). For example, Section 5.2.1.1 states that the draft National Recovery Plan for SRW (DCCEEW 2023) details there is an increase in long-term population trend for southern right whales, albeit slowly for the eastern population, and that this has been achieved whilst co-existing with marine seismic surveys as there have been >80 marine seismic surveys in the last 60 years in the Otway region. This includes at least 10, 3D surveys in the last 20 years. Consideration of cumulative effects of the Regia MSS in conjunction with reasonably foreseeable future activities/ projects is provided in EP Appendix E10 (Otway Cumulative Impact Assessment). The cumulative impact assessment concluded that the potential for cumulative impacts is considered low in full consideration of historic seismic surveys, the Regia MSS and reasonably foreseeable future activities/ projects. Further, a 'whole of ecosystem' assessment was conducted in EP Appendix F3 (Acceptable Levels of Impact and Risk), Section 5.4 Search for unacceptable environmental impacts), which identified the importance of evaluating impacts from the survey more holistically to understand if there are unacceptable impacts. This search concluded that no measurable changes to ecological integrity or population structures are likely because of the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I21	**Matter**: Assessment to recognise tipping points/ existing pressures **Claim**: Direct impacts of Regia MSS are stated many times to be relatively small when compared to other environmental pressures by way of minimising the importance of their cumulative impact to the reader. For example: "…any potential impact will be subsumed into the far larger natural and fishing mortality schedules that already exist." [CGG, p.3143]. This is a false logic since it implies that Regia MSS will not significantly alter the burden of cumulative impact to the environment in relation to other impacts. Assessment of cumulative impact should recognise that any additional impact has the chance to push aspects of an already vulnerable marine environment past tipping points. **Claim**: I am also horrified that in this changing climate that all our sea life, and creatures as precious & as endangered as whales, will be put under such extra and unnecessary stress.	CGG acknowledges claims regarding existing pressures and threats to species and ecosystems and has reviewed the Environment Plan (EP) to ensure that these were adequately considered. Appendix F3 (Acceptable Levels of Impact and Risk) included several species-specific sensitivity analyses to evaluate the potential for the Regia MSS, in conjunction with existing pressurise and threats, to result in cumulative impacts on those species, for example: - Section 5.2.1.3 (Cumulative impacts) assesses the cumulative impacts of the Regia MSS with the other highest rated threats identified within the updated draft National Recovery Plan for the southern right whale (DCCEEW 2023), which includes anthropogenic climate change and climate variability. - Section 5.2.3.3 (Cumulative impacts) assesses the cumulative impacts of the Regia MSS on southern rock lobster considering the long-range forecast for sea surface temperatures. - Section 5.2.4.1 (Species-specific sensitivity) assesses the cumulative impacts of the Regia MSS on giant crab considering the southerly shift of the austral subtropical high-pressure belt, with models predicting more upwelling-favourable winds which has the potential to increase productivity at the population level. Appendix F3, Section 5.4 (Search for unacceptable impacts) provides for additional consideration of potential ecosystem vulnerabilities to ensure that ecosystem integrity, meaning the ability of all species within an ecosystem to survive and reproduce such that the overall health of their ecosystem, is maintained and that potential unacceptable impacts are identified. This included an evaluation of potential ecosystem weaknesses including vulnerability to climate change, genetic diversity, dependence on keystone species, regenerative capacity, other

	THEME	IMPACT AND RISK ASSESSMENTS AND MITIGATIONS (I)
#	***Comments received***	***Titleholder response***
		threatening practices, life-cycle event timings and sensitivities, and abundance and range restrictions. This assessment concluded that no measurable changes to ecological integrity or population structures are likely because of the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I22	**Matter**: Cumulative impacts of successive seismic surveys **Claim**: The submitter does not consider the cumulative impacts of this repeated seismic blasting exploration on the marine environment and marine life to be Acceptable, and urges NOPSEMA to rejerveysect this EP. **Claim:** There is clear and growing evidence that seismic blasting permanently and cumulatively harms a very broad range of marine life. **Claim**: The EPBC act requires proponents to consider cumulative impacts over time of activities such as Regia MSS. Following "60 years" [CGG, Appendix F3, p3134] of seismic acquisition in the Otway Basin. The cumulative impacts of successive seismic surveys have not been presented in this EP. The EP asserts that the impact of Regia on the recovery of multiple species will not have multi-year effects, and so direct impacts are localised, temporary and recoverable. [p3136 Appendix F3]. This is a mechanism to negate the effect of previous surveys and limit the need to consider the cumulative impacts of successive seismic surveys to a marine ecosystem. Additionally, CGG necessarily cannot consider future seismic impacts, thus negating the argument that a single season seismic survey is "recoverable". It cannot be known if another seismic project will be approved in the following season.	CGG acknowledges claims regarding cumulative impacts of successive seismic surveys and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. Consideration of cumulative effects of multiple historic seismic surveys is provided in EP Appendix F3 (Acceptable Levels of Impact and Risk). For example, Section 5.2.1.1 states that the draft National Recovery Plan for SRW (DCCEEW 2023) details there is an increase in long-term population trend for southern right whales, albeit slowly for the eastern population, and that this has been achieved whilst co-existing with marine seismic surveys as there have been >80 marine seismic surveys in the last 60 years in the Otway region. This includes at least 10, 3D surveys in the last 20 years. Consideration of cumulative effects of the Regia MSS in conjunction with reasonably foreseeable future activities/ projects is provided in EP Appendix E10 (Otway Cumulative Impact Assessment). The cumulative impact assessment concluded that the potential for cumulative impacts is considered low in full consideration of historic seismic surveys, the Regia MSS and reasonably foreseeable future activities/ projects. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I23	**Matter**: Precautionary principle for cumulative impacts **Claim**: Given the relationship between impacts directly caused by Regia MSS and the tight relationship between existing impacts used to minimise the effect of Regia MSS, the Precautionary Principle should apply until the cumulative impacts of seismic are assessed in conjunction with other significant stressors of marine ecosystems intersecting the operating area. **Claim**: According the Precautionary Principle we must exercise caution and allow for the worst case scenario that successive years of seismic will have a deleterious effect on multiple species recovery.	CGG acknowledge claims regarding the application of the precautionary principle for cumulative impacts and has reviewed the Environment Plan (EP) to ensure the cumulative impact assessment was adequately described. The application of the precautionary principle, particularly in environmental management, is triggered under conditions where there are threats of serious or irreversible environmental damage and where scientific certainty about these impacts is lacking. This principle does not require the cessation of all activities that could potentially cause harm; rather, it mandates the implementation of proactive measures to prevent or minimise potential damage. In the case of the Regia MSS, CGG's approach adheres to this principle by engaging in extensive research, applying adaptive management strategies, and incorporating real-time environmental monitoring to mitigate impacts and risks. These measures ensure that impacts are managed and that operations can be adjusted in consideration of new scientific data, thereby upholding the responsibility to protect the marine environment against significant threats while acknowledging the inherent uncertainties that come with predicting environmental impacts. Appendices E1-E9 (Impact Assessments) have considered each cause-effect pathway, and the uncertainties present in the assessment. EP Appendix B9 (Environmental Assessment Method) detail the robust methodology applied to understand if there was a threat of serious or irreversible environmental damage. There was no occasion that both preconditions for activities to cease existed. Further, the precautionary principles have also been routinely applied throughout the assessment. This is described in detail in Appendix F4 (ESD Assessment) which clearly outlines comprehensive measures taken to adhere to the precautionary principle, namely that: • The Regia MSS project has implemented proactive measures to mitigate environmental harm despite uncertainties, including robust monitoring and evaluation strategies, and flexible mitigation approaches. • Significant scientific consultation and adaptive management has been integrated into the planning and execution of the Regia MSS. This ensures that potential environmental impacts are continuously assessed and addressed, keeping within defined acceptable levels of environmental impact and risk. EP Appendix E10 (Cumulative Impact Assessment) explicitly addresses the management of cumulative impacts, detailing how other activities in the area are factored into the overall assessment of potential impacts from the Regia MSS. Concerns regarding the potential long-term deleterious effects of successive years of seismic activity on multiple species recovery, suggesting a need for caution per the precautionary principle have been addressed in the aforementioned documents. For example, EP Appendix F3 (Acceptable Levels of Impact and Risk) describes that, although there have been multiple seismic surveys conducted across the greater region for over 20 years, there is no stock-recruitment relationship for Southern Rock Lobsters that can be linked to a seismic survey

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#	***Comments received***	***Titleholder response***
		and that the scale of impact associated with seismic is overwhelmed by the scale of climate events, spatial distribution of habitat and fishing; and that, although there have been >80 marine seismic surveys conducted in the Otway Region the last 60 years, the draft National Recovery Plan for Southern Right Whales (SRW) (DCCEEW 2023) details there has been an increase in the long-term population trend for this species, albeit slowly for the eastern population. These actions are grounded in a scientifically informed approach and adhere strictly to the principles of Ecologically Sustainable Development (ESD), especially the precautionary principle, to ensure that potential impacts are managed responsibly and with consideration of the worst-case scenarios over the long term. The application of these principles demonstrates a commitment to sustainable and responsible environmental management, aligned with regulatory and community expectations. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I24	**Matter**: Surveying previously surveyed areas is unnecessary **Claim**: Furthermore, the proposed survey poses an unnecessary and unacceptable risk to these sensitive features with very little benefit. Submitter understands that about half of the proposed OA overlaps with areas already surveyed by previous 3D seismic blasting projects. In 2023, the data captured by these previous surveys were merged by Geoscience Australia into one publicly available dataset (see the Otway 3D Mega Merge project). In light of this, the proposal by CGG to re-survey these areas represents a failure to consider the need for putting marine life at risk to re-collect seismic data that is already publicly available. In this regard, the submitter does not consider that the EP has adequately or comprehensively considered the cumulative impacts of this proposal, nor demonstrated that efforts to meet ALARP have been undertaken. **Claim**: The OA defined by CGG Regia in their EP has already been mapped and we would argue that there is absolutely no reason to repeat the operation.	CGG acknowledges claims regarding resurveying areas where seismic data has already been acquired and has reviewed the Environment Plan (EP) to ensure that an explanation of the need to resurvey areas was adequately described. As explained in EP Appendix A2 (Description of Activity), the Otway Basin has been producing hydrocarbons since the 1990's and has seen the discovery of several gas fields. Since that time, seismic acquisition and processing technologies have advanced dramatically. The Regia MSS aims to survey areas where 3D geophysical data has not been acquired previously or applying new technologies to overlapping areas of existing 3D data, to improve our understanding of the geophysics of the area. We understand concerns about repeated marine seismic surveys in the one area. The Labella 3D MSS, conducted in 2013, was acquired over a small proportion of the proposed Regia MSS activity action zone. Overlap with the Labella survey is required to ensure the data from the two surveys can be connected, i.e. tied in. In addition, some 2D seismic data was also acquired over part of the survey area, however, the bulk of this data was acquired between 1960s and the early 2000s. 2D data represents discrete widely spaced lines of seismic data that is not able to be used for detailed assessment of the subsurface and eventual drilling well placement. 3D seismic data allows a near complete picture of the subsurface which in turn allows appropriate assessment and well placement. **CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above but has undertaken to update EP Appendix B12 (Regia MSS Maps), namely Figures MAP-REG-EPM-052 (2D NOPIMS) and MAP-REG-EPM-053 (3D Surveys) to show the overlap of the operational and activity action zone and previous survey data in response to these claims.**
Key Matter: Principles of ecologically sustainable development (ESD)		
I25	**Matter**: Consistency with the EPBC Act **Claim**: The proposal to conduct seismic surveying for oil and gas dealt with by this Environmental Plan poses an unacceptable risk to marine life and ecosystems. Relevant consideration has not been made in relation to the plans' consistency with the objectives and principles of the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. **Claim:** Enacted on 16 July 2000, the EPBC Act serves as a cornerstone for protecting and conserving Australia\'s unique biodiversity and natural heritage. By allowing seismic blasting activities that pose a clear threat to marine ecosystems and endangered species, proposal directly contravenes the objectives and principles outlined in Under the EPBC Act, activities that likely to have significant impact on matters of national environmental significance, including threatened species and ecological communities, require rigorous assessment and approval processes. However, the inadequacies of the Environment Plan submitted by CGG fail to meet the standards set forth in this legislation.	CGG does not concur with claims that the Environment Plan (EP) is inconsistent with the Environment Protection and Biodiversity Conservation Act 1999. The primary environmental legislation within Australia is the Environmental Protection and Biodiversity Conservation Act 2002 (EPBC Act). NOPSEMA's authorisation processes have a Part 10 approval that applied to offshore petroleum activities as per the NOPSEMA EPBC Act Program. This program ensures that impacts on matters protected under Part 3 of the EPBC Act are not unacceptable. The primary legislation governing the exploration project is the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) and the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (the Environment Regulations). The OPGGS Act provides the regulatory framework for all offshore exploration and production activities in Commonwealth waters (those areas beyond three nautical miles from the Territorial Sea baseline and with the Commonwealth Petroleum Jurisdiction Boundary). The Environment Regulations have been made under the OPGGS Act for the purposes of ensuring (as described in section 3) that any petroleum activity or greenhouse gas activity carried out in an offshore area is: • Carried out in a manner consistent with the principles of ecologically sustainable development set out in section 3A of the EPBC Act; and • Carried out in a manner by which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable; and • Carried out in a manner by which the environmental impacts and risks of the activity will be of an acceptable level". Furthermore, CGG believed that the EP meets the criteria for acceptance of and Environment Plan. Consistency with legislative and other requirements forms part of the acceptable levels demonstrated in EP Appendix F3 (Acceptable Levels of Impact and Risk). Under the

	THEME	IMPACT AND RISK ASSESSMENTS AND MITIGATIONS (I)
#	*Comments received*	*Titleholder response*
		Commonwealth government streamlining arrangements, NOPSEMA's assessment of this EP provides an appropriate level of consideration of the impacts to matters of national environmental significance (MNES) protected under Part 3 of the EPBC Act. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
I26	**Matter**: Application of the precautionary principle **Claim**: There is no evidence of the precautionary principle in the application from Regia. **Claim**: The precautionary principle should be applied to any reasonable threat of environmental damage, not just a threat of serious or irreversible environmental damage, and should be applied in favour of the environment, not in favour of exploration and commercial interests. **Claim**: I respectfully request that NOPSEMA reject the EP given the unacceptable risk to marine life and on the basis of the Precautionary Principle under the EPBC Act section 391. **Claim**: As the evidence pours in on the effects of seismic blasting on marine life, it is no longer acceptable to say \'we don\'t know\'; at the very least your Authority should, at last, begin applying the PRECAUTIONARY PRINCIPLE and not let the need for further evidence stop you preventing further accumulating and irreversible harms. **Claim**: A lack of scientific certainty should not be used as a reason for allowing this project to proceed, rather there is the need to take precautionary measures to prohibit this project from going ahead. We request that the application of the precautionary principle (under the EPBC Act under section 391) be enforced with regards to approval of this Environmental Plan. **Claim**: There is a need for the precautionary principle to be put into practice now that knowledge of the effects of seismic surveys is widely known in the academic, fishing, and community sectors. **Claim**: There remain information gaps about the environmental impacts of seismic blasting, and the EPBC Act is clear that the precautionary principle applies when there is a lack of scientific knowledge. Despite this CGG compensates fishers for their reduced catch rather than acting to avoid ecosystem harm. **Claim**: This submission advocates applying the precautionary principle when considering projects of such known deleterious consequences for multiple marine species and their ecosystems, as well as unknown impacts.	CGG acknowledges claims regarding the application of the precautionary principle and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. CGG has provided detailed consideration of the precautionary principle and been precautionary in its assessments, applying conservative criteria, rounding up buffer zones, underestimating effectiveness of control measures etc. These are techniques that are good practice in environmental assessments. Evidence of the application of the precautionary principle can be found in EP Appendix F4 (ESD Assessment) and throughout the rest of the EP as referenced in that Appendix. The comments received seem to apply one facet of the precautionary principle to try to stop the activity proceeding. Part of the precautionary principle requires that, 'if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'. CGG notes the absence of a definition of 'serious' environmental damage in relation to the Principles of ESD under the Environment Protection and Biodiversity Conservation Act 1999 and considers a serious impact to have the potential to result in a threat to population or community viability. The Regia MSS EP routinely assessed and identified where there was a lack of full scientific certainty and where there were serious threats to environmental values and sensitivities at a population level. There were no instances where threats were predicted to be irreversible. In these circumstances the precautionary principles have been applied and justified. In all cases CGG has effectively demonstrated that, with the control measures adopted, the seriousness of the threat has been effectively removed and the values and sensitivities in the marine environment can coexist with the presence of anthropogenic sounds, including those from the Regia MSS. Beyond these regulatory-required instances, CGG has routinely applied precaution in its assessment, for example selecting conservative effect thresholds for sound, adjusting the activity design to avoid overlap with sensitive species protected areas (e.g. KEFs), and buffers around marine protected areas. CGG has considered these claims and is satisfied that as the preconditions for application of the precautionary principle that prevents the activity from proceeding have been satisfactorily removed, as demonstrated in the EP, the concerns raised have been adequately addressed. As a result, no changes have been made to the EP in response to these claims.
I27	**Matter**: Application of the precautionary principle for low-frequency cetaceans **Claim**: According to Appendix E7 - Impact Assessment Underwater Sound: Marine Mammals, "the predicted level of impact based on the effect (moderate) and uncertainty (high) levels is assessed as high. For Low-freqquency (LF) cetaceans - those listed above - the predicted level of impact is close or like the pre-defined acceptable levels and/or there is enough uncertainty to apply the precautionary principle". While this is a convoluted sentence, the bottom line is that high level of uncertainty relating to a moderate effect (subjective) is sufficient to warrant application of the precautionary principle. https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf **Claim**: Furthermore, the EPBC Act Policy Statement 2.1 does not consider cumulative noise exposure from multiple noise sources and periods. The precautionary principle should be applied in these cases when a lack of full scientific certainty exists.	CGG acknowledges claims regarding the application of the precautionary principle for low-frequency cetaceans and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. The precautionary principle has been applied in relation to low frequency cetaceans as described in the Regia MSS EP Appendix F3 (Acceptable Levels of Impact and Risk): - Section 5.2.1.1 which describes the eastern population of southern right whales. The consequence of the Regia MSS was assessed as moderate, which is defined as population recovery slows or stalls. The likelihood of occurrence was assessed as likely, expected to occur at least once every five years, resulting in a risk level of as high requiring additional mitigation action and an adaptive management plan required; the precautionary principle should be applied. - Section 5.2..2.1 which states that for pygmy blue whales the likelihood of occurrence was assessed as almost certain, expected to occur every year, resulting in a risk level of very high for which immediate additional mitigation action required; and for Antarctic blue whales the likelihood of occurrence was assessed as possible, the event might occur at some time, resulting in a risk level of as high requiring additional mitigation action and an adaptive management plan required; the precautionary principle should be applied. The claims cite high uncertainty and moderate effects as a basis for applying the precautionary principle. CGG acknowledges the inherent uncertainties in predicting environmental impacts, particularly concerning underwater sound and marine mammals. However, the approach taken aligns with the precautionary principle not by ceasing the activity but by mitigating potential harms through robust measures. The Regia

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#	***Comments received***	***Titleholder response***
	Claim: If there is scientific uncertainty about the impacts of an action, and potential impacts are serious or irreversible, the precautionary principle is applicable. A lack of scientific certainty will not itself justify a decision that an action is not likely to have a significant impact on the environment.	MSS has incorporated extensive monitoring, real-time adjustments, and a comprehensive Fauna Management System and Plan, including Marine Fauna Observers (MFOs) and Passive Acoustic Monitoring (PAM) operators, to ensure that impacts remain within acceptable levels. The claim regarding the EPBC Act Policy Statement 2.1 and cumulative noise exposure is addressed through the multi-faceted management strategy. This includes scheduling operations to avoid peak biological activity periods, adopting lower power emissions during sensitive times, and establishing exclusion zones. Further, our detections strategies rely on multiple observation techniques to create multiple lines of evidence to protect these species. These strategies collectively address cumulative noise impacts from multiple sources, ensuring that the precautionary principle is adequately applied through active mitigation rather than cessation of activities. The commitment to the precautionary principle is evidenced by the proactive steps to understand and mitigate potential impacts before they occur, rather than not considering alternative management measures which can effectively mitigate impacts to levels that are as low as reasonably practicable and acceptable, in line with environmental regulatory requirements. The Regia MSS project has been structured to remove uncertainty where possible and to mitigate the seriousness of any predicted effect, ensuring the sustainability and viability of the marine environment. This response has been summarised from content provided in Appendices E7, F2, F3, and F4. CGG has considered these claims and is satisfied that as the preconditions for application of the precautionary principle have not been satisfied, the concerns raised have been adequately addressed in the EP. As a result, no changes have been made to the EP in response to these claims.
I28	**Mater**: The Intergenerational Principle **Claim**: If this is passed you are not just harming the whales and other sea creatures but you are harming your children and their children as we rely on a healthy functioning ocean to thrive. **Claim**: I grew up by this beautiful piece of coastline, learning about the ocean and the endangered species it is home to. All I want is to be able to teach the future generations about the ocean and hopefully they will livSe to see these species bounce back. This wonâ€™t happen if seismic testing & drilling by CGG occurs. **Claim**: Whales are crucial to healthy oceanic ecosystems. It is patently obvious from the above that to approve this blasting would be the height of shortsighted ignorance. Use the power you have to ensure a healthy future for all generations and deny approval for the blasting. **Claim**: This project will have a significant impact on marine life, for generations to come. **Claim**: Please make decisions that impact our children\'s future with their well being in mind. Our children need healthy oceans. As Australians most of us live by the ocean and it is part of who we are. Thank you for reading this and considering the content deeply.	CGG acknowledges claims regarding the intergenerational equity principle and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. The intergenerational equity principle requires that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations. Detailed consideration of the Intergenerational equity principle has been provided in EP Appendix F4 (ESD Assessment), which includes, for example, identifying and preventing irreversible environmental damage. CGG understood that once certain ecological harm occurred, it might be impossible to rectify or restore, disproportionately affecting future generations. Consequently, there is no irreversible environmental damage predicted from the Regia MSS. CGG is satisfied that the principle of intergenerational equity has been appropriately considered within the EP. As a result, no changes have been made to the EP in response to these claims.
I29	**Matter:** The Biodiversity Principle **Claim:** Given the critical importance of safeguarding biodiversity, the EP falls short of the necessary standards and should rejected.	CGG acknowledges claims regarding the conservation of biological diversity and ecological integrity (The Biodiversity Principle of ESD) and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. The biodiversity principle requires that the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making. Detailed consideration of the biodiversity principle has been provided in EP Appendix F4 (ESD Assessment), which includes, for example, identifying and avoiding activities that could harm biological diversity and ecological integrity wherever possible. This included planning the survey timing, sail lines and other operations to avoid critical areas and sensitive habitats. CGG is satisfied that the biodiversity principle has been appropriately considered within the EP. As a result, no changes have been made to the EP in response to these claims.
I30	**Matter**: The Valuation Principle **Claim**: Misleading assertions to Valuation, Pricing, and Incentives Principle [p3184, Appendix F4]: “locating potential gas reserves is inherently linked to the future valuation and pricing of these resources” If Regia MSS is inherently linked to the future valuation and pricing of gas it is therefore directly related to the consumption of that gas by end	CGG acknowledges claims regarding the valuation principle of ESD and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. The valuation principle requires that improved valuation, pricing and incentive mechanisms should be promoted. Detailed consideration of the valuation principle has been provided in EP Appendix F4 (ESD Assessment).

	THEME	IMPACT AND RISK ASSESSMENTS AND MITIGATIONS (I)
#	***Comments received***	***Titleholder response***
	users. Given uncertainty over climate tipping points, the Precautionary Principle should apply. We therefore demand CGG makes a comprehensive analysis of this project's potential to affect climate tipping points. **Claim:** Misleading assertions to Valuation, Pricing, and Incentives Principle [p3184, Appendix F4]: "the EP preparation process ensures that future generations can make informed decisions regarding the utilisation of these resources" Australia's states are currently in the process of banning continued development of offshore gas - there is declining political support for this activitiy across Australia. Yet, a select few continue to green-light new projects despite public opinion. Therefore this project is not congruent with this ESD principle as current nor future generations are able to choose whether this gas is consumed. **Claim**: Misleading assertions to Valuation, Pricing, and Incentives Principle [p3184, Appendix F4]: "ecological sustainability and environmental protection" This project's claim to "ecological sustainability and environmental protection" cannot be claimed given the huge gaps of knowledge being ignored in this environmental plan.	The assertion that locating potential gas reserves is linked to future valuation and pricing indeed reflects the nature of resource exploration. However, this does not imply direct consumption without consideration of environmental impacts. Recognising the global concerns regarding climate change, future approvals are the appropriate place to conduct analysis of potential impacts on climate tipping points associated with a commercial development. It is essential to clarify that while there are discussions and varying degrees of political support concerning offshore gas development, CGG's operations are conducted under current regulatory frameworks that permit such activities. The EP process ensures that the survey is conducted in compliance with current regulatory requirements, and provides future generations with the data necessary to make informed decisions. This approach does not predetermine the utilisation of the gas but rather ensures that future decision-makers have a robust factual basis to assess the viability and desirability of resource development considering environmental, social, and economic considerations at that time. We acknowledge concerns raised about ecological sustainability and environmental protection. CGG has undertaken extensive environmental impact assessments, as detailed in the Regia MSS EP. These assessments are based on current peer reviewed, published scientific knowledge, and mitigation measures have identified and implemented to minimise impacts. Whilst we recognise that scientific knowledge continually evolves and some uncertainties remain, CGG is committed to adaptive management practices that are responsive to new information and ensure that impact on the environment is minimised through continual improvement. This commitment is supported by ongoing monitoring and engagement with scientific experts to fill any knowledge gaps and refine the impact mitigation strategies accordingly. CGG is satisfied that the valuation principle has been appropriately considered within the EP, as described above. As a result, no changes have been made to the EP in response to these claims.

2. Environmental and Ecological Information and Effects

	THEME	ENVIRONMENTAL AND ECOLOGICAL INFORMATION AND EFFECTS (E)
#	*Comments received*	*Titleholder response*
Key Matter: Australian Marine Parks		
E01	**Matter**: Unacceptable impacts and Risks to Marine Parks and protected areas **Claim:** This is an unacceptable level of impact on our marine parks, which are gazetted due to their biodiversity and high ecological value, and that the EP should act outside of the marine park and Bonney Upwelling areas. **Claim:** Marine parks, including Commonwealth Marine Parks, are at risk from the proposed activities. **Claim**: The EP inadequately considers the impacts on Commonwealth Marine Parks within the Environment Planning Area. **Claim**: There are 3 Commonwealth Marine Parks within the boundaries of the Environment Planning Area: Apollo, Franklin, and Zeehan (Special Purpose Zone and Multiple Use Zone).These should be protected and excluded from any seismic survey otherwise what purpose is the park? These are areas of high conservation value and destruction of these ecosystems is not only undesirable it is dangerous, if animals cannot be safe within these zones where can they be safe? **Claim:** The proposed project area is alarmingly close to Victoria\'s coastline, raising serious ns about the potential impact on marine parks and coastal communities. **Claim:** The proximity of the proposed survey to sensitive marine parks and protected areas heightens the urgency of addressing these concerns. The potential irreversible damage to fragile ecosystems and endangered species within these areas cannot be overstated.	CGG acknowledges claims regarding impacts and risks to marine parks and reserves and has reviewed the Environment Plan (EP) to ensure that these were adequately assessed. The Regia MSS operational area and activity action zone do not overlap any Australian Marine Parks or state marine reserves. The closest marine protected area is the 12 Apostles Marine Park. Consultation with Parks Victoria resulted in an activity limitation with no operational activity within 5 km of the Twelve Apostles State Marine Park to protect the values of this park in as shown in EP Appendix B12 (Regia MSS Maps – MAP-REG-EPM-047) (Feedback 259). **EP Appendix B12 (Regia MSS Maps) has been updated to include distances from the operational area and active source area to marine parks within the broader environmental planning area as follows:** - **The Regia MSS operational area is 6.26 km, and the active source area is 18.49 km from the 12 Apostles Marine Park (MAP-REG-EPM-047).** - **-The Regia MSS operational area is 35.92 km, and the active source area is 44.09 km from the Apollo Marine Park (MAP-REG-EPM-078).** - **-The Regia MSS operational area is 49.06 km, and the active source area is 72.86 km from the Zeehan Marine Park (MAP-REG-EPM-078).** - **-The Regia MSS operational area is 165.35 km, and the active source area is 191.08 km from the Franklin Marine Park (MAP-REG-EPM-078).** - **-The Regia MSS operational area is 109.34 km, and the active source area is 120.19 km from the Nelson Marine Park (MAP-REG-EPM-078)** - The Regia MSS operational area overlaps 1.21% of the Bonney Coast Upwelling Key Ecological Feature (KEF). Consultation with conservation groups and relevant persons revealed that a change in timing of the survey did not adequately address concerns associated with effects to zooplankton, particularly during upwelling events and the values associated with Key Ecological Features (KEFs) in the region. This resulted in an activity limitation of no acquisition within 500 m of the Bonney Upwelling KEF, nor the West Tasmanian Canyons KEF (see Figure: MAP-REG-EPM-003_B). Risks to marine parks and the Bonney Coast Upwelling KEF in the extremely unlikely event of accidental fuel spill are assessed in EP Appendix D4. The impacts and risks associated with the Regia MSS are considered to be of an acceptable level and do not have the potential to result in long-term, serious, irreversible or cumulative impacts to marine parks or reserves. The adopted control measures are considered effective and appropriate to the temporary, small scale and reversible nature of the predicted environmental impacts and risks. Further, the activity can be managed in a way that is not inconsistent with the South-east Commonwealth Marine Reserves Network Management Plan. **CGG has considered these claims and has updated the abovementioned figures to include distances from operational and activity action zone to marine parks and reserves, and included the percentage overlap with the Bonney Coast Upwelling KEF, thereby providing further context of separation distances.**
E02	**Matter**: Failure to address ecological significance of marine protected areas **Claim**: The OA for this proposed project is within 40 km of the Apollo Marine Park, which contains mesophotic reefs, habitat for the southern rock lobster and seabirds like the shy albatross, and countless benthic species that have not yet been described. Seismic blasting by CGG will potentially impact these fragile habitats, with invertebrates and shellfish affected from over 1km away. The EP fails to address the ecological significance of these marine protected areas and the species known to inhabit it, and most importantly the impacts seismic blasting will have on the species known to be in the area during projected operational periods. **Claim:** There are 3 Commonwealth Marine Parks within the boundaries of the Environment Planning Area: Apollo, Franklin, and Zeehan (Special Purpose Zone	CGG acknowledges claims regarding the ecological significance of marine parks and reserves and has reviewed the Environment Plan (EP) to ensure that these were adequately identified and assessed. The Regia MSS operational area and activity action zone do not overlap any Australian Marine Parks or state marine reserves. The closest marine protected area is the 12 Apostles State Marine Park. Consultation with Parks Victoria (Feedback 259) resulted in an activity limitation with no operational activity within 5 km of this Park as shown in EP Appendix B12 (Regia MSS Maps – MAP-REG-EPM-047). Each impact and risk analyses considers matters protected under the EPBC Act and provides evidence that the proposed activity is not in conflict with the management plans in place for Commonwealth reserves, such as Australian Marine Parks, and upholds the Australian IUCN Reserve Management Principles. They also show that the activity will not have unacceptable impacts on the values of these protected areas. For example, risks to marine parks and the Bonney Coast Upwelling KEF in the extremely unlikely event of accidental fuel spill are assessed in EP Appendix D4.

	THEME	ENVIRONMENTAL AND ECOLOGICAL INFORMATION AND EFFECTS (E)
#	***Comments received***	***Titleholder response***
	and Multiple Use Zone). The EP fails to address the ecological significance of the named marine parks and the species known to inhabit them, and the serious impacts seismic blasting will have on them. **Claim:** The EP does not address the ecological importance of these immense marine parks and the species known to inhabit it, and most importantly the impacts seismic surveying will have on the species known to be in the area during projected operational periods.	CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
E03	**Matter**: Excluding Marine Parks/ protected areas **Claim:** If this project were to go ahead the operating area would require a significant redfininition of the area to exclude marine parks [and the Bonney Upwelling], the EP would require a substantial increase in mitigation methods that are backed by strong evidence, and the shutdown zones should be significantly increased to ensure these species are protected. **Claim**: In 2020 the Senate held an Inquiry into the impact of seismic testing on fisheries and the marine environment. One clear recommendation from the Senate Inquiry 'is that seismic blasting must be banned from marine parks, and it doesn't belong in critical marine habitats.	CGG acknowledges claims regarding activity limitations for marine parks and the Bonney Coast Upwelling Key Ecological Feature (KEF) and has reviewed the Environment Plan (EP) to ensure that these were adequately assessed. The Regia MSS operational area and activity action zone do not overlap any Australian Marine Parks or state marine reserves. The closest marine protected area is the 12 Apostles State Marine Park. Consultation with Parks Victoria (Feedback 259) resulted in an activity limitation with no operational activity within 5 km of this Park as shown in EP Appendix B12 (Regia MSS Maps – MAP-REG-EPM-047). The activity will not have unacceptable impacts on the values of marine parks. The Regia MSS operational area overlaps small portions of the Bonney Coast Upwelling and West Tasmanian Canyons Key Ecological Features (KEF). Consultation with conservation groups and relevant persons revealed that a change in timing of the survey did not adequately address concerns associated with effects to zooplankton, particularly during upwelling events and the values associated with KEFs in the region. This resulted in an activity limitation of no acquisition within 500 m of the KEFs (see Figure: MAP-REG-EPM-003_B). Impacts to the Bonney Coast Upwelling KEF and the broader Great Southern Australian Upwelling System, that the Regia MSS overlaps, and the role these upwellings play in ecosystem function and productivity, are not predicted. Risks to marine parks and KEFs in the extremely unlikely event of accidental fuel spill are assessed in EP Appendix D4. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
Key Matter: The Marine Ecosystem and Marine Biodiversity		
E04	**Matter**: Unacceptable impacts on marine life and biodiversity **Claim:** Research has shown that seismic blasting results in serious harm to a variety of marine life, deafening whales and disrupting their feeding and migration, damaging the ability of southern rock lobsters to function and navigate, and causing mortality in small fish and zooplankton. **Claim:** In conclusion, the seismic blasting proposal by CGG must be refused by NOPSEMA due to its adverse impacts on marine life, the inadequacy of the 3332 page Environment Plan, and the confusion surrounding the public consultation process. **Claim:** To conduct seismic blasting between Victoria and Tasmania will harm marine life, and threatened species in these areas. **Claim:** Please DO NOT APPROVE CGGs application to do seismic blasting in the ocean off Victorias coast. It will impact the lives of many sea creatures and a healthy oceanic environment is critical to life on Earth. **Claim:** The severe risk that the seismic survey technique poses to marine life in the area is evident and clear examples of the effects have been seen in Tasmania. **Claim:** These explosions can reach ear-splitting decibel levels of up to 250, causing severe disruption to marine life and habitats. **Claim:** Mechanical intrusions, and in this case, impactful seismic blasting into this precious marine environment and its detrimental impact on various species, and the overall ecosystem and food chain, is seen as highly impactful and should not	CGG acknowledges claims regarding impacts of seismic on marine life and biodiversity and has reviewed the Environment Plan (EP) to ensure that these were adequately assessed. The EP must demonstrate the activity is not inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological communities, or a management plan for an Australian Marine Park or Ramsar Wetland. This means that the acceptable level of impact and risk will be consistent with these plans which aim to ensure biological diversity and ecological integrity is maintained. Several mitigation and management measures were adopted in response to feedback provided during relevant persons consultation to protect areas and periods of higher biodiversity. These include exclusion zones for shallower waters and avoiding peak upwelling/ biodiversity periods in summer (Jan/Feb/Mar) as described in more detail in EP Appendix F2 (ALARP Assessment), Sections 6.1.2, 6.2.1 and 6.2.2. CGG has developed Environmental Performance Outcomes, the measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level specific to protecting marine fauna. These including EPO 2: No death or injury to fauna, including listed threatened or migratory species, from the activity; and EPO 3: Sound emissions in BIAs will be managed such that any whale, including blue whales, continue to utilise the area without injury, and is not displaced from a foraging area; among other EPOs that demonstrate their commitment to protecting marine life and biodiversity. Further, a 'whole of ecosystem' assessment was conducted in EP Appendix F3 (Acceptable Levels of Impact and Risk), Section 5.4 (Search for unacceptable environmental impacts), which identified the importance of evaluating impacts from the survey more holistically to understand if there are unacceptable impacts. This search concluded that no measurable changes to biological diversity or ecological integrity are likely because of the Regia MSS. The EP demonstrates a strong commitment to preserving marine biodiversity and ecological integrity, as described in EP Appendix F4 (ESD Assessment) Section 6.2 (Conservation of Biological Diversity and Ecological Integrity Principle). This includes changing operational timings to minimize biodiversity impact, identifying and protecting critical habitats, implementing mitigation measures for sensitive areas, and engaging with experts in marine biology and ecology.

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	occur. For these reasons I find the proposal of seismic blasting of great concern in respect to the impacts on the ecosystems and wildlife in this precious area. **Claim:** Seismic blasting should not be allowed. The activity results in significant impact to our marine biodiversity. **Claim:** There is overwhelming scientific evidence that seismic blasting is extremely harmful and disruptive to whales and marine life. **Claim:** Seismic blasting does not have community licence. In the proposed operation area, it will impact: whale habitat, endangered marine life, Southern Sea Country, the Zeehan Marine Park, the Budj Bim Eel conservation area, and commercial fisheries. The food chain will be severely affected, with carry-on effects from zooplankton to fish, to whales. **Claim**: Seismic blasting is not safe for any marine creatures. **Claim**: The proposal has significant, irreversible effects on marine life. Approving this proposal would be a complete plight on our whales, marine animals, ocean and all microcosms dependent on an environment free from harmful interference. **Claim**: I personally do not believe that this project is worth potentially eradicating an innocent and incredible species permanently from existence and accelerating the extinction and/or destruction of other species and our natural ocean environment which is an essential source to us humans as well as home to so much beautiful life that has no reason to be denied existence anymore than we have the right to live. **Claim**: Furthermore, the blasting ecosystems and death to hundrends of thousands of marine animals (big or small). **Claim**: SEISMIC BLASTING In the Ocean is CRUEL and DISMISSIVE of these precious Sea Creatures. It is their HABITAT. Clearly, RIGHT ACTION is needed. SAY NO to Seismic Blasting. **Claim**: Such unprecedented seismic blasting by the CGG and the unidentified harm for coastal communities, marine life and our oceans. are significant reasons for refusing this proposal. **Claim**: This seismic blasting proposal by CGG should be refused by NOPSEMA due to the impacts on coastal communities, marine life and our oceans. **Claim:** The flow on effects of the damage whilst not yet known, are predicted to be deadly for many animals. Please reconsider these practices. **Claim:** In conclusion, there is clear evidence that the current EP is unsuitable and does not adequately protect marine species and vulnerable marine environments. **Claim**: We are speaking out to protect our marine life - they can\'t speak for themselves. Once you\'ve destroyed their environment, you destroy them, and you can\'t fix or replace either! **Claim**: This proposed blasting plan is disgraceful and completely ignores the well being of any sea creatures nearby. **Claim:** Approval of this application will have disastrous impacts on marine species, the local fishing industry and, ultimately, the climate. **Claim:** Please DO NOT APPROVE CGGs application to do seismic blasting in the ocean off Victorias coast. It will impact the lives of many sea creatures and a healthy oceanic environment is critical to life on Earth. **Claim:** The Australian people and environment deserve better than this inadequate EP assessment and it's devastating consequences if it were to move forward. If this	CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Climate change contributions are addressed under Theme: Climate Change. Consultation claims are addressed under Theme: Consultation. Impacts to whales are addressed under Theme: Marine Mammals. Impacts to southern rock lobsters are addressed under Theme: Fish, Sharks, Invertebrates and Fisheries. Impacts to plankton are addressed under Theme: Productivity.

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	abundance of marine life and its breeding and feeding grounds are not protected now, we will lose something beyond measure. **Claim:** Seismic blasting is known to cause temporary and permanent hearing loss, habitat abandonment, mating and feeding disruption and death in marine biota. **Claim:** This proposal is unacceptable across the board. Not only does it endanger the longevity of entire marine species, but it causes distress and trauma to them in a multitude of ways. **Claim**: Seismic blasting is dangerous and cruel to ocean dwelling creatures. **Claim**: The body of evidence that seismic surveying harms marine life is growing. Current research includes the negative impacts of seismic surveying on whales, damage to the hearing apparatus of rock lobster, and significant mortality of zooplankton in surveyed areas.	
E05	**Matter**: Harm or damage to ecosystems and communities **Claim**: The proposal to conduct seismic blasting for oil and gas exploration in our oceans will cause irreparable harm to ocean ecosystems. **Claim:** The submitter believes that the proposal to conduct seismic blasting for oil and gas exploration in our oceans will cause significant, potentially irreparable harm to marine ecosystems. **Claim:** Plans by REGIA to conduct seismic blasting for oil and gas exploration will cause direct harm to marine ecosystems. This claim is now supported by multiple marine scientists. **Claim:** Seismic blasting for oil and gas exploration in our oceans will cause direct harm to ocean ecosystems. **Claim:** Seismic blasting has for the most part been found to be harmful to marine life and ecosystems in the scientific research that has been undertaken thus far. **Claim:** It's already well known how seismic blasting causes irreparable damage to our sensitive marine ecosystem. **Claim:** The proposal to conduct seismic blasting for oil and gas exploration in our oceans will cause irreparable harm to ocean ecosystems and should not be allowed to proceed. **Claim**: I am against the CGG proposal to conduct seismic blasting for oil and gas exploration in our oceans will cause irreparable damage . The known harm to ocean ecosystems - has to be rejected to protect Australian marine life. **Claim:** Equally problematic, is such exploration requires seismic blasting. Such blasting has no safe measure and does and will create irreparable damage to marine life and the ocean where this is taking place, ecosystems. **Claim:** Should this happen, this propose/ it will cause irreparable harm to ocean ecosystems. **Claim**: This proposal is completely unacceptable! It will cause irreparable damage if allowed to go ahead. **Claim:** We feel that sound emitted from seismic blasting and some sonar activities are inhumane and damaging to our marine environments. **Claim:** The submitter's members live along the south western coast of Victoria and we are concerned about the impacts of the Regia three-dimensional (3D) marine seismic survey (MSS) in Commonwealth waters will have on our environments.	CGG acknowledges claims regarding harm or damage to ecosystems and faunal communities and has reviewed the Environment Plan (EP) to ensure that these were adequately assessed. The EP must demonstrate the activity is not inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological communities, or a management plan for an Australian Marine Park or Ramsar Wetland. This means that the acceptable level of impact and risk will be consistent with these plans which aim to ensure biological diversity and ecological integrity is maintained. Several mitigation and management measures were adopted in response to feedback provided during relevant persons consultation to protect areas and periods of higher biodiversity. These include exclusion zones for shallower waters and avoiding peak upwelling/ biodiversity periods in summer (Jan/Feb/Mar) as described in more detail in EP Appendix F2 (ALARP Assessment), Sections 6.1.2, 6.2.1 and 6.2.2. CGG has developed Environmental Performance Outcomes, the measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level specific to protecting marine fauna. These including EPO 2: No death or injury to fauna, including listed threatened or migratory species, from the activity; and EPO 3: Sound emissions in BIAs will be managed such that any whale, including blue whales, continue to utilise the area without injury, and is not displaced from a foraging area; among other EPOs that demonstrate their commitment to protecting marine life and biodiversity. Appendix F3, Section 5.4 (Search for unacceptable impacts) provides for additional consideration of potential ecosystem vulnerabilities to ensure that ecosystem integrity, meaning the ability of all species within an ecosystem to survive and reproduce such that the overall health of their ecosystem, is maintained and that potential unacceptable impacts are identified. This included an evaluation of potential ecosystem weaknesses including vulnerability to climate change, genetic diversity, dependence on keystone species, regenerative capacity, other threatening practices, life-cycle event timings and sensitivities, and abundance and range restrictions. This assessment concluded that no measurable changes to ecological integrity or population structures are likely because of the Regia MSS. The EP demonstrates a strong commitment to preserving marine biodiversity and ecological integrity, as described in EP Appendix F4 (ESD Assessment) Section 6.2 (Conservation of Biological Diversity and Ecological Integrity Principle). This includes changing operational timings to minimise biodiversity impact, identifying and protecting critical habitats, implementing mitigation measures for sensitive areas, and engaging with experts in marine biology and ecology. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Climate change contributions are addressed under Theme: Climate Change. Consultation claims are addressed under Theme: Consultation. Impacts to whales are addressed under Theme: Marine Mammals. Impacts to southern rock lobsters are addressed under Theme: Fish, Sharks, Invertebrates and Fisheries. Impacts to plankton are addressed under Theme: Productivity.

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	Claim: I think it is insanity to under go operations such as this in such a crucial marine ecosystem with total disregard for not only the inhabitants it will effect [but also the devastating impact this and other projects like this one will contribute to the climate crisis]. **Claim:** You can't tell me that seismic testing will have little, to on impact on the delicate ecosystem that we have. And if that ecosystem is damaged or destroyed, so could be the vital tourism that supports much of our population. **Claim:** Seismic blasting for oil and gas exploration in our oceans will cause direct harm to ocean ecosystems. To conduct seismic blasting between Victoria and Tasmania will harm marine life, and threatened species in these areas. **Claim:** The issue here is very simple. The proposal to perform seismic blasting off the coast of Victoria will be hugely damaging to a unique and beautiful marine ecosystem. **Claim**: Seismic blasting poses irreparable harm to ocean ecosystems and is incompatible with global warming and zero extinction targets. **Claim:** The proposal to conduct seismic blasting for oil and gas exploration in our oceans will cause irreparable harm to ocean ecosystems and should not be allowed to proceed. **Claim:** I am extremely concerned that blasting of the sea floor is to be considered near the habitat of any endangered species. **Claim**: The extent and duration of blasting proposed by CGG would cause irreparable harm to many threatened and endangered sea creatures, resulting in further species loss (Australia has already lost more mammal species than any other country on Earth). The removal of species from ecological communities can create fatal imbalances in ecosystems , leading to further species losses and collapse.	
Key Matter: Marine Turtles		
E06	**Matter**: Impacts to marine turtles **Claim:** Turtle behaviour is difficult to interpret as each study is qualitative and interpreting results between studies is problematic, as one study will show no signs of behavioural change, whereas another study will show panic or distress in turtles. (S. E Nelms et al. 2016). **Claim:** There is an absence of knowledge regarding the impact of seismic blasts on turtles and we request the CGG conduct more studies into the impact of seismic blasts on turtles, before conducting any seismic blasts. **Claim:** Recommendation: Request studies into the effects of seismic blasts on turtle populations. **Claim**: Submitter requests NOPSEMA require Regia – and indeed all applicants for these types of surveys – to detail the true extent of the impact of their activities. Specifically, the exact impact on pelagic fauna should be explicitly stated in the EP.	CGG acknowledges claims regarding impacts to marine turtles associated with underwater sound and has reviewed the Environment Plan (EP) to ensure that these were adequately assessed. Impacts on marine turtles from underwater sound are extensively assessed in EP Appendix E6 (Impact Assessment: Underwater Sound: Turtles). The PMST Report identified three turtle species within the area potentially affected by underwater sound, Green (may occur), Leatherback (likely to occur) and Loggerhead turtle (likely to occur). Regarding impacts on marine turtle critical habitat, no BIAs or habitat critical to the survival of these species were identified, although the region is recognised as an important feeding area for the leatherback turtle. The impact assessment predicted temporary / reversible and small-scale behavioural response or recoverable temporary threshold shift for marine turtles, with no population level impacts and high confidence in the prediction of risks. In accordance with the management measures outlined within the EP, the Regia MSS will be managed so that potential impacts and risks to marine turtles are reduced to ALARP and Acceptable Levels in accordance with all environmental regulatory requirements. Information on mitigation measures relevant to marine turtles is provided in response to Matter: E13. A review of the reference provided (S. E Nelms et al. 2016, Seismic survey and marine turtles: An underestimated global threat?) identified concerns for turtles including exclusion from critical habitats, damage to hearing and entanglement in seismic survey equipment. The submitted claim misquotes the literature, inferring that a study showed ‘panic and distress’. The referenced literature states: “Turtle behaviour is difficult to interpret (DeRuiter and Larbi Doukara, 2012) and many observational data are often somewhat qualitative. This makes comparing response results among studies problematic. For example, observations from one seismic survey reported no signs of panic or distress and “behaviour consisted of either ‘steady swimming’ or ‘diving’ to avoid the vessel” (Pendoley, 1997). However, similar studies have categorised diving as a potential startle response or avoidance behaviour.”

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		CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Impacts of underwater sound on other pelagic fauna, i.e. birds, e.g. albatross and terns, are addressed in Theme: Birds; pelagic fish and invertebrates, e.g. herring and copepods, are addressed in Theme: Fish, Sharks, Invertebrates and Fisheries; and impacts on krill are addressed in Theme: Productivity.
E07	**Matter**: Turtle entanglement with equipment **Claim:** Request studies into the probability of turtle entanglement with seismic testing equipment and the adequacy of known risk.	CGG acknowledges claims regarding entanglement of marine turtles with equipment and has reviewed the Environment Plan (EP) to ensure that these risks were adequately assessed. CGG has provided discussion on the potential for turtle engagement within EP Appendix D2 (Risk Assessment: Collision with Marine Fauna). There have been no reported cases of marine fauna becoming entangled in seismic survey streamers in Australian waters. As the streamers are towed, they have a level of tautness that would not result in entanglement of fauna. Thus, there is no cause effect pathway for entanglement of fauna in streamers. Tail buoys are now of a design that does not represent an entrapment risk to turtles or turtle guards are used as standard equipment if the tail buoy is not of the newer design (M#05: CGG Marine Assurance System). Thus, there is no cause effect pathway for entrapment of turtles in streamer buoys. In addition, the slow speed of the Seismic Vessel are considered to be effective measures against ship strike and entanglement for marine turtles, and any incidents with turtles will be reported, as recommended under the National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (CoA 2017a). CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
E08	**Matter:** Effectiveness of mitigation measures **Claim**: There are no documented studies that evaluate the effectiveness of mitigation measures put in place to protect turtles. **Claim:** Request studies into the effectiveness of mitigation measures to protect turtles.	CGG acknowledges claims regarding the effectiveness of mitigation measures for marine turtles and has reviewed the Environment Plan (EP) to ensure that these were adequately described. CGG has described the mitigation and management measures for marine turtles in EP Appendix D2 (Risk Assessment: Collision with Marine Fauna) for vessel collision, and in EP Appendix E6 (Impact Assessment – Underwater Sound: Turtles) for underwater sound. These include reduced vessel speeds and assurance that the tail buoys will be of a design that does not represent an entrapment risk, along with soft-start procedures for underwater sound. In accordance with the management measures outlined within the EP, the Regia MSS will be managed so that potential impacts and risks to marine turtles are reduced to ALARP and Acceptable Levels in accordance with environmental regulatory requirements. **EP Appendices D2 and E6 have been updated to include existing mitigation and management measures that will reduce the likelihood of injury associated with vessel collision and underwater sound including M#10: EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales (Soft-start Procedure), which provides for marine turtles to move away from the activity before the airguns reach full power.**
Key Matter: Marine Flora		
E09	**Matter**: Awareness of, and impacts on marine flora/ seaweed **Claim**: It was actually quite clear during the consultations that the company officials did not know what marine flora was, or why seaweed would be relevant, even after having this explained to them, which brings into questions their ability to do thorough and transparent consultations. **Claim**: Little research exists around the specific impacts upon seaweed from seismic activities, and the seaweeds in our region remain understudied more broadly, yet as per the guidelines this is not sufficient to not consider risks or plan accordingly. These points were raised numerous times in community consultations but clearly have not been taken seriously in my opinion and experiences. **Claim:** Seismic testing therefore has the potential to wipe out a significant portion of a given generation of a range of seaweed species, with impacts that may not be	CGG acknowledges claims regarding the awareness of marine flora and has reviewed the Environment Plan (EP) to ensure that marine flora were adequately described. A comprehensive description of kelp, including survey findings along the Otway shelf from Warrnambool to Portland, is provided in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages). **Although there is no evidence to suggest that the Regia MSS will have any material effect on marine algae populations in the region, having considered these claims, the research below will be added to Appendix E2 (Impact Assessment – Underwater Sound: Plankton) to ensure that this consideration is captured within the EP.** **In Australia, shallow (<30 m) temperate reefs are defined largely by the distribution of Ecklonia radiata kelp forests, which span more than 8000 km of coastline from the subtropical waters of northern New South Wales down the east coast of mainland Australia, around Tasmania, along Australia's southern coastline and north as far as Kalbarri in Western Australia (Bennet et al 2015). Most of Australia's kelp-dominated temperate reefs lie within the 'coastal zone' under state jurisdiction (3 nautical miles or 5.5 km from shore) (Bennett et al 2015). On the south and west coasts of Australia, *E. radiata* forests typically occur in mosaics of mixed species with large canopy-forming fucoids (e.g. *Cystophora* spp., *Scytothalia dorycarpa*), covering most of the rocky reefs.**

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	seen for years. Especially when research is already showing that seaweed species are already facing significant population level challenges due to the impacts of climate change, they are at particular risk from these activities. **Claim**: The sounds from seismic blasting travel several kilometres. It has been noted in the literature that plants can absorb and resonate specific sound frequencies which impact the cell cycle of the plant. **Claim**: The effects of seismic testing / blasting on sea grasses and kelp have not been mentioned in the EP which could have a substantial effect on our air quality. **Claim**: Given that Giant Kelp is becoming diminished with the effects of climate change, we are concerned that we are contributing to this decline by allowing further seismic blasts in the area to establish oil and gas rigs. Both of these fossil fuels increase the cause of climate change, and therefore threaten the Giant Kelp forests. (16) 16. https://www.un.org/en/climatechange/science/causes-effects-climate-change#:~:text=Fossil%20fuels%20%E2%80%93%20coal%2C%20oil%20and,of%20all%20carbon%2 0dioxide%20emissions. **Claim**: Submitter request studies into the effects of seismic blasts on giant kelp forests growth rates, and density.	**Timing of reproduction is variable across its distribution range with seasonal peaks in Western Australia and more continuous reproduction of sori and zoospores in Tasmania. Water temperature is the key driver of reproductive timing but is also influenced by other variables such as wave action. Once *E. radiata* zoospores are released, they have the ability to swim for at least 24 h (although they often do so for only 1–2 h), until they settle onto the substratum and germinate into male or female gametophytes. Ecklonia radiata can disperse via three modes; zoospores, sperm and detached fertile drift material. Population genetic studies on *E. radiata* using neutral microsatellite markers (Dolman & Coleman 2009, reported in Wernberg et al 2019) have identified that genetic structure around the Australian continent is weak, suggesting widespread gene flow that is mediated by the strength and direction of prevailing ocean boundary currents. Such strong connectivity should imbue considerable resilience on this species, however climate change is operating at such a large scale that warming temperatures are negatively affecting kelp across its entire range.** **Due to the depths associated with the activity action zone, with no discharge of the sound source at full power to occur in water depths less than 50 m, impacts on larger plants and nearshore planktonic phases arising from the activities associated with the Regia MSS are not anticipated. There is no scientific information on the potential for noise-induced effect in macroalgae and no functional cause-effect relationship has been established. Therefore, impacts from acoustic disturbance on macroalgae/ marine flora, or associated cultural values has not been considered further.** It is understood there is potential for kelp in shallower, more coastal areas to be impacted in the highly unlikely event of a marine oil spill, and a detailed description of kelp, its cultural and seaweed industry value, and risks to kelp associated with a spill are detailed in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages), 6.14 (Seaweed Industry), 6.17 (Protected Areas). ***References**:* *Bennett Scott, Wernberg Thomas, Connell Sean D., Hobday Alistair J., Johnson Craig R., Poloczanska Elvira S. (2015) The 'Great Southern Reef': social, ecological and economic value of Australia's neglected kelp forests. Marine and Freshwater Research 67, 47-56.* *Wernberg, T., Coleman, M.A, Babcock, R.C., BELL, S.Y., BOLTON, J.J., Connel, S.D., Hurd, C.L., Johnson, C.R., Marzinelli, E.M., Shears, N.T., Steinberg, P.D., Thomsen, M.S., Vanderklift, M.A., Vergés, A., Wright, J.T. (2019) Biology and ecology of the globally significant kelp Ecklonia Radiata. Oceanography and Marine Biology: An Annual Review, 2019, 57, 265-324.*
E10	**Matter**: Risks to seaweed **Claim:** Not only is it not described, risks have not been identified, and despite the region being home to some of the world's leading seaweed scientists, no comment has been sought.	CGG acknowledges claims regarding risks to seaweed and has reviewed the Environment Plan (EP) to ensure that marine flora were adequately described. A description of kelp, its cultural and seaweed industry value, and risks to kelp are detailed in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages), 6.14 (Seaweed Industry), 6.17 (Protected Areas). **Although there is no evidence to suggest that the Regia MSS will have any material effect on marine algae populations in the region, having considered these claims, additional information has been added to Appendix E2 (Impact Assessment – Underwater Sound: Plankton), as detailed in response to Matter E09, to ensure that this consideration is captured within the EP.**
E11	**Matter**: Impacts on planktonic seaweed **Claim:** Specifically in their report, they mention the impact upon zooplankton, but completely neglect to mention the impacts on marine flora (seaweed, microalgae and seagrasses) who have planktonic life stages. **Claim:** Specifically in their report, they mention the impact upon zooplankton, but completely neglect to mention the impacts on marine flora (seaweed, microalgae and seagrasses) who have planktonic life stages. These species, to reproduce, release into the water column planktonic reproductive materials that, if evidence upon other planktonic species is to be followed, can be decimated by sound waves. What sets them apart from zooplankton is that these are unable to "replenish" in the way outlined in some of the research listed in the EP.	CGG acknowledges claims regarding the awareness of marine flora and has reviewed the Environment Plan (EP) to ensure that marine flora were adequately described. A comprehensive description of kelp, including survey findings along the Otway shelf from Warrnambool to Portland, is provided in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages). **Although there is no evidence to suggest that the Regia MSS will have any material effect on planktonic life stages of marine algae populations in the region, having considered these claims, the research below will be added to Appendix E2 (Impact Assessment – Underwater Sound: Plankton) as detailed in response to Matter E09, to ensure that this consideration is captured within the EP.**
E12	**Matter**: Acknowledgement of ecological role of seaweed **Claim:** Warrnambool and the broader Otway Basin is home to the world's most diverse and abundant seaweed population of anywhere on the globe. Seaweed is the main habitat forming species in the region, provides food, shelter, temperature control, erosion protection, storm attenuation, water filtration and a range of other	CGG acknowledges claims regarding the ecological role of seaweed and has reviewed the Environment Plan (EP) to ensure that this was adequately described. A comprehensive description of the ecological significance of kelp, including survey findings along the Otway shelf from Warrnambool to Portland, is provided in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages). An excerpt of the information provide in the EP is reproduced below:

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#	***Comments received***	***Titleholder response***
	ecosystem services that are KEY to the ongoing survival of every other species present in the region. Despite this being well known and well understood, and this point being raised by multiple parties during face-to-face consultation in Warnambool, the ecological role of seaweed remains almost completely absent within this EP.	"Bull kelp is a significant habitat. The holdfast can be inhabited by a diverse array of epifauna and infauna invertebrates. These burrow into the holdfast creating holes that can be used by a wide variety of animals. In addition, bull kelp grows in large groups or forests that can become important nursery areas and sanctuary areas for fish, crustaceans and other fauna. Bull kelp has a long history of use by First Nations in Australia, New Zealand, and Chile. In Australia this reportedly dates back 65,000 years (Thurstan et al. 2018). First Nation people in Tasmania used dried bull kelp to transport water and food. The species name came from this use: potatorum means 'to drink' in Latin (Govt of SA 2023)." Additional information is also provided on the Giant Kelp Forests of South East Australia threatened ecological community. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
E13	**Matter**: Failure of EP to address impacts on water quality **Claim**: Seaweed is greatly impacted by pollution and water quality, which is not noted in the EP as is related to waste and fuel release, other than a single mention regarding seaweed farming. This is particularly concerning as this company has previously been found responsible for extensive damage to both commercial and wild seaweed populations related to their activities, so there would be at least a cursory understanding on their point of the risk.	CGG acknowledges claims regarding impacts to seaweed from discharges and an accidental release of fuel and has reviewed the Environment Plan (EP) to ensure that this was adequately assessed. A description of kelp and risks to kelp, and associated cultural and industry values, from an accidental release of fuel are detailed in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages), 6.14 (Seaweed Industry), 6.17 (Protected Areas). The impacts associated with planned vessel discharges (including, for example, sewage, grey water and deck drainage,) were assessed in the Preliminary Environmental Impact and Risk Assessment (PEIRA). The impacts assessment found that routine vessel discharges would have a negligible impact on water quality and would not result in a change in the viability of populations or ecosystems. Therefore, as impacts from planned vessel discharges were not predicted, they were not evaluated further. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
E14	**Matter:** Failure of EP to address coastal erosion due to loss of seaweed. **Claim:** The broader impact of erosion upon the coast and worsening storm damage due to loss of seaweed is also not noted.	CGG acknowledges claims regarding impacts to seaweed from an accidental release of fuel and has reviewed the Environment Plan (EP) to ensure that this was adequately assessed. A description of kelp, and risks to kelp from an accidental release of fuel, are detailed in EP Appendix D4 (Accidental Release of Fuel), in Section 6.3 (Benthic Assemblages). The predicted level of consequence to benthic assemblages from a 250 m^3 MDO spill is assessed as moderate as the consequences could be longer lasting (> 30 days) if kelp and other macroalgal areas are exposure to oil above the low threshold level, the likelihood is assessed as rare (based on the absence of any reported seismic vessel collisions in Australia) resulting in a predicted level of risk of medium. The predicted level of risk is below the pre-defined acceptable level, and mitigation and the management measures including for example, the marine assurance system and oil spill response plans, are in place provide reliable prevention to have confidence in the predicted likelihood levels. **EP Appendix D4 (Accidental Release of Fuel), Section 6.3 (Benthic Assemblages) has been updated in response to these claims to reflect that, due to the exposed nature of the coastal areas within the Environmental Planning Area and the nature of MDO, long-term effects in areas of moderate MDO exposure are not expected and natural weathering should result in rapid recovery of communities. MDO shoreline loading at the high threshold is not predicted due to the low spill volume. Consequently, impacts resulting in the loss of coastal seaweed to the extent that coastal erosion could be affected are not predicted.**

3. Consultation

	THEME	CONSULTATION (C)
#	***Comments received***	***Titleholder response***
C01	**Matter**: Inadequate or unclear information to support consultation **Claim**: Information provided to the community has lacked clarity, and sufficient information to allow meaningful and informed consultation for relevant persons and affected communities. **Claim**: A requirement of adequate consultation is that it be comprehensive and comprehensible in order that the community may properly assess the scope of the project and its impacts. However, this EP has overlooked a broad array of impacts on endangered and other potentially impacted species, despite its significant volume. **Claim**: The consultation process has been confusing and inadequate, failing to provide sufficient information and time for meaningful input. **Claim**: In conclusion, the seismic blasting proposal by CGG must be refused by NOPSEMA due to its adverse impacts on marine life, the inadequacy of the 3332 page Environment Plan, and the confusion surrounding the public consultation process. **Claim**: The process of public consultation has been flawed, with confusion and insufficient information provided to affected communities. This lack of transparency undermines the credibility of the consultation process. **Claim**: In light of the review taking place into the Offshore Petroleum Greenhouse Gas Storage Act (OPGGS) consultation process, for which submissions are due three days before the public comment period for this proposal ends, we consider this consultation and public process to have failed the basic needs of providing sufficient information and time for respondents to digest new information that has been presented in a convoluted format. **Claim**: Submitter maintains that 60 days is simply not sufficient to allow members of the public to understand the complex issue of risk assessment, let alone to decide that CGG's approach is fit for purpose, and is another example of a failure in consultation. Based on these issues, this EP should be rejected by NOPSEMA as the decisions on what are acceptable or unacceptable risks, and measures of ALARP, have not been sufficiently addressed.	CGG acknowledges claims regarding the supply of sufficient information for consultation in the preparation of the Regia MSS Environment Plan (EP) and has reviewed the consultation process undertaken. CGG has undertaken extensive consultation as required under Division 3 and section 25 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023. Formal consultation commenced on 03 February 2023, over 330 days prior to first submission to NOPSEMA, with initial communications outlining the proposed approach to consultation, a consultation timeline and information on the activity. Simultaneous to this, CGG undertook a significant advertising campaign and created an online consultation hub to support the identification of potentially relevant persons, as well as in-community meetings and information sessions. Relevant Persons were invited to co-design engagement, requesting communication methods best suited to their needs, and encouraged to ask questions and request further information if needed, as detailed in Chapter C1, 3.2. CGG extended the original consultation period twice to ensure relevant persons had a reasonable period with sufficient information to engage in the consultation process, as detailed in Chapter C1, 3.3 (EVENT ID: 1182 & 3331). CGG also made draft EP chapters and technical supporting reports publicly available to relevant persons via the consultation hub, as follows: preparatory information uploaded 1 February and 31 March 2023, Establishing Context documents 31 March to 6 June 2023, Risk Assessments on the 11 September 2023, Impact Analyses on the 22 September 2023, and Impact and Risk Treatment on the 28 September 2023. Other documents created through the co-design consultation process, which allowed for potentially relevant persons to request information sharing in their preferred format, included information summaries, webinar recordings, presentation slides, maps, and decision-making documents, and were also made publicly available on the consultation hub. This availability and instructions on how to provide feedback was communicated via email to relevant persons through project update emails (EVENT ID: 535, 1182, 1830, 1916, 2849, 3331, 3811). The draft EP chapters also contained a cover sheet explaining the purpose of publishing the draft chapter, encouraging feedback, and offering assistance if required, for example the summarising of information. The currently available information and information coming soon was also communicated at the Community Information Sessions (EVENT ID 1469, 1481, 1501, 1731, 4112) EP Chapter C1 (Consultation) outlines in detail the methods, approaches and communication tools used to support consultation, with extensive evidence of consultation provided in EP Appendices C2, C3, C4 and C5 (please note C3 and C4 are not released to the public as they contain individuals/organisations sensitive information). This consultation has included providing substantive and fit-for-purpose information on the proposed activities in a variety of forms, providing accessibility of information and allowing for informed decision making. During consultation, CGG documented and responded to all received objections, claims, requests for information, statements, and items of feedback from relevant persons, as detailed in EP Appendix C4. CGG considers that sufficient clear information was provided to allow relevant persons and potentially relevant persons to make an informed assessment of the possible consequences of the activity on their functions, interests or activities, and that each relevant person and potentially relevant persons has been provided with a reasonable period for the consultation, with ample opportunity to provide information and feedback, in a form best suited to them, on the Regia MSS as detailed in EP Chapter C and Appendix C2, 3 and 4. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
C02	**Matter**: Lack of meaningful public/ community consultation **Claim**: Public consultation meetings were an exercise in box ticking, with a consultant, acting on behalf of the proponents, making the statement at a Port Fairy public consultation meeting that "there will never be a scientific or cultural reason that would halt the project". This statement left those attending the consultation event with the clear impression the two proponents - CGG and ConocoPhillips - considered these projects a done deal, and the consultation event was a box ticking exercise, and an exercise in (poor) public relations. **Claim**: The lack of meaningful consultation with affected communities and [Indigenous groups] raises serious concerns about the transparency and legitimacy of the approval process.	CGG acknowledges claims regarding community consultation in the preparation of the Regia MSS Environment Plan (EP) and has reviewed the consultation process undertaken. The statement 'that there would never be a scientific or cultural reason that would halt the project', has previously been discussed with the relevant person, explaining that CGG believes the survey can be designed, and measures put in place, to bring any impacts to an acceptable level. CGG undertook a broad capture approach to identifying relevant people and information, and ensuring the community were aware of the consultation process and proposed activity, which included holding 11 community information sessions (see 3.2.4 of Appendix C1), and the Environment Manager spending 44 days visiting the local communities to raise awareness and meet with potentially relevant persons (see Appendix C1, Table C1-7). As part of the co-design process community members were empowered to request additional sessions in their area, with CGG holding the additional sessions, utilising their feedback on advert placement and timing. The community sessions were not only incredibly valuable in identifying relevant persons, but they provided an open format to provide and

	THEME	CONSULTATION (C)
#	***Comments received***	***Titleholder response***
	Claim: Informed consultation and engagement has not been made for the social wellbeing of coastal communities. **Claim**: There has been a lack of community consultation by REGIA on their proposed seismic blasting plans and their Environment Plan. **Claim**: The Environment Plan is deeply flawed [from a scientific perspective] and has gone through a flawed community consultation process (many coastal communities including the Surf Coast were ignored by REGIA). **Claim**: Submitter critiques the lack of transparency and consultation in the decision-making process, and calls for refusal of the proposal by NOPSEMA. **Claim**: There hasn't been appropriate consultation with other local community members affected by this proposal such as [tour operators], or local sea-loving residents.	receive information. A total of 11 community sessions were held at strategic locations based on the EPA. Information exchange at, and following, these events allowed engagement to be co-designed. Initially, in a bid to mitigate consultation fatigue, events were held with another titleholder who had a proposal in the area. The sessions were advertised in 9 local print newspapers, 3 targeted social media adverts and 272 radio adverts over 6 local stations and their websites. In addition, the collaborative titleholder placed 4 print adverts and 142 radio spots within the EPA to advertise these sessions. Tools, such as an interactive map, were used to facilitate a two-way dialogue with both interested community members and relevant persons. Information was also made publicly available, and resources such as summaries and FAQs were produced to be accessible to a wider audience. 13 Social media adverts and posts were targeted to the local audience, advertising the information sessions and milestone updates. Community members and relevant persons were also encouraged to ask questions and request further information, including information formatted and shared in a manner appropriate to their needs, including one on one in person meetings. Community members were also encouraged to share the activities information within their networks. When contact details were passed on to CGG of potentially relevant persons, they were contacted with initial information and a request for engagement. Local radio, television and print stories were participated in, and advertisements placed, numbering a total of 299 local and national media spots to further assist with community consultation. Transparency was fundamental in the consultation process, with feedback being addressed, comments posted on the Regia website responded to, and EP documents, and resources such as presentation slides (see Matter C01 above) were uploaded into the public document library hosted on the activity website. Changes made to the EP through consultation were shared publicly through project updates and webinars, copies, and recordings of which were made available on the consultation hub. Consultation feedbacks and adopted measures are available in Appendix C2, 3. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: The scientific robustness of the EP is addressed in response to Matter: I15. NOTE: Consultation with Indigenous groups is addressed in response to Matter: FN02. NOTE: Consultation with tour operators is addressed in response to Matter: C07, below. NOTE: Consultation with all coastal communities is addressed in response to Matter: C08, below.
C03	**Matter**: Confusion over who was undertaking what activity. **Claim**: Meetings were held in which the consultant spoke to both projects interchangeably, suggesting to community members that, by combining the consultation meetings for the two respective projects, the consultant was acting in the interest of expediting the process. This had the result of confusing attendees as to the specifics of each project the consultant was consulting on, and what information pertained to each project. This may have impacted the ability for relevant persons and affected communities to make informed Public Comments on this proposal, and the ConocoPhillips public comment process that ran in December 2023. **Claim**: The process of public consultation for this project throughout 2023 has been confused and convoluted, both in the online briefings and community meetings hosted by consultants Klarite on behalf of the proponents. Specifically, the same Klarite consultant acting as the public face for both CGG in this seismic proposal and ConocoPhillips for a separate gas test drilling proposal with areas of overlap in the Otway Basin. **Claim**: The rushed and confusing public consultation efforts by the proponent further erode trust and confidence in the decision-making process. **Claim**: Consultants working on behalf of the proponents, acted as the public face for both CGG in this seismic proposal and ConocoPhillips for a separate gas test drilling proposal with areas of overlap in the Otway Basin. Meetings heard the consultant discuss both projects interchangeably to hasten the process. This had the result of confusing attendees as to the specifics of each project the consultant was talking about.	CGG acknowledges claims regarding community confusion about proponents during the consultation process. In a bid to reduce consultation fatigue and burden on the community and potentially relevant persons, CGG collaborated with another title holder in the region who was undertaking engagement for a non-seismic project. CGG structured these meetings in two parts, with a break between project presentations to avoid confusion. When feedback requested separate meetings be held, CGG implemented our consultation co-design methodology and held Regia MSS only meetings. In some instances, relevant persons required combined meetings, which were undertaken. This initial collaboration was to address concerns of multiple events to attend, not timing. Having collaborative public information sessions would not have shortened the consultation process for either project. All communication resources, such as newsletters, emails, letters, information sheets and social media, were Regia MSS only and branded as such (see Appendix C5). CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no further changes have been made to the EP in response to these claims. NOTE: Claims regarding a lack of meaningful public/ community consultation is addressed in response to Matter: C02.

	THEME	CONSULTATION (C)
#	***Comments received***	***Titleholder response***
	Claim: The public consultation process conducted throughout 2023 has been fraught with confusion, both in online briefings and community meetings hosted by consultants on behalf of the proponents. **Claim**: The dual role of a consultant representing both CGG in the seismic proposal and ConocoPhillips in a separate gas test drilling proposal has muddled the clarity of information presented to the community. By merging consultation meetings for both projects, attendees were left unsure about the specifics of each project, potentially hindering relevant persons and affected communities from making informed public comments. **Claim**: The consultation process for this proposal has been equally concerning. Community meetings have been confusing and poorly organized, leaving affected communities and stakeholders without sufficient information or time to provide meaningful input. This lack of transparency and meaningful engagement undermines the principles of democratic decision-making and fails to uphold the rights of communities to participate in decisions that affect their environment and well-being.	
C04	**Matter**: Volume of information required to be reviewed **Claim**: The lengthy (3322 page) seems designed to obfuscate regarding Such obfuscation an extension of the procedures applied the proponent to the so-called "Consultation" process described below. Indeed, it is arguable that the consultation process indicates an attitude of contempt on the proponent's part toward the Australian government and people, the Australian environment and arguably to their own children and grandchildren. **Claim**: The Regia MSS application is 3332 pages long. It is unreasonable to expect consultees to thoroughly review such huge documents in short periods of time with any thoroughness. Is this a deliberate attempt to make it difficult for consultees to respond within 30 days? **Claim**: It is our view that the 3,332 page Environment Plan (EP) under consideration for this project is obtuse and unnecessarily convoluted, creating a barrier to clear community understanding and informed public assessment. **Claim**: The consultation company employed by CGG to carry out community consultation for this proposal did not prepare us for this extensive document. Instead, the emphasis was on informing community groups of our rights as relevant person(s), with little information about the project details or the science. **Claim**: Unfortunately, the parameters of this consultation have made it difficult for us to prepare a comprehensive response; a time frame of 30 days to read a 3,300 plus page document, find and evaluate their references, and then prepare a response is unrealistic. Considering the complex nature of the topic, which requires considerable time to research and process information, it would be impossible to develop a response which addresses all the potential issues with this plan. **Claim**: The submitter is concerned that an application of some 3,332 pages which requires a response within 30 days is unreasonable, unfair, and unachievable to adequately assess the capacity required for basic review (let alone thorough review).	CGG does not concur with claims relating to the volume of information to be reviewed, for the reasons stated below. The EP has been uniquely structured to address feedback related to the digestion of large and complicated environmental approval documents presented by titleholders. Further, the content is slightly more educational than a typical EP because many of the consultations revealed a need to fully describe the regulatory requirements, share NOPSEMA guidance, and explain environmental management concepts such as reducing impacts and risks to as low as reasonably practicable (ALARP) and to an acceptable level. By having a concise, 56-page, EP document and extended, comprehensive appendices, CGG aims to simplify the assessment processes for NOPSEMA, the public, and relevant persons. For the public, this format is easier to digest, encouraging more readers, inviting more public comments, and potentially helping to identify more relevant persons. For relevant persons identified in preparation of this Environment Plan, the parts of the EP addressing their functions, interests or activities and subsequent objections, feedback and claims are located more quickly and easily through the specific appendices, and their bookmarks. The EP contains a document map on page 3, containing hyperlinks and bookmarks, so reviewers can easily access the information pertinent to them. In addition to this, a video was also produced and linked to on pages 2 and 3 of the EP, providing a visual tool on how to navigate the appendices via the hyperlinks and how to use the bookmarks within the appendices with both Chrome and Explorer browsers. The draft EP Chapters were made publicly available on the website, prior to Public Comment, for relevant persons to review and they were encouraged to provide feedback and ask further questions if required (see theme C01 for further detail on timing and communication of information availability). Public webinars, community sessions and meetings, both virtual and in-person, with individuals and groups as per relevant persons preference, were undertaken during the preparation of the EP to support greater understanding of technical information. This process also facilitated feedback that allowed CGG to identify topics and produce information summaries to further assist relevant and potentially relevant persons to make informed assessments. When stakeholders expressed concern and burden, due to other proposed activities with similar engagement timelines and internal resourcing (Event ID 3413 & 3384), the decision was made to cancel the consultation pause, moving intended Public Comment period to 2024, and keep engagement open (Event ID 3331).CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Information on the quality and timing of information is supplied under theme C01
C05	**Matter**: Failure to respond to questions **Claim**: Questions asked in person and in writing were frequently left unanswered or relevant persons asking the questions were informed the information was not available.	CGG does not concur with these claims and notes that responses to all objections, claims and questions received during consultation were provided to relevant persons, as summarised in the Environment Plan (EP) Appendix C2. Given that responses to all relevant person objections, claims and questions were provided, and that, having considered the claims, CGG has satisfied itself that the potential risks and impacts referred to have been adequately addressed in the EP, no changes have been made to the EP in response to these comments.
C06	**Matter**: Consultation fatigue	CGG acknowledges claims relating to consultation fatigue associated with the Regia MSS.

	THEME	CONSULTATION (C)
#	***Comments received***	***Titleholder response***
	Claim: The submitter expressed being overwhelmed by the ongoing consultation for polluting offshore oil and gas as their kids have to deal with the consequences of the continued opening up of these public resources to private multinationals, at the detriment of our natural resources and our childrens future.	In a bid to mitigate consultation fatigue, initial community information events were held in conjunction with another proponent who was also promoting an offshore activity in the Otway. Following these events, CGG received feedback from some attendees that this was confusing and requested standalone information sessions, which were then organised and undertaken. When stakeholders expressed concern and burden, due to other proposed activities with similar engagement timelines and internal resourcing (Event ID 3413 & 3384), the decision was made to cancel the consultation pause, moving intended Public Comment period to 2024, and keep engagement open (Event ID 3331). Other ways CGG reduced burden was through the use of the consultation hub, creating a space where multiple forms of information could be accessed and feedback provided. This included a survey, where potentially relevant persons could state their functions, interests or activities and request further information and/or consultation, and state preferred means of contact. The Regia project supplied multiple points of contact, including email, phone, postal, social media, online comment boxes, interactive maps, instant feedback, and surveys. Project newsletters were utilised as a tool to capture important information, within a single correspondence to limit consultation fatigue, and to provide information on changes made throughout the consultation process. CGG also offered a co-design consultation process, allowing interested community members and potentially relevant persons to request communications in their preferred method and format, further reducing burden on the stakeholder. CGG has also undertaken collaborative work with other Titleholders in the region on the Sea Country Protection Plan (SCPP) and Commercial Fisheries Adjustment Protocol, to further reduce fatigue while facilitating relevant persons engagement to co-design these programs. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
C07	**Matter**: Failure to consult with relevant persons **Claim**: Cape Bridgewater – About 2500-3000 Australian Fur Seals and Long-Nosed Fur Seals have a breeding colony here. Numbers have been recovering since federal protection. Southern Elephant Seals visit here each summer whilst they moult. Submitter raised concerns that local tour operators with expert knowledge have not been consulted by CGG. **Claim**: Those who rely on these animals, such as tour operators who may run whale watching tours, and local businesses relying on tourism income which is affected by events such as mass amounts of dead sea creatures littering beaches following seismic testing, do not appear to have been adequately considered or consulted. **Claim**: Submitter recommends ensuring consultation processes with locals are also thorough enough to capture local knowledge of significant features. **Claim**: Submitter recommends conducting thorough consultation with local residents and local businesses, including all tourism operators, who may be impacted by the proposed seismic testing to assess potential project impacts. **Claim**: Some tourism operators were not even consulted by CGG, for example the popular whale watching and seal tour operators, and potentially many more. **Claim**: The titleholder has not demonstrated it has carried out consultations or proposed measures, as is required by regulation 34(g) of the Regulations, in relation to social and recreational activities, such as surfing, due to activities with the Operational Area and the Environment Planning Area.	CGG acknowledges claims regarding failure to consult with relevant persons and has reviewed the consultation process undertaken. Regarding impacts to the Long-nosed (or New Zealand) Fur-Seal and the Australian Fur Seal, these species are otariid pinnipeds which are assessed in Section 6.4 (Otariid Pinnipeds) of EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). Impacts and mitigation measures relevant to otariid pinnipeds are addressed extensively in response to Matters: M27, M28, and M31. CGG has reviewed relevant literature and assessed potential impacts on Southern Elephant Seals, a subantarctic species, including the studies conducted by Harris et al (2001) documented in Appendix B8 (Seismic Studies Report) Section 7 (Marine Mammals). **EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) Section 4 (Description of the Existing Environment that may be Affected by the Activity) has been updated in response to these claims, as follows:** **CGG has reviewed relevant literature including Conservation Advice for this species, and has noted the Southern Elephant Seal (*Mirounga leonine*) listed as Vulnerable under the EPBC Act, is a subantarctic species and, although some individuals have been recorded in coastal habitats, this species was not identified in the PMST search for this area. This species has a nearly circumpolar distribution and visits subantarctic islands to breed and to moult. There are two main populations found in Australian waters and the principal breeding colonies for these populations are located on Heard and Macquarie Islands (Shaughnessy 1999; McMahon et al. 2005). Southern Elephant Seals concentrate on the northern beaches of Macquarie Island, although colonies are scattered around the island (DEH 2003). In the Australian Antarctic Territory, small numbers of pups have been reported from Browning Peninsula and Peterson Island, near Casey station (Murray 1981 cited in Shaughnessy 1999), and there has been a well-frequented haul-out area at Vestfold Hills (Burton 1985). Off the coast of mainland Australia, several pups have been born and many animals recorded on Maatsuyker Island (located at the most southern end, off the south-west coast of Tasmania) (Shaughnessy 1999).** **Given the likelihood of encountering this species during the Regia MSS is low, impacts to the species are not predicted and have not been assessed further.** Potentially relevant persons were identified through desktop research, direct communications, through government agencies, community outreach events, and various targeted media and advertising techniques. CGG's strategy included developing tailored identification methods for subject-centred groups. CGG acknowledged that despite best endeavours, there may still be some unidentified relevant persons. To combat these challenges a broad capture of people and information, including the opportunity to self-identify, was undertaken (see Appendix C1, 3). This included holding 11 community information sessions, the Environment Manager spending 44 days visiting the local communities, 13 geographically targeted social media adverts, 299 local media spots, and local radio, television and print media articles (see Appendix

	THEME	CONSULTATION (C)
#	***Comments received***	***Titleholder response***
		C1). Individuals who attended community sessions, left map comments, instant feedback or undertook a consultation survey, were written to and invited to engage. Community members and relevant persons were also encouraged to share the activities information within their networks. When contact details were passed on to CGG of potentially relevant persons, they were contacted with initial information and a request for co-design engagement and activity planning. Through this process relevant persons in the Tourism Operators, Commerce, Other Marine users (such as surf clubs) and Interested member of public, amongst other, subject-centered groups were identified and engaged with, allowing for two-way information sharing and activity co-design. Consultation feedbacks and adopted measures are available in Appendix C2, 3, and full text consultation copies in Appendix C4. In the process of consultation, 737 individuals and 172 organisations were contacted during the preparation of the EP. Of these individual points of contact, 458 relevant persons were identified (full details of these persons can be found in Appendix C3). CGG will continue to promote relevant persons' self-identification throughout the life cycle of the activity. This will occur through the public comment process and regular updates on the Regia website, and so the suggested tourism operators will be contacted by CGG under ongoing consultation in our implementation strategy (see Appendix C1, 3.7). CGG's implementation strategy includes change management procedures in the event of new or modified information being received (see Appendix B3, 12.1). In accordance with the applicable regulatory requirements, CGG has prepared an evidence-based case that the environmental impacts and risks arising from the Regia MSS can be managed to below an acceptable level, with effects of this activity being short-term, localised, and recoverable, as detailed in EP Appendix E (Environmental Impact Assessments). An activity that caused large scale mortal effects would not be undertaken. **Having considered these claims, CGG will contact the named tourism operators with relevant information and update the consultation records (Appendix C2 and C4) accordingly. EP Appendix E7 will also be updated with the assessment of Southern Elephant Seals as detailed above.** NOTE: Consultation with communities is addressed in response to Matter: C02, above. NOTE: Impacts on local livelihoods – Tourism is addressed in response to Matter: T03 ***References**:* *Burton, H.R. (1985). Tagging studies of male southern elephant seals (Mirounga leonina L.) in the Vestfold Hills area, Antarctica, and some aspects of their behaviour. In: Ling, J.K. & Bryden M.M., eds. Studies of sea mammals in south latitudes. Page(s) 19-30. Adelaide, South Australian Museum.* *Department of the Environment and Heritage (DEH) (2003g). Sub-Antarctic Fur Seal and Southern Elephant Seal Recovery Plan - Background Paper. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/seals.html.* *McMahon, C.R., M.N. Bester, H.R. Burton, M. A. Hindell & C.J.A Bradshaw (2005). Population status, trends and a re-examination of the hypotheses explaining the recent declines of the southern elephant seal Mirounga leonina. Mammal Review. 35:82-100.* *Shaughnessy PD. 1999. The Action Plan for Australian Seals. CSIRO Wildlife and Ecology, Natural Heritage Trust, Environment Australia.*
C08	**Matter**: Failure to consult with all coastal communities **Claim**: REGIA have ignored the communities of Lorne, Aireys Inlet, Anglesea, Torquay, Jan Juc, Barwon Heads, Ocean Grove and Point Lonsdale who share a strong understanding and appreciation of their marine environments. **Claim**: The lack of consultation on by REGIA in my community was staggering. REGIA held multiple community information workshops in Apollo Bay (I had to drive from Torquay one night to attend such a workshop) but none in Lorne, Aireys Inlet, Anglesea, Torquay, Jan Juc, Barwon Heads. **Claim**: Local environmental groups had to spend their own money and time to hold community information nights in Torquay and Barwon Heads in 2023 as a result of the lack of consultation by REGIA. Why did Apollo Bay get multiple community workshops and Torquay NONE! The community voice must be an important part of this consultation process.	CGG does not concur with claims relating to a failure to consult with all coastal communities, for the reasons stated below. A total of 11 community sessions were held at strategic locations based on the Environmental Planning Area (EPA) for the Regia MSS. Information exchange at, and following, these events allowed engagement to be co-designed. Initially, in a bid to mitigate consultation fatigue, events were held with another titleholder who had a proposed activity in the area. When requests were made by individuals on behalf of local environmental groups to hold standalone events, in requested areas, these were organised (Event ID's 1005, 806). The sessions were advertised in 9 local print newspapers, 3 targeted social media adverts and 272 radio adverts over 6 local stations and their websites. In addition, the collaborative titleholder placed 4 print adverts and 142 radio spots within the EPA to advertise these sessions. As per the response to Matter C02, CGG's process facilitated a broad capture of people and information, allowing self-identification and consultation co-design. Through desktop research and consultation, CGG became aware of local community groups, who were written to at the commencement and throughout the consultation period, and invited to engage in a manner that suited their needs (Person ID 315 & Org ID 117). CGG has not updated the EP in response to these claims.

	THEME	CONSULTATION (C)
#	*Comments received*	*Titleholder response*
C09	**Matter**: Inadequate public comment period **Claim**: The submitter strongly objects to the limited time of 30 days that community has been given to respond to this extensive and technical document. It equates to reading more than 100 pages per day for 30 days straight, and these pages are replete with obfuscation, padding, and vaguely worded claims. This allows no time to compile a reasonable response. It seems to us the cards are stacked against time-poor volunteers, and that CCG's intention is to overwhelm the layperson. **Claim**: The Environment Plan submitted by CGG to NOPSEMA, spanning 3,332 pages, is excessively lengthy. Given the 30-day public comment period, it does not afford the general public adequate time to review and respond appropriately. With individuals required to digest over 110 pages daily, this poses a challenge, particularly for those fully occupied with work commitments. **Claim:** Relevant persons are given only 30 days to review and provide feedback on the Regia MSS Environmental Plan. However, this plan is excessively long and repetitive, spanning 3332 pages of information that must be reviewed. This timeframe and volume of material make it unrealistic to expect fair and thorough public consultation on the proposed activities. **Claim**: We argue that this EP fails the requirement of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 as they relate to consultations and that it is not practicable for relevant persons to adequately assess this proposal within the allocated thirty day timeframe – particularly considering that this EP was released on a national public holiday one day prior to a weekend. In practical terms this has resulted in many relevant persons who might have taken the long weekend away from their inboxes missing three crucial days to read over and absorb the density of information and consider it on its merits. **Claim**: The EP has shouldered relevant persons for the purposes of consultation on this project with an unwieldy, incomprehensible and uncomprehensive document which is inaccessible within the 30 day public comment window.	Claims regarding the duration of the prescribed public comment period do not relate to the Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of these claims, they have not been considered further in preparing the EP. The 30-day period for public comment is prescribed in the Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023, section 30. Regarding relevant persons consultation, CGG extended the original consultation period twice to ensure relevant persons had a reasonable period with sufficient information to engage in the consultation process, as detailed in Section 3.3 of EP Appendix C1 (EVENT ID: 1182 & 3331). CGG also made draft EP chapters and technical supporting reports publicly available to relevant persons and the general public via the consultation hub, as follows: preparatory information uploaded 1 February and 31 March 2023, Establishing Context documents 31 March to 6 June 2023, Risk Assessments on the 11 September 2023, Impact Analyses on the 22 September 2023, and Impact and Risk Treatment on the 28 September 2023. When the public comment period closed on 26th February 2024 the draft EP chapters and supporting reports had been available to the public for 151 days at the minimum. Consequently, CGG considers that the consultation process has allowed ample opportunity for relevant persons to make an informed assessment of the possible consequences of the activity on their functions, interests, or activities. As a result, no changes have been made to the EP. NOTE: Claims regarding the volume of information required to be reviewed are addressed in response to Matter: C04
C10	**Matter**: Omissions triggering resubmission and new consultation process. **Claim**: Recognise that any omissions will require significant reevaluation of the plan and a resubmission for approval, and will also trigger a new consultation process as the risks and management strategies will have changed.	CGG acknowledges that under section 39 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Environment Regulation) a titleholder may, in certain circumstances, be required to submit a revised Environment Plan (EP) under section 26 of the Environment Regulation. CGG has not updated the EP in response to these claims.

4. First Nations Heritage

	THEME	FIRST NATIONS HERITAGE (FN)
#	***Comments received***	***Titleholder response***
FN01	**Matter**: Acknowledgement of cultural values **Claim**: The proposed seismic blasting project is situated in important Sea Country for the Gunditjmara people, who have enduring spiritual and cultural connections to the area and marine life that lives within it. Their whale ancestors and kin, Koontapool, the southern right whale, and Wuuloc, the pygmy blue whale, are sacred to the Gunditjmara and hold a significant place in their cultural practices. The island of Deen Maar is part of the homeland of the Gunditjmara and Eastern Maar peoples and contains important cultural sites and artefacts as well as spiritual significance.	CGG acknowledges the Sea Country cultural values, identified through our consultation process and broad capture of information, and has appropriate management procedures in place. Cultural Hertiage values are mentioned throughout the Environment Plan (EP), along with Appendix B10 (Cultural Heritage Assessment), Appendix G4 (Sea Country Protection Plan), and Appendix C3 (Sensitive Information Report). **The EP has also been reviewed to ensure values are in alignment with the recently released Gunditjmara Nyamat Mirring Plan 2023 – 2033, and reference to this plan has been included in EP Appendix F2.** CGG has considered this claim and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above.
FN02	**Matter**: Consultation with First Nations peoples. **Claim**: The consultation process has not adequately engaged with local First Nations communities or their representatives in order to determine the impact of this proposal on areas, or species, of cultural significance. **Claim**: The lack of meaningful consultation with [affected communities] and Indigenous groups raises serious concerns about the transparency and legitimacy of the approval process. **Claim**: Submitter recommends conducting thorough consultation with all First Nations People who may be impacted by the proposed seismic testing and prioritising consultation with local First Nations People to determine species and sites of marine and land cultural significance. **Claim**: The cultural significance of various areas and species, whilst mentioned, has also not appeared to receive adequate consultation as detailed in the EP. Ignoring the impacts of this proposal on the region's First Nations People is completely unacceptable. **Claim**: The environmental plan advises that First Nations people have been consulted in relation to CGG's proposed activity by posting a newspaper advertisement in a First Nation's newspaper. This method of communication is insufficient, as it requires affected parties to read that edition of the newspaper. **Claim**: CGG should advise whether every First Nations group that has a stake/interest in the area where CGG proposes to conduct seismic testing, has been properly consulted. **Claim**: There are many lands and title holders in the areas affected by this environmental plan, however it doesn't detail whether there has been consultation with all of the First Nations People whose land backs onto this observation area. **Claim**: Submitter recommends requesting full disclosure of which First Nations People were consulted regarding the proposed seismic testing.	CGG acknowledges claims relating to consultation with First Nations peoples associated with the Regia MSS and has reviewed the Environment Plan (EP) and the consultation process undertaken to ensure that the engagement process was adequately detailed and described. In developing the EP, CGG recognised that in the vastly deep culture of Indigenous Australians, there are often different cultural and consultation requirements that exist in the governance frameworks for the different Indigenous representative bodies. To respond to this, CGG undertook a tailored approach to First Nations consultation, seeking a co-designed process, which is detailed in EP Appendix C1, 3.1.11. Desktop research, engagement with government agencies, Cultural Heritage assessment reports, and advertising in First Nation specific publication were undertaken, in addition to the extensive in-community print and radio advertising (see Appendix C1, 3.1.3), to ensure a broad capture approach. CGG sought input and feedback from the First Nations groups, on how they require consultation to be undertaken, including considerations to reduce burden and consultation fatigue. All available methods of communication were offered, including meetings on Country and in groups. Bespoke communications were offered, to assist in communicating technical information, potential impacts and devised measures, as well as reducing burden, as CGG's consultation logs demonstrate (Appendix C3, 2 & Appendix C4). As a result of consultation during the development of the EP, and in recognition of First Nations groups' stewardship of their heritage and Country, CGG has committed to establishing a Sea Country Protection Program (SCPP), designed to identify, preserve, and protect cultural heritage sites and values within areas of operations off the Otway coast. The SCPP process will also aim to find mutually beneficial outcomes between First Nations communities and the petroleum titleholders. The SCPP is described in EP Appendix G4. First Nations people and organisations have a right to privacy, so individual's names will not be provided publicly, however NOPSEMA will receive this information to aid in their decision making. Some organisations have requested they are kept confidential, as is their right through Clause 25(4) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, which states that organisations may request that information provided to us not be published in the Environment Plan. Correspondence between CGG and all organisations will however be provided in full to NOPSEMA in a part of the Environment Plan which is marked as sensitive and will not be published. CGG has considered this claim and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Affected communities are addressed in response to Matter: C02. NOTE: Threats to culturally importance marine species (general) is addressed in response to Matter: C04
FN03	**Matter**: Impacts to ecosystems protected by First Nations peoples. **Claim**: First Nations people have protected and nurtured the ecosystems of the lands, sea and air of this continent for tens of thousands of years and this whale songline Country is of no exception. To seek to exploit and profit off its destruction is antithesis to First Nations justice and respect and will tether all semblance of respect and dignity to the company. **Claim:** Seismic blasting does not have community licence. In the proposed operation area, it will impact: whale habitat, endangered marine life, Southern Sea Country, the Zeehan Marine Park,	CGG acknowledges claims relating to impacts to ecosystems protected by First Nations peoples and has reviewed the Environment Plan (EP) to ensure the matter has been adequately assessed. CGG acknowledges the cultural, spiritual, and caretaker connection to Country, of First Nations people. The Regia EP preparation process included the assessment of activity impacts and risks and the development of control measures that will reduce these to As Low as Reasonably Practicable (ALARP, see Appendix F2) and designed with the principles of Ecologically Sustainable Development (Appendix F4) underpinning decision making. This process consistently reflected a commitment to safeguarding the marine environment, reducing environmental impacts and risks, and preserving the interests of future generations (Appendix F3, Acceptable Levels of Impact and Risk). CGG has developed a Fauna Management Plan (FMP, Appendix G2) that governs the

	THEME	FIRST NATIONS HERITAGE (FN)
#	***Comments received***	***Titleholder response***
	the Budj Bim Eel conservation area, [and commercial fisheries]. The food chain will be severely affected, with carry-on effects from zooplankton to fish, to whales. **Claim**: The project threatens important cultural heritage sites and lacks consent from First Nations custodians. **Claim**: The proposal to conduct seismic blasting for oil and gas exploration in our oceans will cause irreparable harm to ocean ecosystems and sacred Nyamat Mirring. This area is the ancestral lands of Gunditjmara people and part of their cultural heritage. **Claim**: The CGG proposal should be rejected outright rather than threatening Koontapul, Yarramila, and other marine creatures.	protection of marine fauna interactions during the survey. The FMP has clear guidance for on-water actions to protect marine fauna, along with shoreside support, decision, and review mechanisms to improve the fauna management system over time. CGG has considered this claim and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Lack of meaningful public/ community consultation is addressed in response to Matter: C02. NOTE: UN Declaration on the Rights of Indigenous Peoples and consent is addressed in response to Matter: FN08 NOTE: Consultation regarding, and impacts on eels are addressed in response to Matter: FN04. NOTE: Impacts to Whale and Whale songlines are addressed in response to Matter: FN05. NOTE: Impacts on seaweed and cultural practices are addressed in response to Matter: FN06 NOTE: Productivity, including the Bonney Upwelling, is addressed in Matters: P01-P11
FN04	**Matter**: Consultation regarding, and impacts on, eels **Claim**: We note that local First Nations People were not consulted about the likely effects of seismic blasts on larval eels. **Claim**: Regia must consult with the First Nations people at Budj Bim to honestly and explicitly explain the damage that will ensue from the seismic blasting of the ocean and the consequent destruction of the eel larvae and get the response from these traditional owners. First Nations People must have the right of veto on whether damaging activities are allowed to take place on their Sea Country. **Claim**: Specific information relating to the effects of seismic basting on short fin eels needs to be explored as the migration patterns of the eel are intricate. Eels are vulnerable throughout their life cycle and have a single opportunity to successfully reproduce (14). Larval eels return on ocean currents to southwest Victoria and there is every likelihood, they will die during seismic blasting activity. [14. Koster, W. et al (2021, Nov.) Fast tracking of the oceanic spawning migrations of Australasian short finned eels. Retrieved February 4th , 2024 from: https://www.nature.com/articles/s41598-021-02325-9] **Claim**: The killing of eel larvae in the ocean by seismic blasting would have a devastating effect on the work done by the Gunditjmra people in the present times to repair and recreate the eel system at Budj Bim. It was destroyed by the European settlers who knew no better, but the proponents of seismic testing do know that seismic blasting kills larval fish and larval eels. **Claim**: The Short-Finned Eel is of great cultural significance to the indigenous Gunditjmara people. No studies have been done on the effect of seismic blasting on the “near threatened” Short-finned Freshwater Eel.	CGG acknowledges claims relating to consultation with First Nations People regarding, and impacts on, eels (Kooyang) and has reviewed the Environment Plan (EP) to ensure to ensure the matter has been adequately assessed. As described in Matter FN02 above, CGG undertook a comprehensive and tailored approach to the identification of relevant First Nations people, groups, and information. During this process, guided by the cultural heritage assessment report (Appendix B10) and consultation with First Nations organisations, the First Nations connection to Kooyang (Eels), and the Budj Bim Cultural Landscape World Hertiage Area eel traps, was identified. EP Appendix E3, Underwater Sound (Fish), Section 4.1.9., assessed both the Short-finned and Long-finned Eel, and the First Nations Connection to Eel, with impacts to Eels described in Section 6.5 of the appendix. The paper listed in the adjacent claim was referenced in this assessment. From the detailed assessment undertaken it was identified that the Operational Area (area potentially impacted by underwater sound) does not overlap habitat associated with the Long-finned Eel, with no effect to World Heritage values of Budj Bim as the aquaculture systems are outside of the area that may be affected by underwater sound. As detailed in EP Appendix F3, Section 5.2.5, there is no evidence to support an expectation of significant and measurable cumulative impacts to short-finned eels as a result of the Regia MSS. **Having considered these claims, a Fact Sheet summarising CGG’s assessment of Glass Eels, previously provided to First Nations organisation during ongoing consultation, has now been made publicly available on the website. This is evidenced in Appendix C5 of the EP.**
FN05	**Matter**: Impacts on whales and whale songlines **Claim**: The Traditional owners, keepers of whale songlines, hold grave concerns about the impact on whale migration should this go ahead as it is within 61km of whale birthing areas. They say this project has no permission to proceed. **Claim**: The Southern Right Whale are of strong cultural significance for the Gunditjmara Traditional Owners. The EPBC Act requires that the significance of this marine area and species such as the Southern Right Whale to First Nations people must be properly considered. The EP does not adequately address this requirement of the or other requirements laid out in international First Nations covenants to which Australia is signatory. **Claim**: Any negative impacts from seismic blasting on whales contravene the cultural and spiritual stories of local, coastal First Nations peoples. **Claim**: We also acknowledge the continuing connection and cultural practices of the First Nations peoples who have been stewards of the Sea Country extending across the coastal areas now	CGG acknowledges claims relating to impacts on whales and whale songlines and has reviewed the Environment Plan (EP) to ensure these have been adequately considered. As discussed in response to Matter FN02 above, CGG undertook comprehensive desktop research and a consultation process with First Nations organisations, allowing a broad capture of information, such as the cultural and spiritual significance of whale’s, whale songlines, ceremony and whale dreaming (see Appendices C1 (Section 3.1.11), C2 and C3). Control measures designed to protect the marine environment, such as shut down zones, no discharge of the sound source at full power in water depths less than 50 m, a Fauna Management Plan (Appendix G2) and the Sea Country Protection Program (Appendix G4), will ensure Sea Country values and sensitivities are protected. EP Appendix F3 (Acceptable Levels of Impact and Risk) outlines CGG’s commitment to managing environmental impacts and risks to within acceptable levels and demonstrates how this will be achieved. In this document Southern Right Whales and Blue Whale are identified as key environmental values and sensitivities, with further assessments provided in Sections 5.2.1 and 5.5.5 respectively. **Having considered these claims, the identified potential impacts and their measures concerning First Nations cultural values regarding whales, will be added to Appendix G2, Fauna Management Plan.**

	THEME	FIRST NATIONS HERITAGE (FN)
#	***Comments received***	***Titleholder response***
	known as Victoria since time immemorial. We note that their ability to practice their culture is a human right protected by Australian and international human rights law. Accordingly, we do not support any disruption to cultural practices and songlines of those First Nations peoples related to whale migration pathways and breeding cycles which are at high risk due to the seismic survey. **Claim**: The whales are part of the song lines of First Nationsâ€™people past, present and future they are the archives. If we respect Country we stop seismic testing. For thousands of years First Nations people have recorded whale knowledge in stories, art, music creating an archives of previous human survival through climate and environmental change. Testing disrupts breeding and causes static and disturbances for the whales. **Claim**: Seismic testing is destroying the vibration of the ocean that the whales depend on for communicating and their life. This cannot and should not continue it is shameful to First Nations people and makes a mockery of Australiaâ€™s tourism based on protecting whales.	NOTE: Impacts to Southern Right Whales, including migration and biologically important areas, are addressed in response to Matters: M14-22. NOTE: Impacts to Blue Whale are addressed in response to Matters: M23-26. NOTE: The UN Declaration on the Rights of Indigenous Peoples is addressed in response to Matter: FN08, below
FN06	**Matter**: Impacts on seaweed and cultural practices. **Claim**: Avoiding the bonny upwelling to protect planktonic species is not adequate for protecting the reproductive life cycle of seaweed, as they breed much more openly and broadly throughout the proposed zone. Impacts upon these species, also greatly impacts the ability of Wathaurong and Eastern Maar peoples to continue their cultural practices, as seaweeds remain extremely important cultural species, especially for women (unpublished + unpublished research, Z Brittain Deakin Uni, R Thurstan Exeter Uni).	CGG acknowledges claims relating to impacts on seaweed and cultural practices and has reviewed the Environment Plan (EP) to ensure the matter has been appropriately considered. A comprehensive description of kelp, including survey findings along the Otway shelf from Warrnambool to Portland, is provided in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages). **Although there is no evidence to suggest that the Regia MSS will have any material effect on marine algae populations in the region, having considered these claims, the research below will be added to Appendix E2 (Impact Assessment – Underwater Sound: Plankton) to ensure that this consideration is captured within the EP.** **In Australia, shallow (<30 m) temperate reefs are defined largely by the distribution of *Ecklonia radiata* kelp forests, which span more than 8000 km of coastline from the subtropical waters of northern New South Wales down the east coast of mainland Australia, around Tasmania, along Australia's southern coastline and north as far as Kalbarri in Western Australia (Bennet et al 2015). Most of Australia's kelp-dominated temperate reefs lie within the 'coastal zone' under state jurisdiction (3 nautical miles or 5.5 km from shore) (Bennett et al 2015). On the south and west coasts of Australia, E. radiata forests typically occur in mosaics of mixed species with large canopy-forming fucoids (e.g. *Cystophora spp*., *Scytothalia dorycarpa*), covering most of the rocky reefs.** **Timing of reproduction is variable across its distribution range with seasonal peaks in Western Australia and more continuous reproduction of sori and zoospores in Tasmania. Water temperature is the key driver of reproductive timing but is also influenced by other variables such as wave action. Once E. radiata zoospores are released, they have the ability to swim for at least 24 h (although they often do so for only 1–2 h), until they settle onto the substratum and germinate into male or female gametophytes. Ecklonia radiata can disperse via three modes; zoospores, sperm and detached fertile drift material. Population genetic studies on E. radiata using neutral microsatellite markers (Dolman & Coleman 2009, reported in Wernberg et al 2019) have identified that genetic structure around the Australian continent is weak, suggesting widespread gene flow that is mediated by the strength and direction of prevailing ocean boundary currents. Such strong connectivity should imbue considerable resilience on this species, however climate change is operating at such a large scale that warming temperatures are negatively affecting kelp across its entire range.** **Due to the depths associated with the activity action zone, with no discharge of the sound source at full power to occur in water depths less than 50 m, impacts on larger plants and nearshore planktonic phases arising from the activities associated with the Regia MSS are not anticipated. There is no scientific information on the potential for noise-induced effect in macroalgae and no functional cause-effect relationship has been established. Therefore, impacts from acoustic disturbance on macroalgae/ marine flora, or associated cultural values has not been considered further.** **It is understood there is potential for kelp in shallower, more coastal areas to be impacted in the highly unlikely event of a marine oil spill, and a detailed description of kelp, its cultural and seaweed industry value, and risks to kelp associated with a spill are detailed in EP Appendix D4 (Accidental Release of Fuel), in Sections 6.3 (Benthic Assemblages), 6.14 (Seaweed Industry) and 6.17 (Protected Areas).** ***References:***

	THEME	FIRST NATIONS HERITAGE (FN)
#	***Comments received***	***Titleholder response***
		Bennett Scott, Wernberg Thomas, Connell Sean D., Hobday Alistair J., Johnson Craig R., Poloczanska Elvira S. (2015) The 'Great Southern Reef': social, ecological and economic value of Australia's neglected kelp forests. Marine and Freshwater Research 67, 47-56. *Wernberg, T., Coleman, M.A, Babcock, R.C., BELL, S.Y., BOLTON, J.J., Connel, S.D., Hurd, C.L., Johnson, C.R., Marzinelli, E.M., Shears, N.T., Steinberg, P.D., Thomsen, M.S., Vanderklift, M.A., Vergés, A., Wright, J.T. (2019) Biology and ecology of the globally significant kelp Ecklonia Radiata. Oceanography and Marine Biology: An Annual Review, 2019, 57, 265-324.*
FN07	**Matter**: Inadequate/ inappropriate measures. **Claim**: The measures the titleholder proposes to adopt because of consultations are inappropriate, as is required by regulation 34(g)(i) of the Regulations, in relation to cultural rights. **Claim**: The EP fails to properly address cultural heritage concerns of Indigenous peoples.	CGG acknowledges claims relating to perceived inadequacy of measures in place to protect cultural heritage and has reviewed the Environment Plan (EP) and measures proposed in response to these claims. It is important to acknowledge the mistakes of the past in assuming knowledge about First Nations values and how they can be protected. This is why we have consulted with First Nations groups and individuals to the best of our ability and have proposed a Sea Country Protection Program (SCPP) that acknowledges the stewardship of Country (EP Appendix G4). The SCPP is proposed to be co-designed and co-implemented with First Nations peoples with Sea Country within or adjacent to operational areas. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
FN08	**Matter**: UN Declaration on the Rights of Indigenous Peoples. **Claim**: Submitter supports First Nations peoples and calls on NOPSEMA to recognise that under the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), the principle of Free, Prior, and Informed Consent (FPIC) is a specific right granted to Indigenous Peoples, which aligns with their universal right to self-determination. Furthermore, FPIC allows First Nations peoples to provide, withhold or withdraw consent at any point regarding projects impacting their territories. Submitter recommends that NOPSEMA refuse this EP given the objections raised by First Nations peoples regarding seismic blasting in their Sea Country and the potential impacts on culturally-significant wildlife and habitats. **Claim**: Gunditjmara Traditional Owners have the right to determine what happens to country. According to Article 32, Item 2 of the UN Declaration on the Rights of Indigenous Peoples: states shall consult and cooperate in good faith with the Indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands. **Claim**: Submitter understands that First Nations peoples have repeatedly voiced their opposition to the CGG proposal and their concern for the risk of damage to their culturally significant Sea Country, wildlife and landscapes. Submitter supports First Nations peoples and calls on NOPSEMA to recognise that under the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), the principle of Free, Prior, and Informed Consent (FPIC) is a specific right granted to Indigenous Peoples, which aligns with their universal right to self-determination. **Claim**: Submitter supports First Nations peoples and calls on NOPSEMA to recognise that under the UN Declaration on the Rights of Indigenous Peoples (UNDRIP), the principle of Free, Prior, and Informed Consent (FPIC) is a specific right granted to Indigenous Peoples and their right to self-determination. 49) 49. https://humanrights.gov.au/our-work/un-declaration-rights-indigenous-peoples-1	CGG acknowledges claims relating to the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and has reviewed the Environment Plan (EP) to ensure these rights have been adequately reflected. Noting that whilst Australia supports UNDRIP, it has not been implemented into law, policy and practice and consent is not a requirement under current regulations. The UN Declaration on the Rights of Indigenous Peoples "addresses both individual and collective rights, cultural rights and identity, rights to education, health and employment, language, and others. It outlaws discrimination against indigenous people and promotes their full and effective participation in all matters that concern them. It also ensures their right to remain distinct and to pursue their own priorities in economic, social and cultural development". The Declaration "explicitly encourages harmonious and cooperative relations between States and indigenous peoples". With Article 18 stating "Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own indigenous decision-making institutions" (United Nations, 2007). CGG's alignment with this statement is reflected in the EP, through the co-design methodology of both consultation and activity, consultation efforts, information capture, impact assessments and the implementation strategy and measures, such as the Sea Country Protection Plan (see Appendix G4). CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
FN09	**Matter**: Acknowledgement of objections. **Claim**: The Environmental Plan does not adequately consider the objections of Traditional Owners and their concerns regarding the risk to culturally significant Sea Country. **Claim**: I respectfully ask that NOPSEMA refuse this Environmental Plan given the objections raised by First Nations peoples regarding seismic surveying in their Sea Country and the potential impacts on culturally-significant wildlife and habitats.	CGG acknowledges the public objection and concerns regarding First Nations matters and has reviewed the Environment Plan (EP) to ensure these rights have been adequately reflected. CGG undertook a tailored consultation strategy to allow a broad capture of information and identification of relevant First Nations individuals and groups (see Matter FN02). Cultural Heritage values are mentioned throughout the EP, along with Appendix B10 (Cultural Heritage Assessment), Appendix G4 (Sea Country Protection Plan), and Appendix C3 (Sensitive Information Report). Consultation, including concerns and objections, are recorded in full in Appendix C4, with summaries and feedbacks available in Appendix C2.

	THEME	FIRST NATIONS HERITAGE (FN)
#	***Comments received***	***Titleholder response***
	Claim: For the purposes of this consultation we acknowledge the Gunditjmara community, some of whom have shown strong opposition to seismic blasting in their cultural sea country. **Claim**: In particular we cite the Citizen's Protection Declaration10 written by representatives from the Southern Ocean Protection Embassy Collective: WE REFUSE ANY FURTHER FOSSIL FUEL PROJECTS ON OUR LAND AND IN OUR WATERS. We condemn all new and existing seismic testing and gas mining exploration approvals across the south west Victorian coastal waters covering Gunditjmara Sea Country. We demand an absolute stop to mining, drilling and other forms of environmental assault on Gunditjmara country, specifically areas of highly regarded cultural significance. These include sacred Whale Songline and Birthing Country and Sacred Women's Country. We refuse permits allowing resource extraction industries to continue operations and commit further advances of a foreign destructive colonial legacy. Drilling must be included alongside seismic testing as risks to whale safety under the Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the Environment Protection and Biodiversity Conservation Act. Greater regulatory provisions must be included under the Wildlife Act 1975 to include restrictions on ocean blasting and drilling. 10 https://drillwatch.org.au/	Through desktop research and engagement with other groups, CGG also learnt of objections from Southern Ocean Protection Embassy Collective (SOPEC) and its founder. First Nations persons were invited through multiple channels to participate in consultation during the development of the EP as evidenced in Appendix C4. Whilst some did not respond, their objections were researched and addressed. These efforts are documented in the Sensitive Information Report, Appendix C3. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
FN10	**Matter**: Compensation to First Nations Peoples. **Claim**: We also acknowledge the social impact on First Nations Communities of titleholders and project proponents offering financial compensation to Traditional Owners in return for their approval of projects. A startling demonstration of both the damaging impact on cultural areas and sea country as a whole, and the lack of natural social licence, Traditional Owner consent must be bought – it is clearly not given willingly. This leads to divisions within communities between those Traditional Owners who want to protect their cultural heritage at all costs and those who are willing to be bought off in order to overlook damage to their sea country. We consider this to be the most damning evidence of industry awareness of the damage caused by their operations, and their willingness to extend that damage into the social fabric of First Nations Communities.	CGG does not concur with claims relating to compensation to First Nations Peoples. CGG has not offered financial compensation to Traditional Owners in return for their approval of projects. CGG has committed to establishing a Sea Country Protection Program in consultation with First Nations Peoples with Sea Country within or adjacent to operational areas. This will be a partnership that supports the protection of Sea Country, and will align with the stated goal of the Gunditjmara Nyamat Mirring Plan 2023-2033 that seeks to "start a conversation and facilitate respectful, beneficial partnerships to help strengthen and heal Nyamat Mirring" (Introduction, 2023). CGG has considered these claims and is satisfied that the concerns raised have been appropriately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

5. Tourism, Recreation and Communities

	THEME	TOURISM, RECREATION AND COMMUNITIES (T)
#	*Comments received*	*Titleholder response*
T01	**Matter**: Impacts on coastal communities (general) **Claim**: This seismic blasting proposal by CGG should be refused by NOPSEMA due to the impacts on coastal communities, marine life and our oceans. **Claim**: This proposal is totally out of touch for what is best for the region and for the public. **Claim**: This region harbours immense cultural and economic worth that will live far beyond our changing dependence of fossil fuels. It is imperative that we consider at the lasting, irreparable impact this testing could do.	CGG acknowledges claims relating to impacts on coastal communities and has reviewed the Environment Plan (EP) to ensure potential impact were appropriately considered. When designing the activity, it was recognised that communities along the Otway Coast are deeply intertwined with this marine ecosystem. Their livelihoods, predominantly fishing and tourism, are directly linked to the health of the marine environment. There is a growing body of literature exploring the socio-economic dependence of these communities on the marine ecosystem, highlighting the need for sustainable management practices. Cumulative impacts on the areas' key environmental sensitivities and values have been assessed in EP Appendix E10 (Cumulative Impact Assessment). As shown in Annex 2 – CIA Scoping Tool, whilst a number of socio-economic components were identified, the only potential material impacts identified concerned commercial fishing. Further assessment was undertaken and a number of measures, including activity limitations and an adjustment protocol, were put in place. Environmental aspects were screened against the components of the environment, to identify potential impacts (EP Appendix F1 (Regia MSS Environment Plan), Table F1-3) allowing further assessment and refinement through consultation, prioritising, identifying and preventing irreversible environmental damage. EP Appendix F4 (ESD Assessment) underlines the adherence to Ecologically Sustainable Development (ESD) principles, highlighting the integration of economic, social, and environmental considerations in decision-making processes and illustrating how the activity design process aligns with key principles like the precautionary approach, intergenerational equity, and conservation of biological diversity. Consequently, there is no irreversible environmental damage predicted from the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to this claim. NOTE: Lack of meaningful public/ community consultation is addressed in response to Matter: C02.
T02	**Matter**: No return to community **Claim**: This proposal offers our community little long-term return for considerable community cost. **Claim**: Flow on impact to regional communities, businesses and livelihoods.	CGG does not concur with claims regarding no return to community from the Regia MSS, nor claims regarding considerable community cost. CGG has devised an Environment Plan (EP) that ensures any potential impacts are managed to levels that are as low as reasonably practicable and acceptable, aligning the project with the key principles of Ecologically Sustainable Development (Appendix F4). This includes consideration of the Integration Principle, whereby the decisions made do not compromise the ability of future generations to meet their needs and enjoy a healthy marine environment. The Regia MSS will provide valuable information about the subsurface geology of the ocean floor. This information can be used for a variety of purposes such as oil and gas exploration, environmental studies, and natural resource management. Australia is facing challenges to the security of its domestic gas supply, specifically in the east coast gas market and a domestic gas supply shortfall could have serious consequences for Australians (DISR, 2022). Australians rely on gas for residential heating and cooking. Australian industry and manufacturers rely on gas as feedstock and for energy. Insufficient gas supply could impact the stable operation of Australia's electricity network. CGG has considered these claims and is satisfied that the concerns raised have been appropriately considered, as outlined above. As a result, no changes have been made to the EP in response to this claim. ***References**:* *DISR, 2022. Securing Australia's domestic gas supply – Options to improve the Australian Domestic Gas Security Mechanism (1 August 2022), Australian Government Department of Industry, Science and Resources. https://consult.industry.gov.au/securing-australias-domestic-gas-supply*
T03	**Matter**: Impacts on local livelihoods – Tourism **Claim**: The whole ecosystem is incredibly important and any proposals that will impact on that should simply not occur The likelihood for people of seeing wildlife in the region, and in particular the now increasing presence of whale activity along the coast, is in itself a tourist attraction; and needs to be nurtured not detrimentally impacted. **Claim**: This area of the Otway Coast has a well earned reputation as the calving place for southern Right , Humpback whales , many tourists travel to this area solely for this reason , the seismic blasting will endanger this livelihood of local tourism industry. **Claim**: This area is worth so much to Australias tourism industry and this proposal places this industry at risk.	CGG acknowledges claims relating to impacts on local livelihoods including tourism and has reviewed the Environment Plan (EP) to ensure the matter has been adequately assessed. When designing the activity, it was recognised that communities along the Otway Coast are deeply intertwined with this marine ecosystem. Their livelihoods, predominantly fishing and tourism, are directly linked to the health of the marine environment. There is a growing body of literature exploring the socio-economic dependence of these communities on the marine ecosystem, highlighting the need for sustainable management practices. Environmental aspects were screened against the components of the environment, to identify potential impacts (EP Appendix F1 (Regia MSS Environment Plan), Table F1-3 allowing further assessment and refinement through consultation, prioritising identifying and preventing irreversible environmental damage. Appendix G1 (Environmental Performance) details the control measures and environmental performance required for the activity to reduce environmental impacts and risks to As Low As Reasonably Possible (ALARP) and acceptable levels. It includes consultation outcomes and was updated throughout the consultation process. It demonstrates compliance with applicable regulations (Regulation 21 (5)(c) & Regulation 21(7)) whilst Appendix F2 (ALARP Assessment) contains additional or alternative control measures considered. Activity co-design also reflects this, with the activity design being adapted over time, through consultation. For example, consultation resulted in an activity limitation extending the water depth for 'no seismic acquisition' from no shallower than 30 m to no shallower than 50 m to reduce impacts to commercial

	THEME	TOURISM, RECREATION AND COMMUNITIES (T)
#	***Comments received***	***Titleholder response***
	Claim: As a member of the public whos job often relies on the health of he ocean and presence of the Southern Right Whale and Humpback Whales during migration, I feel decision makers must truly consider how such seismic blasting practices will impact not just the natural environments themselves, but the impact on the tourism/ecotourism businesses along the south-west coast of Victoria. **Claim**: Submitter recommends assessing the impacts of proposed activity on tourism; whale watching cruises often include dolphin watching; assessing the impacts of proposed activity on tourism, such as whale watching. **Claim**: I live in Melbourne but I travel to SA to snorkel in the unique and beautiful marine environments. Thinking of seismic blasting interfering with marine life such as whales is very upsetting for me and definitely would reduce my likelihood of tourism to SA in the future. **Claim**: Both fishing and whale watching are massive tourist draw cards that contribute a large amount of money into the local economy. I cannot fathom why we would put this and other aspects of our marine environment at risk for a fossil fuel that is only going to contribute to fuelling the greenhouse effect. **Claim**: Not only is this harmful to the marine life around my hometown, it is also heartbreaking to the townspeople and the people who come to visit to see the whales every year. **Claim**: You can't tell me that seismic testing will have little, to on impact on the delicate ecosystem that we have. And if that ecosystem is damaged or destroyed, so could be the vital tourism that supports much of our population.	and recreational fishers, surfers, swimmers, and coastal users. Additionally, whale mitigation zones around survey vessels where activities are restricted to reduce the risk of disturbance to marine mammals were implemented, and acquisition within the Bonney Coast Upwelling Key Ecological Feature and the Southern Right Whale reproductive BIA were excluded. The survey timing has also been adapted, from one 6-month window to two 3-month windows, reflecting additional measures for Blue Whales and upwelling/increased biodiversity periods. EP Appendix F4 (ESD Assessment) outlines the adherence to Ecologically Sustainable Development (ESD) principles, highlighting the integration of economic, social, and environmental considerations in decision-making processes and illustrating how the activity design process aligns with key principles like the precautionary approach, intergenerational equity, and conservation of biological diversity. Consequently, there is no irreversible environmental damage predicted from the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Consideration of flow-on impacts is addressed in response to Matter: T07, below NOTE: Productivity, including the Bonney Upwelling, is addressed in Matters: P01-P12 NOTE: Impacts on coastal communities (general), is addressed in Matter: T01, above
T04	**Matter**: Impacts on volunteer marine rescue units **Claim**: The proposal furthermore does not consider potential impacts on volunteer marine rescue (VMR) units that maybe tasked to respond.	CGG acknowledges claims relating to impacts on volunteer marine rescue units and has reviewed the Environment Plan (EP) to ensure to ensure the matter has been adequately considered. The activity has been designed to be compliant with all on-water safety regulations, assessed in Appendix B2 (Legislative Requirements), with control measures adopted to ensure any potential impacts and risks are reduced to As Low As Reasonably Practicable (ALARP) and acceptable levels. As described in Section 7.4.1 of EP Appendix G1 (Regia MSS Environment Plan), the activity will include one support vessel and one chase vessel, accompanying the acquisition vessel. The support vessel will be responsible for equipment and crew transfers and, when safe, assist in the recovery of lost equipment or unintentional garbage discharges. Support and/or chase vessels will accompany the seismic vessel during surveying operations to patrol and maintain a clear zone ahead of the vessel. This includes scouting for and communicating with commercial, recreational, shipping, and other marine users to ensure their safety. Local water safety organisations were contacted during the consultation process, with full text copies of correspondence available in Appendix C4. CGG has considered these claims and is satisfied that the concerns raised have been appropriately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
T05	**Matter**: Importance of little penguins for tourism **Claim**: The Environment Plan fails to recognise the importance of Little Penguins for tourism on page 2821. **Claim**: The Warrnambool (Middle Island) breeding colonies have been omitted, which is of concern given they are in proximity to the Operational Area and are significant for regional tourism https://www.nature.com/articles/s41598-017-16569-x	CGG acknowledges claims relating to the importance of little penguins for tourism has reviewed the Environment Plan (EP) to ensure this has been appropriately considered. EP Appendix E1 (Physical Presence) Section 5.1.4 (Marine Tourism) confirms that no areas of marine tourism were identified within the operational area. This is also shown on map 'MAP-REG-EPM-064 Little Penguin Biologically Important Areas', in Appendix B12 (Regia MSS Maps). The Middle Island Little Penguins were identified in the Preliminary Environmental Impact and Risk Assessment (EP Appendix B4), and via the online interactive map comments. Further, engagement was undertaken with relevant specialists in this area. The potential impacts assessed, with measures adopted where required, are described in detail in EP Appendix E5 (Impact Assessment - Underwater Sound: Birds), namely in Sections 2, 4.5, 6 and 7. CGG has considered these claims and is satisfied that the concerns raised have been appropriately considered in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

	THEME	**TOURISM, RECREATION AND COMMUNITIES (T)**
#	***Comments received***	***Titleholder response***
T06	**Matter**: Changes to dolphin migration patterns affecting tourism **Claim**: If the dolphin migration patterns through the Operational Area are changed, this will have adverse impacts on tourism businesses, even if they are not in the Operational Area.	CGG acknowledges claims relating to impacts on dolphins affecting tourism and has reviewed the Environment Plan (EP) to ensure that these impacts were appropriately considered. Dolphins were identified as being present in the operational area in the Protected Matter Search Tool (PMST, Appendix B5), and potential impacts and thresholds were identified in the Underwater Sound Impact Assessment (Appendix E7). Six dolphin species were identified which are likely or may occur in the area, none of these species are threatened or have biologically important behaviour in the area. As detailed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals), impacts to dolphins, which are classified as high-frequency (HF) cetaceans, are limited to avoidance behaviour out to 2.95 – 10.3 km from the sound source, depending on where in the Operational Area the survey is being undertaken. As HF cetaceans are not dependent on any specific area within the area affected, impacts may occur to individuals but not at a level to reduce fitness. Predicted impacts to dolphins are limited to temporary / reversible and small scale behavioural response and are not predicted to result in changes in migration patterns or impacts at a population level. CGG has considered these claims and is satisfied that the concerns raised have been appropriately considered and assessed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
T07	**Matter**: Consideration of flow-on impacts **Claim**: Consideration of the flow-on impacts needs to be provided, with identification and assessment of the risks, impacts and consequences for: a) The local region overall – communities, businesses, livelihoods, and jobs b) The social costs associated with such impacts and consequences c) Fishing and tourism in the short and long term need to be assessed.	CGG does not concur with claims regarding a lack of consideration of flow-on impacts associated with the Regia MSS, for the following reasons. EP Appendix F4 describes how the Regia MSS EP preparation process aligns with the principles of Ecologically sustainable Development (ESD). The assessment of the Regia MSS Environment Plan (EP) preparation process against the principles of ESD demonstrates CGG's strong commitment to responsible and sustainable offshore petroleum activities in Australian waters, ensuring that the cost of protecting natural and human capital is adequately considered. The adherence to ESD principles, as enshrined in the Regulations, underscores the importance of integrating economic, social, and environmental considerations into the decision-making processes surrounding petroleum operations. From the precautionary approach to intergenerational equity and the conservation of biological diversity, the EP process consistently reflects a commitment to safeguarding the marine environment, reducing environmental impacts and risks, and preserving the interests of future generations. CGG has considered these claims and is satisfied that the concerns raised have been appropriately considered and assessed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

6. Marine Mammals

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
M01	**Matter**: Impacts to marine mammals (general) **Claim:** There are various inadequacies in the proposal's Environment Plan (EP), emphasising potential irreparable harm to marine ecosystems, particularly endangered species such as southern right whales and Australian sea lions. **Claim:** I am particularly concerned about the impact on whales. **Claim:** The Environment Plan (EP) submitted by CGG to NOPSEMA lacks clarity and fails to adequately address the potential impacts of seismic blasting on marine life, particularly EPBC-listed species such as southern right whales and Australian fur seals. **Claim:** The Environment Plan (EP) submitted to NOPSEMA by CGG is a convoluted and incomprehensible 3,332 page document fails to provide sufficient detail on the impacts of seismic blasting on the endangered southern right whales and Australian sea lions. **Claim:** In particular, there is a lack of detail on the presence of numerous/ several EPBC-listed species, including Endangered marine mammals (including blue whales, southern right whales and Australian sea lions), and what enforceable measures will be taken to ensure that the key ecological features and threatened species in the proposed project areas will not be harmed. **Claim:** In particular, there is a lack of detail on the presence of several EPBC-listed species, including the endangered southern right whale, endangered Australian fur seals, vulnerable fin and sei whales and dwarf and pygmy sperm whales. **Claim**: It fails to demonstrate management practices that would guarantee the health and wellbeing of whales and other marine life. **Claim:** This seismic blasting proposal by CGG should be because of the extreme harm it poses to all other cetaceans, marine mammals and in fact the entire marine ecosystem in our southern ocean.	CGG acknowledges claims regarding impacts to marine mammals associated with the Regia MSS, particularly to endangered species such as Southern Right Whales (SRWs) and Australian Sea Lions and have reviewed the Environment Plan (EP) to ensure that impacts to these species have been adequately assessed. Impacts and risks to marine mammals, including SRWs and Australian Sea Lions, have been assessed in: • Appendix D1 (Risk Assessment – Accidental Release of Materials and Waste Overboard) • Appendix D2 (Risk Assessment – Collision with Marine Fauna) • Appendix D4 (Risk Assessment – Accidental Release of Fuel) • Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) • Appendix E10 (Impact Assessment – Otway Cumulative Impact Assessment Refer to responses M06, M08 and M09 for further explanation of how impacts to marine mammals, particularly whales, are assessed in the EP. Refer to responses M27, M28 and M29 for further explanation of how sea lions are assessed within the EP. CGG is confident that impacts and risks to marine mammals have been thoroughly assessed in the EP. The EP also includes identification of mitigation and management measures in each impact assessment section (see appendices listed above), including a Fauna Management Plan (Appendix G2) that outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. In accordance with the control measures set out in the EP, the Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with all environmental regulatory requirements. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
Key Matter: Impact Assessment for Cetaceans		
M02	**Matter:** Timing and duration of impacts **Claim:** The proposed start date for this operation is April 2024, and CGG is proposing to conduct seismic blasting year round except for January, February and March. Seismic blasting in the remaining 9 months within the Operational Area (OA) would take place over Biologically Important Areas (BIA) for EPBC-listed whale species, threatening critical feeding, calving and migration routes. Specifically: • May to October is calving period for the EPBC-listed Endangered southern right whale in this region, and they will be migrating through the OA and the broader Environment Planning Area before and after this calving period. • October to June is the feeding period for the EPBC-listed Endangered pygmy blue whale, with the OA situated completely within the whales' designated foraging BIA. January through to April is the peak feeding time for this species.	CGG acknowledges claims regarding impacts to marine mammals over the duration of the Regia MSS and has reviewed the Environment Plan (EP) to ensure that the duration of the activity has been adequately described. Although the term of the EP is effectively four and a half years (earliest start date for operations is 1 April 2024, and latest finish date for operations is 31 October 2028), the activity will not occur continuously over that period. EP Appendix A2 (Description of Activity) Table A2-3 (Operating envelope parameters) provides details on the actual operational duration of the activity with the maximum number of operational days specified as 90 continuous days and the maximum number of acquisition days specified as 60 days. Consequently, the marine seismic survey will not be conducted 'year round' as stated in the claim. Information on the Environment Protection and Biodiversity Conservation Act 1999 listing and seasonal presence of Southern Right, Pygmy Blue, Sei, Fin and Pygmy Right Whales, as well as other species, is provided in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals), with excerpts provided below: • The peak period for **Southern Right Whale** (SRW) mating is from mid-July through to August (CoA 2012). Pregnant females generally arrive during late May/early June and depart with calves in September to October however the general time of arrivals and departures varies on an inter-annual basis. Calving females are known to have high site fidelity and a 3 to 4-year calving interval. Other population classes stay for shorter and variable periods undertaking coastal movements and departing the coast earlier than female-calf pairs (CoA 2012).The PMST Report identified that Southern Right Whale breeding is known to occur within area that may be affected by

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
	• January to April is the foraging period for the pygmy right whale, Vulnerable fin whale and Vulnerable sei whale in the OA.	underwater sound, in addition the area where the noise effect criteria for SRW is reached is within the migration BIA and reproduction BIA (Appendix B12 MAP-REG-EPM-069). • **Pygmy Blue Whales** (PBW) Important foraging grounds for Blue Whales include the Great Australian Bight, South Australia, and off Portland Victoria. Research to date has found that Pygmy Blue Whales occupy the western area of the Bonney Upwelling system in the Eastern Great Australian Bight and adjacent to the Kangaroo Island canyons from November and December (DoE 2015e). Pygmy Blue Whales then move southeast to the Bonney Upwelling system off eastern South Australia and Victoria (e.g., between Robe, SA and Cape Otway, Vic). This occurs predominately between January to April (DoE 2015e). The area that may be affected by underwater sound is within the Pygmy Blue Whale foraging (annual high use) BIA (Appendix B12 MAP-REG-EPM-068). Blue Whales predominately occur in this area between January to April (DoE 2015e) though they have been recorded in the Otway area as early as October and as late as June. • There are no BIAs for the **Fin Whale** within Australian waters. Fin Whales are likely to be foraging in the area that may be affected by underwater sound at similar time as Blue Whales, predominately between January to April. • There are no BIAs for the **Sei Whale** within Australian waters. Sei Whales are likely to be foraging in the area that may be affected by underwater sound at similar time as Blue Whales, predominately occur between January to April. • There are no BIAs for the **Pygmy Right Whale** within Australian waters. Pygmy Right Whale are likely to be foraging in the area that may be affected by underwater sound at similar time as Blue Whales, predominately between January to April. Impacts and risks to marine mammals, including impacts to biologically important behaviours (feeding, calving and migration) have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna), where relevant. Measures to mitigate impacts are also detailed in these Appendices and in the Fauna Management Plan, included in Appendix G, that includes whale detection and measures to minimise anthropogenic noise threats to whales, associated with the survey and, vessel strike for all species. EP Appendix F2 (ALARP Assessment) Section 6.1 includes additional measures to protect these species during biologically important behaviours, such as: • Minimising the duration of the survey to a maximum of 60 days of acquisition • Surveying shallower SRW BIAs between November and April when this species is not known to be present. • Not surveying during the months of January-March and managing potential interactions with PBWs, and other foraging species listed above, given the larger spatial distribution of the population through the shoulder seasons, i.e. through the implementation of the Fauna Management Plan. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including these species and identifies: • There will be no impact to SRWs within reproduction BIAs based on spatial and temporal exclusion zones, and the energetic costs of behavioural disturbance on migration would be extremely low, if avoidance behaviour occurred, and would not impact the recovery of the species. • As the Regia MSS will only occur during one season when blue whales are present in Australia waters, and permanent or temporary hearing loss and/or displacement of blue whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (Appendix G2). The Regia MSS will not impact on the recovery of the population. CGG has considered these claims and is satisfied that the potential impacts and risks have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
M03	**Matter**: Consideration of presence of cetaceans all year round **Claim:** The REGIA Environment Plan does not take into consideration the year round presence of different whale species whales in the Otway Basin. **Claim**: Submitter is of the view that seismic blasting within this area should be avoided entirely due to the evidence that shows vulnerable marine mammal species use this area year round.	CGG acknowledges claims regarding temporal presence of marine mammals in the Otway Basin and has reviewed the Environment Plan (EP) to ensure that the year round presence of different whale species has been adequately described. Information on the Environment Protection and Biodiversity Conservation Act 1999 listing and seasonal presence of Southern Right, Pygmy Blue, Sei, Fin and Pygmy Right Whales, as well as other species, is provided in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals), with excerpts provided below: • The peak period for **Southern Right Whale** (SRW) mating is from mid-July through to August (CoA 2012). Pregnant females generally arrive during late May/early June and depart with calves in September to October however the general time of arrivals and departures varies on an inter-annual basis. Calving females are known to have high site fidelity and a 3 to 4-year calving interval. Other population classes stay for shorter and variable periods undertaking coastal movements and departing the coast earlier than female-calf pairs (CoA 2012).The Protected Matters Search Tool (PMST) Report identified that Southern Right Whale breeding is known to occur within

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#	**Comments received**	***Titleholder response***
		area that may be affected by underwater sound, in addition the area where the noise effect criteria for SRW is reached is within the migration Biologically Important Area (BIA) and reproduction BIA (Appendix B12 MAP-REG-EPM-069). • **Pygmy Blue Whales** (PBW) Important foraging grounds for Blue Whales include the Great Australian Bight, South Australia, and off Portland Victoria. Research to date has found that Pygmy Blue Whales occupy the western area of the Bonney Upwelling system in the Eastern Great Australian Bight and adjacent to the Kangaroo Island canyons from November and December (DoE 2015e). Pygmy Blue Whales then move southeast to the Bonney Upwelling system off eastern South Australia and Victoria (e.g., between Robe, SA and Cape Otway, Vic). This occurs predominately between January to April (DoE 2015e). The area that may be affected by underwater sound is within the Pygmy Blue Whale foraging (annual high use) BIA (Appendix B12 MAP-REG-EPM-068). Blue Whales predominately occur in this area between January to April (DoE 2015e) though they have been recorded in the Otway area as early as October and as late as June. • There are no BIAs for the **Fin Whale** within Australian waters. Fin Whales are likely to be foraging in the area that may be affected by underwater sound at similar time as Blue Whales, predominately between January to April. • There are no BIAs for the **Sei Whale** within Australian waters. Sei Whales are likely to be foraging in the area that may be affected by underwater sound at similar time as Blue Whales, predominately occur between January to April. • There are no BIAs for the **Pygmy Right Whale** within Australian waters. Pygmy Right Whale are likely to be foraging in the area that may be affected by underwater sound at similar time as Blue Whales, predominately between January to April. CGG undertook a presence/absence analysis of environmental receptors in the environment planning area to decide on the preferred timing of the activity. The outcome of the analysis can be found in EP Appendix F2 (ALARP Assessment) Section 6.1 (Survey Timing Constraints) and Annex 1 (Presence/ Absence Analysis for Species within the Environmental Planning Area). In acknowledgement of the varied timing of these species CGG has committed to a range of measures to mitigate and manage impacts to these species, including: • A change in timing preference to avoid the peak levels of biodiversity expected in the summer months (January/February/March). • Excluding the Southern Right Whale reproduction Biologically Important Area from the activity area. • Excluding activity from the Southern Right Whale reproduction Biologically Important Area (15 km) while Southern Right Whales are present. • No acquisition within 500 m of the Bonney Upwelling Key Ecological Feature (KEF), nor the West Tasmanian Canyons KEF. • The implementation of a comprehensive Fauna Management Plan (Appendix G2). CGG has considered these claims and is satisfied that the year round presence of different whale species has been adequately considered in the EP, as detailed above. As a result, the EP has not been updated in response to these claims.
M04	**Matter:** Overlap of the OA with the Australian Whale Sanctuary **Claim:** The Environment Plan states the operational area will overlap the Australian Whale Sanctuary and it being an offence to kill, injure or interfere with a cetacean. Seismic blasting is likely to contravene this legislation, leading us to ask 'why is seismic blasting allowed, when cetaceans will be interfered with?' Especially, as no safeguards can be sufficient to prevent this. **Claim:** The Environment Plan states the observation area will overlap the Australian Whale Sanctuary and it being an offence to kill, injure or interfere with a cetacean, the above impacts breach this act. These impacts should carry sufficient weight to put an immediate stop to this proposal.	CGG acknowledges claims regarding an overlap of the Operational Area (OA) with the Australian Whale Sanctuary and has reviewed the Environment Plan (EP) to ensure that the overlap was adequately considered. The Australian Whale Sanctuary includes all Commonwealth waters from the three nautical mile state waters limit out to the boundary of the Exclusive Economic Zone. Within the Sanctuary it is an offence to kill, injure or interfere with a cetacean. These restrictions are established to conserve all cetaceans in Australian waters under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). For species which are listed as threatened under the EPBC Act, which includes Blue Whale, Southern Right Whale, Sei Whale and Fin Whale, additional protections are afforded to these species through recovery plans prepared by the Australian Government (Department of Climate Change, Energy, the Environment and Water; DCEEW). Impacts and risks to marine mammals, including impacts to biologically important behaviours (feeding, calving and migration) have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna), where relevant. Measures to mitigate impacts are also detailed in these Appendices and in the Fauna Management Plan (Appendix G2), that includes whale detection and measures to minimise anthropogenic noise threats to whales, associated with the survey and, vessel strike for all species. Species-specific management plans, recovery plans and conservation advice have been taken into consideration when developing these control measures. Appendix F3 (Acceptability Assessment) of the EP demonstrates how the environmental impacts and risks of the Regia MSS will be of an acceptable level. Acceptability takes into account a broad framework of concepts in order to define acceptable levels, including Principles of ecologically sustainable development (ESD) and Legislative Context which both reference Section 3A of the EPBC Act. The principles of ESD in Section 3A of the EPBC Act refer to a set of guidelines aimed at promoting responsible environmental stewardship and sustainable use of natural resources. The six principles of ESD (as described in Appendix B1, Table B1-1) are designed to ensure that the EPBC Act can be adhered to,

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#	**Comments received**	***Titleholder response***

		including the protection requirements afforded to whales located within the Australian Whale Sanctuary (i.e., an offence to kill, injure or interfere with a cetacean within the defined area).
		The defined acceptable levels for the Regia MSS (Appendix B1, Section 5) relevant to marine mammals include:
		• The petroleum activity results in temporary / reversible, small scale, and/or low intensity environmental damage.
		• The impact and risk assessments are based on sufficient information to understand if:
		  ○ Serious/irreversible environmental damage is predicted; or
		  ○ The application of the precautionary principle is applied in the presence of scientific uncertainty.
		• Environmental management of the activity must not be inconsistent with EPBC Act Management Plans and Recovery Plans, and
		• Ecological Impacts and risks to ecological features will be temporary / reversible, small scale, and/or low intensity damage to the overall health, diversity, or functioning of the ecosystem.
		In accordance with the control measures set out within the EP, the Regia MSS will be managed so that the potential impacts and risks will be mitigated to acceptable levels that are as low as reasonably practicable, in accordance with environmental regulatory requirements.
		CGG has considered these claims and is satisfied that the year round presence of different whale species has been adequately considered in the EP, as detailed above. As a result, the EP has not been updated in response to these claims.

M05	**Matter:** Animat modelling **Claim:** The EP states that, due to a lack of fine-scale behavioural data on southern right whales, CGG's animat modelling for southern right whales in the Otway Basin instead used data from North Atlantic right whales (EP p. 604, Appendix B7) and southern right whales in South America. This was the case for scenarios of southern right whale aggregation and migration. Of all the data used to inform the animat modelling for southern right whales, only the data on migration travel speed came from the south-east Australian population. Similarly for pygmy blue whales, the EP states that data on fine-scale foraging behaviour are not currently available for pygmy blue whales. Therefore, data from multi-sensor tags deployed on blue whales from the North Pacific were used to inform the feeding behaviours" (EP p.603, Appendix B7). Data from blue whales off the coast of California was also used. Only data on travel speed and surface interval were derived from studies on Australian pygmy blue whales. Given the independent expert advice regarding the importance of using species-specific and location-specific data to accurately model animal behaviour and associated potential impacts of seismic surveys, the submitter does not consider that CGG's animat modelling is fit for purpose. **Claim:** Northern hemisphere whale populations may be the closest analog to those in the Otway Basin, but there is considerable uncertainty about how these populations differ in their perception of, and physiological and behavioural reaction to, seismic surveys. Significantly, this knowledge gap is not acknowledged in the EP. These data sources and parameters demand scrutiny because the results of the animat modelling produced less conservative estimates of impacts to whales than did the sound propagation modelling in the EP" Animat modelling of impact thresholds for southern right whales show permanent threshold shifts (PTS) - permanent hearing loss - occurring at a maximum of 1.5 km from the seismic source, temporary threshold shifts (TTS) - temporary hearing loss - at 1.6 km, and behavioural impacts at 8.17 km. However, these modelled predicted maximum distances are smaller than those calculated by sound propagation modelling for baleen whales (4.89 km, 43.5 km, and 10.3 km, respectively).	CGG acknowledges claims regarding the analogues used for animat modelling and has reviewed the Environment Plan (EP) to ensure that the selection of modelling parameters and their applicability to the assessment has been adequately described. As described in Appendix B7 (Sound Modelling Report), the parameters used for forecasting realistic behaviours (e.g., diving and foraging depth, swim speed, surface times) by the JASMINE model are determined and interpreted from marine mammal studies (e.g., tagging studies) where available, or reasonably extrapolated from related or comparable species. In the case of this EP, animat modelling was undertaken to further understand potential behavioural changes resulting from underwater sound exposure. Acoustic modelling (Appendix B7) provides two main ways to describe the sound exposure from an underwater noise source – per pulse (i.e., exposure from each individual seismic pulse) and accumulated exposure (i.e., total exposure experienced over a time period of 24 hours). Although those parameters provide a good starting point for determining the nature and scale of potential impacts and for characterising received levels of sound at different distances, they do not provide a real-world understanding of how marine mammals will receive sound. Marine mammals are active individuals, with their movements and behaviours varying depending on complex biological factors. It is not credible that an individual would remain within constant distance of a sound source for 24-hours, primarily because the sound source will be moving (and hence the individual marine mammal would have to move at the exact same speed and trajectory to maintain exposure) but also because that does not align with what we know of marine mammal behaviours, based on published literature for specific and analogous species. Therefore, animat modelling has been used to provide a more realistic understanding of how marine mammal behaviour will affect potential exposure over extended periods of time. Animat modelling is just one tool used to understand the nature and scale of potential impacts to marine mammals from underwater sound emissions. Animat modelling offers a unique insight into how individual animals could behave in reaction to a sound source with the parameters of the planned Regia marine seismic survey, however the results from the modelling are used in conjunction with literature and other underwater sound modelling studies to fully describe the range of potential effects that could occur to sensitive marine mammal species. The methodology used to assess the overall level of identified impacts and risks acknowledges that uncertainty may exist within the assessment evaluation, with the uncertainty level highlighted in each impact evaluation section. In Section 6.3 of Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals), the level of uncertainty in the assessment of impacts to LF cetaceans is assessed as high based on: • The sound effect criteria used in the impact assessment have been published in peer reviewed journals. • There is limited published data on noise studies specific to species. • The absence of direct hearing data for low frequency (LF) cetaceans continues to warrant substantial caution in attempting to predict their hearing capabilities and any potential susceptibility of their hearing to nose exposure (South et al. 2019). • An absence of long-term monitoring data of the effects of seismic on LF cetaceans in the presence of frequent seismic surveys, and other anthropogenic sound generating activities, in the region. This high level of uncertainty results in an overall impact level of high, and an application of the precautionary principle when selecting mitigation measures. Measures to mitigate impacts are also detailed in Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and in the Fauna Management Plan (Appendix G2), that includes whale detection and measures to minimise anthropogenic noise threats to whales, associated with the survey and, vessel strike for all species.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
	Despite the scientific uncertainty in the animat modelling - which was not accounted for or qualified - the results were nonetheless used to design mitigation measures that serve to ensure compliance with EPBC Policy Statement 2.1. "An 11.3 km buffer around southern right whale calving grounds has been presented as a sufficient treatment to prevent injury to southern right whales. The maximum distance for TTS for baleen whales is 43.5 km according to sound propagation modelling, making the 11.3 km buffer insufficient to mitigate harm to southern right whales in their calving grounds. By relying on the shorter distances generated by animat modelling (which is itself informed by data from different populations, introducing further uncertainty in the results), CGG could potentially expose EPBC-listed species to damaging levels of sound exposure. Based on this failure to qualify the results of the animat modelling in line with scientific best practice, adopt more conservative thresholds and design mitigation measures accordingly, the EP should be refused.	CGG has reviewed the discussion and reasoning around applying a >15 km activity limitation (M#01: Activity Limitation) buffer around a Southern Right Whale reproduction BIA or Habitat Critical to Survival (HCTS) while Southern Right Whales are present in the BIA and HCTS. CGG is satisfied that the precautionary principle has been appropriately applied to the application of mitigation measures for baleen whales, and that animat modelling is suitably described in the EP. As a result, the EP has not been updated in response to these claims.
Key Matter: Impacts on Cetaceans		
M06	**Matter:** Underwater sound impacts on cetaceans (general) **Claim:** I am against seismic testing as it is very hazardous to sea life, in particular whales and dolphins. **Claim:** The noise from the seismic blasts will spread kilometres and be harmful to whales' hearing. **Claim:** Evidence that seismic blasting is extremely harmful to whales and other marine life is growing. (e.g. Ed Yong An Immense World London Bodley Head 2022). **Claim:** Not mentioned in the Regia application is the fact that seismic blasting has been connected to temporary and permanent hearing loss, habitat abandonment, mating and feeding disruption and possible death in marine mammals like whales. **Claim:** There is overwhelming scientific evidence that seismic blasting is extremely harmful and disruptive to whales and marine life. **Claim:** The Environment Plan is deeply flawed from a scientific perspective failing to acknowledge the science around the impacts seismic blasting has on whales and other marine life. **Claim:** Seismic blasting causes temporary and permanent hearing loss, abandonment of habitat, disruption to mating and feeding, beach strandings, and even death, to whales, dolphins and seals.2 The Otway Basin provides important habitat for such animals including protected sanctuaries for blue whales, southern right whales, and their calves. (2)RP Koper and S Plön, 'The Potential Impacts of Anthropogenic Noise on Marine Animals and Recommendations for Research in South Africa' (Endangered Wildlife Trust, 2012),https://biblioteca.biofund.org.mz/wp-content/uploads/2018/11/1542889906- 1727.Ewt%20Research%20&%20Technical%20Paper%201%20-%20Koper%20&%20Plon%20-20Ocean%20Noise%20Pollution.Pdf.	CGG acknowledges claims regarding impacts on cetaceans from underwater sound associated with the Regia MSS and has reviewed the Environment Plan (EP) to ensure that impacts to these species were adequately assessed. CGG has provided a detailed discussion of the scientific literature outlining potential impacts to cetaceans from exploratory seismic surveys in EP Appendix B8 (Seismic Sound Studies Report, Section 7 Marine Mammals) and Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). CGG has reviewed the scientific literature provided in these claims and is satisfied that best available, peer reviewed literature has been used to inform impact assessment. Kavanagh et. al. (2019), cited in this claim, is included in Section 7 of the EP Seismic Sound Studies Report. Activity-specific underwater sound modelling (Appendix B7a and B7b Sound Modelling Reports) was commissioned to ensure that the extent of potential impacts to marine mammals were fully understood. In acknowledgement of the potential for the Regia MSS to impact cetaceans within the Otway Basin, CGG developed control measures in consultation with marine mammal experts, taking into consideration relevant Conservation Management Plans and all environmental regulatory requirements. Control measures to reduce impacts on cetaceans are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). Control measure M#03: Fauna Management System (Appendix G2) outlines whale and dolphin detection techniques and measures to minimise anthropogenic noise threats and the risk of vessel strike associated with the survey. The Fauna Management Plan (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. Mortal and potential mortal injury impacts are not predicted to occur as received sound levels are not of sufficient magnitude and injury (including permanent and temporary threshold shift) of cetaceans is not predicted as a result of the Regia MSS, as described in detail in EP Appendix F7 (Impact Assessment – Underwater Sound: Marine Mammals) and Appendix F3 (Acceptable Levels of Impact and Risk). Refer to the following responses for further details on potential impacts to cetaceans: • Impacts to cetaceans are predicted to be limited to behavioural responses as described in response to Matter: M05. • Impacts associated with strandings are addressed in response to Matter: M13. CGG has assessed the claims pertaining to underwater sound impacts to cetaceans and considers the detailed control measures included in the Fauna Management Plan will reduce the impacts associated with underwater sound to as low as reasonably practicable and acceptable levels. Consequently, no changes have been made to the EP in response to these claims.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
	Claim: Seismic blasting does not have community licence. In the proposed operation area, it will impact: whale habitat, endangered marine life, Southern Sea Country, the Zeehan Marine Park, the Budj Bim Eel conservation area, and commercial fisheries. The food chain will be severely affected, with carry-on effects from zooplankton to fish, to whales. **Claim**: Seismic blasting has been found to result in permanent damage and death for a diversity of species within marine ecosystems... larger species such as whales have been deafened or killed outright. **Claim:** I'm a coast and marine scientist myself and find it hard to ignore scientific evidence of the impact of seismic blasting on cetaceans and other marine life. https://www.nature.com/articles/s41***-***-****0-4 . **Claim:** Additionally, the sound waves generated by seismic blasting can have detrimental effects on marine mammals, such as deafening. **Claim**: It is well known these blasts damage, deafen, and kill aquatic mammals. **Claim:** Recommendations: Request studies into the effects of seismic blasts on whale populations.	
M07	**Matter:** Underwater sound and juvenile marine mammals **Claim:** Marine mammals don't have the hairs in their inner ears, and their ears are blocked off when underwater, but I wonder are infant marine mammals taken into account when safe distances from seismic blasting for different marine mammals are calculated? If not, it is a consideration that may impact whether the calculations are inclusive for young of seals, dolphins or whales. If they are based only on adults, they may not be appropriate or inclusive and therefore be void. **Claim:** NOPSEMA should reject the use of seismic blasting as proposed by CGG because safe sound level limits of seismic blasting for marine mammals do not take into account the significantly smaller size of juveniles and their consequent likely greater sensitivity and potential for harm. **Claim:** If calculations for safe sound levels for marine mammals are based on adult male measurements and the hearing and anatomy of young/smaller marine mammals is more sensitive and prone to harm from loud sound than adults, then the precautionary safe distances and sound levels to avoid harm for marine mammals will need to be adjusted before the project can be approved and undertaken.	CGG acknowledges claims regarding impacts of underwater sound on juvenile marine mammals and has reviewed the Environment Plan (EP) to ensure that this was appropriately considered. The behaviour of whale mother/calf pairs can be dramatically different from other demographics, particularly in regard to the amount of time spent resting at the surface (Cusano et al. 2019, Nielsen et al. 2019). Therefore, modelling conducted by internationally renowned underwater noise specialist, Jasco Applied Sciences, for the EP (Appendix B7a and 7b - Sound Modelling Report) created separate behavioural profiles for differing species demographics. EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) Section 6.3 (Low Frequency Cetaceans) presents the result of Animat modelling conducted for whales undertaking biologically important behaviours such as Southern Right Whale mother and calf pairs and foraging differences between male and female Pygmy Blue Whales. In addition, the Animat modelling considers the vessel and whale movements and provides a more realistic prediction of the area that may be affect by underwater sound. Modelling results show that exposure ranges are, on average, slightly longer for TTS and PTS for mother and calf pair versus no calf Southern Right Whale scenarios as well. This is primarily due to the inclusion of nursing behaviour, where animals spend time stationary at the surface (Thomas et al. 1984), and the long duration of resting periods with slow travel speeds for mother/calf pairs (Hain et al. 2013). As a result, they accumulate more sound energy and are exposed for a longer time. Modelling also showed female Pygmy Blue Whale scenarios resulted in slightly larger exposure ranges than the corresponding male Pygmy Blue Whale scenarios. These detailed modelling results provide for extensive consideration whale sensitivities, and have informed the impact assessment, see Table E7-5-1: Sound Exposure Guidelines and Predicted Maximum Distance for Marine Mammals. CGG has considered these claims and is satisfied that the potential impacts to various species demographics have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims. ***References***: *Cusano, D.A., L.A. Conger, S.M. Van Parijs, and S.E. Parks. 2019. Implementing conservation measures for the North Atlantic right whale: Considering the behavioral ontogeny of mother-calf pairs. Animal Conservation 22(3): 228-237. https://doi.org/10.1111/acv.12457.* *Hain et al. 2013 - James H. W. Hain ,Joy D. Hampp,Sheila A. McKenney,Julie A. Albert,Robert D. Kenney. Swim Speed, Behavior, and Movement of North Atlantic Right Whales (Eubalaena glacialis) in Coastal Waters of Northeastern Florida, USA. Published: January 10, 2013. https://doi.org/10.1371/journal.pone.0054340* *Nielsen, M.L., L. Bejder, S.K. Videsen, F. Christiansen, and P.T. Madsen. 2019. Acoustic crypsis in southern right whale mother–calf pairs: infrequent, low-output calls to avoid predation? Journal of Experimental Biology 222(13): jeb190728.* *Thomas et al. 1984*

	THEME	**MARINE MAMMALS (M)**
#	**Comments received**	***Titleholder response***
M08	**Matter**: Underwater sound affecting biologically important areas **Claim:** This initiative poses an imminent threat to the delicate marine ecosystem, particularly endangering the critical habitats of the southern right whales and other marine life in the region. **Claim:** I am opposed to seismic blasting so close to an environmentally sensitive area. It does not align to the environmental plan of protecting the marine environment. **Claim:** This is the last regular calving ground for the 300 remaining southern right whales and inside crucial feeding areas of endangered blue Pygmy whales. The risk is too great. **Claim**: All marine life ONLY have the ocean for their homeâ€¦ for them to suffer by becoming deaf, and unable to communicate is beyond harrowing! I hope there is an urgent review, followed by action, to cease seismic blasting and prioritise the welfare of our beautiful water creatures! **Claim:** Seismic blasts can damage the hearing of whales and keep them away from key feeding and breeding grounds. Other large animals like dolphins, sea turtles, and sea lions could suffer similar effects. We can only imagine how distressing seismic blasts must be for marine animals, like whales and dolphins, that rely on sound to navigate and for communicating over vast distances. **Claim:** Seismic blasting is a cruel treatment to impose on sea creatures of all kinds. Some will have little choice but to remain in the vicinity either because they can\'t move or because it\'s their habitual grounds, such as whales calving. **Claim**: This EP is inadequate and must be refused due to know impacts to our oceans and marine life. It ignores that there are no safe blasting in the breading grounds of whales, for example. **Claim:** Whales are such an iconic species to our coastline and project will force whales out of crucial breeding grounds. **Claim:** This initiative poses an imminent threat to the delicate marine ecosystem, particularly endangering the critical habitats of the southern right whales and other marine life in the region.	CGG acknowledges claims regarding impacts on cetaceans within biologically important areas (BIAs), and has reviewed the Environment Plan (EP) to ensure that impacts to these areas and the species that utilised them were adequately assessed. The impact of underwater sound on cetaceans within biologically important areas has been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). Measures to mitigate impacts are also detailed in this Appendix and in the Fauna Management Plan, included in Appendix G2. The Fauna Management Plan provides for whale detection and measures to minimise anthropogenic noise threats to whales associated with the survey. EP Appendix F2 (ALARP Assessment) Section 6.1 includes additional measures to protect these species within biologically important areas, such as: • Minimising the duration of the survey to a maximum of 60 days of acquisition. • Surveying shallower Southern Right Whale BIAs between November and April when this species is not known to be present. • Not surveying during the months of January-March, which is the peak period for Pygmy Blue Whale presence and managing potential interactions with this species and other foraging species, given the larger spatial distribution of the population through the shoulder seasons, through the implementation of the Fauna Management Plan. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including BIAs for these species and identifies: • There will be no impact to Southern Right Whales within reproduction BIAs based on spatial and temporal exclusion zones, and the energetic costs of behavioural disturbance on migration within the migration BIA would be extremely low if avoidance behaviour occurred and would not impact the recovery of the species. • The Regia MSS will only occur during one season when Pygmy Blue Whales are present in Australia waters, and permanent or temporary hearing loss and/or displacement of blue whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (Appendix G2). Consequently, the Regia MSS is not predicted to impact on the recovery of the population. CGG has considered these claims and is satisfied that the potential impacts to these species within their BIAs have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
M09	**Matter:** Impacts on biologically important behaviours (foraging/ feeding, calving and migrating) and masking **Claim:** Seismic testing is the same thing to marine animals only much much worse and it doesn\'t stop day or night!!! It disrupts communication, hearing, navigation, reproduction and breeding of whales and all marine creatures. **Claim:** The marine life of our south-east oceans is unique and under increasing threat from the expansion of the offshore oil and gas industry. Evidence has shown that seismic blasting harms marine life and can deafen whales, impacting their feeding and migration patterns. **Claim:** Just stop this idea immediately. As you know it will damage whales and their breeding groups. **Claim:** It will devastate the marine environment and particularly damage the already threatened pygmy blue whales and southern right whales that breed and feed there**.** **Claim**: Seismic testing is destroying the vibration of the ocean that the whales depend on for communicating and their life. This cannot and should not continue	CGG acknowledges claims regarding impacts on biologically important behaviours and masking and has reviewed the Environment Plan (EP) to ensure that these impacts were adequately assessed. Impacts and risks to marine mammals, including impacts to biologically important behaviours (feeding, calving and migration) have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). Measures to mitigate impacts are also detailed in this Appendix and in the Fauna Management Plan, included in Appendix G. The Fauna Management Plan provides for whale detection and measures to minimise anthropogenic noise threats to whales associated with the survey. EP Appendix F2 (ALARP Assessment) Section 6.1 includes additional measures to protect these species during biologically important behaviours, such as: • Minimising the duration of the survey to a maximum of 60 days of acquisition • Surveying shallower Southern Right Whales Biologically Important Areas (BIAs) between November and April when this species is not known to be present. • Not surveying during the months of January-March, which is the peak period for Pygmy Blue Whale presence, and managing potential interactions with this species and other foraging species, given the larger spatial distribution of the population through the shoulder seasons, through the implementation of the Fauna Management Plan (Appendix G2). EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including BIAs for these species and identifies:

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	it is shameful to First Nations people and makes a mockery of Australiaâ€™s tourism based on protecting whales. **Claim:** Seismic blasting during known periods of presence for these identified species will inevitably lead to harm, hearing loss and disruption in navigation, feeding and breeding activities of cetaceans in the area. **Claim:** Science tells us that seismic blasting has a negative impact on whales and other marine (In marine mammals, the blasts — which reach more than 250 decibels and be heard for miles — can cause hearing loss, disturb essential behaviours like feeding and breeding, and mask communications between individual whales and dolphins. The blasts also reduce catch rates of commercial fish). **Claim:** Whales rely on echolocation for communication with each other, finding food and navigation. Seismic blasting can damage whale hearing, prevent echolocation and kill or displace their food supply. **Claim:** I am very concerned about the new seismic blasting proposal to find methane gas because it will endanger whales. The planned blast is only a few kilometres from the whale\'s calving grounds off the coast of Victoria. **Claim:** Seismic blasting has been linked to significant harm to marine life, including deafening whales, disrupting their feeding and migration, and causing mortality in various species. The proposed operation threatens critical feeding, calving, and migration routes of endangered whale species in this region. **Claim:** Impacts on Whales: The proposed start date is dangerously close for this operation to begin this April 2024 putting at risk feeding, calving and migration routes. Some endangered species are foraging for food in these same areas and puts their survival at risk. **Claim:** Regarding whales, the proposed operational schedule threatens critical feeding, calving, and migration routes of EPBC-listed whale species. Seismic blasting during these periods poses significant harm to vulnerable whale populations. **Claim:** The literature (2) (3) has indicated that marine mammals rely heavily upon acoustics as a primary means of communicating, navigating and foraging for food as well as avoiding danger. Past research has indicated that any changes to their acoustic environments impact upon their behavioural patterns. (4). (2)George Frisk (2012) Noiseonomics: the relationship between ambient noise levels in the sea and global economic trends. Nature Article No. 437, Retrieved Dec. 4th, 2923 from https://www.nature.com/articles/srepoo437 (3)Tom Mustil (2022). How to speak whale: Voyage into the Future of Animal Communication. William Collins; (4) Christine Erbe, Michael Dähne, Jonathan Gordon, Heike Herata, Dorian Houser, Sven Koschinski, Russell Leaper, Robert McCauley, Brian Miller, Mirjam Müller, Anita Murray, Julie Oswald, Amy Scholik-Schlomer, Max Schuster, Ilse van Opzeeland, Vincent M. Janik (2019, Nov) Managing the effects from ship traffic, seismic surveying and construction on marine mammals in the Antarctic. Retrieved Dec. 4th , 2023 from https://research-portal.standrews.ac.uk/en/publications/managing-the-effects-of-noise-from-ship-traffic-seismicsurveying. **Claim:** Seismic blasting threatens critical feeding, calving, and migration routes of numerous (~29) cetacean species. Claim: all seismic blasting proponents including Regia should explain to the community, independent scientists, and First Nation’s People how noise from	• There will be no impact to Southern Right Whales within reproduction BIAs based on spatial and temporal exclusion zones, and the energetic costs of behavioural disturbance on migration within the migration BIA would be extremely low if avoidance behaviour occurred and would not impact the recovery of the species. • The Regia MSS will only occur during one season when Pygmy Blue Whales are present in Australia waters, and permanent or temporary hearing loss and/or displacement of blue whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (Appendix G2). Consequently, the Regia MSS is not predicted to impact on the recovery of the population. **EP Appendix B8 (Seismic Study Report), provides an overview of current published, peer-reviewed literature available on acoustic masking. In response to these claims CGG has updated the information provided in EP Appendix E7 (Underwater Sound (Marine Mammals), in Section 6.3 to include the following:** **The sound generated by seismic surveys comprises low frequency pulses in the order of tens of milliseconds, occurring several seconds apart. At great distances from the seismic source, sound levels will be quieter, but transmission of the sound via multiple pathways (water, seabed) and reverberation mean that the pulse duration increases with distance. The sound frequencies that are emitted by seismic acoustic sources are broadband; however, most of the energy is concentrated between 0.1 kHz and 0.25 kHz. Consequently, the lowest frequency cetaceans are particularly affected since they have the most overlap with the frequencies of the seismic survey acoustic sources. As detailed in EP Appendix F3 (Acceptable Levels of Impact and Risk), Blue Whale calls last up to 18 s and generally consist of three segments: a 9-s-long, 27-Hz tone, followed by a 1-s downsweep to 19 Hz and another, longer-lasting downsweep to 18 Hz (Širović et al 2004, Rankin et al 2005); and Antarctic Blue Whale source levels have been estimated to be between 188-191 decibels (Miller et al 2021). Given the short seismic pulse duration relative to the duration of marine mammal vocalisations (several seconds to several minutes or longer), marine mammals are likely to be able to detect calls in between seismic pulses (Wood et al., 2012).** **Further, several studies have documented compensation responses (anti-masking strategies) to anthropogenic underwater noise, including changes in vocalisation strength, frequency, and timing (Erbe et al., 2016). For example, Blue Whales increased their calls (emitted during social encounters and feeding) when a seismic survey was operational in the area (Di Iorio and Clark, 2010). Such adaptations have also been reported for Humpback Whales (McCauley et al., 1998; 2003b), Right Whales (Parks et al., 2007, 2011), Killer Whales (Holt et al., 2008), and Bottlenose Dolphins (van Ginkel et al., 2017). It is thought that increased calling enhances the probability that communication signals will be successfully received by conspecifics by reducing the effects of auditory masking.** **It is likely that marine mammals in the vicinity of the OA during the Regia MSS, particularly baleen whales, may be subject to some masking effects. The proposed survey timing, i.e., avoiding the peak productivity period for foraging Blue Whale and other species in the area will reduce the potential for behavioural impacts, including interference with communication.** **Masking levels are difficult to predict, and no auditory thresholds exist for predicting masking effects on marine mammals (Erbe et al., 2016); however, as outlined above masking responses (e.g., changes in calling rates) have been documented to occur at relatively low exposure levels (i.e., lower than would elicit any behavioural response). Any masking effects will however cease at the completion of the survey and are highly unlikely to have detectable population level effects.** **EP Appendix E7 (Underwater Sound (Marine Mammals), Sections 6.1 and 6.2 were also updated to include the following:** **Auditory masking of high-frequency and very high-frequency cetacean vocalisations is less likely as these species generally operate at higher frequencies than those generated by a seismic survey.** Regarding claims of impacts to echolocation, baleen whales do not use echolocation, but rather communicate using a series of sounds. Toothed whales (e.g. Sperm Whales) and dolphins use echolocation for hunting and navigating. As stated in EP Appendix B8 (Seismic Study Report), Sperm Whales did not show any statistically significant changes in horizontal movement, diving and echolocation behaviour at received levels of approximately 118–131 dB re 1µPa^2·s (SELM-weighted) (Miller et al. 2009); further, the hearing of dolphins (HF cetaceans) is less sensitive in the low frequency range of air gun impulses (<500 Hz) and seismic operators sometimes report dolphins and other small toothed whales near operating seismic source arrays. However, there is a component of seismic pulses in the higher spectrum and in general most toothed whales do show some limited avoidance of operating seismic vessels. Note: Claims regarding injury of cetaceans are addressed in response to Matter: M07. Claims regarding impacts to prey species/ food supplies are addressed in response to Matter: M11. ***References:*** *Di Iorio L and Clark CW. 2010. Exposure to seismic survey alters blue whale acoustic communication. Biology letters 6:51-54.*

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	their seismic blasts will not affect the hearing, auditory group communication, and behaviour of whales and dolphins both in the range of a few kilometres and up to thousands of kilometres away. **Claim:** Marine animals cannot live peacefully and humanely with seismic blasting. Whales and other marine animals cannot live as deaf creatures. They rely on hearing to feed and navigate. Stop this now! **Claim:** Potential impacts of noise, such as that resulting from seismic testing, include interruption of essential behaviours, masking signals of interest (e.g., the sounds of predators, conspecifics or prey), displacement from crucial habitat, dir ect physical injury including temporary or permanent hearing loss, and in extreme cases, death. **Claim:** The Environment Plan does not provide sufficient detailed evidence on specific potential impacts on hearing, navigation, calving and feeding. **Claim:** The submitter also notes that there is a lack of evidence of the behaviors and impacts on several marine mammals in the proposed seismic blast area. **Claim**: The scientific evidence overwhelmingly demonstrates the detrimental effects of seismic blasting on marine life, including whales, dolphins, and plankton. These species face disruption to their feeding, migration, and reproductive behaviors, posing a grave to survival. operational schedule, which coincides with critical periods further exacerbates the potential harm to these already vulnerable populations.	*Erbe C, Reichmuth C, Cunningham K, Lucke, K and Dooling R. 2016. Communication masking in marine mammals: A review and research strategy. Marine pollution bulletin, 103(1-2), pp.15-38.* *Holt M M, Veirs V, & Veirs S. 2008. Noise Effects on the Call Amplitude of Southern Resident Killer Whales (Orcinus Orca). Bioacoustics, 17(1–3), 164–166. https://doi.org/10.1080/09524622.2008.9753802* *McCauley RD, Jenner MN, Jenner C, McCabe KA and Murdoch J. 1998. "The Response of Humpback Whales (Megaptera Novaeangliae) to Offshore Seismic Survey Noise: Preliminary Results of Observations About a Working Seismic vessel and Experimental Exposures" - refereed paper. The APPEA Journal 1998 - Delivering National Prosperity, 38(1), Technical and Commercial Papers - APPEA Conference, Canberra, March 1998.* *McCauley R, Cato DH, Dunlop R, Noad M. 2023. Measurements of a 20, 440, and 3130 cubic inch air gun or array off Peregian Beach Queensland and Dongara Western Australia highlight small and large scale inhomogeneous sound propagation environments. The Journal of the Acoustical Society of America, 2023* *Miller PJ, Johnson MP, Madsen PT, Biassoni N, Quero M & Tyack PL. 2009. Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico. DeepSea Research I, 56, 1168-1181. http://dx.doi.org/10.1016/j.dsr.2009.02.008.* *Miller BS, The IWC-SORP/SOOS Acoustic Trends Working Group, Balcazar N, Nieukirk S, Leroy EC, Aulich M, Shabangu FW, Dziak RP, Lee WS, Hong JK. 2021. An open access dataset for developing automated detectors of Antarctic baleen whale sounds and performance evaluation of two commonly used detectors. Sci Rep 11:806.* *Parks SE, Ketten DR, O'Malley JT and Arruda J. 2007. Anatomical predictions of hearing in the North Atlantic right whale. The Anatomical Record 290(6): 734-744. https://doi.org/10.1002/ar.20527.* *Rankin S, Ljungblad D, Clark C, Kato H. 2005. Vocalisations of Antarctic blue whales, Balaenoptera musculus intermedia, recorded during the 2001/2002 and 2002/2003 IWC/SOWER circumpolar cruises, Area V, Antarctica. Journal of Cetacean Research and Management. 7. 13-20. 10.47536/jcrm.v7i1.752.* *Širović A, Hildebrand JA, Wiggins SM, McDonald MA, Moore SE, Thiele D. 2004. Seasonality of Blue and Fin Whale Calls and the Influence of Sea Ice in the Western Antarctic Peninsula. Deep Sea Res. (II Top. Stud. Oceanogr.) 51 (17-19), 2327–2344. doi: 10.1016/j.dsr2.2004.08.005* *van Ginkel C, Becker DM, Gowans S, & Simard P. 2017. Whistling in a noisy ocean: Bottlenose dolphins adjust whistle frequencies in response to real-time ambient noise levels. Bioacoustics, 27(4), 391–405.* *Wood J, Southall BL, and Tollit DJ. 2012. PG&E offshore 3-D Seismic Survey Project Environmental Impact Report–Marine Mammal Technical Draft Report. SMRU Ltd. 121 pp. https://www.coastal.ca.gov/energy/seismic/mm-technical-report-EIR.pdf.*
M10	**Matter:** Impacts to whales food source **Claim:** Whales are only one of many species that are affected by these regular incredibly loud blasts, even the krlll that whales need for food are disoriented and later die. **Claim**: The adverse effects of seismic blasting extend beyond the immediate vicinity of the operation. Studies have shown a direct correlation between seismic activity and increased mortality rates in shellfish and marine mammals, as well as significant disruptions to the marine food chain.	CGG acknowledges claims regarding impacts of underwater sound on food sources for whales and has reviewed the Environment Plan (EP) to ensure that this was appropriately considered. Impacts to whales are extensively addressed in response to Matters: M02-M09 above. Regarding impacts to prey species such as krill, EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton) – Section 4.1 includes acknowledgement of krill's importance to PBWs. EP Appendix F3 (Acceptable Levels of Impact and Risk), Section 5.2.2. provides for further assessment of key environmental values and concludes that, as the Regia MSS will only occur during one season when blue whales are present in Australia waters, potential impacts to individual blue whales will not impact on the recovery of the population. EP Appendix F3, Section 5.2.7 (Plankton Communities and the Bonney Upwelling System) provides a detailed assessment of the predicted level of impact to prey species for blue and other whale species in the region and concludes that impacts on population dynamics of these communities, as a result of the Regia MSS are insignificant relative to the scales of change that operate normally, and while effects of seismic will be felt by plankton assemblages at localised scales the highly dynamic nature of populations in space and time will ensure there are no population level effects hence the magnitude of any effects will be minor. **CGG has undertaken further investigation and provided an additional response related to this matter in EP Appendix F3, Section 5.2.10.1 which states:** **Krill is a key component of the plankton communities of the region. Because of its primary role in the regional food chains many species long term sustainability is closely linked to the annual upwelling events that drive the krill blooms upon which animals converge to feed. Because upwelling is the key driver of krill population dynamics, it follows that the huge shifts in temporal and areal extent of the GSU both within and between years will cause krill populations to shrink and expand in a similar way. Such changes, as previously noted, can be as much as 50%. The animals that rely on this system (e.g. whales) for their survival must therefore have evolved to survive and thrive within a system that changes markedly in scale and extent. When put into this context the scale of any potential impacts to plankton**

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		communities from the proposed Regia MSS will have no measurable effect on the population health of plankton communities. By extension the risk associated with reduced krill biomass available to feeding animals as a result of the proposed Regia MSS is immeasurably low.
M11	**Matter:** Research on impacts of anthropogenic noise on marine mammals. **Claim:** The review team is referred to the article: 'Underwater noise pollution is risking the lives of whales and dolphins.' https://www.nhm.ac.uk/discover/news/2022/july/underwater-noise-pollution-risking-lives-whales-dolphins.html#:~:text=Anthropogenic%20noise%20can%20change%20a,and%20poor%20immune%20system%20functionls This article although not written specifically about SRWs, comments on a study undertaken on narwhals (also a cetacean) and demonstrates that highly unusual and dangerous physiological conditions occur when they flee. **Claim:** A further article pertaining to the same study clarifies what the scientists observed. Namely, there was a lack of correlation between the whales' heart rates and the level of exertion they were undertaking. https://www.bbc.com/news/science-environment-42259289 Dr Terry Williams (University of California) is quoted in the article as saying, "" ...two opposite things happening at exactly the same time, heart rate is really low, and that is superimposed on an exercise response. It was crazy."" This reduction in heart rate, the scientists suggest, could help explain some whale strandings. If animals are moving quickly to escape a threat, but their heart rate is very low, this could deprive their brain of oxygen and leave them disorientated. Long periods of this low blood flow and reduced oxygen supply to the brain might even cause permanent damage." "I think we've identified a real physiological challenge here and we're going to pursue the details of that to see if we can figure out what's going on".	CGG acknowledges claims regarding research on the impacts of anthropogenic noise on marine mammals and has reviewed the Regia MSS Environment Plan (EP) to ensure appropriate peer reviewed published literature was references to support conclusion. The articles cited in the relevant claims pertain to a study on the physiological response of Narwhals to anthropogenic noise (Williams *et. al.* 2022), which found individuals had marked cardiovascular, respiratory and locomotor reactions in response to seismic pulses. The study assessed the effect of seismic pulses and associated ship noise on 13 Narwhals over a 5-year period. **Updates have been made to EP Appendix B8 (Seismic Studies Report) Section 6 in response to these claims as follows:** **A study on the physiological response of Arctic Narwhals to anthropogenic noise found individuals had marked cardiovascular, respiratory and locomotor reactions in response to seismic pulses. Noise exposed Narwhals experienced a 2-2.2-fold increase in the energetic cost of diving, whilst paradoxically heart rate reduced (bradycardia). Williams *et. al.* 2022 compared these results to studies on trained harbour porpoises (*Phocoena phocoena*, Elmegaard et al., 2021) and a closely related species, the Beluga Whale (*Delphinapterus leucas*, Lyamin et al., 2011). In the harbour porpoise study, the cetaceans initially had intensified levels of bradycardia, however this response diminished as they habituated to the noise. In the Beluga Whale study, the continued noise exposure resulted in eventual bradycardia. These studies are impacted by variation in environmental conditions and type of fear stimuli (Williams *et. al.* 2022).** **Updates have been made to EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) Section 6.5 in response to these claims as follows:** **While there has been considerable conjecture that the displacement of cetaceans from seismic surveys (as a consequence of avoidance) could result in stranding events, no solid evidence has yet been forthcoming to support this link. The most recent assessment of whale stranding patterns in Victoria (Foord et al., 2019) makes no reference to seismic surveys, and found no seasonal stranding pattern. While Foord et al (2019) didn't specifically investigate the relationship between strandings and seismic surveys, seismic surveys typically occur over the summer months off the south coast of Australia; hence if causal links were present, some evidence of seasonal patterns would be expected.** **Further to this, NOPSEMA (2019) states that "Evidence of mass whale stranding exists from six to seven million years ago, long before anthropogenic sound became a factor, and it is likely that any observable increase in occurrence [of stranding events] is due to greater visibility of previously inaccessible coastline."** ***References***: *Elmegaard, S. L., McDonald, B. I., Teilmann, J., & Madsen, P. T., 2021. 'Heart rate and startle responses in diving, captive harbour porpoises (Phocoena phocoena) exposed to transient noise and sonar'. The Journal of Experimental Biology, 10. https://doi.org/10.1242/bio.058679.* *Foord, C.S., Rowe, K.M.C,, Robb K , 2019. 'Cetacean biodiversity, spatial and temporal trends based on stranding records (1920-2016), Victoria, Australia'. PLoS ONE 14(10): e0223712. https://doi.org/10.1371/journal.pone.0223712.* *Lyamin, O. I., Korneva, S. M., Rozhnov, V. V., & Mukhametov, L. M., 2011. 'Cardiorespiratory changes in beluga in response to acoustic noise'. Doklady Akademii Nauk, 440, 704–707. https://doi.org/10.1134/S0012496611050218.* *NOPSEMA, 2019. Environment and Communications References Committee. Inquiry into the impact of seismic testing on fisheries and the marine environment. Submission 66 from the National Offshore Petroleum Safety and Environmental Management Authority. December 2019. pp. 103. Available online at: https://www.nopsema.gov.au/sites/default/files/documents/2021-06/A706091.pdf* *Williams, T. M., Blackwell, S. B., Tervo, O., Garde, E., Sinding, M-H., Richter, B., & Heide-Jørgensen, M. P., 2022. 'Physiological responses of narwhals to anthropogenic noise: A case study with seismic airguns and vessel traffic in the Arctic'. Functional Ecology, 36, 2251–2266. https://doi.org/10.1111/1365-2435.14119.*
M12	**Matter:** Cumulative effects of seismic activity in the area **Claim:** The EP fails to address the cumulative impact of seismic blasting and marine noise on marine life. It fails to provide specific impacts on the array of Baleen whales and the other 34 species that have been identified as being present by the EPBC Act Protected Matters Report.	CGG acknowledges claims regarding cumulative impacts and has reviewed the Environment Plan (EP) to ensure that cumulative impacts have been appropriately considered for cetacean species. Appendix E10 (Cumulative Impact Assessment) presents a detailed assessment of potential cumulative impacts. The effects of past projects and activities, and currently operating projects, are included in the description of existing condition of, and any pressure or threats affecting, the environment, i.e., any impacts to marine life from current previous activities and projects is inherent within the description of the baseline. The

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		cumulative impact assessment considers the impacts of the proposed activity on key environmental values and sensitivities in conjunction with the impacts from other reasonably foreseeable future projects. Potential for cumulative impacts to whale species, including baleen whales, has been scoped in Appendix E10 (Cumulative Impact Assessment). During the assessment process, components of the environment and aspects of the ongoing and reasonably foreseeable projects and activities were identified where there was the potential for successive, additive, or synergistic impacts to reasonably accumulate over temporal and spatial scales, when considered in the context of ongoing and reasonably foreseeable future projects or activities in the Otway Basin. The CIA Scoping Tool (Annex 2 – CIA Scoping Tool) details the assessment undertaken of the components of the environment and aspects of the Otway Exploration Drilling Program to identify where a potential cumulative cause-effect pathway with the other reasonably foreseeable future projects (identified in Table E10-31-) may occur and, if it may occur, was likely to have a material impact. For underwater sound, impacts on noise-sensitive whale species with biologically important behaviours, such as the Blue Whale and Southern Right Whale, within relevant BIAs that overlap underwater sound EMBAs were identified through this process. Where a potential cumulative cause-effect pathway and material impact was identified further assessment was undertaken as detailed in • EP Appendix E10 Section 5.4: Effects of Elevated Levels of Sound to Blue Whales, and • EP Appendix E10 Section 5.5: Effects of Elevated Levels of Sound to Southern Right Whales. In both assessments, it is concluded that, without appropriate detection and actions in place there is the potential that blue whales could be exposed to underwater sound from two sources (seismic and drilling) within the foraging BIA that could result in them expending more energy to move away from the sound source to forage or restrict the area of foraging. This could also occur for consecutive years whilst drilling activities are undertaken within the Otway Basin. However, cumulative impacts resulting in an increase in the likelihood of PTS and TTS for foraging blue whales is not predicted due to the small distances to the PTS and TTS noise criteria for activities. Consequently, as each titleholder will be required to undertake their activity in a manner that will not be inconsistent with the relevant recovery / management plans, such that blue whales can continue to utilise the area without injury and [are] not displaced from a foraging area and that actions within and adjacent to SRW BIAs should demonstrate that they do not prevent any SRW from utilising the area or cause injury (TTS and PTS) and/or disturbance, cumulative impacts are not predicted. CGG considers the assessment of cumulative impacts to be a full and complete assessment, undertaken in line with NOPSEMA guidelines and industry best practice. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M13	**Matter**: Mass strandings **Claim:** Seismic testing causes hearing loss and navigation loss in whales and they get stranded en masse and die as a result. Other marine animals die instantly in test areas.	CGG acknowledges claims regarding impacts on marine mammals associated with underwater sound and has reviewed the Environment Plan (EP) to ensure that this was appropriately considered. **As stated in response to Matter M11 above, updates have been made to EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals), Section 6 .5 of the EP in response to these claims as follows:** **While there has been considerable conjecture that the displacement of cetaceans from seismic surveys (as a consequence of avoidance) could result in stranding events, no solid evidence has yet been forthcoming to support this link. The most recent assessment of whale stranding patterns in Victoria (Foord et al., 2019) makes no reference to seismic surveys, and found no seasonal stranding pattern. While Foord et al (2019) didn't specifically investigate the relationship between strandings and seismic surveys, seismic surveys typically occur over the summer months off the south coast of Australia; hence if causal links were present, some evidence of seasonal patterns would be expected.** **Further to this, NOPSEMA (2019) states that "Evidence of mass whale stranding exists from six to seven million years ago, long before anthropogenic sound became a factor, and it is likely that any observable increase in occurrence [of stranding events] is due to greater visibility of previously inaccessible coastline."** ***References***: *Foord, C.S., Rowe, K.M.C,, Robb K , 2019. 'Cetacean biodiversity, spatial and temporal trends based on stranding records (1920-2016), Victoria, Australia'. PLoS ONE 14(10): e0223712. https://doi.org/10.1371/journal.pone.0223712* *NOPSEMA, 2019. Environment and Communications References Committee. Inquiry into the impact of seismic testing on fisheries and the marine environment. Submission 66 from the National Offshore Petroleum Safety and Environmental Management Authority. December 2019. pp. 103. Available online at: https://www.nopsema.gov.au/sites/default/files/documents/2021-06/A706091.pdf*
Key Matter: Southern Right Whale (SRW)		

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M14	**Matter:** Southern Right Whale is not mentioned in the Environment Plan **Claim:** It is concerning that the Southern Right whale is not mentioned in the CGG plan , which also does not include any enforceable measures to protect this endangered species.	CGG acknowledges claims regarding the consideration of Southern Right Whales (SRW) and measures to protect this species within the Environment Plan (EP) and has reviewed the EP to ensure this species was adequately considered and appropriate mitigation measures were identified. Presence of the SRW within the Regia MSS Operational Area was identified in the Protected Matters Search Tool (PMST) report (Appendix B5) as 'breeding known to occur within area'. Biologically Important Areas (BIAs) for the SRW are identified in relevant impact and risk assessment sections. Description of SRW spatial and temporal presence, and potential impacts and risks to SRW associated with the Regia MSS, have been described and assessed in: • Appendix D1 (Risk Assessment – Accidental Release of Materials and Waste Overboard) • Appendix D2 (Risk Assessment – Collision with Marine Fauna) • Appendix D4 (Risk Assessment – Accidental Release of Fuel) • Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) • Appendix E10 (Impact Assessment – Otway Cumulative Impact Assessment These appendices include identification of mitigation and management measures to ensure potential impacts and risks have been reduced to As Low As Reasonably Practicable (ALARP). Measure M#03: Fauna Management System and, more specifically the Fauna Management Plan in Appendix G2, outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. EP Appendix F2 (ALARP Assessment) Section 6.1 includes additional measures to protect SRWs during biologically important behaviours, such as: • Minimising the duration of the survey to a maximum of 60 days of acquisition • Surveying shallower SRW BIAs between November and April when this species is not known to be present. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including SRWs and identifies: • There will be no impact to SRWs within reproduction BIAs based on spatial and temporal exclusion zones, and the energetic costs of behavioural disturbance on migration would be extremely low, if avoidance behaviour occurred, and would not impact the recovery of the species. CGG has reviewed the EP in response to this claim and is satisfied that potential impacts and risks to SRWs associated with the Regia MSS, as well as mitigation and management measures, have been adequately addressed. As a result, no changes have been made to the EP in response to this claim.
M15	**Matter:** Impacts to Southern Right Whales **Claim:** The Southern Right Whale is just beginning to recover from whaling, over one hundred years ago. This fresh assault cannot be allowed. Please NOPSEMA refuse CCG\'s proposal. **Claim:** Recommendation: Request CGG to undertake studies on the effect of their project on the health and wellbeing of Southern Right whales. **Claim:** This seismic blasting proposal by CGG should be refused due to the devastating impact it will have, firstly on the remnant eastern endangered SRW population, secondly, on the greater population of Australian SRWs, a significant number of which access their primary breeding grounds at Head of Bight via the species' main east-west migratory route, part of which falls within the area of CGG's proposal and thirdly, because of the extreme harm it poses to all other cetaceans, marine mammals and in fact the entire marine ecosystem in our southern ocean. **Claim**: This seismic blasting proposal must not be approved, a multinational company.? Their only interest is monetary profits, blowing up the ocean would be catastrophic for the southern right whales.	CGG acknowledges claims regarding impacts to Southern Right Whales (SRWs) associated with the Regia MSS and has reviewed the Environment Plan (EP) to ensure that these were adequately described and mitigated. Potential impacts and risks to SRW associated with the Regia MSS have been assessed in: • Appendix D1 (Risk Assessment – Accidental Release of Materials and Waste Overboard) • Appendix D2 (Risk Assessment – Collision with Marine Fauna) • Appendix D4 (Risk Assessment – Accidental Release of Fuel) • Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) • Appendix E10 (Impact Assessment – Cumulative Impact Assessment SRW habitat and potential presence in relation to the Regia MSS has been described throughout these appendices and informs impact and risk assessments. Excerpts are provided below: 'Southern Right Whales are distributed in the Southern Hemisphere with a circumpolar distribution between latitudes of 16°S and at least 65°S. They migrate from southern feeding grounds in sub-Antarctic waters to Australia in between May and November to calve, mate and rest (Bannister et al. 1996, DCCEEW 2022). In Australian coastal waters, they occur along the southern coastline of the mainland and Tasmania and generally extend as far north as Sydney on the east coast and Perth on the west coast (CoA 2012). There are occasional sightings further north, with the extremities of their range recorded at Hervey Bay and Exmouth (CoA 2012). The largest established calving areas in Australia include Head of Bight in SA, and Doubtful Island Bay and Israelite Bay in WA. Smaller but established aggregation areas regularly occupied by Southern Right Whales include Yokinup Bay in WA, Fowlers Bay in SA and the Warrnambool and Portland in Victoria. Emerging aggregation areas include Flinders Bay, Hassell Beach, Cheyne/Wray Bays, and Twilight Cove in WA, and

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		sporadically occupied areas include Encounter Bay in SA. Southern Right Whales generally occupy shallow sheltered bays within 2 km of shore and within water depths of less than 20 m (Charlton et al. 2017). A number of additional areas for Southern Right Whales are emerging that might be of importance, particularly to the south-eastern population. In these areas, small but growing numbers of non-calving whales regularly aggregate for short periods of time. These areas include coastal waters off Peterborough, Port Campbell, Port Fairy and Portland in Victoria (CoA 2012). These emerging areas off Victoria align with the Draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) which provides an update to BIAs and emerging aggregation areas (Figure D1-51-). The proposed changes are: • Reproductive areas - Areas where mating, calving, nursing and/or presence of neonates are known, or likely, to occur. For Victoria this is the nearshore area between Portland and Port Campbell. • Migration areas - Areas where Southern Right Whales are known, or likely, to use for movement between regions that support biologically important behaviour (e.g., coastal movement between reproductive areas). The EP also describes any overlap between areas of potential impact and SRW BIAs: • The Operational Area overlaps the Southern Right Whale Migration BIA where the whales are present between April and October (NCVA 2023) (Appendix B12 MAP-REG-EPM-069; Appendix D1; Appendix D2). • The Environmental Planning Area overlaps the Southern Right Whale reproduction and migration BIAs (Appendix B12 MAP-REG-EPM-069; Appendix D4) • The PMST Report identified that Southern Right Whale breeding is known to occur within area that may be affected by underwater sound, in addition the area where the noise effect criteria for SRW is reached is within the migration BIA and reproduction BIA (Appendix B12 MAP-REG-EPM-069; Appendix E7). Peer reviewed literature and sound modelling has been used to inform the impact assessment sections listed above. CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a: Initial Sound Modelling Report and B7: Secondary Sound Modelling Report) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including SRWs. Acoustic modelling was used in conjunction with animat modelling for SRWs to provide a more realistic prediction of the area that may be affected by underwater sound (as opposed to acoustic modelling alone). Estimates of sound exposure distribution were determined by moving large numbers of simulated animals (animats) through a modelled time-evolving sound field, computed using acoustic models. As described in Section 6.3 (Low-frequency Cetaceans) of Appendix E7 (Impact Assessment: Underwater Sound Marine Mammals), the predicted maximum distances to the PTS 24hr cumulative effect criteria, TTS 24hr cumulative effect criteria and behavioural effect criteria for Southern Right Whales is 1.4km, 14.2 km and 9.51km, respectively. This modelling has been used to ensure that the action from the draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) of "Actions within and adjacent to Southern Right Whale BIAs and HCTS should demonstrate that it does not prevent any Southern Right Whale from utilising the area or cause injury (TTS and PTS) and/or disturbance" will be met. This includes implementation of activity limitations where the sound source will not be operated within 15 km (based on modelling which produced a TTS effect distance of 14.2 km) of the Southern Right Whale reproduction BIA or Habitat Critical to Survival (HCTS) while Southern Right Whales are present in the reproduction BIA and HCTS, and surveying shallower areas between November and April when this species is not known to be present. Therefore, due to the spatial and temporal exclusion zones, there will be no impact to Southern Right Whales within reproduction BIAs. (EP Appendix E7- Impact Assessment Underwater Sound: Marine Mammals). CGG have also provided a summary of available literature and descriptions of the potential impacts of anthropogenic noise on marine mammals (EP Appendix B8- Seismic Studies Report, Section 7 Marine Mammals). CGG has used current best available science and modelling to assess impacts and risks on species listed under the Environment Protection and Biodiversity Conservation Act 1999, with application of conservative distances within which species may be impacted. The EP fully acknowledges and describes SRW biologically important behaviours and spatial and temporal overlap with the Regia MSS. The EP includes identification of mitigation and management measures in each impact assessment section (see appendices listed above), including a Fauna Management Plan (Appendix G2) that outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. In accordance with the control measures set out in the EP, the Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with all environmental regulatory requirements. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.

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M16	**Matter:** Impacts to Southern Right Whale Biologically Important Areas **Claim**: Of particular concern is the proximity of the proposed blasting site to the most important calving grounds for south-east Australia\'s 300 remaining southern right whales. These majestic creatures, already facing numerous threats to their survival, would be subjected to intolerable levels of noise pollution and disturbance, putting their very existence at risk. **Claim:** Allowing any seismic blasting to species-sensitive areas such as the Otway Basin just kilometres off the coast of the Great Ocean Road and in the calving grounds of the endangered southern right whale should not be allowed. **Claim**: Under no circumstances should the seismic blasting be allowed near endangered whale\'s calving grounds. There is no way to mitigate the effects of the seismic blasting. **Claim**: The EP states that blasting will not occur within the reproduction BIA or within 12km of the reproduction BIA while whales are present. However, southern right whales migrate to their calving grounds from April to November using the migration BIA, which stretches from the Victorian coast, south to Tasmania, and west to the southern coast of Western Australia. It is therefore not possible that the CGG project could operate in those months without exposing southern right whales to seismic blasting in their migration BIA. Further, the proposal to conduct seismic blasting in critical habitat for this Endangered species is incompatible with the Australian Government's efforts to protect the species and support its recovery. **Claim:** This EP is inadequate and must be refused due to know impacts to our oceans and marine life. It ignores that there are no safe blasting in the breading grounds of whales, for example **Claim:** The plan does not outline how the sound is not going to impact the Southern Right Whale breeding area when the seismic zone surrounds the area **Claim:** There are so many plans in the pipeline for massive marine-based industrial developments along the southern coast of Australia right now. Most of these will include seismic blasting, increased vessel noise and potential vessel strike, drilling, pile-driving and/ or other acute and/or chronic noise and chemical spill hazards. Each of them, will negatively impact critical breeding and/or migratory SRW habitat and will increase the accumulate stresses impacting our already struggling SRW population. **Claim:** It could also impact Southern Wright whales which use this area as a nursery and other cetacean species that are endemic or transit through this area as part of their migration. **Claim:** Southern right whales are listed as Endangered under the EPBC Act and the EP does not adequately demonstrate that risks and impacts to designated migration and reproduction BIAs, both of which lie within CGG's Environment Planning Area, will be reduced to an acceptable level.	CGG acknowledges claims regarding impacts to Southern Right Whales (SRWs) Biologically Important Areas (BIAs) associated with the Regia MSS and has reviewed the Environment Plan (EP) to ensure that these are adequately described and mitigated. CGG acknowledges the importance of protecting SRWs within the reproduction and migration BIAs. SRW habitat and potential presence in relation to the Regia MSS has been described throughout the EP (as outlined in response M15). The Operational Area overlaps the SRW migration BIA where the whales are present between April and October (NCVA 2023) (Appendix B12 MAP-REG-EPM-069; Appendix D1; Appendix D2). The Operational Area does not overlap the reproduction BIA for the SRW and as such no seismic testing will be conducted within the reproduction BIA. As described in EP Appendix E7 (Impact Assessment Underwater Sound: Marine Mammals), the area where noise effect criteria for SRWs is reached is within the migration BIA and reproduction BIA (Appendix B12 MAP-REG-EPM-069; Appendix E7). As detailed in EP Appendix F7 (Impact Assessment – Underwater sound: Marine Mammals), animat modelling was undertaken for whales undertaking biologically important behaviours, including Southern Right Whales (breeding), that considers the vessel and whale movements and provides a more realistic prediction of the area that may be affect by underwater sound. The predicted maximum distances to the Permanent Threshold Shift (PTS) 24hr cumulative effect criteria, Temporary Threshold Shift (TTS) 24hr cumulative effect criteria and behavioural effect criteria for Southern Right Whales is 1.4km, 14.2 km and 9.51km, respectively, respectively. To meet the action from the draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) of "Actions within and adjacent to Southern Right Whale BIAs and HCTS should demonstrate that it does not prevent any Southern Right Whale from utilising the area or cause injury (TTS and PTS) and/or disturbance", CCG adopted specific control measures to mitigate potential impacts to SRWs including: • Use of a reduced acoustic source size. • Measure M#01: which stipulates the sound source will not be discharged in the Southern Right Whale reproduction BIA at any time. • Measure M#01: which stipulates that CGG will implement an activity limitation where there will be no discharge of the sound source within >15 km of the SRW reproduction BIA or Habitat Critical to Survival (HCTS) while SRWs are present in the BIA and HCTS. 15 km is based on initial modelling which produced a TTS effect distance of up to 14.2 km, from a more conservative BIA (based on the initial NCVA update) as the furthest distance to sound effect criteria for aggregating Southern Right Whale without a calf. • Measure M#03: Fauna Management System and, more specifically the Fauna Management Plan in Appendix G2, which outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey within the migration BIA. • Minimising the duration of the survey to a maximum of 60 days of acquisition, and • Surveying shallower parts of the SRW migration BIAs between November and April when this species is not known to be present. The response to Matter: M18 describes how impacts to SRWs within the migration BIA have been assessed and mitigated in the EP. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including SRWs and identifies: • Permanent or temporary hearing loss to SRWs is not predicted based on the distance of the spatial and temporal exclusion zones to SRW reproduction BIAs. • While SRWs are migrating to and from the coastal reproduction BIAs, they are moving at speeds between 3 – 3.3. km/hr (Charlton 2017) and hence are unlikely to be within the area of cumulative sound exposure for a long enough period to receive cumulative sound levels above the effect criteria. • As the Regia MSS will only occur during one season when SRWs are present in Australia waters, potential behavioural impacts to individual SRW will not impact on the recovery of the population. The Acceptability Assessment (Appendix F3) also describes how CGG has ensured that regulatory requirements relevant to the Regia MSS and SRWs will be met. As stated in Section 5.2.1.5 of Appendix F3, the updated draft National Recovery Plan for SRW (DCCEEW 2023) has significant weight in CGG's assessment due to the involvement of Commonwealth and State regulatory agencies, threatened species managers, and scientific experts in the development of the recovery plan. As such, recommended actions from the plan relevant to the Regia MSS have been implemented as detailed above and within Section 5.2.1.6 of Appendix F3. CGG acknowledges the importance of assessing cumulative impacts to species including SRWs. Cumulative impacts have been thoroughly assessed in EP Appendix E10 (Cumulative Impact Assessment)/ This assessment concluded that as each titleholder will be required to undertake their activity in a manner that will not be inconsistent with the relevant recovery / management plans, such that actions within and adjacent to SRW BIAs should demonstrate that they do not prevent any SRW from utilising the area or cause injury (TTS and PTS) and/or disturbance, cumulative impacts are not predicted. CGG has reviewed the EP in response to these claims and is satisfied that potential impacts and risks to SRWs, within their reproduction and migration BIAs, have been adequately assessed. Appropriate mitigation and control measures ensure that potential impacts associated with the

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		Regia MSS are reduced to As Low As Reasonably Practicable (ALARP). As a result, no changes have been made to the EP in response to this claim.

M17	**Matter**: Impacts to remnant eastern population of Southern Right Whales
	Claim: Given the scientific research* observing an 88% drop in whale / cetacean sightings caused by these seismic tests, it's more than concerning to see the map with Logan's Beach (Whale nursery, tourist icon) directly labelled adjacent to the proposed operating and testing field. It should be more than clear that the value of this marine environment and the marine animals that inhabit this area far outweighs any short term financial gain from seismic testing and any subsequent oil and gas drilling it facilitates. * Kavanagh, A.S., Nykänen, M., Hunt, W. et al. Seismic surveys reduce cetacean sightings across a large marine ecosystem. Sci Rep 9, 19164 (2019).
	Claim: If this proposal is allowed to progress, not only will the major east-west SRW migratory corridor to Head of Bight be negatively impacted, but Logan's Beach, the only habitat used by the small remnant population of the eastern SRW (thought to be a genetically different to the western SRW population) will be rendered unsuitable as crucial calving and nursing habitat.
	Claim: Seismic blasting next to their only Victorian calving ground will undoubtedly drive calving / nursing Southern Right Whale cows away from this historically important habitat. It could even spell the end for this small remnant, genetically unique population - only about 300 individuals remain. If we want this tiny population to survive, then we must preserve the integrity of its only breeding habitat.
	Claim: This seismic blasting proposal by CGG should be refused due to the devastating impact it will have, firstly on the remnant eastern endangered SRW population, secondly, on the greater population of Australian SRWs, a significant number of which access their primary breeding grounds at Head of Bight via the species' main east-west migratory route, part of which falls within the area of CGG's proposal and thirdly, because of the extreme harm it poses to all other cetaceans, marine mammals and in fact the entire marine ecosystem in our southern ocean.
		CGG acknowledges claims regarding impacts to the south-eastern Southern Right Whale (SRW) population and has reviewed the EP to ensure impacts and risks to this population were appropriately considered.
		CGG acknowledges the importance of the reproduction Biologically Important Area (BIA), including Logan's Beach, throughout the EP. Important areas for the south-eastern SRW population are described in the EP:
		• 'Southern Right Whales are distributed in the Southern Hemisphere with a circumpolar distribution between latitudes of 16°S and at least 65°S. They migrate from southern feeding grounds in sub-Antarctic waters to Australia in between May and November to calve, mate and rest (Bannister et al. 1996, DCCEEW 2022). In Australian coastal waters, they occur along the southern coastline of the mainland and Tasmania and generally extend as far north as Sydney on the east coast and Perth on the west coast (CoA 2012). There are occasional sightings further north, with the extremities of their range recorded at Hervey Bay and Exmouth (CoA 2012).
		• The largest established calving areas in Australia include Head of Bight in SA, and Doubtful Island Bay and Israelite Bay in WA. Smaller but established aggregation areas regularly occupied by Southern Right Whales include Yokinup Bay in WA, Fowlers Bay in SA and the Warrnambool and Portland in Victoria. Emerging aggregation areas include Flinders Bay, Hassell Beach, Cheyne/Wray Bays, and Twilight Cove in WA, and sporadically occupied areas include Encounter Bay in SA. Southern Right Whales generally occupy shallow sheltered bays within 2 km of shore and within water depths of less than 20 m (Charlton et al. 2017). A number of additional areas for Southern Right Whales are emerging that might be of importance, particularly to the south-eastern population. In these areas, small but growing numbers of non-calving whales regularly aggregate for short periods of time. These areas include coastal waters off Peterborough, Port Campbell, Port Fairy and Portland in Victoria (CoA 2012). These emerging areas off Victoria align with the Draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) which provides an update to BIAs and emerging aggregation areas (Figure D1-51-). The proposed changes are:
		  ○ Reproduction areas - Areas where mating, calving, nursing and/or presence of neonates are known, or likely, to occur. For Victoria this is the nearshore area between Portland and Port Campbell.
		  ○ Migration areas - Areas where Southern Right Whales are known, or likely, to use for movement between regions that support biologically important behaviour (e.g., coastal movement between reproductive areas).'
		The EP also describes any overlap between areas of potential impact and SRW BIAs:
		• The Operational Area overlaps the Southern Right Whale migration BIA where the whales are present between April and October (NCVA 2023) (Appendix B12 MAP-REG-EPM-069; Appendix D1; Appendix D2).
		• The Environmental Planning Area overlaps the Southern Right Whale reproduction and migration BIAs (Appendix B12 MAP-REG-EPM-069; Appendix D4)
		• The PMST Report identified that Southern Right Whale breeding is known to occur within that area that may be affected by underwater sound, in addition the area where the noise effect criteria for SRW is reached is within the migration BIA and reproduction BIA (Appendix B12 MAP-REG-EPM-069; Appendix E7).
		• The acquisition area does not overlap the reproduction BIA.
		Appendix E7 of the EP comprehensively assesses potential impacts to marine mammals, including SRWs, from anthropogenic noise associated with the Regia MSS. The response to Matter: M15 describes how peer reviewed literature and sound modelling have been used to inform the impact assessment for the SRW, and details mitigation and management measures that will be implemented to ensure impacts will be reduced to As Low As Reasonably Practicable (ALARP).
		To meet the action from the draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) of "Actions within and adjacent to Southern Right Whale BIAs and HCTS should demonstrate that it does not prevent any Southern Right Whale from utilising the area or cause injury (TTS and PTS) and/or disturbance", CCG adopted specific control measures to mitigate potential impacts to SRWs including:
		• Use of a reduced acoustic source size.
		• Measure M#01: which stipulates the sound source will not be discharged in the Southern Right Whale reproduction BIA at any time.
		• Measure M#01: which stipulates that CGG will implement an activity limitation where there will be no discharge of the sound source within 15 km of the SRW reproduction BIA or Habitat Critical to Survival (HCTS) while SRWs are present in the BIA and HCTS. 15 km is based on initial modelling which produced a TTS effect distance of up to 14.2 km as the furthest distance to sound effect criteria for aggregating Southern Right Whale without a calf. .

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#	**Comments received**	***Titleholder response***
		• Measure M#03: Fauna Management System and, more specifically the Fauna Management Plan in Appendix G2, which outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey within the migration BIA. • Minimising the duration of the survey to a maximum of 60 days of acquisition, and • Surveying shallower parts of the SRW migration BIAs between November and April when this species is not known to be present. • In accordance with the control measures set out in the EP, the Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with all environmental regulatory requirements. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including SRWs and identifies: • Permanent or temporary hearing loss to SRWs is not predicted based on the distance of the spatial and temporal exclusion zones to SRW reproduction BIAs. • While SRWs are migrating to and from the coastal reproduction BIAs, they are moving at speeds between 3 – 3.3. km/hr (Charlton 2017) and hence are unlikely to be within the area of cumulative sound exposure for a long enough period to receive cumulative sound levels above the effect criteria. • Thus, effects are limited to behaviour responses to migrating SRW which may range from short term orientation to moving away from the sound source. Disturbance of migrating mothers could increase their energy expenditure which could result in a reduction of energy available for their calf and for their return migration (Christiansen et al 2014). Based on an average swim speed of between 3 – 3.3 km / hr (Charlton 2017) and a distance to the behavioural effect criteria of 9.51 km, the energetic costs would be extremely low if avoidance behaviour occurred. • In addition, SRWs whales are a highly mobile migratory species that travel thousands of kilometres between habitats used for essential life functions (CoA 2012). Along the Australian coast, individual SRWs use widely separated coastal areas (200–1,500 km apart) within a season, indicating substantial coast-wide movement. The longest movements are undertaken by non-calving whales, though calving whales have also been recorded at locations up to 700 km apart within a single season (CoA 2012). Thus, if a SRW avoided the area above the behavioural effect criteria of 9.51 km it is unlikely to prevent them from undertaking their seasonal migrations. • As the Regia MSS will only occur during one season when SRWs are present in Australia waters, potential behavioural impacts to individual SRW will not impact on the recovery of the population. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
M18	**Matter:** Impacts to migrating Southern Right Whales **Claim**: Given that this operation is proposed to occur between the months of April - December, there is significant risk of harm to the Southern Right Whale during their calving period (May - October), when they will be migrating through the operational area. **Claim**: Plan states that blasting will not occur within the reproduction area, or within 12km of the reproduction area, while whales are present. However, southern right whales migrate to their calving grounds from April to November, an area which stretches from the Victorian coast, south to Tasmania, and west to the southern coast of Western Australia. It is therefore not possible that the CGG project could operate in those months without exposing southern right whales to seismic blasting during their migration to their birthing area. (46). 46 https://www.wildlife.vic.gov.au/__data/assets/pdf_file/0021/90750/Southern-RightWhale.pdf. **Claim:** The Environmental Plan states that surveying will not take place within 12km of the whale's reproductive 'Biologically Important Area' (BIA) whilst the whales are present. However, given that the Southern Right Whale migrates through the BIA between April and November it is not possible that the project could operate in these months without exposing these whales to seismic surveying.	CGG acknowledges claims regarding the impacts to migrating Southern Right Whales (SRW) and has reviewed the Environment Plan (EP) to ensure these impacts were adequately described and mitigated. As detailed in EP Appendix F7 (Impact Assessment – Underwater sound: Marine Mammals), animate modelling was undertaken for whales undertaking biologically important behaviours, such as Southern Right Whales (breeding), that considers the vessel and whale movements and provides a more realistic prediction of the area that may be affect by underwater sound. The predicted maximum distances to the Permanent Threshold Shift (PTS) 24hr cumulative effect criteria, Temporary Threshold Shift (TTS) 24hr cumulative effect criteria and behavioural effect criteria for Southern Right Whales is 1.4km, 14.2 km and 9.51km, respectively. To meet the action from the draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) of "Actions within and adjacent to Southern Right Whale BIAs and HCTS should demonstrate that it does not prevent any Southern Right Whale from utilising the area or cause injury (TTS and PTS) and/or disturbance" CCG adopted specific control measures to mitigate potential impacts to SRWs including: • Use of a reduced acoustic source size. • Measure M#01: which stipulates the sound source will not be discharged in the Southern Right Whale reproduction BIA at any time. • Measure M#01: which stipulates that CGG will implement an activity limitation where there will be no discharge of the sound source within 15 km of the SRW reproduction BIA or Habitat Critical to Survival (HCTS) while SRWs are present in the BIA and HCTS. 15 km is based on initial modelling which produced a TTS effect distance of up to 14.2 km as the furthest distance to sound effect criteria for aggregating Southern Right Whale without a calf. • Measure M#03: Fauna Management System and, more specifically the Fauna Management Plan in Appendix G2, which outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey within the migration BIA. • Minimising the duration of the survey to a maximum of 60 days of acquisition, and • Surveying shallower parts of the SRW migration BIAs between November and April when this species is not known to be present.

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	Claim: The endangered southern right whale returns to the beaches around Warrnambool for calving in the winter months, between May to October. They travel through the operating area in the lead up to and during this calving period. Noting that the operating area is just 16.22km from Warrnambool, we hold grave concerns about the ability of Southern Right Whales to return to these beaches for their calving season. **Claim:** There are some claims within the submission that seismic blasting will not occur at birthing times , however this is an unrealistic as southern right whales migrate to their calving grounds from April to November using the migration BIA, which stretches from the Victorian coast, south to Tasmania, and west to the southern coast of Western Australia. It is therefore not possible that the CGG project could operate in those months without exposing southern right whales to seismic blasting in their migration BIA.	EP Appendix E10 (Cumulative Impact Assessment) concluded that, without appropriate detection and actions in place there is the potential that SRWs could be exposed to underwater sound from two sources (seismic and drilling) within the migration BIA that could result in them expending more energy to move away from the sound source when migrating to and from coastal breeding areas. This could also occur for consecutive years whilst drilling activities are undertaken within the Otway Basin. However, as fauna management-type plans including detection and mitigation measures are considered standard within the industry, the potential for behavioural disturbance is significantly mitigated. Cumulative impacts resulting in an increase in the likelihood of PTS and TTS for a migrating SRW are not predicted due to the small distances to the PTS and TTS noise criteria for drilling activities. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including SRWs and identifies: • Effects are limited to behaviour responses to migrating SRW which may range from short term orientation to moving away from the sound source. Disturbance of migrating mothers could increase their energy expenditure which could result in a reduction of energy available for their calf and for their return migration (Christiansen et al 2014). Based on an average swim speed of between 3 – 3.3 km / hr (Charlton 2017) and a distance to the behavioural effect criteria of 9.51km, the energetic costs would be extremely low if avoidance behaviour occurred. • In addition, SRWs whales are a highly mobile migratory species that travel thousands of kilometres between habitats used for essential life functions (CoA 2012). Along the Australian coast, individual SRWs use widely separated coastal areas (200–1,500 km apart) within a season, indicating substantial coast-wide movement. The longest movements are undertaken by non-calving whales, though calving whales have also been recorded at locations up to 700 km apart within a single season (CoA 2012). Thus, if a SRW avoided the area above the behavioural effect criteria of 9.51km it is unlikely to prevent them from undertaking their seasonal migrations. • As the Regia MSS will only occur during one season when SRWs are present in Australia waters, potential behavioural impacts to individual SRW will not impact on the recovery of the population. CGG has reviewed the EP in response to this claim and is satisfied that potential impacts SRWs on migration associated with the Regia MSS have been appropriately assessed and are mitigated to as low as reasonably practicable and acceptable levels. As a result, no changes have been made to the EP in response to this claim.
M19	**Matter:** Impacts to Southern Right Whale energy reserves during migration **Claim:** SRW's do not eat while overwintering on the Australian coast. They rely solely on their stored energy reserves to sustain themselves and their calves until they return to their summer feeding grounds. In their research paper 'Behavioural Development in southern right whale calves', Mia L. K. Nielsen, Kate R. Sprog, Lars Bejder, Peter T. Madsen and Fredrik Christiansen provide the following critical details as they relate to this: https://www.int-res.com/abstracts/meps/v629/p219-234/ "Most baleen whales migrate to low-latitude breeding grounds during winter to give birth and nurse their calves during the early stages of growth and development. While mothers invest a large amount of energy into the early development of their calves, the time allocated to important behaviours associated with maternal care (e.g., nursing) as well as the energetics related to the rapid growth of calves are important to quantify and understand to inform conservation measures. To investigate this, we conducted behavioural focal follows of southern right whale Eubalaena australis mother- calf pairs on a breeding ground in South Australia using unmanned aerial vehicles. Over the breeding season, we conducted behavioural focal follows of 51 mother calf pairs for a total of 58 h across 75 d. Our observations showed that the proportion of time calves spent in nursing position and the duration of potential nursing bouts increased with increasing calf size throughout the breeding season, suggesting that calves seek to maximise energy acquisition. With increasing body size, the absolute metabolic expenditure of calves increased, underlining the importance of mothers being able to maintain low energy expenditure to ensure sufficient energy available for their calves during the nursing season. Our findings from this	CGG acknowledges claims regarding the impacts to Southern Right Whale (SRW) energy reserves during migration and has reviewed the Environment Plan (EP) to ensure this has been adequately assessed. CGG acknowledges the importance of protecting SRWs within the Biologically Important Areas (BIA) from disturbances which could disrupt the crucial maternal care, energy transfer and rapid early development of calves. This acknowledgement resulted in the adoption of specific control measures to mitigate potential impacts including: • Measure M#01: which stipulates the sound source will not be discharged in the Southern Right Whale reproduction BIA at any time. • Measure M#01: which stipulates that CGG will implement an activity limitation where there will be no discharge of the sound source within 15 km of the SRW reproduction BIA or Habitat Critical to Survival (HCTS) while SRWs are present in the BIA and HCTS. 15 km is based on initial modelling which produced a TTS effect distance of up to 14.2 km as the furthest distance to sound effect criteria for aggregating Southern Right Whale without a calf. • Measure M#03: Fauna Management System and, more specifically the Fauna Management Plan in Appendix G2, which outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey within the migration BIA. • Minimising the duration of the survey to a maximum of 60 days of acquisition, and • Surveying shallower parts of the SRW migration BIAs between November and April when this species is not known to be present. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including SRWs and identifies: • Effects are limited to behaviour responses to migrating SRW which may range from short term orientation to moving away from the sound source. Disturbance of migrating mothers could increase their energy expenditure which could result in a reduction of energy available for their calf and for their return migration (Christiansen et al 2014). Based on an average swim speed of between 3 – 3.3 km / hr (Charlton 2017) and a distance to the behavioural effect criteria of 9.51 km, the energetic costs would be extremely low if avoidance behaviour occurred. • In addition, SRWs whales are a highly mobile migratory species that travel thousands of kilometres between habitats used for essential life functions (CoA 2012). Along the Australian coast, individual SRWs use widely separated coastal areas (200–1,500 km apart) within a season, indicating substantial coast-wide movement. The longest movements are undertaken by non-calving whales, though calving

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	undisturbed population (1) demonstrate the considerable changes that calves undergo during the -3 months they spend on the breeding ground and (2) highlight the importance of these areas to be protected from anthropogenic disturbances that could disrupt the crucial maternal care, energy transfer and rapid early development of calves." They go on to note in their conclusion that, "Despite the limited time that SRWs spend on their breeding ground, fasting, lactating females transfer an enormous amount of energy to their calves (Christiansen et al. 2018). To facilitate the high energy transfer, a substantial part of the daily time budget of mothers is devoted to milk delivery. Here, we show that SRW calves are in nursing position -10 % of the time and that this proportion increased with calf size. Increased time spent nursing may reflect an increased energy expenditure of calves as they grow larger. The high proportion of time spent nursing emphasises the vulnerability of SRW mother-calf pairs to disturbances in the environment that could either disrupt crucial energy transfer between a mother and calf or increase the daily energy expenditure for either of them. A way for calves to decrease their energy expenditure is by remaining close to the mother. We show that calves are within an adult body length (<14 m) to its mother for >90% of the time. However, the estimated fixed rate of volume loss by the lactating females are mis-matched by an increasing rate of FMR of the growing calf. Thus, to maintain the documented calf growth rates, lactating females may reduce their maintenance metabolism. This notion is supported by the decreased ventilation rate of mothers during the breeding season. The apparent necessity of a lactating female to maintain low energy expenditure during the breeding season highlights the importance of protecting the breeding habitats to minimise human disturbance e.g. boat-based whale-watching, shipping, fishing and oil and gas development. A similar result of maintaining a low energy expenditure was documented for lactating humpback whales on a breeding ground in Western Australia (Bejder et al. 2019). Such disturbances would potentially increase the energy expenditure of both mother and calves and/or decrease the amount of time nursing can occur and hence the amount of energy available to allocate to calf growth, which may ultimately lead to a lower chance of survival (Christiansen el al. 2014). Nursing areas are therefore important for the healthy growth not only of the calves but also for the population".	whales have also been recorded at locations up to 700 km apart within a single season (CoA 2012). Thus, if a SRW avoided the area above the behavioural effect criteria of 9.51 km it is unlikely to prevent them from undertaking their seasonal migrations. • As the Regia MSS will only occur during one season when SRWs are present in Australia waters, potential behavioural impacts to individual SRW will not impact on the recovery of the population. CGG has reviewed the EP in response to this claim and is satisfied that potential impacts SRWs energy reserves associated with the Regia MSS have been appropriately assessed and are mitigated to as low as reasonably practicable and acceptable levels. As a result, no changes have been made to the EP in response to this claim.
M20	**Matter:** Impacts to Southern Right Whale food source **Claim:** There are only about 300 endangered Southern Right Whales that visit our waters. Their breeding has not been going well in recent years. Being close to a seismic blasting regime will reduce their food supply of krill, make them less likely to be comfortable to visit our area and give birth and may also be harmful to the more sensitive young whales.	CGG acknowledges claims regarding the impacts to food sources for the Southern Right Whale (SRW) and has reviewed the Environment Plan (EP) to ensure this was appropriately considered. EP Appendix E7 (Impact Assessment: Underwater Sound: Marine Mammals) provides information on the distribution of SRWs in the Southern Hemisphere, with a circumpolar distribution between latitudes of 16°S and at least 65°S, migrating from southern feeding grounds in sub-Antarctic waters to Australia in between May and November to calve, mate and rest (Bannister et al. 1996, DCCEEW 2022). Further information provided in draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) elaborates that, while feeding whales have been observed in the region of the Subtropical Front (41 – 44°S) in January and December, feeding has not been observed in coastal Australian waters, although other parts of the Australian Exclusive Economic Zone (EEZ) may be utilised for feeding, and three likely foraging grounds have been identified; south-west of WA, waters associated with the Subtropical Front, and Antarctic waters. Consequently, impacts to SRW food sources are not predicted given the significant distances from the Regia MSS to likely foraging grounds. Impacts to food sources for other species known to forage in the Otway Basin are assessed in response to Matter M10. CGG has reviewed the EP in response to this claim and is satisfied that potential impacts SRWs energy reserves associated with the Regia MSS have been appropriately assessed. As a result, no changes have been made to the EP in response to this claim.
M21	**Matter:** Impacts to Southern Right Whale calving and cow-calf pairs	CGG acknowledges claims regarding impacts on SRW calving and cow-calf pairs and has reviewed the Environment Plan (EP) to ensure that these impacts are adequately assessed.

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#	**Comments received**	***Titleholder response***
	Claim: I am appalled that this is allowed to happen both for risks to whales calving and because we need to stop new fossil fuel exploration. **Claim:** There are a broad range of consequences likely to negatively impact SRWs as a result of exposure to seismic blasting. Among them the following behavioural and physiological impacts should be of concern to the Nosema review team in regard to pregnant SRW cows and cow-calf pairs. **Claim:** Scientific research and observational data on the 'fight-flight' response shows how cetaceans, when faced with physically uncomfortable and/or threatening anthropogenic noise, will flee in order to escape the perceived danger. Consequences of the fight-flight response can be incredibly serious, both in the immediate and in the longer term. The stress of a pregnant female fleeing an excessive noise impact could have serious physiological implications for both the mother and her unborn calf. No less so, the stress to a cow fleeing the area to protect her new-born. **Claim:** SRW mothers are fiercely protective of their young and waste no time escaping perceived danger - an instinctive antipredator strategy. Capable of short bursts of fast swimming, SRWs either choose to fight or flee. If fleeing is the only option available, this response can have devastating ramifications for the calf. Unable to keep up with its mother, the calf will likely succumb to exhaustion, separation and/or predator attack. **Claim:** Should temporary hearing loss have affected one or both of the pair, things get a lot worse. Temporary deafness can last anywhere from minutes to hours. Apart from reducing the chances of the pair being reunited, a distressed calf calling for its mother is essentially a location beacon for predators.	Impacts and risks to marine mammals, including SRW and cow-calf pairs have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals), EP Appendix B7a and B7b – (Sound Modelling Reports) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). Southern Right Whales are distributed in the Southern Hemisphere with a circumpolar distribution between latitudes of 16°S and at least 65°S. They migrate from southern feeding grounds in sub-Antarctic waters to Australia in between May and November to calve, mate and rest (Bannister et al. 1996; DCCEEW 2022). The peak period for Southern Right Whale mating is from mid-July through to August (CoA 2012). Pregnant females generally arrive during late May/early June and depart with calves in September to October however the general time of arrivals and departures varies on an inter-annual basis. Calving females are known to have high site fidelity and a 3 to 4-year calving interval. Other population classes stay for shorter and variable periods undertaking coastal movements and departing the coast earlier than female-calf pairs (CoA 2012). CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Reports) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including SRW calving and cow-calf pairs. The predicted maximum distances to the PTS 24hr cumulative effect criteria, TTS 24hr cumulative effect criteria and behavioural effect criteria for Southern Right Whale mother and calf pairs is 1.4km, 14.2 km and 9.51km, respectively (see tables 24 and 25 in EP Appendix B7 – Sound Modelling Reports). Control measures to reduce impacts to SRW calving and cow-calf pairs are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). M#01: Activity Limitations stipulates the sound source will not be discharged in the Southern Right Whale reproductive BIA at any time. M#01: Activity Limitations also stipulates that CGG will implement an activity limitation where there will be no discharge of the sound source within 15 km of a Southern Right Whale BIA or Habitat Critical to Survival (HCTS) while Southern Right Whales are present in the BIA and HCTS. 15 km is based on modelling which produced a TTS effect distance of up to 14.2 km as the furthest distance to sound effect criteria for aggregating Southern Right Whale without a calf. Control measure M#03: Fauna Management System, namely the Fauna Management Plan (EP Appendix G2) provide details on whale detection techniques and measures to minimise anthropogenic noise threats and the risk of vessel strike associated with the survey. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including these species and identifies: • Permanent or temporary hearing loss to SRWs is not predicted based on the distance of the spatial and temporal exclusion zones to SRW reproduction BIAs. In addition, while SRWs are migrating to and from the coastal reproduction BIAs, they are moving at speeds between 3 – 3.3. km/hr (Charlton 2017) and hence are unlikely to be within the area of cumulative sound exposure for a long enough period to receive cumulative sound levels above the effect criteria. • Effects are limited to behavioural responses to migrating SRW which may range from short term orientation to moving away from the sound source. Disturbance of migrating mothers could increase their energy expenditure which could result in a reduction of energy available for their calf and for their return migration (Christiansen et al 2014). Based on an average swim speed of between 3 – 3.3 km / hr (Charlton 2017) and a distance to the behavioural effect criteria of 9.51 km, the energetic costs would be extremely low if avoidance behaviour occurred. • SRWs whales are a highly mobile migratory species that travel thousands of kilometres between habitats used for essential life functions (CoA 2012). Along the Australian coast, individual SRWs use widely separated coastal areas (200–1,500 km apart) within a season, indicating substantial coast-wide movement. The longest movements are undertaken by non-calving whales, though calving whales have also been recorded at locations up to 700 km apart within a single season (CoA 2012). Thus, if a SRW avoided the area above the behavioural effect criteria of 9.51 km it is unlikely to prevent them from undertaking their seasonal migrations. CGG will establish an expert panel of independent and qualified experts in SRW and BW. The aim of the expert panel is to provide advice and recommendations on the FMP Implementation Plan. The Fauna Management Plan (EP Appendix G2, table G2.2) provides further details on the expert panel. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. CGG has assessed the claims pertaining to underwater sound impacts and considers the detailed control measures included in the Fauna Management Plan will reduce the impacts associated with underwater sound to as low as reasonably practicable and acceptable levels. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
		References: *Bannister JL, Kemper CM & Warneke RM. 1996. The Action Plan for Australian Cetaceans. Canberra: Australian Nature Conservation Agency.* *DCCEEW. 2022. Draft National Recovery Plan for the Southern Right Whale, Department of Climate Change, Energy, the Environment and Water, Canberra.* *Christiansen, F., Víkingsson, G.A., Rasmussen, M.H. and Lusseau, D., 2014. Female body condition affects foetal growth in a capital breeding mysticete. Functional Ecology, 28(3), pp.579-588.* *CoA. 2012. Conservation Management Plan for the Southern Right Whale. Commonwealth of Australia.* *Charlton, C.M. (2017). Population demographics of southern right whales (Eubalaena australis) in southern Australia. Ph.D. thesis. Curtin University, Centre for Marine Science and Technology, Perth, Australia, pp. 171.*
M22	**Matter:** Cumulative impacts to Southern Right Whales **Claim:** Before whaling in Victoria, Southern Right Whales used to give birth in Port Fairy Bay, with up to 30 whales visible in the bay at a time (Honan, 2009). I am hopeful that one day the species may recover and this may happen once again. Every extra project that happens in our ocean that has a harmful impact on our whales, makes it harder and less likely for them to recover. Each one, such as yours, that intends to blast when whales are in the vicinity, adds to the cumulative impact that they have to endure and somehow cope with.	CGG acknowledges claims regarding cumulative impacts on SRW and CGG has reviewed the Environment Plan (EP) to ensure that these impacts are adequately assessed. EP Appendix E10 (Cumulative Impact Assessment) presents a detailed assessment of potential cumulative impacts. The effects of past projects and activities, and currently operating projects, are included in the description of existing condition of, and any pressure or threats affecting, the environment, i.e., any impacts to marine life from current previous activities and projects is inherent within the description of the baseline. The focus of this Cumulative Impact Assessment (CIA) is to further build on these assessments by considering the impacts of the proposed activity on key environmental values and sensitivities in conjunction with the impacts from other reasonably foreseeable future projects. Table E10-3-1 in Appendix E10 of the EP details ongoing and future projects in the Otway offshore region. Potential for cumulative impacts to Southern Right Whales have been specifically addressed in: • Effects of Elevated Levels of Sound to Southern Right Whales (Appendix E10 Section 5.5). With the current uncertainty on the timing of some other projects and the distance of underwater sound affected areas, there is the potential for cumulative impact if the following occur within the migration BIA during the biologically relevant periods (nominally April and October): • Overlap between one seismic survey and one drilling activity for one season. • Consecutive drilling/P&A activities over several seasons. Without appropriate detection and actions in place there is the potential that SRWs could be exposed to underwater sound from two sources (seismic and drilling) within the migration BIA that could result in them expending more energy to move away from the sound source when migrating to and from coastal breeding areas. This could also occur for consecutive years whilst drilling activities are undertaken within the Otway Basin. Detection methodologies and mitigation measures for Southern Right Whales are addressed in EP Appendix G2 (Fauna Management Plan). The assessment concluded that cumulative impacts are not predicted as all draft National Recovery Plan for the Southern Right Whale (DCCEEW 2022) such that actions within and adjacent to SRW BIAs should demonstrate that it does not prevent any SRW from utilising the area or cause injury (TTS and PTS) and/or disturbance. Table E10-5-7 – of EP Appendix E10 contains the full cumulative impacts assessment for Southern Right Whale. Cumulative impacts resulting in an increase in the likelihood of PTS and TTS for a migrating SRW is not predicted due to the small distances to the PTS and TTS noise criteria for drilling activities. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. CGG has assessed the claims pertaining to underwater sound impacts and considers the detailed control measures included in the Fauna Management Plan will reduce the impacts associated with underwater sound to as low as reasonably practicable and acceptable levels. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
Key Matter: Blue Whale		
M23	**Matter:** Impacts to Blue Whales	CGG acknowledges claims regarding underwater noise impacts on Blue Whales/Pygmy Blue Whales (BW) and has reviewed the Environment Plan (EP) to ensure that these impacts are adequately assessed.

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#	**Comments received**	***Titleholder response***
	Claim: This destruction must not be allowed, for so many reasons, largely for the safety and future of the blue whales.	Impacts and risks to marine mammals, including Blue Whales have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) describes the distribution of Blue/Pygmy Blue Whales in and around the operational areas, noting that Pygmy Blue Whales not only occur on the Continental Shelf, but also in deeper waters, and that it is likely that whales occurring throughout this region are taking advantage of the highly productive waters associated with both the Bonney Upwelling and the subtropical convergence as foraging habitat, with peak foraging season occurring from January to April. CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Report) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including Blue Whales. The predicted maximum distances to the PTS 24hr cumulative effect criteria, TTS 24hr cumulative effect criteria and behavioural effect criteria for Blue Whales is 1.98 m, 22.5 km and 9.83 km, respectively. Control measures to reduce impacts to Blue Whales are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). M#01: Activity Limitations stipulates the seismic source will not be discharged in January, February and March. Pygmy Blue Whales and other foraging whales are associated with the Bonney Upwelling which is driven by spring-summer winds that blow from the south-east. It can vary from year to year but typically starts during November and December and retreats in April. Most consultations identified that the upwelling events and the associated increase in biodiversity in the area was a high priority. As a result, CGG will avoid the peak upwelling months of January, February, and March. M#01: Activity Limitations also stipulates the sound source will only be discharged in the Pygmy Blue Whale foraging BIA when low numbers of Pygmy Blue Whales and other foraging whales are in the BIA. Control measure M#03: Fauna Management System outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. The Fauna Management Plan (FMP) (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. CGG will establish an expert panel of independent and qualified experts in Southern Right Whales and BW. The aim of the expert panel is to provide advice and recommendations on the FMP Implementation Plan. The Fauna Management Plan (EP Appendix G2, Table G2.2) provides further details on the expert panel. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including these species and identifies: • As the Regia MSS will only occur during one season when Blue Whales are present in Australia waters, and permanent or temporary hearing loss and/or displacement of Blue Whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (Appendix G2). The Regia MSS will not impact on the recovery of the population. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. CGG has assessed the claims pertaining to underwater sound impacts and considers the detailed control measures included in the Fauna Management Plan will reduce the impacts associated with underwater sound to as low as reasonably practicable and acceptable levels. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
M24	**Matter:** Impacts to migrating Blue Whales **Claim:** Of particular concern the proposal\'s impact on endangered whale species. The operational schedule outlined by CGG would coincide with critical periods for pygmy blue whales, including calving and feeding seasons. These whales, already facing significant threats due to historical whaling and habitat degradation, cannot afford further disturbances to their essential habitats and migration routes. Seismic blasting during these sensitive periods would not only disrupt their natural behaviours but also jeopardize their chances of survival and recovery.	CGG acknowledges claims regarding underwater noise impacts on migrating Blue Whales and has reviewed the Environment Plan (EP) to ensure that these impacts are adequately assessed. Refer to the following responses: • Migratory patterns of Blue Whales to the Otway are extensively addressed in response to Matter: M03. • Underwater sound impacts to blue whales and control measures are extensively addressed in response to Matter: M23. The area that may be affected by underwater sound is within the Pygmy Blue Whale foraging (annual high use) BIA (Appendix B12 MAP-REG-EPM-068). Blue Whales predominately occur in this area between January to April (DoE 2015e) though they have been recorded in the Otway area as early as October and as late as June. Control measures to reduce impacts to Blue Whales are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). #01: Activity Limitations stipulates the seismic source will not

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
		be discharged in January, February and March. Pygmy Blue Whales and other foraging whales are associated with the Bonney Upwelling which is driven by spring-summer winds that blow from the south-east. It can vary from year to year but typically starts during November and December and retreats in April. Most consultations identified that the upwelling events and the associated increase in biodiversity in the area was a high priority. As a result, CGG will avoid the peak upwelling months of January, February, and March. M#01: Activity Limitations also stipulates the sound source will only be discharged in the Pygmy Blue Whale foraging BIA when low numbers of Pygmy Blue Whales and other foraging whales are in the BIA off Otway. Control measure M#03: Fauna Management System (Appendix G2) outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. The Fauna Management Plan (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. CGG will establish an expert panel of independent and qualified experts in SRW and BW. The aim of the expert panel is to provide advice and recommendations on the FMP Implementation Plan. The Fauna Management Plan (EP Appendix G2, table G2.2) provides further details on the expert panel. CGG has assessed the claims pertaining to underwater sound impacts and considers the detailed control measures included in the Fauna Management Plan (Appendix G2) will reduce the impacts associated with underwater sound to as low as reasonably practicable and acceptable levels. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims.
M25	**Matter:** Overlap of the operational area with Blue Whale Biologically Important Area **Claim:** The proposed survey area is a critical feeding habitat for endangered blue whale species and southern right whale (as well as other baleen whales), which very seldom vocalise in the feeding grounds. Seiche Environmental (2020) Marine Mammal Monitoring Report - Seabird 2D Seismic Survey, Otway Basin, Australia. Obtained under Freedom of Information, July 2023". **Claim:** Table 37 (page 235) in the EP shows seismic activity taking place in the OA directly over Baleen Whale habitat and Biologically Important Areas (BIA) including the Bonney Upwelling, threatening EPBC listed species. **Claim:** The endangered pygmy blue whale comes to the Southern Ocean to feed from October to June, directly within the operating area for this project. **Claim:** The submitter recommends CGG amends the impact assessment and mitigation actions to address their concerns and ensure all blue whales can continue to use the BIA without injury. **Claim:** There is evidence that blue whales feed year round (Moller et al., 2020). It is therefore essential that no seismic acquisition occurs within the BIA at any time of year. **Claim**: Pygmy blue whales must be able to use BIAs free of threat, harm or injury from seismic blasting exploration activities, according to EPBC Policy Statement 2.1. Based on the growing evidence of year round habitation of the OA by pygmy blue whales, seismic exploration in this area poses unacceptable risk.	CGG acknowledges claims regarding the overlap of the operational area with Blue Whale BIA and has reviewed the Environment Plan (EP) to ensure that these impacts are adequately assessed. Pygmy Blue Whales and other foraging whales are associated with the Bonney Upwelling which is driven by spring-summer winds that blow from the south-east. It can vary from year to year but typically starts during November and December and retreats in April. Most consultations identified that the upwelling events and the associated increase in biodiversity in the area was a high priority. CGG acknowledges that the area that may be affected by underwater sound is within the Pygmy Blue Whale foraging (annual high use) BIA (Appendix B12 MAP-REG-EPM-068). Blue Whales predominately occur in this area between January to April (DoE 2015e) though they have been recorded in the Otway area as early as October and as late as June. Impacts and risks to marine mammals, including Blue Whales, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). Measures adopted to ensure environmental impacts will be of an acceptable level and as low as reasonably practicable (ALARP) are detailed in these appendices. Control measures to minimise impacts to blue whales are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). #01: Activity Limitations stipulates the seismic source will not be discharged in January, February and March. Pygmy Blue Whales and other foraging whales are associated with the Bonney Upwelling which is driven by spring-summer winds that blow from the south-east. It can vary from year to year but typically starts during November and December and retreats in April. Most consultations identified that the upwelling events and the associated increase in biodiversity in the area was a high priority. As a result, CGG will avoid the peak upwelling months of January, February, and March. During this time permanent or temporary hearing loss and/or displacement of blue whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (EP Appendix G2). Furthermore, it has been suggested that Blue Whales may continue to forage within 2.5 km of an operating seismic survey if resources are abundant enough to outweigh the physical and energetic costs of acoustic disturbance (Burton *et al* 2023). M#01: Activity Limitations also stipulates the sound source will only be discharged in the Pygmy Blue Whale foraging BIA when low numbers of Pygmy Blue Whales and other foraging whales are in the BIA off Otway. Control measure M#03: Fauna Management System (Appendix G2) outlines whale detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. The Fauna Management Plan (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
		CGG will establish an expert panel of independent and qualified experts in SRW and BW. The aim of the expert panel is to provide advice and recommendations on the FMP Implementation Plan. The Fauna Management Plan (EP Appendix G2, table G2.2) provides further details on the expert panel. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including these species and identifies: • As the Regia MSS will only occur during one season when Blue Whales are present in Australia waters, and permanent or temporary hearing loss and/or displacement of Blue Whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (Appendix G2). The Regia MSS will not impact on the recovery of the population. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. The control measures outlined in the EP along with the Fauna Management Plan will ensure anthropogenic threats to Blue Whales inside the BIA are minimised. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References:*** *Burton, C., Bouchet, P.J., Gill, P. and Marley, S.A., 2023. Evidence of likely foraging by pygmy blue whales in the Timor Trough during the late austral winter and early austral spring. Marine Ecology Progress Series, 718, pp.99-117.*
M26	**Matter:** The Environment Plan is inconsistent with the Blue Whale Management Plan. **Claim**: The submitter and their many community members and supporters contend that the EP is inconsistent with the Blue Whale Conservation Management Plan. **Claim:** The proposed management procedures are inconsistent with the Blue Whale Conservation Management Plan. Action Area A.2 of the Management Plan states “Anthropogenic noise in biologically important areas will be managed such that any blue whale con6nues to utilise the area without injury, and is not displaced from a foraging area.” This quote stipulates that any and all blue whales, at any time of year, can use the BIA without injury or displacement.	CGG acknowledges claims regarding requirements for titleholders to undertake their activity in a manner that is not inconsistent with the Blue Whale Conservation Management Plan and has reviewed the Environment Plan (EP) to ensure this is adequately addressed. To reduce impacts to Blue Whales within the BIA, CGG established Control measure M#01: Activity Limitations (EP Appendix G2). M#01: Activity Limitations stipulates the seismic source will not be discharged in January, February and March. Pygmy Blue Whales and other foraging whales are associated with the Bonney Upwelling which is driven by spring-summer winds that blow from the south-east. It can vary from year to year but typically starts during November and December and retreats in April. Most consultations identified that the upwelling events and the associated increase in biodiversity in the area was a high priority. As a result, CGG will avoid the peak upwelling months of January, February, and March. M#01: Activity Limitations also stipulates the sound source will only be discharged in the Pygmy Blue Whale foraging BIA when low numbers of Pygmy Blue Whales and other foraging whales are in the BIA off Otway. Control measure M#03: Fauna Management System (Appendix G2) outlines whale and dolphin detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. The Fauna Management Plan (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. CGG will establish an expert panel of independent and qualified experts in SRW and BW. The aim of the expert panel is to provide advice and recommendations on the FMP Implementation Plan. The Fauna Management Plan (EP Appendix G2, table G2.2) provides further details on the expert panel. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. The control measures outlined in the EP along with the Fauna Management Plan will ensure the EP is consistent with the Blue Whale Management Plan. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
Key Matter: Pinnipeds		
M27	**Matter:** Underwater sound impacts to seals	CGG acknowledges claims regarding underwater sound impacts to seals from the Regia MSS and have reviewed the Environment Plan (EP) to ensure that impacts to these species are adequately assessed.

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#	**Comments received**	***Titleholder response***
	Claim: Problems that I foresee include: Harming the seals directly with blasts. (I have heard of seal death accounts from other seismic blasting projects). **Claim:** Problems that I foresee include: Creating more difficult conditions in which to communicate and hunt that rely on use of hearing and sound detection. **Claim:** Causing stress to seals with the incessant loud blasts day and night, especially as they don't usually go back to land overnight and stay at sea to forage for a number of days. **Claim:** Problems that I foresee include: Providing another layer of more challenging conditions in which to survive and try to recover as a species. **Claim:** The Australian Fur Seals of Deen Maar are already under significant threat and having difficulty recovering as a population due a number of different threats they already face. Having another environmentally destructive activity added to the list of threats they already face in a highly used area upon which they heavily rely for their survival is a problem for them, as it will ADD to the difficulties they will face in trying to locate sufficient food to be healthy and raise a healthy generation of pups. **Claim:** There is an absence of knowledge regarding the impact of seismic blasts on marine seals and we request that CGG conduct further studies into the impact of seismic blasts on seals, before conducting any seismic blasts. **Claim:** Recommendations: Request studies into the effects of seismic blasts on seal health, behaviours and populations. **Claim:** Some potential effects of seismic blasting to local species of significance are: There are 4 seal species known to most frequently inhabit the ocean off the coast of Western Victoria; Australian Fur Seals, Long-Nosed Fur Seals, Southern Elephant Seals and Sub-Antarctic Fur Seals. **Claim:** In general, seismic blasting is a concern for seals because: It can damage the seals' hearing or even kill at close range. **Claim:** It may interfere with the seals being able to locate food in ways in which rely on hearing. **Claim:** It may interfere with communication between seals that rely on sound detection. **Claim:** It may well prevent seals from foraging in specific locations upon which they rely for their food, where they visit in their greatest densities. **Claim:** So how can CGG conduct its seismic blasting project in such a way that individual seals (as they are ALL protected, not just the species as a whole) will not be harmed directly or indirectly? **Claim:** Australian Fur Seals are PROTECTED BY LAW and not to be harmed, either directly or indirectly. CGG would be irresponsible and negligent to not consider the effects that their seismic blasting will have on the seals and to take action that is constructive in ensuring that they don't cause further challenges for this seal colony. **Claim:** Endangered Australian sea lions, Australian fur seals, and little penguins are at risk from seismic blasting.	Impacts and risks to marine mammals, including seals, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). CGG carried out a Protected Matters Search Tool (PMST) search and found three species of seal with the potential to occur within the Active Source Area, as detailed in Environment Plan (EP) (Appendix B5 PMST Reports). The Australian Fur-seal (*Arctocephalus pusillus*) was listed as breeding known to occur within area, the New Zealand Fur-seal (*Arctocephalus forsteri*) and the Australian Sea-lion (*Neophoca cinerea*) were listed as species that may occur within the Active Source Area. The Australian Sea-lion (*Neophoca cinerea*) is listed as 'endangered' under the Environment Protection and Biodiversity Conservation Act 1999. In Victorian waters Australian Fur-seal breed on offshore islands, including Lady Julia Percy Island, Seal Rocks in Westernport Bay, Kanowna and Rag Islands off the coast of Wilson's Promontory and The Skerries off Wingan Inlet in Gippsland. In Tasmanian waters they breed on Reid Rocks. There are important breeding sites on Lady Julia Percy Island and Seal Rocks, with 25% of the population occurring at each of these islands. Their preferred breeding habitat is a rocky island with boulder or pebble beaches and gradually sloping rocky ledges. Lady Julia Percy Island is within the area that may be affected by underwater sound. The Australian Sea Lion is a specialised benthic forager, primarily feeding on the sea floor (DSEWPaC 2013). The Australian Sea Lion feeds on the continental shelf, most commonly in depths of 20–100 m, with adult males foraging further and into deeper waters (DSEWPaC 2013). They typically feed on a range of prey including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobster and penguins (DSEWPC 2013) They typically forage up to 60 km from their colony but can travel up to 190 km when over shelf waters (Shaughnessy 1999). CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Report) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including seals. The effect criteria for PTS and TTS for these species was not reached. The effect criteria for TTS for these species was not reached for the per pulse criteria and was only reached at 60 m from the sound source for the 24 hr cumulative effect criteria. It is highly unlikely that a seal or sea lion would stay within 60 m of the sound source for up to 24 hr, thus TTS impacts are not predicted. Impacts to seals or sea lions are limited to avoidance behaviour within an area between 2.91 – 11.8 km depending on where in the Operational Area the survey is being undertaken. As seals and sea lions are not dependent on any specific area within the area affected impacts may occur to individuals but not at a level to reduce fitness. Control measures to reduce impacts to Australian Fur-seal and the Australian Sea Lion are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). #01: Activity Limitations stipulates the sound source will not be discharged within 17 km of Lady Percy Julia Island / Deen Maar. 11.8 km is the furthest distance to sound effect criteria for pinnipeds (seals and sea lions). The increased protections afforded through the 17 km buffer are considered highly conservative to minimise disturbance of breeding seals in recognition that this is the largest Australian Fur Seal breeding colony in Australia. CGG will also implement soft starts, where prior to acquisition commencing the sound source power is ramped up over 30 minutes. This measure reduces the risk that seals or sea lions are within distances that PTS or TTS could occur. CGG has reviewed relevant literature and has noted the Southern Elephant Seals and Sub-Antarctic Fur Seals are subantarctic species. The Southern Elephant Seal has a nearly circumpolar distribution and visits subantarctic islands to breed and to moult. There are two main populations found in Australian waters and the principal breeding colonies for these populations are located on Heard and Macquarie Islands (Shaughnessy 1999; McMahon et al. 2005). Southern Elephant Seals concentrate on the northern beaches of Macquarie Island, although colonies are scattered around the island (DEH 2003). In the Australian Antarctic Territory, small numbers of pups have been reported from Browning Peninsula and Peterson Island, near Casey station (Murray 1981 cited in Shaughnessy 1999), and there has been a well-frequented haul-out area at Vestfold Hills (Burton 1985). Off the coast of mainland Australia, several pups have been born and many animals recorded on Maatsuyker Island (located at the most southern end, off the south-west coast of Tasmania) (Shaughnessy 1999). The subantarctic fur seal is a small, carnivorous marine mammal. In Australian waters, the subantarctic fur seal breeds, moults and hauls out mainly on Macquarie Island, but individuals range widely and occasionally reach the beaches of Tasmania and mainland Australia (DEH 2003g). Breeding colonies are only found at Macquarie Island (Shaughnessy et al. 1988; Goldsworthy 1999). Subantarctic fur seal individuals haulout at Heard Island, and one pup was born in each of 1987, 2000 and 2003 (Woinarski et al. 2014). Very few immigrants from large breeding colonies in the western Indian Ocean visit Australia (Woinarski et al. 2014). The Southern Elephant and the Seal Sub-Antarctic Fur Seals did not come up in the PMST search (see EP Appendix B5 PMST Reports), thus the likelihood of encountering the species during the Regia MSS is low and impacts to these species is not predicted. The Long-Nosed-Fur-Seal is a an Otariid pinniped and impacts to Otariid pinnipeds are assessed in Section 6.4 (Otariid Pinnipeds) of Appendix E7 of the EP (Impact Assessment – Underwater Sound: Marine Mammals). Impacts to this species are not predicted.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
		The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. The control measures outlined in the EP will ensure anthropogenic threats to seals are minimised. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *Burton, H.R. (1985). Tagging studies of male southern elephant seals (Mirounga leonina L.) in the Vestfold Hills area, Antarctica, and some aspects of their behaviour.* ***In:*** *Ling, J.K. & Bryden M.M., eds. Studies of sea mammals in south latitudes. Page(s) 19-30. Adelaide, South Australian Museum.* *Department of the Environment and Heritage (DEH) (2003g). Sub-Antarctic Fur Seal and Southern Elephant Seal Recovery Plan - Background Paper. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/seals.html.* *DSEWPaC. 2013. Recovery Plan for the Australian Sea Lion (Neophoca cinerea). Department of Sustainability, Environment, Water, Population and Communities. Commonwealth of Australia.* *Goldsworthy, S. (1999). Maternal attendance behaviour of sympatrically breeding Antarctic and subantarctic fur seals, Arctocephalus spp., at Macquarie Island. Polar Biology. 21:316-325.* *McMahon, C.R., M.N. Bester, H.R. Burton, M. A. Hindell & C.J.A Bradshaw (2005). Population status, trends and a re-examination of the hypotheses explaining the recent declines of the southern elephant seal Mirounga leonina. Mammal Review. 35:82-100.* *Shaughnessy, P.D., G.L. Shaughnessy & L. Fletcher (1988a). Recovery of the fur seal population at Macquarie Island. Papers and Proceedings of the Royal Society of Tasmania. 122:177-187.* *Shaughnessy PD. 1999. The Action Plan for Australian Seals. CSIRO Wildlife and Ecology, Natural Heritage Trust, Environment Australia.* Woinarski, J., A. Burbidge & P. Harrison (2014). *The Action Plan for Australian Mammals 2012*. CSIRO Publishing, Victoria, Australia.
M28	**Matter**: Underwater sound impacts to Australian Sea Lions **Claim**: CGG will argue that the sea lions will choose to avoid the seismic blasted area when they experience discomfort from the sound source, but why should they have to when they are ENDANGERED and we are supposed to be protecting them? They may be restricted from locations that they actually need to feed to find enough food to be healthy. **Claim**: The Australian Sea Lion is listed as Endangered under the EPBC Act and its current estimated population size makes it the rarest pinniped in the world. Foraging by this species is known to occur from coastal waters (20-100m depth) to continental shelf areas within the CGG Environment Planning Area. **Claim:** Endangered Australian sea lions, Australian fur seals, and little penguins are at risk from seismic blasting. **Claim:** I am particularly concerned about the impact endangered endangered lions along with the other unique life.	CGG acknowledges claims regarding impacts to Australian Sea Lions from the Regia MSS and have reviewed the Environment Plan (EP) to ensure that impacts to these species are adequately assessed. Refer to the following responses: • Impacts associated with underwater noise and Australian Sea Lions are extensively addressed in response to Matter: M03. • Impacts associated with underwater noise and Little Penguins are extensively addressed in response to Matter: B01. Impacts and risks to marine mammals, including seals, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). The Australian Sea Lion is a specialised benthic forager, primarily feeding on the sea floor (DSEWPaC 2013). The Australian Sea Lion feeds on the continental shelf, most commonly in depths of 20–100 m, with adult males foraging further and into deeper waters (DSEWPaC 2013). They typically feed on a range of prey including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobster and penguins (DSEWPC 2013) They typically forage up to 60 km from their colony but can travel up to 190 km when over shelf waters (Shaughnessy 1999). CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Reports) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including Australian Sea Lion. The effect criteria for PTS for these species was not reached. The effect criteria for TTS for these species was not reached for the per pulse criteria and was only reached at 60 m from the sound source for the 24 hr cumulative effect criteria. It is highly unlikely sea lions would stay within 60 m of the sound source for up to 24 hr, thus TTS impacts are not predicted. Impacts to sea lions are limited to avoidance behaviour within an area between 2.91 – 11.8 km depending on where in the Operational Area the survey is being undertaken. As seals and sea lions are not dependent on any specific area within the area affected impacts may occur to individuals but not at a level to reduce fitness. CGG will implement soft starts, where prior to acquisition commencing the sound source power is ramped up over 30 minutes. This measure reduces the risk that seals or sea lions are within distances that PTS or TTS could occur. The control measures outlined in the EP will ensure anthropogenic threats to sea lions are minimised. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

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		References: *DSEWPaC. 2013. Recovery Plan for the Australian Sea Lion (Neophoca cinerea). Department of Sustainability, Environment, Water, Population and Communities. Commonwealth of Australia.* *Shaughnessy PD. 1999. The Action Plan for Australian Seals. CSIRO Wildlife and Ecology, Natural Heritage Trust, Environment Australia.*
M29	**Mater:** Impacts to pinniped food sources **Claim:** Problems that I foresee include: Interfering with the seal's food supply directly, such as scaring off fish (Davis, 2020). **Claim:** Problems that I foresee include: Killing off future food supply of fish larvae in the zooplankton (McCauley et.al, 2017). **Claim:** It is also unknown how the seismic blasting will affect next generations of their food supplies and whether this will result in insufficient prey in following seasons to feed this already struggling colony of significance. **Claim**: Also, like the seals, sea lions food supply may well be scared off, reduced or killed, making their chance of survival and recovery as a species harder and less likely. **Claim:** It may well be a concern because of the seal's food supply being killed directly or indirectly from zooplankton being killed (McCauley et.al., 2017) and the flow on effect up the food chain.	CGG acknowledges claims regarding impacts to pinniped food sources from the Regia MSS and has reviewed the Environment Plan (EP) to ensure that impacts to these species are adequately assessed. Research being undertaken at Lady Julia Percy Island indicates that adult females Australian Fur-Seals feed extensively in the waters between Portland and Cape Otway, out to the 200 m bathymetric contour. Seal numbers on the island reach a maximum during the breeding season in late October to late December. By early December, large numbers of lactating females are leaving for short feeding trips at sea and in late December there is an exodus of adult males. Thereafter, lactating females continue to alternate between feeding trips at sea and periods ashore to suckle their pups. Even after pups begin to venture to sea, the island remains a focus, and at any time during the year groups may be seen ashore resting (Robinson et al. 2008, Hume et al. 2004, Arnould & Kirkwood 2007). Studies have shown Australian Fur-Seal females to be almost exclusively benthic foragers, feeding on a wide range of prey including bony fish cephalopods and elasmobranchs (Arnould & Hindell 2001, Kirkwood et al. 2008, Deagle et al. 2009). The Australian Sea Lion is a specialised benthic forager, primarily feeding on the sea floor (DSEWPaC 2013). The Australian Sea Lion feeds on the continental shelf, most commonly in depths of 20–100 m, with adult males foraging further and into deeper waters (DSEWPaC 2013). They typically feed on a range of prey including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobster and penguins (DSEWPC 2013) They typically forage up to 60 km from their colony but can travel up to 190 km when over shelf waters (Shaughnessy 1999). Impacts to pinniped food sources including impacts to invertebrates, fish and elasmobranchs are assessed in Matter F01, F04, and F07. Impacts to pinniped food sources including penguin are assessed in Matter B01 and impacts to zooplankton are assessed in Matter P05. Impacts to zooplankton as a food source is assessed in Matter P07. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References:*** *Arnould, J.P.Y.A., Boyd, I., Rawlins, D. and Hindell, M., 2001. Variation in maternal provisioning by lactating Antarctic fur seals (Arctocephalus gazella): response to experimental manipulation in pup demand. Behavioral ecology and sociobiology, 50, pp.461-466.* *Arnould, J.P. and Kirkwood, R., 2007. Habitat selection by female Australian fur seals (Arctocephalus pusillus doriferus). Aquatic Conservation: Marine and Freshwater Ecosystems, 17(S1), pp.S53-S67.* *DSEWPaC. 2013. Recovery Plan for the Australian Sea Lion (Neophoca cinerea). Department of Sustainability, Environment, Water, Population and Communities. Commonwealth of Australia.* *Deagle, B.E., Kirkwood, R. and Jarman, S.N., 2009. Analysis of Australian fur seal diet by pyrosequencing prey DNA in faeces. Molecular ecology, 18(9), pp.2022-2038.* *Hume F, Hindell MA, Pemberton D & Gales R. 2004. Spatial and temporal variation in the diet of a high trophic level predator, the Australian fur seal (Arctocephalus pusillus doriferus). Marine biology. Vol. 144, no. 3, pp. 407-415.* *Kirkwood, R., Hume, F. and Hindell, M., 2008. Sea temperature variations mediate annual changes in the diet of Australian fur seals in Bass Strait. Marine Ecology Progress Series, 369, pp.297-309.* *Robinson S, Gales R, Terauds A & Greenwood M. 2008. Movements of fur seals following relocation from fish farms. Aquatic Conservation: Marine and Freshwater Ecosystems. Vol. 18, no. 7, pp. 1189-1199.* *Shaughnessy PD. 1999. The Action Plan for Australian Seals. CSIRO Wildlife and Ecology, Natural Heritage Trust, Environment Australia.*
M30	**Matter:** Impacts to juvenile seals **Claim:** CGG has not investigated whether the ears and hearing ability of seal pups are more sensitive to seismic blasting compared to adults. This must be investigated given the proposed activities will take place in close proximity to pupping grounds.	CGG acknowledges claims regarding underwater sound impacts to juvenile seals from the Regia MSS and has reviewed the Environment Plan (EP) to ensure that impacts to seal pups are adequately assessed. Impacts to marine mammals, including seals, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). CGG carried out a Protected Matters Search Tool (PMST) search and found three species of seal with the potential to occur within the Active Source Area, as detailed in Environment Plan (EP) (Appendix B5 PMST Reports), including the Australian Fur-Seal (*Arctocephalus pusillus*), with breeding known to occur within area. In Victorian waters Australian Fur-Seal breed at a number of offshore islands. In Tasmanian

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	Claim: Causing some harm, such as killing some of the seals, or preventing them from foraging from their hot spots, or impacting their food supply to a level that affects them negatively for that season or any future seasons or damaging the young seals' hearing, is not acceptable. **Claim:** Problems that I foresee include: Especially when closer to Deen Maar, potentially causing harm to the hearing of juvenile seals that are learning to forage or foraging within a smaller range from Deen Maar. Due to their smaller size, their ears may be more sensitive and more susceptible to harm from loud noise. **Claim:** Investigate whether the ears and hearing ability of seal pups are more sensitive to seismic blasting compared to adults.	waters they breed at Reid Rocks. Twenty-five percent of the population occurs on Lady Julia Percy Island/ Deen Maar and Seal Rocks, with only Lady Julia Percy Island /Deen Maar being within the area that may be affected by underwater sound. Fur-seals are present in the region all year, with breeding taking place during November and December. Research being undertaken at Lady Julia Percy Island indicates that adult females feed extensively in the waters between Portland and Cape Otway, out to the 200 m bathymetric contour. Seal numbers on the island reach a maximum during the breeding season in late October to late December. By early December, large numbers of lactating females are leaving for short feeding trips at sea and in late December there is an exodus of adult males. Thereafter, lactating females continue to alternate between feeding trips at sea and periods ashore to suckle their pups. Even after pups begin to venture to sea, the island remains a focus, and at any time during the year groups may be seen ashore resting (Robinson et al. 2008, Hume et al. 2004, Arnould & Kirkwood 2007). CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7: Sound Modelling Report) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including seals. The effect criteria for Permanent Threshold Shift (PTS) for these species was not reached. The effect criteria for Temporary Threshold Shift (TTS) for these species was also not reached for the per pulse criteria and was only reached within 60 m from the sound source for the 24 hr cumulative effect criteria. Given it is highly unlikely that a seal (adult or juvenile) would stay within 60 m of the moving sound source for up to 24 hr, TTS impacts are not predicted. Consequently, impacts to seals are limited to avoidance behaviour out to 2.91 – 11.8 km distance from the acoustic source, depending on where in the Operational Area the survey is being undertaken, affecting individuals but not at a level to reduce fitness. Control measures to reduce impacts to seals are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). **Information in the EP Appendix E7 (Impact Assessment – Underwater Sound Marine Mammals) has been updated as follows:** • **M#01: Activity Limitations, has been updated to reflect that the sound source will not be discharged within 17 km of Lady Percy Julia Island / Deen Maar. A 10.3km buffer from Deen Maar was initially applied to reduce risks and impacts to Australian Fur Seals to ALARP and an Acceptable level. This effect distance for pinnipeds was based on the initial modelling conducted for the activity (see Appendix B7a). The commissioning of subsequent modelling (see Appendix B7b Sound Emissions Secondary Modelling Report) has provided further insights relevant to the management of this species. The secondary modelling was undertaken in response to consultation with commercial divers mainly to address constraining the sound source operation to water depths of no shallower than 50 m. Results from this work show that behavioural sound effect criteria for pinnipeds is now reached at a maximum of 11.8 km from the sound source. As the survey area is a minimum of 17km from the closest haul out site (Deen Maar), behavioural impacts to pinnipeds at this location are no longer predicted.** • **CGG has committed to not conducting the survey in the high productivity months of January-March which represents an important period when lactating females are alternating between feeding trips at sea and periods ashore to suckle their pups.** **EP Appendix F1 (Environmental Plan) has also been updated to amend the buffer to Deen Maar to 17km.** Further, CGG will also implement soft starts where, prior to acquisition commencing, the sound source power is ramped up over 30 minutes, to reduce the risk of startle response (as identified in EP Appendix B8 (Seismic Studies Report)) and ensure no seals (adults or pups) are within effect distances whereby the onset of PTS or TTS could occur. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to levels that are as low as reasonably practicable and acceptable in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. The control measures outlined in the EP will ensure anthropogenic threats to both adult and juvenile seals are minimised. Further, CGG has extended the buffer around Lady Julia Percy /Deen Maar Island such that behavioural impacts to breeding Australian fur-seals will be reduced.
M31	**Matter:** Displacement of Deen Maar and Portland seal colonies **Claim:** I am especially concerned about the impact of seismic on the Australian Fur Seal colony on Dean Maar, in particular disruption to feeding practices due to displacement as a result of seismic blasting within the area proposed by CGG, which overlaps this colony\'s year-round continental shelf foraging grounds to a significant extent. See research conducted by Arnould & Kirkwood (2008/2011). **Claim:** Prey directly around the colony site is typically reduced in a halo effect in colonies with high populations (Kirkwood & Arnould, 2011). So even though CGG	CGG acknowledges claims regarding impacts to seals associated with the Regia MSS and have reviewed the EP to ensure impacts to seals are adequately assessed. Impacts to marine mammals, including seals, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). CGG carried out a Protected Matters Search Tool (PMST) search and found three species of seal with the potential to occur within the Active Source Area, as detailed in Environment Plan (EP) (Appendix B5 PMST Reports), including the Australian Fur-seal (*Arctocephalus pusillus*), with breeding known to occur within area. The presence of Australian fur seals is described in EP Appendix E7 Section 4.1:

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	is providing a seismic blasting buffer of 10.3km from Deen Maar, this area is likely to have a low amount of food for the seals to persist on, and so the seals generally forage much further afield. **Claim:** Portland is home to a seal colony as is Deen Marr Indigenous Protected Area and in previous studies they have shown avoidance of their preferred feeding areas during seismic activities, leading to increased effort for their overall foraging. The impact of this on the health and longevity of seals is unknown. Longer-term repercussions on hearing cannot be ruled out (9) (9) https://www.cbd.int/doc/meetings/mar/mcbem-2014-01/other/mcbem-2014-01-su bmission-seismic-airgun-en.pdf. **Claim:** Interestingly, when overlaid with the CGG map, there is a very strong match up of the required foraging hot spot for the seal mothers of Deen Maar and the area that is proposed to be seismic blasted by CGG. Here is an approximate sketch that I drew up showing seal colony locations of Western Victoria, the continental shelf boundary, the CGG area and the foraging zone (not including density levels) of the female mother seals: Ref Kirkwood & Arnould, 2011. **Claim:** This Australian Fur Seal colony is significant for the species, the balance of the local marine ecosystem and for community in our local area. It needs serious consideration to ensure this project does not negatively impact it.	• In Victorian waters they [Australian Fur-seals] breed on offshore islands, including Lady Julia Percy Island (Deen Maar), Seal Rocks in Westernport Bay, Kanowna and Rag Islands off the coast of Wilson's Promontory and The Skerries off Wingan Inlet in Gippsland. In Tasmanian waters they breed on Reid Rocks. • There are important breeding sites on Lady Julia Percy Island and Seal Rocks, with 25% of the population occurring at each of these islands. • Australian Fur-seals are present in the region all year, with breeding taking place during November and December. • Research being undertaken at Lady Julia Percy Island indicates that adult females feed extensively in the waters between Portland and Cape Otway, out to the 200 m bathymetric contour. • Lady Julia Percy Island is within the area that may be affected by underwater sound. Control measures to reduce impacts to seals are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). **Information in the EP Appendix E7 (Impact Assessment – Underwater Sound Marine Mammals) has been updated as follows:** • **M#01: Activity Limitations, has been updated to reflect that the sound source will not be discharged within 17 km of Lady Percy Julia Island / Deen Maar. A 10.3km buffer from Deen Maar was initially applied to reduce risks and impacts to Australian Fur Seals to ALARP and an Acceptable level. This effect distance for pinnipeds was based on the initial modelling conducted for the activity (see Appendix B7a). The commissioning of subsequent modelling (see Appendix B7b Sound Emissions Secondary Modelling Report) has provided further insights relevant to the management of this species. The secondary modelling was undertaken in response to consultation with commercial divers mainly to address constraining the sound source operation to water depths of no shallower than 50 m. Results from this work show that behavioural sound effect criteria for pinnipeds is now reached at a maximum of 11.8 km from the sound source. As the survey area is a minimum of 17km from the closest haul out site (Deen Maar), behavioural impacts to pinnipeds at this location are no longer predicted.** • **CGG has committed to not conducting the survey in the high productivity months of January-March which represents an important period when lactating females are alternating between feeding trips at sea and periods ashore to suckle their pups.** **EP Appendix F1 (Environmental Plan) has also been updated to amend the buffer to Deen Maar to 17km.** Further, CGG will also implement soft starts where, prior to acquisition commencing, the sound source power is ramped up over 30 minutes, to reduce the risk of startle response (as identified in EP Appendix B8 (Seismic Studies Report)) and ensure no seals are within effect distances whereby the onset of Permanent Threshold Shift (PTS) or Temporary Threshold Shift (TTS) could occur. The EP recognises the important foraging area between Portland and Cape Otway as detailed by Kirkwood and Arnold (2011), 'Research being undertaken at Lady Julia Percy Island indicates that adult females feed extensively in the waters between Portland and Cape Otway, out to the 200 m bathymetric contour' (EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals)). The map referenced in this matter focuses on this foraging area, which is a 20 km strip out to 120 km. Kirkwood and Arnold (2011) note that seals from Lady Julia Percy Island tend to forage south-east of the colony between 60-200 m depth. The foraging area overlaps the Regia MSS. Modelling was conducted by internationally renowned underwater noise specialist, Jasco Applied Sciences, for the EP (Appendix B7 - Sound Modelling Report) to assist in understanding the potential acoustic impacts on key regional receptors including pinnipeds. The effect criteria for PTS for these species was not reached. The effect criteria for TTS for these species was also not reached for the per pulse criteria and was only reached within 60 m from the sound source for the 24 hr cumulative effect criteria. Given it is highly unlikely that a seal would stay within 60 m of the moving sound source for up to 24 hr, TTS impacts are not predicted. Consequently, impacts to seals are limited to avoidance behaviour out to 2.91 – 11.8 km distance from the moving acoustic source, depending on where in the Operational Area the survey is being undertaken, affecting individuals but not at a level to reduce fitness. **In response to Matter: M31, the following changes have been made to the EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals):** **Section 4.1 has been updated to add the following:** **A study on the foraging behaviour of seals from the colony at Lady Julia Percy Island found that lactating Australian Fur-seals tended to search for prey south-east of their colony at 60- 200 m depth (Kirkwood and Arnould, 2011). The Regia MSS Operational Area may overlap foraging areas for the Australian Fur-seal.** **Section 6.4 has been amended to revise a bullet point as follows:** **Impacts to seals or sea lions are limited to avoidance behaviour within an area between 2.91 – 11.8 km depending on where in the Operational Area the survey is being undertaken. The Regia MSS Operational Area may overlap foraging areas for the Australian Fur-seal.** **EP Appendix F1 (Environmental Plan) has also been updated to amend the buffer to Deen Maar to 17km.**

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		No changes to the overall assessment of impacts or the selection of mitigation measures is required as a result of these changes. The literature referenced in this claim highlights impacts to foraging behaviours of Gray Seals and Harbour Seals based on a 1998 study (Thompson et. al. 1998 cited in Weilgart, 2013). Appendix B8 (Seismic Studies Report) includes references to several studies on the impacts of seismic on Grey Seals, Harbour Seals and phocid seals (Gotz et. al. 2009; Harris et al. 2001). Gotz et. al. (2009) recorded immediate, but short-term startle responses in two seals, with behaviour returning to normal soon after each trial. Harris et. al. undertook monitoring studies on phocid seals s (more sensitive to sound than otariid pinnipeds) and observed: • During daylight hours seals were seen at nearly identical rates during periods where there were no air guns firing, one air gun firing and the full array operational. • Seals tended to be further away during full array seismic. Swimming away was more common during full array operation than no air gun periods, but relative behaviours (looked, approached, swam parallel to boat's track, dive or swam away when full array was firing) did not differ significantly among the distance categories. • Approximately 79% of seal sightings were within 250 m of the seismic vessel. There was partial avoidance of the zone less than 150 m from the vessel during full array seismic, but seals did not move much beyond 250 m at any time. • Received levels of noise pulses from the full array were ≥180 dB SPL out to a radius of 1 km. Despite this, many seals showed little or no obvious avoidance and no obvious tendency to avoid diving (Appendix B8 Seismic Studies Report). As described above, mitigation measures have been implemented to reduce potential impacts to seals from noise associated with the Regia MSS. Reputable literature and acoustic modelling has been used to inform impact assessment and mitigation measures. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to levels that are as low as reasonably practicable and of an acceptable level in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. Appendix F3 (Acceptability Assessment) of the EP demonstrates how the environmental impacts and risks of the Regia MSS will be of an acceptable level. Acceptability takes into account a broad framework of concepts in order to define acceptable levels, including Principles of ecologically sustainable development (ESD) and Legislative Context which both reference Section 3A of the EPBC Act. The principles of ESD in Section 3A of the EPBC Act refer to a set of guidelines aimed at promoting responsible environmental stewardship and sustainable use of natural resources. Application of the principles of ESD ensures that impact at a population or ecosystem level are avoided. The control measures outlined in the EP will ensure anthropogenic threats to Australian Fur-seals are minimised. Further, CGG has extended the buffer around Lady Julia Percy /Deen Maar Island such that behavioural impacts to Australian Fur-Seals will be reduced. Refer to the response to Matter: M27 regarding the impact of underwater sound on Australian Fur -seals and Matter M:32 regarding impacts to foraging female fur seals. *References* *Arnould, J. & Kirkwood, R., 2011. 'Foraging trip strategies and habitat use during late pup rearing by lactating Australian fur seals'. Australian Journal of Zoology, 2011, 59, 216–226. ttp://dx.doi.org/10.1071/ZO11080.* *Gotz T, Hastie G, Hatch L, Raustein O, Southall B, Tasker M and Thomsen F. 2009. Overview of the impacts of anthropogenic underwater sound in the marine environment. OSPAR Commission. London.* *Harris RE, Miller GW and Richardson WJ. 2001. Seal Response to Air gun Sounds During Summer Seismic Surveys in the Alaskan Beaufort Sea. Marine Mammal Science. 17(4):795-812.* *Weilgart, L., 2013. 'A review of the impacts of seismic airgun surveys on marine life'. Submitted to the CBD Expert Workshop on Underwater Noise and its Impacts on Marine and Coastal Biodiversity, 25-27 February 2014, London, UK. Available at: http://www.cbd.int/doc/?meeting=MCBEM-2014-01.*
M32	**Matter:** Operational Buffer around Deen Maar **Claim:** Female seals migrate out to the continental shelf to feed, a journey that involves passing through the OA where the seismic source is operating. Although CGG has placed an operational buffer around Deen Maar/Lady Julia Percy Island to protect seals and cultural heritage from seismic blasting, it has not recognised or taken measures to protect the seal migration pathway and reduce the risk of harm to migrating seals posed by blasting activities. Nor has CGG investigated whether the ear anatomy and hearing abilities of seal pups are more sensitive to	CGG acknowledges claims regarding underwater sound impacts to foraging female seals from the Regia MSS and has reviewed the Environment Plan (EP) to ensure that impacts to foraging female seals are adequately assessed. Impacts to marine mammals, including seals, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). CGG carried out a Protected Matters Search Tool (PMST) search and found three species of seal with the potential to occur within the Active Source Area, as detailed in Environment Plan (EP) (Appendix B5 PMST Reports), including the Australian Fur-Seal (*Arctocephalus pusillus*), with breeding known to occur within area. In Victorian waters Australian Fur-seal breed at a number of offshore islands. In Tasmanian waters they breed at Reid Rocks. Twenty-five percent of the population occurs on Lady Julia Percy Island/ Deen Maar and Seal Rocks, with only Lady Julia Percy Island /Deen Maar being within the area that may be affected by underwater sound.

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	seismic blasting than those of adult seals. This must be investigated given the proposed activities will take place in close proximity to pupping grounds.	Fur-seals are present in the region all year, with breeding taking place during November and December. Research being undertaken at Lady Julia Percy Island indicates that adult females feed extensively in the waters between Portland and Cape Otway, out to the 200 m bathymetric contour. Seal numbers on the island reach a maximum during the breeding season in late October to late December. By early December, large numbers of lactating females are leaving for short feeding trips at sea and in late December there is an exodus of adult males. Thereafter, lactating females continue to alternate between feeding trips at sea and periods ashore to suckle their pups. Even after pups begin to venture to sea, the island remains a focus, and at any time during the year groups may be seen ashore resting (Robinson et al. 2008, Hume et al. 2004, Arnould & Kirkwood 2007). EP Appendix B8 (Seismic Studies Report) provided a review monitoring studies (Harris et al. 2001) undertaken on the behaviour of phocid seals (which are more sensitive to sound than otariid pinnipeds such as the Australian Fur-Seal) during a nearshore seismic program in Alaska observed that: • During daylight hours seals were seen at nearly identical rates during periods where there were no air guns firing, one air gun firing and the full array operational. • Seals tended to be further away during full array seismic. Swimming away was more common during full array operation than no air gun periods, but relative behaviours (looked, approached, swam parallel to boat's track, dive or swam away when full array was firing) did not differ significantly among the distance categories. • Approximately 79% of seal sightings were within 250 m of the seismic vessel. There was partial avoidance of the zone less than 150 m from the vessel during full array seismic, but seals did not move much beyond 250 m at any time. • Received levels of noise pulses from the full array were ≥180 dB SPL out to a radius of 1 km. Despite this, many seals showed little or no obvious avoidance and no obvious tendency to avoid diving. CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Reports, results from B7b are used here) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including seals. The effect criteria for Permanent Threshold Shift (PTS) for these species was not reached. The effect criteria for Temporary Threshold Shift (TTS) for these species was also not reached for the per pulse criteria and was only reached within 60 m from the sound source for the 24 hr cumulative effect criteria. Given it is highly unlikely that a seal would stay within 60 m of the moving sound source for up to 24 hr, TTS impacts are not predicted. Consequently, impacts to seals are limited to avoidance behaviour out to 2.91 – 11.8 km distance from the moving acoustic source, depending on where in the Operational Area the survey is being undertaken, affecting individuals but not at a level to reduce fitness. Control measures to reduce impacts to seals are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). **Information in the EP has been updated as follows:** • **M#01: Activity Limitations, has been updated to reflect that the sound source will not be discharged within 17 km of Lady Percy Julia Island / Deen Maar. A 10.3km buffer from Deen Maar was initially applied to reduce risks and impacts to Australian Fur Seals to ALARP and an Acceptable level. This effect distance for pinnipeds was based on the initial modelling conducted for the activity (see Appendix B7a). The commissioning of subsequent modelling (see Appendix B7b Sound Emissions Secondary Modelling Report) has provided further insights relevant to the management of this species. The secondary modelling was undertaken in response to consultation with commercial divers mainly to address constraining the sound source operation to water depths of no shallower than 50 m. Results from this work show that behavioural sound effect criteria for pinnipeds is now reached at a maximum of 11.8 km from the sound source. As the survey area is a minimum of 17km from the closest haul out site (Deen Maar), behavioural impacts to pinnipeds at this location are no longer predicted.** • **CGG has committed to not conducting the survey in the high productivity months of January-March which represents an important period when lactating females are alternating between feeding trips at sea and periods ashore to suckle their pups.** **EP Appendix F1 (Environmental Plan) has also been updated to amend the buffer to Deen Maar to 17km.** Further, CGG will also implement soft starts where, prior to acquisition commencing, the sound source power is ramped up over 30 minutes, to reduce the risk of startle response (as identified in EP Appendix B8 (Seismic Studies Report)) and ensure no seals are within effect distances whereby the onset of PTS or TTS could occur. The Regia MSS will be managed so that the potential impacts and risks will be mitigated to levels that are as low as reasonably practicable and acceptable in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. The control measures outlined in the EP will ensure anthropogenic threats to foraging female seals are minimised. Further, CGG has extended the buffer around Lady Julia Percy /Deen Maar Island such that behavioural impacts to breeding Australian Fur-Seals will be reduced.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
		Note: Impacts to juvenile seals addressed in response to Matter: M30 above.
M33	**Matter:** Insufficient mitigation measures for seals and sea lions **Claim:** In the Plan it is stated that CGG has placed an operational buffer around Deen Maar Indigenous Protected Area to protect seals from seismic blasting, however it has not recognised, or taken measures, to protect seal migration through the Operational Area to their breeding grounds. **Claim:** Recommendation: Increase the exclusion zone from known colonies from seismic blasts to 100km. **Claim:** Recommendation: Formulate a plan for risk mitigation and management of the risks that seismic blasting has on seal behaviour and populations. **Claim:** NOPSEMA should reject the Environment Plan by CGG if a safe plan for the Australian Fur Seal colony at Deen Maar, as well as the others is not formed. This should be in conjunction with knowledgeable seal scientists from Victoria that are familiar with the colony. **Claim:** The EP lacks clarity and fails to adequately address the potential marine life, particularly EPBC-listed such as fur seals. The document, spanning over 3,000 pages, is convoluted and lacks essential details on mitigation measures to protect these vulnerable species. **Claim:** The EP shows that sea lion behavioural effects from seismic blasting can occur up to 10km from the seismic source, yet there are no mitigation measures in place to detect, measure or reduce the harm from seismic blasting to foraging sea lions as they pass through or near the OA. **Claim:** On page 2, 979 of their plan, CGG mentions impacts on seals and sea lions will be limited to 2.95 - 10.3km and there will be a sound exclusion zone within 10.3km of the breeding ground. However, according to the Department of Climate Change, Energy, Water and Environment due to mobility and foraging requirements fur seals may occur in areas 500km from the colony making the exclusion zone of 10.3 km that CGG recommends severely inadequate. (45) 45. https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=21. **Claim:** In addition to the impacts on marine mammals, the proposal neglects to adequately address the potential consequences for other marine species, such as pinnipeds and penguins. Endangered species like Australian sea lions and little penguins are at risk of significant harm from seismic activities in their habitats, yet the EP fails to implement adequate measures to protect these vulnerable populations. **Claim:** The EP acknowledges that there is limited published data on seismic effects on sea lions, yet asserts that the disturbance will be “minimal”. Based on this failure to explicitly acknowledge and consider the implications of sea lion foraging near the OA and to accordingly implement appropriate mitigation measures to protect the world’s rarest pinniped from harm, the EP should be refused. **Claim:** When Australian Sea Lions are in the vicinity of the seismic blasting, it is unlikely that Marine Mammal Observers will spot these creatures, diving for up to 12 minutes at a time. And they certainly wouldn’t be detected by sight during night time blasting periods.	CGG acknowledges claims regarding mitigation measure for underwater sound impacts to seals and sea lions and has reviewed the Environment Plan (EP) to ensure that mitigation measures were appropriately considered. Impacts to marine mammals, including seals, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). CGG carried out a Protected Matters Search Tool (PMST) search and found three species of otariid pinnipeds with the potential to occur within the Active Source Area, as detailed in Environment Plan (EP) (Appendix B5 PMST Reports), including the Australian Fur-Seal (breeding known to occur in the area), New Zealand Fur-Seal (may occur in the area,) and the Australian Sea Lion (known to occur in the area). There are no biologically important areas (BIAs) in the area for these species. The Australian Sea Lion feeds on the continental shelf, most commonly in depths of 20–100 m, with adult males foraging further and into deeper waters (DSEWPaC 2013). They typically forage up to 60 km from their colony, with the closest colonies occurring in South Australia, but can travel up to 190 km when over shelf waters (Shaughnessy 1999). Australian Sea Lions, forage at all times of day and dive continuously while at sea (Costa & Gales 2003). Individual dives rarely exceed eight minutes in duration (Kirkwood & Goldsworthy 2013). EP Appendix B8 (Seismic Studies Report) provided a review monitoring studies (Harris et al. 2001) undertaken on the behaviour of phocid seals (which are more sensitive to sound than otariid pinnipeds) during a nearshore seismic program in Alaska observed that: • During daylight hours seals were seen at nearly identical rates during periods where there were no air guns firing, one air gun firing and the full array operational. • Seals tended to be further away during full array seismic. Swimming away was more common during full array operation than no air gun periods, but relative behaviours (looked, approached, swam parallel to boat’s track, dive or swam away when full array was firing) did not differ significantly among the distance categories. • Approximately 79% of seal sightings were within 250 m of the seismic vessel. There was partial avoidance of the zone less than 150 m from the vessel during full array seismic, but seals did not move much beyond 250 m at any time. • Received levels of noise pulses from the full array were ≥180 dB SPL out to a radius of 1 km. Despite this, many seals showed little or no obvious avoidance and no obvious tendency to avoid diving. Regarding recommendations for a 100 km exclusion zone from Deen Maar, CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7: Sound Modelling Report) to assess distances from activities where underwater sound reached exposure criteria corresponding to various levels of potential impact to marine fauna including seals and sea lions. The effect criteria for Permanent Threshold Shift (PTS) for these species was not reached. The effect criteria for Temporary Threshold Shift (TTS) for these species was also not reached for the per pulse criteria and was only reached within 60 m from the sound source for the 24 hr cumulative effect criteria. Given it is highly unlikely that a seal would stay within 60 m of the moving sound source for up to 24 hr, TTS impacts are not predicted. Consequently, impacts to seals and sea lions are limited to avoidance behaviour out to 2.91 – 11.8 km distance from the moving acoustic source, depending on where in the Operational Area the survey is being undertaken, affecting individuals but not at a level to reduce fitness based on the Seismic Studies Report information in Appendix B8. Control measures to reduce impacts to seals and sea lions are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). **Information in the EP has been updated as follows:** • **M#01: Activity Limitations, has been updated to reflect that the sound source will not be discharged within 17 km of Lady Percy Julia Island / Deen Maar. A 10.3km buffer from Deen Maar was initially applied to reduce risks and impacts to Australian Fur Seals to ALARP and an Acceptable level. This effect distance for pinnipeds was based on the initial modelling conducted for the activity (see Appendix B7a). The commissioning of subsequent modelling (see Appendix B7b Sound Emissions Secondary Modelling Report) has provided further insights relevant to the management of this species. The secondary modelling was undertaken in response to consultation with commercial divers mainly to address constraining the sound source operation to water depths of no shallower than 50 m. Results from this work show that behavioural sound effect criteria for pinnipeds is now reached at a maximum of 11.8 km from the sound source. As the survey area is a minimum of 17km from the closest haul out site (Deen Maar), behavioural impacts to pinnipeds at this location are no longer predicted.** • **CGG has committed to not conducting the survey in the high productivity months of January-March which represents an important period when lactating females are alternating between feeding trips at sea and periods ashore to suckle their pups.** • **EP Appendix F1 (Environmental Plan) has also been updated to amend the buffer to Deen Maar to 17km.**

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
		Further, CGG will also implement soft starts where, prior to acquisition commencing, the sound source power is ramped up over 30 minutes, to reduce the risk of startle response (as identified in EP Appendix B8 (Seismic Studies Report)) and ensure no seals or sea lions are within effect distances whereby the onset of PTS or TTS could occur. The Regia MSS will be managed so that the potential impacts to seal and sea lions will be mitigated to levels that are as low as reasonably practicable and acceptable in accordance with environmental regulatory requirements. The control measures outlined in the EP will ensure anthropogenic threats to seals and sea lions are minimised. Further, CGG has extended the buffer around Lady Julia Percy /Deen Maar Island such that behavioural impacts to breeding Australian Fur-Seals will be reduced.
Key Matter: Impacts to Other Marine Mammals		
M34	**Matter:** Impacts on dolphins **Claim:** Dolphins– These come and go at all times of the year in the Moyne region. They are affected by seismic blasting in similar sorts of ways as whales, as they also rely heavily on echolocation to survive in an underwater world. They are expected to leave the area when seismic blasting regimes are conducted. It hardly seems fair, given the ocean is their habitat. **Claim:** Gordon et al., (2003) and Gray and van Waerebeek (2011) reported a single pantropical spotted dolphin showing severe behavioural distress followed by ataxia near a seismic array. Mann et al. (2010) reported several incidences of permanent hearing loss in stranded odontocetes where exposure to high levels of anthropogenic noise cannot be dismissed. There is very limited research on the impact of seismic blasts on dolphins. **Claim:** Request studies into the effects of seismic blasts on dolphin populations.	CGG acknowledges claims regarding impacts to dolphins over the duration of the Regia MSS and has reviewed the Environment Plan (EP) to ensure that the assessment of potential impacts to dolphin species has been adequately described. Sound exposure criteria thresholds and impacts to marine mammals were identified using extensive peer review, published literature (referenced throughout the EP). In addition, modelling was conducted by internationally renowned underwater noise specialist, Jasco Applied Sciences, for the EP (Appendix B7a and B7b- Sound Modelling Report) to assist in understanding the potential acoustic impacts on key regional receptors including marine mammals. Table E7-5-1 in EP Appendix E7 (Impact Assessment - Underwater Sound: Marine Mammals) states the sound exposure guidelines for the onset of Permeant Threshold Shift (PTS), Temporary Threshold Shift (TTS) and the current interim criterion for impulsive sound sources for marine mammal' behavioural threshold. Table E7-5-1 shows that the noise effect criteria for PTS for high-frequency cetaceans (such as dolphins) was not reached during any modelled scenario. Table E7-5-1 also shows that the noise effect criteria for TTS per pulse effect criteria is not reached but the TTS 24hr cumulative effect criteria is reached up to 50 m. However, it is not feasible that a dolphin would be within that distance of the moving vessel for 24 hrs, thus impacts are not predicted. **EP Appendix E7, Section 6.2 has been updated to provide clarity to the statements within this section and now states:** • **The TTS per pulse effect criteria is not reached. The TTS 24hr cumulative effect criteria is reached up to 50 m, however it is not feasible that a cetacean would be within that distance of the moving vessel for 24 hrs, thus impacts are not predicted.** Impacts to high-frequency cetaceans are limited to avoidance behaviour out to between 2.91 – 11.8 km depending on where in the Operational Area the survey is being undertaken. As high-frequency cetaceans are not dependent on any specific area within the area affected impacts through avoidance behaviour may occur to individuals but not at a level to reduce fitness. The Protected Matters Search Tool (PMST) Report (Appendix B5 – PMST Reports) identified that six dolphin species, which are classed as high-frequency cetaceans, potentially occur within the area that may be affected by underwater sound. The predicted level of impact based on the effect (minor) and uncertainty (medium) levels is assessed as medium. For HF cetaceans the predicted level of impact is clearly below the predefined acceptable levels of impact as detailed in Section 7 of Appendix E7. The mitigation and management measures detailed in Section 8 provide sufficient confidence in the predicted effect levels. Gordon et al. (2003) reviews of the effects of seismic surveys on marine mammals and discusses a number of sources including underwater explosions and military applications. Gordon et al. (2003) does state that underwater explosions cause tissue damage and can be lethal, but such activities are not part of the Regia MSS. Gordon et al. (2003) continues by stating pressure pulses from air guns have longer rise times and are therefore less likely to cause damage than pressure waves from high explosives and to date there is no evidence that seismic pulses cause acute physical damage to marine mammals. Gordon et al. (2003) does not refer to behavioural distress or ataxia in dolphins near a seismic array as per the claim. It should be noted that further reviews have been conducted since Gordon et al. (2003) which have been used as part of the impact assessment used in the EP. Gray and van Waerebeek (2011) reported on a single pantropical spotted dolphin relative to a vessel towing a seismic array with significant differences in the specifications of the towed source, with Gray and van Waerebeek (2011) reporting a towed array of 2 x 3400 cui compared to the maximum total volume to be utilised during the Regia MSS of 2,820 cui. They also implemented a reduced soft start period (20 minutes) compared to 30 minutes for the Regia MSS. Modelling, as previously detailed, shows that PTS and TTS per pulse effect criteria for high-frequency cetaceans is not reached, with TTS 24hr cumulative effect criteria only reached within 50 m of the sound source, with impacts therefore limited to avoidance behaviour only. The control measures detailed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and the Fauna Management Plan (Appendix G2) demonstrate that impacts have been reduced to as low as reasonably practicable (ALARP) and are of an acceptable level. Whilst Mann et al. (2010) discusses a number of contributing factors to hearing loss in marine mammals, it also states that the noise exposure history of any of dolphins studied is not known. Regarding strandings, Mann et al. (2010) states that based on the locations of stranding, it is

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#	**Comments received**	***Titleholder response***
		possible that some of them have been exposed to chronic noise from boating and shipping, while for others this is unlikely. There is no mention in Mann et al. (2010) of seismic activities. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. **CGG has updated the EP to provide additional clarity on the underwater sound modelling results as described above, however no material changes have been made to the EP in response to these claims.** ***References**:* *Gordon, J., Gillespie, D., Potter, J., Frantzis, A., Simmonds, M.P., Swift, R., Thompson, D., 2003. 'A Review of the Effects of Seismic Surveys on Marine Mammals' . Marine Technology Society Journal, 37(4):16-34.* *Gray, H., van Waerebeek, K., 2011. 'Postural instability and akinesia in a panspotted tropical dolphin Stenella attenuata, in proximity to operating airguns of a geophysical seismic vessel'. Journal for Nature Conservation 19(6): 363– 367.* *Mann D, Hill-Cook M, Manire C, Greenhow D, Montie E, et al. (2010) Hearing Loss in Stranded Odontocete Dolphins and Whales. PLoS ONE 5(11): e13824. doi:10.1371/journal.pone.0013824*
M35	**Matter**: Impacts on dwarf and pygmy sperm whales **Claim**: Dwarf and pygmy sperm whales have been recorded in the deep water areas of the OA off the west coast of Tasmania, with the greatest number of sightings occurring in October and November. Very little information exists on how these species are affected by seismic blasting, and there is limited data on the distribution and habitat use of these species, which are found in oceanic waters far from shore. Allowing seismic blasting in these periods fails to protect these species from the proven harm inflicted by this activity to whales over hundreds of kilometres in range. **Claim:** The submitter recommend that CGG fund research on these species, with NOPSEMA overseeing the efficacy of this research to ensure the adequate protection of these species.	CGG acknowledges claims regarding the presence of Dwarf and Pygmy Sperm Whales off the west coast of Tasmania and have reviewed the Environment Plan (EP) to ensure that the assessment of potential impacts to Sperm Whales has been an appropriate. Dwarf Sperm Whales are found in open ocean habitats in temperate to tropical waters around the world with no recorded sightings or strandings off Victoria (DCCEEW 2023a). Pygmy Sperm Whales are found in ocean habitats in temperate to tropical waters around the world and have been recorded in all states except NT, though as strandings (DCCEEW 2023b). There is limited information on both Pygmy and Sperm Whales as they are difficult to observe in the wild. These animals are usually found offshore in deeper waters (Best, 2007), and data from stomach analysis from stranded individuals suggests Pygmy Sperm Whales feed in waters beyond the edge of the continental self, while Dwarf Sperm Whales feed mainly over the continental shelf and slope (Ross, 1979, Plön et al., 1999, Plön and Baird, 2022, Plön, 2023). These studies also indicate both species feed predominately on n squid, with few fish and crustaceans in the diet (Ross, 1979, Sekiguchi et al., 1992, McAlpine and Murison, 1997, Plön et al., 1999, Santos et al., 2006, Beatson, 2007, West et al., 2009, Staudinger et al., 2014, Matsuda et al., 2023). Recent research has shown that there there has been at least some historical gene flow between these distant populations of Dwarf Sperm Whales between Chile and South Africa, and Australia. (Plön et al. 2023). Both the Dwarf and Pygmy Sperm Whales have an identified presence as "species or species habitat may occur" within the Active Source Area by the Protected Matters Search Tool (PMST), however, numbers are predicted to be low and as there are no BIAs these species are likely to be transient in the area. EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) assess impacts to very-high frequency (VHF) cetaceans such as Sperm Whale, with detailed noise modelling provided in EP Appendix B7a and B7b (Sound Modelling Report, results from B7b are used here). CGG also provided an extensive literature study on the effects of seismic activity on marine mammals including Sperm Whales in Appendix B8 (Seismic Sound Studies Report, Section 7-Marine Mammals). CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Reports) to assess distances from the sound source within which sound effect criteria are predicted to be exceeded. This was tested for several survey layouts that were iteratively refined based on feedback and insights from interested persons. For VHF functional hearing group species such as Dwarf and Pygmy Sperm Whales, the distance from the sound source within which the Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) per pulse effect criteria was exceeded was between 410m and 820 m for all survey layout scenarios tested. Through iterative testing of survey layouts, the PTS 24hr cumulative effect criteria was able to be constrained to within 70 m of the sound source. An exceedance of the TTS 24hr cumulative effect criteria was also iteratively reduced to within 350 m of the sound source, down from max 550 m that was initially predicted for earlier survey layout scenarios. The potential for a PTS or TTS response impact has thereby been spatially constrained and is only credible if an individual remains within the predicted distance of the moving sound source continuously for a period of 24 hours. Considering the limited distance range from the sound source within which these sound effect criteria are exceeded (max 820 m) as well as the range of controls adopted for implementation of the survey, the risk to Dwarf and Pygmy Sperm Whales is considered to be addressed comprehensively through survey pre-planning efforts. Control measures to minimise impacts to very high frequency cetaceans are outlined in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). M#03: Fauna Management System (Appendix G2) outlines whale and dolphin detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey.

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		The Fauna Management Plan (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. CGG acknowledges the recommendation to fund research on Dwarf and Pygmy Sperm Whales, and also acknowledges that NOPSEMA's Research Strategy 2024-2027 identifies threatened and migratory species as a relevant research topic for decision-making. With their research strategy, NOPSEMA promotes a collaborative approach to addressing knowledge gaps. Relevant research topics include: • Better understanding, and where possible quantifying, behavioural responses to underwater noise and implications for foraging, feeding, fitness and breeding success in the context of EPBC Act species recovery requirements (e.g. Actions relevant to underwater noise management set out in in-force EPBC Act species conservation management documentation). CGG commissioned Klarite to undertake a review of seismic studies and extensive research undertaken (available in Appendix B8), demonstrating that core impact pathways for cetaceans from underwater noise is well established. This fundamental understanding of impact pathways has been brought into the EP to inform the impact assessment for marine mammals. To continue to inform knowledge gaps, CGG will submit all sightings and acoustic observations as reports to the Australian Antarctic Division via the National Marine mammal Data Portal and hosted by the Australian Marine Mammal Centre (AMMC) for the collation of national sightings. The AMMC has developed database applications to support marine mammal conservation and policy initiatives. These applications: • provide the public with summarised information on the biology of Australian marine mammals; • facilitate data-driven management and conservation decisions; • collate, protect and archive data; • assisting with reporting obligations to the International Whaling Commission and under the Environment Protection and Biodiversity Conservation Act encouraging and facilitating collaboration, analysis and reporting. The observational data hosted by the AMMC is available to research community. CGG will, further, review any new relevant research that is available in the public domain, or otherwise made available. To continue to manage the Regia MSS to ALARP and Acceptable levels, collection and review of new relevant research, if any, will be completed within one month of the commencement of the Regia MSS. A risk assessment and management of change process will be instigated if outcomes of relevant research suggest that there has been a significant change to the context of the Regia MSS that may lead to an update to the Fauna Management Plan (EP Appendix G2). The Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. See EP Appendix F2 (ALARP Assessment) for a detailed explanation of the ALARP status determination used for the Regia MSS. The control measures outlined in the EP will ensure anthropogenic threats to of Dwarf and Pygmy Sperm Whales are minimised. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *Beatson, E., 2007. The diet of pygmy sperm whales, Kogia breviceps, stranded in New Zealand: implications for conservation. Rev. Fish. Biol. Fish. 17, 295–303.* *Best, P.B., 2007. Whales and Dolphins of the Southern African Subregion. Cambridge University Press, Cape Town, pp. 338.* *Matsuda, T.A., Matsuishi, T.F., Tajima, Y., Yamada, T. K., 2023. Notes on stomach contents of pygmy and dwarf sperm whales (Kogia spp.) from around Japan. Advances in Marine Biology, 96, pp.1-24.* *McAlpine, D.F., Murison, L.D., 1997. New records for the pygmy sperm whale, Kogia breviceps (Physeteridae) from Atlantic Canada with notes on diet and parasites. Mar.Mamm. Sci. 13 (4), 701–704.* *Plön, S.E.E., Bernard, R.T.F., Klages, N.T.K. and Cockcroft, V.G., 1999. Stomach content analysis of pygmy and dwarf sperm whales and its ecological implications: is there niche partitioning. European Research on Cetaceans, 13, pp.336-339.* *Plön, S., Baird, R., 2022. Kogia sima. In: Hackländer, K., Zachos, F.E. (Eds.), Handbook of the Mammals of Europe. Springer* *Plön, S., 2023. Kogia breviceps. In: Hackländer, K., Zachos, F.E. (Eds.), Handbook of the Mammals of Europe. Springer*

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#	**Comments received**	***Titleholder response***
		Plön, S., Best, P.B., Duignan, P., Lavery, S.D., Bernard, R.T., Van Waerebeek, K. and Baker, C.S., 2023. Population structure of pygmy (Kogia breviceps) and dwarf (Kogia sima) sperm whales in the Southern Hemisphere may reflect foraging ecology and dispersal patterns. Advances in Marine Biology, 96, pp.85-114 *Ross, G.J.B., 1979. Records of pygmy and dwarf sperm whales, genus Kogia, from southern Africa, with biological notes and some comparisons. Ann. Cape Prov. Mus. (nat. Hist.)11 (14), 259–327.* *Santos, M.B., Pierce, G.J., López, A., Reid, R.J., Ridoux, V., 2006. Pygmy sperm whales Kogia breviceps in the Northeast Atlantic: new information on stomach contents and strandings. Mar. Mamm. Sci. 22, 600–616.* *Sekiguchi, K., Klages, N.T.W., Best, P.B., 1992. Comparative analysis of the diets of smaller odontocete cetaceans along the coast of Southern Africa. S. Afr. J. Mar. Sci. 12,843–861.* *Staudinger, M.D., McAlarney, R.J., McLellan, W.A., Pabst, D.A., 2014. Foraging ecology and niche overlap in pygmy (Kogia breviceps) and dwarf (Kogia sima) sperm whales from waters of the U.S. mid-Atlantic coast. Mar. Mamm. Sci. 30, 626–655.* *West, K.L., Walker, W.A., Baird, R.W., White, W., Levine, G., Brown, E., et al., 2009. Diet of pygmy sperm whales (Kogia breviceps) in the Hawaiian Archipelago. Mar. Mamm. Sci. 25, 931–943.*
M36	**Matter**: Impacts on fin and sei whales **Claim**: Fin and sei whales are listed as Vulnerable under the EPBC Act. These species are known to feed in the OA from January to April, though there is limited information available concerning the lifecycle and habitat use of these species. Submitter recommends that the precautionary principle be applied in recognition of the lack of understanding of how these species will be affected, both immediately and cumulatively, by the proposed seismic blasting surveys in their important habitats areas. **Claim:** The submitter recommend that CGG fund research on these species, with NOPSEMA overseeing the efficacy of this research to ensure the adequate protection of these species.	CGG acknowledges claims regarding impacts to Fin and Sei Whales from the Regia MSS and have reviewed the Environment Plan (EP) to ensure that impacts to these species are adequately assessed. Impacts and risks to marine mammals, including Fin and Sei Whales, have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna). Both the Fin and Sei Whales have an identified presence as “foraging, feeding or related behaviour known to occur within the area” within the Active Source Area by the Protected Matters Search Tool (PMST), included in EP Appendix B5 (PMST Reports). There are no BIAs for the Fin and Sei Whales within Australian waters. The conservation advice for both species (TSSC 2015ba, TSSC 2015b) identify anthropogenic noise and acoustic disturbance as a minor consequence rating. There is no information on foraging areas for Fin, Pygmy Right Whale or Sei whales off Victoria. The Fin Whale is listed as vulnerable and migratory under the EPBC Act. As described in EP Appendix E7 Section 4.4 (Fin Whale), while Australian Antarctic waters are important feeding grounds for Fin Whales, the species also feeds in the Bonney Upwelling during summer/autumn sometimes in the company of Blue and Sei Whales (DCCEEW 2023). Areas of upwelling and interfaces with mixed and stratified waters may be an important feature of Fin Whale feeding habitat with the species feeding on planktonic crustacea, krill, some fish and cephalopods (DCCEEW 2023). Fin Whales frequently lunge or skim feed at or near the surface and they are known to dive to 230 m to feed. The Sei Whale is listed as vulnerable under the EPBC Act. As described in EP Appendix E7 Section 4.7, Sei Whales are considered a cosmopolitan species, ranging from polar to tropical waters, but tend to be found more offshore than other species of large whales. In Australia, Sei Whales occur within Australian Antarctic Territory waters and Commonwealth waters, and have been infrequently recorded off Tasmania, NSW, Queensland, the Great Australian Bight, Northern Territory and Western Australia (Parker 1978; Bannister et al. 1996; Thiele et al. 2000; Chatto and Warneke 2000; Bannister 2008). Sightings of Sei Whales within Australian waters includes areas such as the Bonney coast upwelling off South Australia (Miller et al. 2012), where opportunistic feeding has been observed between November and May (Gill et al. 2015). CGG commissioned international experts to undertake underwater sound modelling (EP Appendix B7a and B7b: Sound Modelling Reports) to assess distances from the sound source within which noise effect criteria are predicted to be exceeded. This was tested based on several survey layouts that were iteratively refined based on feedback and insights from interested persons. For low frequency (LF) functional hearing group species such as Fin and Sei whales, the distance from the sound source within which the Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) per pulse effect criteria was exceeded remained at 30 - 90 m for all survey layout scenarios tested. The distance from the sound source within which cumulative effect criteria were exceeded, however, was predicted to reduce significantly once the survey layout was refined and constrained to deeper than 50 m. The PTS 24hr cumulative effect criteria was able to be limited to within 5.08 km (min 1 km) – which was out to 4.89 km from the sound source in earlier survey layout scenarios. Although this was number did not reduce, CGG is confident that these individuals could be observed through visual and acoustic detection mechanisms already built in as controls for the survey and, if observed, triggering requirements to moderate operation of the sound source. The TTS 24hr cumulative effect criteria was also able to be limited to within 41.9 km (min 20.5 km) – which was out to 43.5 km from the sound source in earlier survey layout scenarios. The potential for a TTS response impact has thereby been spatially constrained and is only credible if an individual remains within the predicted distance of the moving sound source continuously for a period of 24 hours. Considering the range of

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		controls adopted for implementation of the survey, the risk to Sei and Fin Whales is considered to be addressed comprehensively through survey pre-planning efforts. Control measures to minimise impacts during the survey to low frequency cetaceans are outlined in in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals). M#03: Fauna Management Plan (EP Appendix G2) outlines whale and dolphin detection techniques and measures to minimise anthropogenic noise threats and risk of vessel strike associated with the survey. The Fauna Management Plan (EP Appendix G2) also outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. Although the Fauna Management Plan outlines mitigation measures for low frequency cetaceans, it does not specifically mention Fin and Sei Whales. **EP Appendix G2 (Fauna Management Plan) has been updated to include Fin and Sei Whales.** CGG acknowledges the recommendation to fund research on Fin and Sei Whales, and also acknowledges that NOPSEMA's Research Strategy 2024-2027 identifies threatened and migratory species as a relevant research topic for decision-making. With their research strategy, NOPSEMA promotes a collaborative approach to addressing knowledge gaps. Relevant research topics include: • Better understanding, and where possible quantifying, behavioural responses to underwater noise and implications for foraging, feeding, fitness and breeding success in the context of EPBC Act species recovery requirements (e.g. Actions relevant to underwater noise management set out in in-force EPBC Act species conservation management documentation). CGG commissioned Klarite to undertake a review of seismic studies and extensive research undertaken (available in Appendix B8), demonstrating that core impact pathways for cetaceans from underwater noise is well established. This fundamental understanding of impact pathways has been brought into the EP to inform the impact assessment for marine mammals. To continue to inform knowledge gaps, CGG will submit all sightings and acoustic observations as reports to the Australian Antarctic Division via the National Marine mammal Data Portal and hosted by the Australian Marine Mammal Centre (AMMC) for the collation of national sightings. The AMMC has developed database applications to support marine mammal conservation and policy initiatives. These applications: • provide the public with summarised information on the biology of Australian marine mammals; • facilitate data-driven management and conservation decisions; • collate, protect and archive data; • assisting with reporting obligations to the International Whaling Commission and under the Environment Protection and Biodiversity Conservation Act encouraging and facilitating collaboration, analysis and reporting. The observational data hosted by the AMMC is available to research community. CGG will, further, review any new relevant research that is available in the public domain, or otherwise made available. To continue to manage the Regia MSS to ALARP and Acceptable levels, collection and review of new relevant research, if any, will be completed within one month of the commencement of the Regia MSS. A risk assessment and management of change process will be instigated if outcomes of relevant research suggest that there has been a significant change to the context of the Regia MSS that may lead to an update to the Fauna Management Plan (EP Appendix G2). The Regia MSS will be managed so that the potential impacts and risks will be mitigated to levels that are as low as reasonably practicable (ALARP) and acceptable in accordance with environmental regulatory requirements. Additional information on the determination of ALARP is provided in EP Appendix F2 (ALARP Assessment). CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. **CGG has considered these claims and has updated EP Appendix G2 (Fauna Management Plan) to include Fin and Sei Whales.** ***References:*** *Bannister JL, Kemper CM & Warneke RM. 1996. The Action Plan for Australian Cetaceans. Canberra: Australian Nature Conservation Agency* *Baker. 1985. Pygmy right whale Caperea marginata (Gray, 1846). In: Ridgway SH & Harrison R, eds. Handbook of Marine Mammals Vol. 3: The Sirenians and Baleen Whales. Page(s) 345-354. Academic Press, London.* *Chatto R & Warneke RM. 2000. Records of cetacean strandings in the Northern Territory of Australia. The Beagle, Records of the Museums and Art Galleries of the Northern Territory. 16:163-175.* *DCCEEW 2023. Balaenoptera physalus — Fin Whale. Species Profile and Threats Database. Department of Climate Change, Energy, the Environment and Water.*

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		Gill PC, Pirzl R, Morrice MG & Lawton K. 2015. Cetacean diversity of the continental shelf and slope off southern Australia. The Journal of Wildlife Management. *Miller BS, Kelly N, Double MC, Childerhouse SJ, Laverick S & Gales N. 2012. Cruise report on SORP 2012 blue whale voyages: development of acoustic methods. Paper SC/64/SH1 1 presented to the IWC Scientific Committee.* *Parker DAA. 1978. Observations of Whales on Australian National Antarctic Research Expeditions (ANARE) Voyages between Australia and Antarctica. Australian Wildlife Research. 5:25-36.* *Thiele D. 2002. International Whaling Commission - Southern Ocean GLOBEC collaboration. Update from the Western Antarctic Peninsula. GLOBEC International Newsletter. 8(2):7-9.* *TSSCa, 2015. Threatened Species Scientific Committee. Established under the Environment Protection and Biodiversity Conservation Act 1999. Conservation Advice Balaenoptera physalus- Fin whale.* *TSSCb, 2015. Threatened Species Scientific Committee. Established under the Environment Protection and Biodiversity Conservation Act 1999. Conservation Advice Balaenoptera borealis - Sei whale*
Key Matter: Mitigation Measures for Marine Mammals		
M37	**Matter:** Insufficient mitigation measures (general) **Claim:** The plan lacks in sufficient detail, data and effective mitigation methods that would ensure endangered and vulnerable marine species who are known to frequently feed, calve and migrate through this area are protected. **Claim:** There are also no safe measures when decibels exceed sound that whales can endure. Safety measures, evidence already tells us, are largely breached with seismic blasting. (see for example, https://www.thesaturdaypaper.com.au/news/environment/2023/06/10/seismic-blasting-whistleblower-speaks#hrd). **Claim:** Under no circumstances should the seismic blasting be allowed near endangered whales calving grounds. There is no way to mitigate the effects of the seismic blasting.	CGG acknowledges claims regarding insufficient mitigation measures for marine mammals and has reviewed the Regia MSS Environment Plan (EP) to ensure that appropriate mitigation measures for marine mammals have been identified and were adequately described. Impacts and risks to marine mammals, including impacts to biologically important behaviours (feeding, calving and migration) have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna), where relevant. Measures to mitigate impacts are also detailed in these Appendices and in the Fauna Management Plan, included in Appendix G, that includes whale detection and measures to minimise anthropogenic noise threats to whales, associated with the survey and, vessel strike for all species. The NOPSEMA Environment plan content requirement Guidance Note (2020) and Environment Plan decision making Guideline (2024) describe the purpose of mitigation measures and the process for determining whether effective measures have been identified for implementation. These NOPSEMA documents provided the basis of the robust framework provided in EP Appendix F2 (ALARP Assessment), which systematically identifies and evaluates control measures and strategies that can reasonably and effectively reduce risks to the lowest practicable level. Appendix F3 (Acceptability Assessment) of the EP demonstrates how the environmental impacts and risks of the Regia MSS will be of an acceptable level, taking into account the mitigation measures and strategies identified, and applying additional mitigation measures where relevant to ensure that risks are effectively reduced to acceptable levels. The mitigation measures outlined in the EP will reduce all risks to ALARP and acceptable levels. CGG has reviewed the methodology and application of mitigation measures throughout the EP and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M38	**Matter:** Shut down zones for whales **Claim:** The decision to implement a 2km shut down zone for all whales (apart from pygmy blue and southern right whales) is not supported by evidence. In contrast, the EP states that CGG will implement a 14km shut down zone for pygmy blue whales and a 12km shut down zone for southern right whales “to provide another level of protection to whales.” This inconsistency in the shut down distance must be explained in the context of CGG’s obligations to protect all whale species from seismic blasting, as detailed in Policy Statement 2.1 of the EPBC Act. **Claim:** The decision to implement a 2km shut down zone for all whales (apart from pygmy blue and southern right whales) is not supported by evidence. That is, the EP used modelling to calculate specific shut down distances for southern right and blue whales, but simply stated a 2km shut down for other whale species without justifying this distance with evidence. **Claim:** The EP outlines a mitigation plan to have a 3 km shut down zone for all whales (apart from pygmy blue and southern right whales) which is ineffective and	CGG acknowledges claims regarding the adequacy of a 2 km shut down zone for whales (excluding the pygmy blue whale and southern right whale) and has reviewed the Environment Plan (EP) to ensure that the 2 km spatial extent is adequate. Sound exposure criteria thresholds and impacts to marine mammals were identified using extensive peer review, published literature (referenced throughout the EP). In addition, modelling was conducted by internationally renowned underwater noise specialist, Jasco Applied Sciences for the EP (B7a and B7b - Sound Modelling Report) to assist in understanding the potential acoustic impacts on key regional receptors including marine mammals. Table E7-5-1 in Section E7 - Underwater Sound (Marine Mammals) of the EP states the sound exposure guidelines for the onset of Permanent Threshold Shift (PTS), Temporary Threshold Shift (TTS) and the current interim criterion for impulsive sound sources for marine mammal’ behavioural threshold. The EP has utilised the most current, globally recognised technical guidance for assessing the effect of anthropogenic sound on marine mammal hearing PTS and TTS thresholds which are from NMFS (2018) and Southall et al. (2019). Further, CGG has developed a Fauna Management Plan (Appendix G2) which details the procedure and actions that will be implemented such as shut down zones, pre-acquisition surveys and soft starts. Appendix B7a and B7b (Sound modelling) was conducted to identify potential impacts to species per pulse and over a cumulative 24h period. The maximum distance where per pulse effect criteria was reached was for very high frequency cetaceans at 820 m. In line with Policy Statement 2.1 of the EPBC Act CGG has implemented soft starts, where prior to acquisition commencing, the sound source power is ramped up

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	not underpinned by evidence. The EP used modeling to calculate shut down distances for southern right whales and pygmy blue whales, but have self determined a 3 km shut down zone for other whale species without justifying this decision with evidence. **Claim:** The rationale behind implementing a 2km shutdown zone for all species except the Southern right whale and Pygmy blue whale lacks sufficient evidence to support its claim of non-adverse impacts on threatened whale species' hearing. **Claim:** CGG must substantiate its reasoning behind the inconsistent shutdown zone distances, particularly as stipulated by policy statement 2.1 of the EPBC Act, which requires CGG to ensure the protection for all whale species from seismic blasting. **Claim:** The shut down envelope of 2km if a whale is sighted is woefully inadequate. Whales communicate over tens or even hundreds of kilometres and blue whales have been found to stop singing for days after exposure to seismic airgun blasts 10km away. Changes in whale behaviour have been observed up to 54–73 km from seismic surveys at received levels that could be as low as <125 dB (Weitgart, L 20136). The measures proposed under the EP appear to favour the proponent's convenience over actually minimising likely impacts on cetacean species. **Claim:** CGG has identified that they will shutdown operations for all whales within 2,000 metres (2km) of the seismic testing activities. We believe that 2km is inadequate as within 2km whales could still be well within the seismic blasting area and greatly affected by the sound blasts. **Claim:** Whales can dive frequently, or they can be underwater for up to 15 minutes, which would result in the whales potentially travelling vast distances during this time. They can initially dive from outside of the 2 km visual search radius and travel underwater to within the radius where the seismic blasting is being conducted, without being observed. In order to ensure that no whales are injured or killed during the blast, CGG must create a plan which includes thorough and accurate monitoring of what is happening out of sight, in the ocean.	over 30 minutes. This will ensure no cetaceans are within distances that PTS or TTS could instantly occur. Therefore, a 2 km shut down zone for whales is considered to be an adequate distance which will ensure that whales are protected from injury from the per pulse effect criteria. The maximum distance where cumulative 24h period effect criteria was reached for low-frequency cetaceans at 41.9 km, based on secondary modelling (EP Appendix B7b). It is not realistic that a whale will be stationary for a 24-hour period unless there is potential for them to be undertaking behaviours such as reproduction or foraging. Animat modelling was undertaken for particularly sensitive species with national conservation/recovery management plans which identify anthropogenic noise as a threat to the species recovery and was intended to afford additional protection to threatened species that by limiting the potential for disturbance. The Pygmy Blue Whale and the Southern Right Whale both have Conservation Management Plans that identify anthropogenic noise as a threat to the species recovery as well as spatially identified biologically important areas (BIAs) within the area that may be affected by underwater sound impacts. Therefore, these species have been further assessed with Animat modelling which considers vessel and whale movements and resulted in extended shutdown distances of 23 km and 15 km. The 2 km shutdown zone is based on the low power zone for whales as detailed in the EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales (Policy Statement 2.1). This is based on the likelihood of encountering other whales to be low, for which Policy Statement 2.1 details if the likelihood of encountering whales is low, the chance of a seismic survey having a significant impact on a whale species should be minimal, provided that the proponent and the operator of the seismic survey adopt the measures outlined in Part A Standard Management Procedures. No other foraging or reproduction BIAs occur within the area that may be affected by underwater sound, however 3 other whale species have been identified to potentially participate in foraging behaviours such as the Fin Whale, Sei Whale and the Pygmy Right Whale. The Pygmy Right Whale does not have a recovery plan or conservation advice. Conservation advice for the Fin Whale and the Sei Whale identify anthropogenic noise and acoustic disturbance as a threat, however it is assessed to have a minor consequence. Therefore, a 2 km shut down zone for whales is considered to be an adequate distance. The shut down procedure and associated spatial extents detailed in the Fauna Management Plan (Appendix G2) are considered to be adequate to protect whale species from injury from sound emissions associated with the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M39	**Matter:** Shut down zones for pygmy blue and southern right whales **Claim:** The EP states a 14 km shut down zone for pygmy blue whales and a 12 km shut down zone for southern right whales. Considering that research shows that seismic blast noise travels over 100 kms, we believe that 14 km and 12 km shut down zones are inefficient in adequately protecting these endangered species. This inconsistency in the shut down distance must be explained in the context of CGG's obligations to protect all whale species from seismic blasting, as detailed in Policy Statement 2.1 of the EPBC Act. **Claim**: Scientific research demonstrates that seismic blast noise travels over 100 km's in the oceans. The impact to marine life is well beyond the described zone in this EP. **Claim:** The proposed 14km shutdown zone and 12km shutdown zone for the PBW and SRW, respectively, are impractical, as monitoring from such distances is completely unrealistic, even under optimal conditions. This raises concerns regarding the Environmental Plan's feasibility and adherence to regulatory requirements, and therefore should be refused by NOPSEMA. **Claim:** Whales live below the ocean and below the field of view of a person standing on a boat. Research shows that many whale species are able to hold their breath, and some species can swim at 35 km/h which renders the 3 km,	CGG acknowledges claims regarding the adequacy of a proposed 14 km shutdown zone for Pygmy Blue and the initial 12 km shutdown zone Southern Right whales and has reviewed the Environment Plan (EP) to ensure that the spatial extent of each shutdown zone is adequate. Sound exposure criteria thresholds and impacts to marine mammals were identified using extensive peer review, published literature (referenced throughout the EP). In addition, modelling was conducted by internationally renowned underwater noise specialist, Jasco Applied Sciences for the EP (B7 - Sound Modelling Report) to assist in understanding the potential acoustic impacts on key regional receptors including marine mammals. Table E7-5-1 in Section E7 - Underwater Sound (Marine Mammals) of the EP states the sound exposure guidelines for the onset of Permanent Threshold Shift (PTS), Temporary Threshold Shift (TTS) and the current interim criterion for impulsive sound sources for marine mammal' behavioural threshold. Further, CGG has developed a Fauna Management Plan (Appendix G2) which details the procedure and actions that will be implemented such as shut down zones, pre-acquisition surveys and soft starts. Appendix B7 (Sound Modelling) was conducted to identify potential impacts to species per pulse and over a cumulative 24h period. The maximum distance where cumulative 24h period effect criteria was reached for low-frequency cetaceans was initially modelled at 43.5 km (maximum TTS 24hr cumulative effect criteria for low frequency (LF) cetaceans). This was reduced to 41.9 km based on secondary modelling (EP Appendix B7b) In any case, it is considered not realistic that a whale will be stationary for a 24-hour period unless there is potential for them to be undertaking behaviours such as reproduction or foraging. Animat modelling considers vessel and whale movements and Animat modelling was undertaken for particularly sensitive species with national conservation/recovery management plans which identify anthropogenic noise as a threat to the species recovery and was intended to afford additional protection to threatened species that by limiting the potential for disturbance. The Pygmy Blue Whale and the Southern Right Whale both have Conservation Management Plans that identify anthropogenic noise as a threat to the species recovery as well as spatially identified biologically important areas (BIAs) within the area that may be affected by underwater sound impacts.

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	14km and 12km shutdown zones ineffective in ensuring that whales are not in the area through MFO's the submitter supports the recommendations for sufficient mitigation measures. However, we also recommend that whale exclusion zones be rezoned to over 35 km.	The predicted maximum distances to the PTS 24hr cumulative effect criteria, TTS 24hr cumulative effect criteria and behavioural effect criteria for Southern Right Whales is 1.4 km, 14.2 km and 9.83 km, respectively. The predicted maximum distances to the PTS 24hr cumulative effect criteria, TTS 24hr cumulative effect criteria and behavioural effect criteria for Pygmy Blue Whales is 1.98 km, 22.5 km and 9.51 km, respectively. A 15 km shut down zone for Southern Right Whales, updated on the basis of revised modeling in Appendix B7b, and the 23km shut down zones for Blue Whales is based on the Animat modelling results where 14.2 km and 22.5km were the furthest distance to sound effect. Therefore, the revised 15 km shut down zone for Southern Right Whales and 23 km shutdown zone for Pygmy Blue Whales is considered to be an adequate distance. The EP does provide a justification for the shut down zones for both the Pygmy Blue Whale and the Southern Right Whales in Section 9.1 (Shut Down Zone) of Appendix G2 of the EP (Fauna Management Plan). The EP details the shut down distances are based on the underwater modelling and the distances are used as the activity must be conducted in a manner to meet the actions from the: • Conservation Management Plan for the Blue Whale of "Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to utilise the area without injury and is not displaced from a foraging area". • Draft National Recovery Plan for the Southern Right Whale of "Actions within and adjacent to Southern Right Whale BIAs and HCTS should demonstrate that it does not prevent any Southern Right Whale from utilising the area or cause injury (TTS and PTS) and/or disturbance". The shut down procedure and associated spatial extents detailed in the Fauna Management Plan (Appendix G2) are considered to be adequate to protect whale species from injury from sound emissions associated with the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M40	**Matter:** Additional shut down and exclusion distances for dolphins **Claim:** Implement shut down within 100 km (extended from 100m as per plan) of dolphin sightings. **Claim:** Increase the exclusion zone from known seal colonies from seismic blasts to 100km. **Claim:** A proposed control method for the management of acoustic disturbance was a shutdown zone for whales of 2000 metres (2km) within the seismic activity. The submitter believes this control measure is necessary and would like this control measure to be extended to dolphins and increased to 100km. **Claim:** the EP would require a substantial increase in mitigation methods that are backed by strong evidence, and the shutdown zones should be significantly increased to ensure these species [dolphins] are protected. **Claim**: Scientific research demonstrates that seismic blast noise travels over 100 km's in the oceans. The impact to marine life is well beyond the described zone in this EP.	CGG acknowledges claims regarding impacts to dolphins and seals over the duration of the Regia MSS and has reviewed the Environment Plan (EP) to ensure that the assessment of potential impacts to dolphin species have been adequately described and assessed. Sound exposure criteria thresholds and impacts to marine mammals were identified using extensive peer review, published literature (referenced throughout the EP). In addition, modelling was conducted by internationally renowned underwater noise specialist, Jasco Applied Sciences, for the EP (B7a and B7b - Sound Modelling Reports) to assist in understanding the potential acoustic impacts on key regional receptors including marine mammals. Table E7-5-1 in Section E7 - Underwater Sound (Marine Mammals) of the EP states the sound exposure guidelines for the onset of Permanent Threshold Shift (PTS), Temporary Threshold Shift (TTS) and the current interim criterion for impulsive sound sources for marine mammal' behavioural threshold. Table E7-5-1 of EP Appendix E7 shows that the noise effect criteria for PTS for high-frequency cetaceans (such as dolphins) was not reached during any modelled scenario. Table E7-5-1 also shows that the noise effect criteria for TTS per pulse effect criteria is not reached but the TTS 24hr cumulative effect criteria is reached up to 50 m. However, it is not feasible that a dolphin would remain within that distance of the moving vessel for 24 hrs, thus TTS is not predicted. Table E7-5-1 of the EP shows that the noise effect criteria for PTS for otariid pinnipeds (such as sea lions and fur seals) was not reached during any modelled scenario. Table E7-5-1 also shows that the noise effect criteria for TTS per pulse effect criteria is not reached but the TTS 24hr cumulative effect criteria is reached up to 60 m. Again, it is not feasible that a seal would remain within that distance of the moving vessel for 24 hrs, thus TTS is not predicted. Sections 6.2 and 6.4 (of EP Appendix E7), state that impacts to high-frequency cetaceans and otariid pinnipeds are limited to avoidance behaviour within an area out to 2.1 – 11.8 km depending on where in the Operational Area the survey is being undertaken. As high-frequency cetaceans and otariid pinnipeds are not dependent on any specific area, impacts are predicted to be limited to avoidance behaviour affecting individuals but not at a level to reduce fitness. The PMST Report (Appendix B5 – PMST Reports) identified that 6 dolphin species, which are classed as high-frequency cetaceans, and 3 otariid pinnipeds species potentially occur within the area that may be affected by underwater sound. For both dolphin and otariid pinnipeds, the predicted level of impact based on the effect (minor) and uncertainty (medium) levels is assessed as medium within the EP. The predicted level of impact is clearly below the predefined acceptable levels of impact as detailed in Section 7 of EP Appendix E7. The mitigation and management measures detailed in Section 8 provide sufficient confidence in the predicted effect levels and therefore the increase in exclusion ones is not required. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

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M41	**Matter**: Temporal seismic exclusion periods **Claim:** Seismic blasting may be avoided at certain times of the year to minimise the chance of harming the whales or interfering with their feeding, but no matter what time of the year activity is conducted, whales of some species will be visiting. **Claim:** The submitters believe that the decision to stop seismic blasting during the months of January, February and March, as outlined in the EP is insufficient. There is clear evidence that many marine mammal species are frequenting this area in other months for feeding, calving and migration.	CGG acknowledges claims regarding seasonal exclusions relevant to the timing of the Regia MSS and has reviewed the Environment Plan (EP) to ensure that these have been adequately described. As detailed in response to Matter M10 above, impacts and risks to marine mammals, including impacts to seasonal biologically important behaviours (feeding, calving and migration) have been assessed in EP Appendix E7 (Impact Assessment – Underwater Sound: Marine Mammals) and EP Appendix D2 (Risk Assessment – Collision with Marine Fauna), where relevant. Measures to mitigate impacts are also detailed in these Appendices and in the Fauna Management Plan, included in Appendix G. The Fauna Management Plan includes whale detection and measures to minimise anthropogenic noise threats to whales, associated with the survey and, vessel strike for all species. EP Appendix F2 (ALARP Assessment) Section 6.1 describes the process that CGG undertook to establish timing constraints for the activity and the additional measures identified to protect species during biologically important behaviours, such as: • Minimising the duration of the survey to a maximum of 60 days of acquisition • Surveying shallower Southern Right Whale (SRW) Biologically important Areas (BIAs) between November and April when this species is not known to be present. • Not surveying during the months of January-March and managing potential interactions with Pygmy Blue Whales (PBW), and other foraging species, given the larger spatial distribution of the population through the shoulder seasons, i.e., through the implementation of the Fauna Management Plan. EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2 provides for further assessment of key environmental values and sensitives including these species and identifies: • There will be no impact to SRWs within reproduction BIAs based on spatial and temporal exclusion zones, and the energetic costs of behavioural disturbance on migration would be extremely low, if avoidance behaviour occurred, and would not impact the recovery of the species. • As the Regia MSS will only occur during one season when blue whales are present in Australia waters, and permanent or temporary hearing loss and/or displacement of blue whales is not predicted based on the implementation of detection systems and actions as described in the Fauna Management Plan (Appendix G2). The Regia MSS will not impact on the recovery of the population. In accordance with the control measures set out within the EP, the Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and acceptable levels in accordance with environmental regulatory requirements. CGG has considered these claims and on the basis of the strong suite of control measures already proposed, is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M42	**Matter**: The use of MFOs/MMOs is inadequate for marine mammal detection **Claim:** The measures described of having a Marine Fauna Observer (MFO) on a boat to spot whales, and reduce the scale of seismic blasting frequency if they are spotted, is ineffective. Whales live below the ocean and below the field of view of a person standing on a boat. Many of the affected species can dive for prolonged periods of time, and will not be sighted from above the water. Seismic blasting during known periods of presence for these identified species will inevitably lead to harm, hearing loss and disruption in navigation, feeding and breeding activities of cetaceans in the area. **Claim:** The method of protection and detection having a having a Marine Fauna Observer (MFO) on a boat to spot whales, and reduce the scale of seismic blasting frequency if they are spotted, is ineffective. I have personally spoken to a retired marine spotter and they claim it was almost impossible to watch the water at all times and detect animals below the surface. Any attempt to create corridor in the sea and blasting exclusion zones and shut down distances is likewise unfeasible as currents and all oceans creatures travels as they wish and are hard to monitor. **Claim:** Given the potential damage to whales' hearing and communication systems, it is vitally important that they are detected during a seismic operation:	CGG acknowledges claims regarding the ability of Marine Fauna Observers (MFOs) to detect cetaceans and has reviewed the Environment Plan (EP) to ensure that limitations and supplemental methods have been adequately considered and described. Measure M#03: Fauna Management System, which includes the Fauna Management Plan (EP Appendix G2), outlines specific measures to minimise anthropogenic noise threats to relevant species as required by EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales. Further, an activity limitation (M#01) has been applied to reduce the acoustic source size used for the survey. As described in EP Appendix G1 (Control Measures and Environmental Performance), the Fauna Management System is designed to safeguard marine mammals, with a primary focus on Southern Right Whales (SRWs) and Blue Whales (BW), during the Regia MSS. This control measure employs various surveillance methods to detect marine mammal presence, assess their classification, monitor behaviour, and ensure the adaptation of the acquisition plan to minimise the impact of sound on these mammals. The Fauna Management System and Fauna Management Plan, describe multiple methods for detecting fauna, including Marine Fauna Observers (MFO) and Passive Acoustic Monitoring (PAM) from the vessel, and Acoustic Detection Monitoring (ADM) within the broader area. Acoustic monitoring provides for the detection of vocalising whales, including submerged whales. Further, an expert panel of independent and qualified cetacean experts will assist in responding to the dynamic situations that are likely to arise during the survey, to ensure that appropriate action Is taken. This panel will coordinate aerial surveys to detect the movement of SWs into and out of the coastal reproduction BIA, and the movement of BWs into and out of the Otway area, complementing vessel-based observations and acoustic monitoring, In addition to the use of PAM and ADM, in recognition that whales will not be visually detectable when they are submerged, pre-acquisition detection criteria have been established that require that no SRW or BW are detected within 24-48 hours prior to acquisition commencing, as detailed in the Fauna Management Plan (Appendix G2), Figure G2-6.

	THEME	**MARINE MAMMALS (M)**
#	**Comments received**	***Titleholder response***
	The method of detecting whales by using an observer based on the ship conducting the seismic survey is not valid. **Claim:** Vulnerable species, the fin whale and the sei whale feed in the operating area during the southern summer period and are still found in the area in the month of April. Additionally, the pygmy right whale can also be found foraging in the operating area during this time. Given the failures highlighted with the spotting program used to detect whales as described in the EP, we urge NOPSEMA to refuse approval for this project.	CGG has not proposed to 'reduce the scale of seismic blasting frequency' in response to the detection of a whale, as stated in claims by interested persons. Rather, the Fauna Management Plan details specific actions that could be taken including to shut-down the acoustic source, move away, etc in the event that cetaceans are detected within relevant shut down zones determined through expert sound modelling. Further, based on previous seismic surveys, CGG has chosen to only implement a shut down and not a low power zone to provide another level of protection to whales. The proposed measures adopt the best national and international approaches to minimise impacts on marine mammals, including the use of a reduced acoustic source size, spatial and temporal measures to prohibit acquisition in and around BIAs during relevant seasons, MFOs, PAM, ADM, shut-down zones, soft-starts, delayed starts, limitations on night-time and low visibility operations and adaptive management procedures involving an expert panel. In particular, the Regia MSS has adopted the EPBC Act Policy Statement 2.1 and additional measures that exceed the requirements of this policy statement to ensure that the risks to marine mammals are reduced to the lowest possible level. Additionally, several alternative management and mitigation measures were assessed in EP Appendix F2 (ALARP Assessment) and were rejected as explained in Annex 4. CGG considers that the management and mitigation measures proposed are sufficient to ensure impacts are reduced to levels that are as low as reasonably practicable and acceptable, in accordance with regulatory requirements. Consequently, no changes have been made to the EP in response to these claims.
M43	**Matter:** Limitations of MFOs/MMOs when detecting marine mammals **Claim:** Additionally, high sea states commonly experienced in the region can lead to seasickness among MFOs, particularly during shifts and high swell events, potentially impairing their ability to observe marine fauna. In such cases, off-duty MFOs may need to cover shifts, resulting in fatigue and reduced effectiveness in monitoring. Furthermore, MFOs on duty are not relieved for bathroom breaks, leaving periods of time without any mitigation methods in place.	CGG acknowledges claims regarding MFO duties and fatigue management and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. **CGG has considered these claims and has updated EP Appendix G2 (Fauna Management Plan), EP Appendix F3 (Acceptability Assessment) and EP Appendix G1 (Environmental Outcomes) to include an additional MFO/ PAM operator to ensure fatigue management is appropriately addressed with allowance for 24/7 coverage.** Refer to M46 below for response to fatigue management for PAM operators.
M44	**Matter:** MFOs/MMO's only effective in daylight hours and optimum conditions **Claim:** An additional concern is the fact that the surveys are proposed to be conducted during both the day and night. Certainly, whales in the vicinity would not be detected by an observer at night. 24-hour seismic operations cannot be justified and should not take place. **Claim:** The effectiveness of management procedures during daylight hours heavily relies on visibility of the marine environment. MFOs can only observe surface marine fauna during daylight, and their observations are contingent upon good visibility. However, visibility in offshore operations varies significantly based on environmental conditions such as wind, sea state, precipitation, fog, and glare, with visibility decreasing as these factors worsen. **Claim:** Moreover, the challenging ocean conditions in the Otway Basin pose significant threats to MFO visibility and increase the risk of equipment damage and environmental emergencies. These conditions, along with the direct experience of poor environmental conditions during the 2020 Otway Basin Seismic Survey, led MFOs to recommend additional mitigation measures for future seismic surveys in the region, such as restricting operations to daylight hours and periods of good visibility (Seiche Environmental, 2020). **Claim:** Deck top spotters for whales are only able to view whales in the direction within which they look and only within limited scope during daylight hours, even under optimal conditions. There are no guarantees therefore that threatened, endangered or critically endangered species present within the 10.3km behavioural response impact zone defined under the EP (p. 582) will be detected under the spotting methods described.	CGG acknowledges claims regarding the effectiveness of Marine Fauna Observers (MFOs) being limited to daylight hours with reasonably sighting conditions, and has reviewed the Environment Plan (EP) to ensure that these limitations were adequately considered in the EP. In the context of the Regia MSS, it is acknowledged that there are inherent challenges in detecting whales. Whales, with their vast range of species, behaviours, and habitats, require a multifaceted approach to detection. No single method can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection. CGG acknowledge that visual detection of marine fauna is restricted to daylight hours and reasonable sightings conditions. Consequently, several management measures have been considered in the Fauna Management Plan (Appendix G2) such as pre-acquisition detection criterion which must be met which counter these limitations. Further, CGG has committed to utilising Passive Acoustic Monitoring (PAM) and Fixed Buoy Acoustic Monitoring technologies to detect whale vocalisations in the marine environment. Prior to deploying these acoustic detection systems, they will be subjected to rigorous testing to validate reliability. These tests are specifically designed to confirm the systems' capability to detect whales, including those emitting low-frequency calls. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). The use of acoustic detection technologies will allow CGG to detect whales 24/7 while the survey is occurring and will not require operations to be restricted to daylight hours. Aerial surveys will complement vessel-based observations and acoustic monitoring techniques and will be overseen by the Southern Right Whale (SRW) and Blue Whale (BW) expert panel. This panel will be in charge of determining when aerial surveys are required and will develop the objectives and flight path for the survey. Aerial surveys will be used to identify if SRWs are moving between the reproduction BIA and if BWs are moving within the Otway area. As listed in Appendix G2 details of when aerial surveys will be employed are listed below: • Directed by the BW/SRW expert panel • Required to obtain information to inform decision making • Detection of a BW outside of 23 km of the seismic source • Detection of a SRW occurs outside of 15 km of the seismic source • 3 BW/SRW shut downs occur within 24 hours • The seismic source has not been able to restart within the past 12 hours due to an ongoing presence of BW/SRW.

	THEME	**MARINE MAMMALS (M)**
#	**Comments received**	***Titleholder response***
	Claim: Further we contend that it is impossible to accurately observe whales in poor weather and at night. **Claim:** Marine observers are on board blasting vessels, that operates day and night (blasts every 10 seconds or so for months on end) cannot see whales and dolphins (cetaceans) at night and cannot see below the see surface. A high risk process that offers few guarantees that whales and dolphins will be adequately protected. **Claim:** I don't see how it can even be considered that seismic blasting is allowed to happen at night or at other times when visibility is not optimum. And even when it IS the best visibility possible, who is to say that the whales aren't travelling underwater for tens of minutes at a time, which would make them difficult to spot.	CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M45	**Matter:** MFOs/MMO's do not have a 360-degree view, the use of one MFO/MMO is inadequate. **Claim:** Marine fauna observers (MFO) are inadequate to mitigate any impacts to whales. They are positioned on board their vessel to look for whales, however their view is insufficient as it does not cover a full 360 degree view, which is imperative to ensure there is no harm to whales. There is no place on the ship from which an MFO can monitor all sides of the vessel or even under the sea water; this becomes much harder at night when visibility diminishes further with low light. **Claim:** MFOs have a maximum visibility of 180 degrees at any given time, and their field of vision is further hindered by the structures and layout of their work environment, even on the vessel bridge where visibility is presumed to be highest. **Claim:** Marine observers are on board the blasting vessels, which operates day and night (blasts every 10 seconds or so for months on end) but they cannot see whales and dolphins (cetaceans) at night and they cannot see below the see surface. There are no vantage points on the vessels from which they have a 360 degree view of the surrounding ocean. **Claim:** Especially because it is impossible for the MMOs to have simultaneous 360 degree vision, as well as full concentration, for hours on end. **Claim:** The Fauna Management Plan states that there must be at least one Marine Fauna Observer (MFO) on duty at all times on the seismic vessel during daylight hours. However, having only one MFO on watch is inadequate for maintaining a comprehensive 360-degree watch over the sea surface for marine fauna. **Claim:** The submitter recommends a minimum of two MFOs are on duty at all times from the Seismic Vessel (totalling 4 MFOs onboard). **Claim:** The Environment Plan specifies the use of Marine Fauna Observers (MFO) to watch for marine fauna during the course of the survey. It is believed that having one observer on board a vessel is inadequate, as their ability to monitor the water around the entire vessel is impeded. There is no way for the observer to see behind the vessel and the observer's view is diminished in the dark, making it almost impossible to see dolphins and whales.	CGG acknowledges claims regarding the ability of Marine Fauna Observers (MFOs) to survey relevant zones, and has reviewed the Environment Plan (EP) to ensure this was adequately considered in the EP. In the context of the Regia MSS, it is acknowledged that there are inherent challenges in detecting whales. Whales, with their vast range of species, behaviours, and habitats, require a multifaceted approach to detection. No single method can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection. CGG acknowledge that visual detection of marine fauna is restricted to daylight hours and reasonable sightings conditions. Consequently, several management measures have been considered in the Fauna Management Plan (Appendix G2) such as pre-acquisition detection criterion which must be met which counter these limitations and CGG has committed to utilising Passive Acoustic Monitoring (PAM) and Fixed Buoy Acoustic Monitoring technologies to detect whale vocalisations in the marine environment. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). EPBC Act Policy Statement 2.1(Interaction between offshore seismic exploration and whales) considers that Part A Standard Management Procedures may be sufficient in locations where the likelihood of encounters with whales is low, and trained crew can perform observation duties. However, proponents need to consider additional avoidance and mitigation measures for areas and/or seasons where the likelihood of encountering whales is moderate to high. In these circumstances, proponents should not only apply Part A Standard Management Procedures, but should also consider measures like those outlined in Part B Additional Management Procedures. In situations involving biologically important habitats, such as those encountered in the Regia MSS, it is necessary to implement more extensive measures, such as greater precaution zones and additional marine mammal observer coverage. Requirements for Marine Mammal Observers are specified in Section B.1 of the policy statement which states, 'as the likelihood of encountering whales increases, the proponent should engage MMOs. MMOs should be trained and experienced in whale identification and behaviour, distance estimation, and be capable of making accurate identifications and observations of whales in Australian waters. The MMOs should assist other observers (e.g. trained crew) and be available to provide advice, should whales be encountered.'. The Fauna Management Plan includes requirements for Vessel Crew to be trained in the implementation of the FMP, and to communicate whale sighting immediately, supported by relevant information where available (e.g. latitude and longitude, time of sighting, no. of whales). **CGG has considered these claims and has determined that additional MFO coverage is appropriate to further mitigate the potential for whales to go undetected within the 3 km observation zone. Consequently, CGG has updated EP Appendix G2 (Fauna Management Plan), EP Appendix F3 (Acceptability Assessment) and EP Appendix G1 (Environmental Performance) to include an additional MFO/ PAM operator will be present on the vessel to support fatigue management. In addition to the two MFOs on the seismic vessel, two dedicated, trained and experienced MFOs will be onboard a dedicated spotter vessel at all times. In addition, officers of the watch on the attending support vessels will be trained to identify whales during daylight hours to support the visual detection of marine mammals.**
M46	**Matter:** Passive Acoustic Monitoring (PAM) is inadequate for marine mammal detection **Claim:** An industry report from a similar region concluded that PAM is ineffective during periods of darkness or poor visibility and that detecting certain vocalizations using standard equipment is nearly impossible (Seiche	CGG acknowledges claims regarding the inadequacy of Passive Acoustic Monitoring (PAM) for marine mammal detection, and has reviewed the Environment Plan (EP) to ensure this was adequately considered in the EP. CGG acknowledges there are inherent challenges in detecting whales. Whales, with their vast range of species, behaviours, and habitats, require a multifaceted approach to detection. No single method can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
	Environmental, 2020). Given that PAM is primarily relied upon to mitigate impacts on whales during these conditions, this finding raises concerns, especially in an area known for its significance to blue whales and southern right whales. **Claim**: The submitter supports professional PAM operator opinions that PAM is an ineffective mitigation method to mitigate impacts to marine mammals in the proposed survey area, and should be excluded from the Regia Marine Seismic Survey. **Claim:** Omission of the decision criteria that must be met before PAM can be validated as suitable for estimating distances for low frequency cetaceans during the application of the 14 km shut down for blue whales, and a 12 km shut down for southern right whales.	CGG commissioned a desktop assessment of available whale detection technologies for marine seismic surveys (Appendix F5 Marine Mammals Detection Technology Assessment) which acknowledges the limitation of PAM's ability to detect marine life acoustic signals in amongst the large impulse noise of seismic airgun arrays being discharged during seismic surveys. Dependent on the water depth and subsurface geology, the subsurface acoustic reflections from each seismic source impulse can still be returning to the sea surface whilst the next airgun array impulse is generated. This means that the actual "quiet" period where lower amplitude marine fauna noise source levels can be monitored, without background seismic signal data present, is either minimal or non-existent during active survey periods. Therefore, PAM systems need to be able to filter out, or differentiate between seismic energy returns. The best times for detection of marine mammal vocalisations are the short periods of lower noise levels between seismic airgun pulses and during transits between seismic survey transect lines (line changes). Appendix F5 details a number of PAM systems, including the advantages and disadvantages of each. CGG will utilise this report along with the most up to date scientific research prior to acoustic detection system confirmation. EP Appendix F5 Marine Mammals Detection Technology Assessment notes "the use of PAM is just one aspect of a comprehensive environmental monitoring and management plan that operators implement during seismic surveys. Other measures, such as visual monitoring, pre-survey assessments, and adherence to mitigation zones, also play significant roles in safeguarding marine life during seismic operations." To maximize marine mammal detection, CGG has committed to utilising Fixed Buoy Acoustic Monitoring along with PAM technologies to detect whale vocalisations in the marine environment. Prior to deploying these acoustic detection systems, they will be subjected to rigorous testing to validate reliability. These tests are specifically designed to confirm the systems' capability to detect whales, including those emitting low-frequency calls. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). The use of acoustic detection technologies will allow CGG to detect whales 24/7 while the survey is occurring and will not require operations to be restricted to daylight hours. CGG acknowledges that visual detection of marine fauna is restricted to daylight hours and reasonable sightings conditions. Several management measures have been considered in the Fauna Management Plan (Appendix G2) such as pre-acquisition detection criterion which must be met which counter these limitations. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M47	**Matter:** PAM is only effective when marine mammals are communicating **Claim:** The Plan also states CGG will use Passive Acoustic Monitoring (PAM) with the aim of detecting dolphins in real time, particularly at night or during poor visibility. PAM only works when dolphins are communicating, and is ineffective at determining the range and bearing of animals. As dolphins often go for over 10 minutes without calling (41), PAM can fail to realise that dolphins are in the area, as they can enter the seismic blasting zone during a period when they are not communicating. 41. https://seamor.org/how-long-can-a-bottlenose-dolphin-hold-its-breath/#:~:text=Dolphins. **Claim:** CGG plans to use Passive Acoustic Monitoring (PAM) with the aim to detect whales in real time, particularly at night or during poor visibility operations. These only work when whales are communicating, and are ineffective at determining the range and bearing of animals. As whales often go for over 20 minutes without calling, PAM can miss that whales are in the area, as a whale can enter the seismic blasting zone during a period when they are not communicating. The irony is that seismic blasts themselves can silence whales. (32). The seismic blasts can also interfere with PAM as they are ineffective in noisy environments, as the seismic blasts can mask the sound of the whales.(38) 32. https://www.fisheries.noaa.gov/feature-story/10-wonderful-whale-facts 38. https://www.wwf.org.uk/sites/default/files/2019-04/Acousticmonitoring-WWF-guide lines.pdf.	CGG acknowledges claims regarding the effectiveness of Passive Acoustic Monitoring (PAMs) and has reviewed the citations referenced in the development of the Environment Plan (EP) to ensure that the use of PAMs for the Regia MSS represents a suitable mitigation measure. CCG notes the following supplied websites provided with corresponding claims, which do not represent published peer reviewed literature and are therefore not discussed further: • https://seamor.org/how-long-can-a-bottlenose-dolphin-hold-its-breath/#:~:text=Dolphins. • https://www.fisheries.noaa.gov/feature-story/10-wonderful-whale-facts • https://www.wwf.org.uk/sites/default/files/2019-04/Acousticmonitoring-WWF-guide lines.pdf. The ALARP assessment for underwater sound during the Regia MSS evaluates the impact of elevated underwater sound levels resulting from seismic, vessel and helicopter operations during the survey. These activities have the potential to disturb marine fauna due to underwater sound, presenting an effect that is both unusual in its nature and of higher order in terms of potential impact. The sustainable management of the Regia MSS activity relies on multiple categories of controls including both standard and novel measures for planning the survey, management of sound source emissions, and visual and acoustic detection of marine fauna. The strength of the management approach for underwater noise of the Regia MSS lies in the multiple and complementary controls adopted, recognising and mitigating that each have its technical or practical limitations. Pre-survey planning and assessment is the most effective step in eliminating unnecessary risks and impacts, and reducing residual risks and impacts to ALARP and Acceptable levels. The pre-survey planning and assessment step for Regia MSS is comprehensive and includes iterative testing of planned sound emissions of survey layouts that have been refined following considerations of insights gained from interested persons. For cetaceans in the low frequency hearing group (baleen), the maximum distance for the per pulse Permanent Threshold Shift (PTS) criterion to be triggered is 30 m from the sound source and up to 90 m for the Temporary Threshold Shift (TTS) criterion. Cumulative sounds exposure criteria have been assessed and used conservatively, as they assume that an individual remains within the moving sound source for 24 hrs during operations. The cumulative PTS sound exposure criterion may be exceeded if an individual remains within 5.07 km of the moving sound source for 24 hrs. Similarly, the cumulative TTS criterion is exceeded if a cetacean remains within 41.9 km of the moving sound source for 24 hrs. For

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	Claim: Secondly, some whale species, including blue whales, vocalize less frequently in their feeding areas (Oleson et al., 2007). Lastly, many species of concern either do not produce vocalizations or do so infrequently. Consequently, even if whales pass close to a PAM system, they may remain undetected. This ineffectiveness of PAM was evident in a recent seismic survey where no baleen whales were detected despite visual sightings of blue whales during the day (Seiche Environmental, 2020). Additionally, when baleen whales are detected, there is low confidence in determining their location and direction using standard PAM equipment (Seiche Environmental, 2020).. This inability to accurately locate whales hampers the ability of operators to establish safety zones.	cetaceans in higher frequency hearing groups, such as toothed whales, the distances from the sound sources to where sound effect criteria may be exceeded is much reduced and well within visual and acoustic observation ranges of controls adopted. The Fauna Management Plan (EP Appendix G2) outlines the implementation of marine fauna observers, acoustic detection technologies, aerial surveys, activity action zones for vessels and helicopters to reduce vessel collisions and disturbance, shut down zones and pre-acquisition and acquisition processes and actions. Marine Fauna Observers (MFOs) are deployed to monitor fauna before and during survey activities. Mitigation and buffer zones, and sound source limitations are established to ensure compliance with noise levels and to protect marine fauna. Spatial and temporal restrictions on survey activities are enforced during sensitive times and locations. Additionally, communication protocols and adaptive management strategies are in place, based on marine fauna observations and noise monitoring data. EP Appendix F2 (ALARP Assessment) provides information on the technical, economic, and practical feasibility of these measures, which is high as they rely on established technologies and equipment, are cost-effective, and are practical to implement within the standard operating procedures of the Regia MSS. They also align with regulatory expectations for minimising underwater sound impacts. To enhance the management of underwater sound, the ALARP assessment recommends the adoption of additional measures such as real-time underwater sound monitoring and advanced marine fauna observation technologies, including passive acoustic monitoring on the vessel and on tethered buoys. These technologies are in various stages of development and integration with existing vessel systems. They are deemed expensive but reasonable and recommended to improve the detection and monitoring of marine fauna in relation to underwater sound sources, despite some uncertainty in their effectiveness. EP Appendix F5 (Marine Mammal Detection Technology Assessment) provides an assessment of the level of technical and commercial development of systems to support marine fauna observations. This report was used to inform the assessments in Annex 2 and Annex 4. Overall, passive acoustic monitoring has become an essential tool in marine mammal research and mitigation, offering a non-invasive and effective means of detecting vocalising marine mammals. Ongoing advancements in technology continue to improve the accuracy, efficiency, and scope of PAM use in a broad range of applications. However, it is considered best practice as an additional management procedure beyond the standard management procedure requirements of the EPBC Act, Policy Statement 2.1. The Fauna Management Plan (Appendix G2) outlines specific measures to minimise anthropogenic noise threats to relevant species, including the implementation of increased safe operating distances between vessels and whales, pre-acquisition surveys and a variety of detection systems. CGG acknowledges that there are inherent challenges in detecting whales. Whales, with their vast range of species, behaviours, and habitats, require a multifaceted approach to detection. No single method, including PAM, can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection. CGG has committed to utilising PAMs and Fixed Buoy Acoustic Monitoring technologies to detect whale vocalisations in the marine environment. Prior to deploying these acoustic detection systems, they will be subjected to rigorous testing to validate reliability. These tests are specifically designed to confirm the systems' capability to detect whales, including those emitting low-frequency calls. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). The use of acoustic detection technologies will allow CGG to detect whales 24/7 while the survey is occurring and will not require operations to be restricted to daylight hours. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M48	**Matter:** PAM is ineffective in noisy marine environments **Claim:** The irony is that seismic blasts themselves can silence dolphins. (32). The seismic blasts can also interfere with PAM as they are ineffective in noisy environments, as the seismic blasts can mask the sound of the dolphins.(38) 32. https://www.fisheries.noaa.gov/feature-story/10-wonderful-whale-facts 38. https://www.wwf.org.uk/sites/default/files/2019-04/Acousticmonitoring-WWF-guide lines.pdf. **Claim:** Passive Acoustic Monitoring (PAM) is proposed as a method to detect whales during surveys, particularly in conditions of low visibility such as night time. This is especially crucial because seismic operations are proposed to occur during darkness when visual detection methods utilised by Marine Fauna	CGG acknowledges claims regarding the effectiveness of PAM in noisy marine environments and has reviewed the citations provided alongside the Environment Plan (EP) to ensure that the use of PAM for the Regia MSS is a suitable mitigation measure. CGG has committed to utilising Passive Acoustic Monitoring (PAM) and Fixed Buoy Acoustic Monitoring technologies to detect whale vocalisations in the marine environment. Prior to deploying these acoustic detection systems, they will be subjected to rigorous testing to validate reliability. These tests are specifically designed to confirm the systems' capability to detect whales, including those emitting low-frequency calls. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). The use of acoustic detection technologies will allow CGG to detect whales 24/7 while the survey is occurring and will not require operations to be restricted to daylight hours. CGG commissioned a desktop assessment of available whale detection technologies for marine seismic surveys (Appendix F5) which acknowledges the limitation of PAM's ability to detect marine life acoustic signals in amongst the large impulse noise of seismic airgun arrays being discharged during seismic surveys. Dependent on the water depth and subsurface geology, the subsurface acoustic reflections from each seismic source impulse can still be returning to the sea surface whilst the next airgun array impulse is generated. This means that the actual

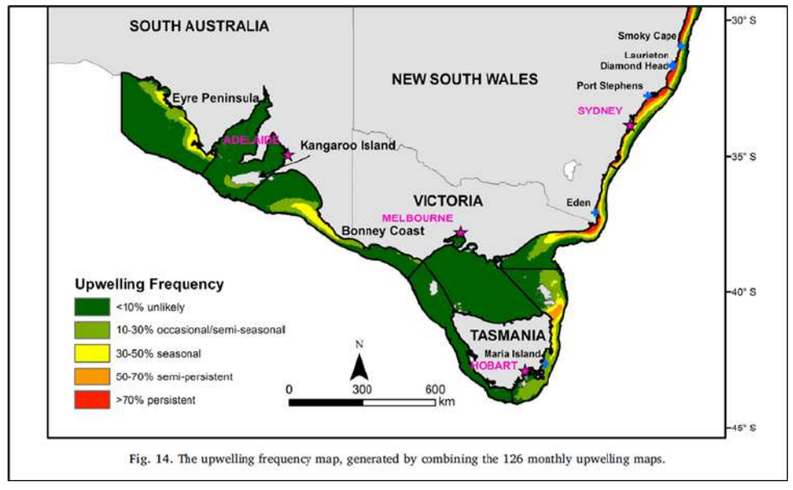
	THEME	**MARINE MAMMALS (M)**
#	**Comments received**	***Titleholder response***
	Observers (MFOs) are ineffective, and in areas important for blue whales and southern right whales. However, PAM faces challenges in effectively detecting whales due to several reasons. Firstly, the constant noise generated by the seismic vessel interferes with the detection process. **Claim:** Moreover, PAM equipment is typically placed behind the seismic vessel, exposing it to various sources of noise such as engine and propeller noise, as well as the low-frequency sound produced by airguns. For example, the vocalisation frequencies of blue whales are between 10 and 40 Hz (Cummings & Thompson, 1971; Richardson et al., 1995) and seismic vessel engine frequencies are in a similar range starting from 11.0 Hz. This proximity to such noises masks the low-frequency biological sounds emitted by whales, further reducing detection capabilities (Seiche Environmental, 2020). **Claims:** There may well be whale detection systems in place, however whales can't be seen at night, and baleen whale vocalisations are difficult to detect against the similar frequency levels of boat propellers and seismic airgun blasts.	"quiet" period where lower amplitude marine fauna noise source levels can be monitored, without background seismic signal data present, is either minimal or non-existent during active survey periods. Therefore, PAM systems need to be able to filter out, or differentiate between seismic energy returns. The best times for detection of marine mammal vocalisations are the short periods of lower noise levels between seismic airgun pulses and during transits between seismic survey transect lines (line changes). Appendix F5 lists several PAM systems and details the advantages and disadvantages of each. CGG will utilise this report along with the most up to date scientific research prior to the Regia MSS commencing and acoustic detection system confirmation. The Fauna Management Plan (Appendix G2) outlines specific measures to minimise anthropogenic noise threats to relevant species, including the implementation of increased safe operating distances between vessels and whales, pre-acquisition surveys and a variety of detection systems. CGG acknowledges that there are inherent challenges in detecting whales. Whales, with their vast range of species, behaviours, and habitats, require a multifaceted approach to detection. No single method, including PAM, can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection. CGG considers the approach detailed in the Fauna Management Plan (Appendix G2) to be adequate in improving the detection of marine mammals during the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M49	**Matter:** The use of two PAM operators is inadequate **Claim:** Implementing a 24-hour roster with only two PAM operators is likely to lead to fatigue and gaps in observations due to necessary breaks for meals and rest. For instance, dividing the 24-hour period between just two operators could mean either a 12-hour shift, which raises concerns about fatigue and adequate meal breaks, or a 4-hour rotation repeated six times, which doesn't allow for sufficient sleep. To ensure effective monitoring, more than two PAM operators are needed for continuous 24-hour operations. **Claim:** If PAM is used during the seismic survey (and operations are 24 hours), the submitter recommends more than two PAM operators are rostered on. This will 1) manage fatigue, and 2) allow for continuous 24 hour PAM observations to be maintained.	CGG acknowledges claims regarding the number of PAM operators allowed and has reviewed the Environment Plan (EP) to ensure that the proposed mitigation measure is sufficient. As described in the Fauna Management Plan (Appendix G2), CGG's whale detection strategy includes the integration of acoustic detection systems, recognising the dynamic nature of whale behaviour and the crucial factor that whales must vocalise to be detected. Acoustic detection systems will consist of passive acoustic monitoring (PAM) and the use of fixed buoy acoustic detection monitoring. **CGG has considered these claims and has updated EP Appendix G2 (Fauna Management Plan), EP Appendix F3 (Acceptability Assessment), and EP Appendix G1 (Environmental Outcomes) and Appendix G2 (Acceptability Assessment) Section 6 to include an additional MFO/ PAM operator to ensure fatigue management is appropriately addressed with allowance for 24/7 coverage.**
M50	**Matter:** The use of reliable marine mammal detection technology **Claim:** Whales may not be detected before they are in the area of operation. No information has been given in the application on reliable detection of whales during both day and the night. **Claim:** PAM has been determined as an ineffective detection mechanism for Baleen whales [NOPSEMA, RMS ID: A701545]. In response, CGG has included ADMs (tethered buoys), MFOs and aerial surveys to their detection regime. Yet, adding additional methods, each with admitted weaknesses in various environmental conditions, does not necessarily constitute a reliable method for improving the detection regime for whales and other marine mammals. **Claim:** It is quite possible that the addition of other visual and/or acoustic methods of detection will not increase detection rates for PAM under conditions of poor visibility or in the absence of whale vocalisations. **Claim:** If one single protected whale comes within range of the area, without question it should confidently be able to be detected to ensure zero harm or stress is caused to it, otherwise the activity should not be allowed to be conducted. It is not acceptable or worth the risk to be adding non-essential human caused pressures to the remaining individuals of these protected species.	CGG acknowledges claims regarding the reliability of marine mammal detection technology and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. In the context of the Regia MSS, it is acknowledged that there are inherent challenges in detecting whales. Whales, with their vast range of species, behaviours, and habitats, require a multifaceted approach to detection. No single method can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection. CGG acknowledge that visual detection of marine fauna is restricted to daylight hours and reasonable sightings conditions. Several management measures have been considered in the Fauna Management Plan (Appendix G2) such as pre-acquisition detection criterion which must be met which counter these limitations. Further, CGG has committed to utilising Passive Acoustic Monitoring (PAM) and Fixed Buoy Acoustic Monitoring technologies to detect whale vocalisations in the marine environment. Prior to deploying these acoustic detection systems, they will be subjected to rigorous testing to validate reliability. These tests are specifically designed to confirm the systems' capability to detect whales, including those emitting low-frequency calls. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). The use of acoustic detection technologies will allow CGG to detect whales 24/7 while the survey is occurring and will not require operations to be restricted to daylight hours. Aerial surveys will complement vessel-based observations and acoustic monitoring techniques and will be overseen by the SRW and BW expert panel. This panel will be in charge of determining when aerial surveys are required and will develop the objectives and flight path for the survey. Aerial surveys will be used to identify if SRWs are moving between the reproduction BIA and if BWs are moving within the Otway area. As listed in Appendix G2 details of when aerial surveys will be employed are listed below:

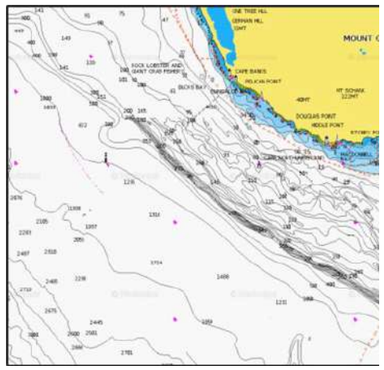
	THEME	**MARINE MAMMALS (M)**
#	**Comments received**	***Titleholder response***
		• Directed by the BW/SRW expert panel • Required to obtain information to inform decision making • Detection of a BW outside of 23 km of the seismic source • Detection of a SRW occurs outside of 15 km of the seismic source • 3 BW/SRW shut downs occur within 24 hours • The seismic source has not been able to restart within the past 12 hours due to an ongoing presence of BW/SRW. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M51	**Matter:** Restrict seismic operations to daylight hours periods of good visibility periods **Claim:** Considering the limitations of PAM in protecting marine fauna, especially during darkness or poor visibility, additional mitigation measures are necessary. It is recommended to restrict seismic operations to daylight hours or periods of good visibility to ensure the protection of listed species under the Environment Protection and Biodiversity Conservation (EPBC) Act. **Claim:** The submitter recommends seismic operations are not conducted during darkness and/or periods of poor visibility to mitigate impacts to EPBC listed species during these times. **Claim:** The submitter recommends mitigation methods appropriate for the region and expected environmental conditions and include restricting seismic operations to daylight hours and/or periods of good visibility only.	CGG acknowledges claims regarding the restriction of the Regia MSS to daylight hours during periods of good visibility and has reviewed the Environment Plan (EP) to ensure that mitigation measures are adequately considered within the EP. CGG acknowledge that visual detection of marine fauna is restricted to daylight hours and reasonable sightings conditions. Several management measures have been considered in the Fauna Management Plan (Appendix G2) such as pre-acquisition detection criterion which must be met which counter these limitations. Further, CGG has committed to utilising Passive Acoustic Monitoring (PAM) and Fixed Buoy Acoustic Monitoring technologies to detect whale vocalisations in the marine environment. Prior to deploying these acoustic detection systems, they will be subjected to rigorous testing to validate reliability. These tests are specifically designed to confirm the systems' capability to detect whales, including those emitting low-frequency calls. The deployment of acoustic monitoring technologies to detect whales in real time may provide an additional method of detecting and avoiding whales during surveys and may be particularly useful during night-time and low visibility operations (Appendix F5). The use of acoustic detection technologies will allow CGG to detect whales 24/7 while the survey is occurring and will not require operations to be restricted to daylight hours. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in Appendix G2 of the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M52	**Matter:** The use of aerial surveys **Claim:** At a minimum, CGG must be required to have a spotter plane surveying for cetaceans every day that seismic blasting occurs in order to provide a 10km sighting zone. **Claim:** Given the site-specific and species-specific data and recommendations of the Seiche Environmental report, it is essential additional mitigation procedures are employed throughout the current survey area to compensate for the lack of detection probability of baleen whales, particularly during poor environmental conditions. Additional mitigation procedures include aerial surveys, or where aerial surveys are not possible (during darkness or during high wind conditions), a complete cessation of acquisition. **Claim:** It is recommended aerial surveys are undertaken immediately prior to, and during, seismic swathes to ensure aerial surveys are more effectively providing a “clearance search” of the footprint of the seismic vessel. **Claim:** The submitter recommends aerial surveys are conducted immediately prior to, and during, acquisition within any BIA. **Claim:** The submitter recommends seismic surveys are not undertaken during poor visibility during daylight hours without a concurrent aerial survey. **Claim:** During poor environmental conditions, aerial surveys can assist in the maintenance of the Shut Down Zone, given MFOs positioned on the seismic vessel have significantly reduced visibility. It is recommended seismic surveys are not undertaken during poor visibility without a concurrent aerial survey.	CGG acknowledges claims regarding the use of aerial surveys for assisting with marine mammal detection during the Regia MSS and has reviewed the Environment Plan (EP) to ensure that this mitigation measure was adequately considered. The Fauna Management Plan (Appendix G2) outlines the details on how the Regia MSS will minimise anthropogenic noise threats and the risk of collision to fauna to relevant species. A number of different techniques will be utilised by Regia MSS to assist in the detection of marine mammals. No single method can guarantee the detection of all whales, but by combining several complementary techniques across various platforms, it maximises the likelihood of accurate and early detection both above and below the water surface. The Chapter 9 of the Fauna Management Plan provides a detailed procedure, including actions to be implemented during the seismic acquisition such as soft starts, shut down zone distances and pre-acquisition and acquisition processes and actions. Aerial surveys will complement vessel-based observations and acoustic monitoring techniques and will be overseen by the SRW and BW expert panel. This panel will be in charge of determining when aerial surveys are required and will develop the objectives and flight path for the survey. Aerial surveys will be used to identify if SRWs are moving between the reproduction BIA and if BWs are moving within the Otway area. As listed in Appendix G2 details of when aerial surveys will be employed are listed below: • Directed by the BW/SRW expert panel • Required to obtain information to inform decision making • Detection of a BW outside of 23 km of the seismic source • Detection of a SRW occurs outside of 15 km of the seismic source • 3 BW/SRW shut downs occur within 24 hours • The seismic source has not been able to restart within the past 12 hours due to an ongoing presence of BW/SRW. CGG acknowledge that visual detection of whales is restricted to daylight hours and reasonable sightings conditions and that animal behaviour has the ability to further affect detection probability. Several management procedures such as pre-acquisition detection criterion which must be met will help to counter these limitations. Daily use of aerial surveys, including while Regia MSS is within BIAs, is not considered appropriate nor practicable on account of weather constraints, aviation safety and aircraft availability. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in Appendix G2 of the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
	Claim: Aerial surveys increase the observation area, however continue to limit observation to the sea surface only. The EP does not stipulate when an aerial survey will be conducted prior to commencement of acquisition. **Claim:** Similarly, aerial detection to scan an area of up to 10km from the survey vessel will only locate whales in optimal conditions, during daylight hours. The public is not informed whether operations will cease when spotting is unavailable due to insufficient light or poor weather. **Claim:** Having spotter planes to look out for them on occasion will certainly not be sufficient to monitor for the presence of marine mammals either.	
M53	**Matter:** EP fails to address if there is a process to ensure there is no seismic discharge in the Southern Right Whale reproduction Biologically Important Area **Claim:** Based on the information inspected, it is not clear that there is a real-time verification process in place to ensure that there is no discharge of the seismic array inside the BIA. There are no roles and responsibilities for this critical verification step specified in the EP. **Claim:** The submitter recommends a real-time verification process be put in place to ensure there is no discharge of the seismic array inside the BIA. Roles and responsibilities for this critical verification step need to be specified in the EP.	CGG acknowledges claims regarding the potential for discharge of seismic sources in the southern right whale BIA and has reviewed the Environment Plan (EP) to ensure that this was adequately considered. The peak period for Southern Right Whale (SRW) mating is from mid-July through to August (CoA 2012). Pregnant females generally arrive during late May/early June and depart with calves in September to October however the general time of arrivals and departures varies on an inter-annual basis. The PMST Report identified that Southern Right Whale breeding is known to occur within an area that may be affected by underwater sound, in addition the area where the noise effect criteria for SRW is reached overlaps the reproduction BIA (Appendix B12 MAP-REG-EPM-069). Consequently, CGG has included additional measures to protect the SRW within this BIA by surveying shallower areas between November and April when this species is not known to be present. Therefore, due to the spatial and temporal exclusion zones, there will be no impact to SRWs within reproduction BIAs. EP Section 6.4.3 (Details of Control Measures) includes “M#05: Sail Line Plan: Procedural control for contractor activities, including technical and spatial data to comply with CGG specifications”; and Section 6.5 (Environmental Performance Outcomes and Standards) includes “EPO 7. To ensure that the seismic acquisition activity adheres to the specified boundaries and technical requirements outlined in the sail line plan, minimizing the impact on the environment’. Additional details on the M#05: Sail Line Plan, including an evaluation of effectiveness, are included in EP Appendix G1 (Control Measures and Environmental Performance), which shows that the sail line plan supports onboard real-time monitoring of survey performance to ensure that the seismic acquisition activity adheres to the specified boundaries and achieves the specific geophysical objectives, ensuring there can no seismic discharge outside of the permitted areas. As shown in Table G1-2 (Measurement Criteria for the Regia MSS), this control measure is the responsibility of the Quality Control Representative and is included in the daily report. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in Appendix G2 of the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
M54	**Matter:** Additional mitigation measures for marine mammal detection **Claim**: CGG should also be required to utilise new technology that detects whales in low visibility conditions (i.e. WhalePOD and Seiche Smart Visual Detection Systems (SSVDOs)) - technologies which were developed using funding from NOPSEMA specifically to address the known limitations of MFOs. **Claim**: Given the legal responsibility for CGG to reduce harm to whales and cetaceans during seismic surveys under EPBC Policy Statement 2.1, CGG’s refusal to transparently consider the costs associated with technology that addresses a limitation with MFOs is a problematic weakness of this EP. **Claim:** The SSVDOs are now commercially available, but CGG in its EP did not conduct a cost-benefit analysis regarding the implementation of the device during seismic surveys. The reason for this was not explained. **Claim:** Similarly, the WhalePOD system was deemed “likely to be cost prohibitive for the potential benefits of system deployment” according to the EP (p.3232), though no cost projection was provided. **Claim:** Support vessels with MFOs should be utilised to facilitate execution of an extended Shut Down Zone for blue whales and southern right whales to 14 kms and 12 kms, respectively.	CGG acknowledges claims regarding alternative/ additional mitigation measures for whale detection and has reviewed the Environment Plan (EP) to ensure that these were adequately considered. CGG recognise the complexities and uncertainties inherent in this task and acknowledge that no single detection method is perfect. Therefore, they have strategically leveraged the strengths of multiple alternative methods to enhance confidence in detection capabilities. 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. Regarding the consideration of alternative technologies, CGG commissioned an independent assessment of available whale detection technologies as additional management procedures for the Regia 3D Marine Seismic Survey, as included in EP Appendix F5 (Marine Mammals Detection Technology Assessment). This detailed assessment collated all available information on the status and suitability of alternative detection technologies, such as the Seiche Marine Technology | Thermal Imaging and High Definition Camera and WhalePOD (thaum.io) camera based systems. The information provided is from relevant equipment vendors and publicly available sources. Both systems are in stages of commercialisation and the costs associated with trailing all of these technologies would be unreasonable, considering the uncertainty in effectiveness to mitigate impacts. Consequently, these technologies are not currently suitable for application and alternative detection methods are considered more suitable. Up to 10 aerial surveys have been included as part of Control Measure M#03 Fauna Management System, as stated in EP Section 6.4.3 (Details of the control measures) and as evaluated in the EP Appendix F2 (ALARP Assessment – Annex 4).

	THEME	MARINE MAMMALS (M)
#	**Comments received**	***Titleholder response***
	Claim: Additional mitigation procedures are required for the Regia Marine Seismic Survey to compensate for the lack of detection probability of baleen whales during poor environmental conditions. Additional mitigation procedures appropriate for the region (given its significance and provision of critical habitat for protected species) include support vessels, aerial surveys and a cessation of acquisition during poor environmental conditions. The submitter recommends additional mitigation procedures, including a Support Vessel, to compensate for the lack of detection probability of baleen whales during poor environmental conditions. Additional mitigation procedures include support vessels with MFOs, aerial surveys, and a cessation of acquisition during poor environmental conditions. **Claim:** Implement radars that search for whales under the ocean water that are monitored 24/7 or whilst the seismic blasts are being conducted. **Claim:** Implement radars that search for dolphins under the ocean water that are monitored 24/7 whilst the seismic blasts are being conducted. **Claim:** It is quite possible that the addition of other visual and/or acoustic methods of detection will not increase detection rates for PAM under conditions of poor visibility or in the absence of whale vocalisations. **Claim:** Furthermore, the proposed mitigation measures, such as the presence of Marine Fauna Observers on board, are woefully inadequate to protect marine life effectively. The limitations of these measures, combined with the lack of consideration for new technologies that could enhance whale detection in low visibility conditions, highlight the shortcomings of CGG\'s approach to mitigating environmental impacts. **Claim:** Given the critical nature of detection of SRW due to the Operating Area intersecting known migration paths of SRWs and given that the survey will be active during months of migration and calving and Logan’s Beach whale nursery, Submitter requests that cumulative effectiveness of multiple detection strategies be explicitly assessed for the expected combinations of conditions during the acquisition period. **Claim:** Request studies into the probability of a whale being within the testing zone undetected, giving due consideration to the proposed exclusion zone, the diving and travelling distances of whales and the limitations of human observers. Use this information to reassess the risk mitigation proposal. **Claim**: Saying that no blasts occur if whales are sighted does not account for the waves traveling many miles and disrupting the whales' perception and navigation further out than within visible range of vessels or helicopters.	The use of a spotter vessel with MMOs was also evaluated in EP Appendix F2 (ALARP Assessment – Annex 4), which identified a significant cost element for a limited benefit of an extra 3 km radius of observation. Further, the addition of more vessels in an area would increase overall risks more than the offset of impacts considering the other measures adopted (i.e. tethered buoys). Conventional radar is not considered an appropriate detection technology given it is designed to reflect off dense objects like metal, which means that it is unlikely to detect whales or dolphins. Radio detection and ranging (also known as RADAR), has been tested and found to be a poor performer in real world conditions for a range of reasons (Verfuss et al 2018). CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *Ursula K. Verfuss, Douglas Gillespie, Jonathan Gordon, Tiago A. Marques, Brianne Miller, Rachael Plunkett, James A. Theriault, Dominic J. Tollit, Daniel P. Zitterbart, Philippe Hubert, Len Thomas, Comparing methods suitable for monitoring marine mammals in low visibility conditions during seismic surveys, Marine Pollution Bulletin, Volume 126, 2018, Pages 1-18, ISSN 0025-326X, https://doi.org/10.1016/j.marpolbul.2017.10.034. (https://www.sciencedirect.com/science/article/pii/S0025326X17308809)*

7. Productivity

	THEME	PRODUCTIVITY
#	***Comments received***	***Titleholder response***
Key Matter: The Bonney Coast Upwelling		
P01	**Matter:** Misrepresentation of the Bonney Coast Upwelling **Claim:** The EP inaccurately characterises the Bonney Upwelling as being smaller, less extensive, and further from the boundary of the OA than it actually is . In reality, the upwelling overlaps with the OA and provides the nutrient-dense water that is critical for primary production and zooplankton growth. **Claim:** The full expanse of the Bonney Upwelling has been misrepresented in the Environmental Plan. **Claim**: The Environment Plan misrepresents the full expanse of the biologically important area, the Bonney Upwelling. **Claim**: Both the size of the area that will be affected and the true extent of the Bonny Upwelling have been misrepresented by the industry.	CGG acknowledges claims regarding representation of the Bonney Upwelling and has reviewed the Environment Plan (EP) to ensure that the representation described in the EP is an accurate assessment based on available scientific literature. CGG recognises the fundamental role of the upwelling systems to the ecology of the area. Earlier consultation with conservation groups and relevant persons revealed that the change in timing of the survey did not adequately address concerns associated with effects to zooplankton communities, particularly during upwelling events and the values associated with Key Ecological Features (KEFs) in the region. CGG subsequently endorsed an activity limitation of no acquisition within 500m of the Bonney Coast Upwelling KEF, nor the West Tasmanian Canyons KEF (Appendix F3: page 24 Regia EP). The upwelling systems in the region are collectively known as the Great Southern Upwelling which is not a continuous system but rather 3 distinct systems (the Bonney Coast Upwelling, Kangaroo Island Upwelling and the Eyre Peninsula Upwelling) that ebb and flow in strength and extent within and between years, subject to wind conditions. The Bonney Coast Upwelling extends NW from Cape Nelson, Portland with its epicentre running NW from Mount Gambier. Summarising over 10 years of data Huang and Wang (2019) were able to clearly show where upwelling activity is highest and conversely where it is minimal. The area within which the Regia MSS is being proposed is not within any of the core upwelling zones (Appendix F3: page 30-31, Regia EP)  Fig. 14. The upwelling frequency map, generated by combining the 126 monthly upwelling maps. **Figure 1:** Map showing upwelling frequency. Examination of nautical charts from the region further clarifies why the core of the Bonney Coast Upwelling is centred adjacent to Mt Gambier. The bathymetry indicates a steep drop off from 200 to 400m which provides a geological ramp for concentrating and intensifying upwelling dynamics, with the steep ridge line providing a mechanism for intense and concentrated upwelling of nutrients and associated plankton communities, as shown below.

	THEME	**PRODUCTIVITY**
#	***Comments received***	***Titleholder response***
		 **Figure 2:** Map showing bathymetry off the coast of Mount Gambier. Further, mapping of the Bonney Coast Upwelling, as shown in Figure MAP-REG-EPM-003b (Bonney Coast Upwelling Key Ecological Feature), is based on spatial data from the Australian Government's National Conservation Values Atlas (NCVA). The spatial boundary of this KEF, as defined in the NCVA, was derived through a review of enhanced chlorophyll occurrence for summer seasonal data (1998-2010) provided by CSIRO. CGG has considered these claims and is satisfied that the extent of the Bonney Coast Upwelling has been appropriately described and mapped using Australian Government spatial data in the EP, as described outlined above. As a result, the EP has not been updated in response to these claims. ***References:*** *Huang, Z. and Wang, X.H., (2019) Mapping the spatial and temporal variability of the upwelling systems of the Australian south-eastern coast using 14-year of MODIS data. Remote sensing of environment, 227, pp.90-109.*
P02	**Matter:** Overlap of the Operational Area with the Bonney Coast Upwelling **Claim**: Blue whales and pygmy blue whales feed on these zooplankton in the waters of the Bonney Upwelling and the OA, thus an accurate characterisation of the Bonney Upwelling is crucial to understanding the connection between the physical environment and the food webs and species present in the OA and Environment Planning Area. These inaccuracies in the EP in detailing the BIA and the Key Ecological Feature of the Bonney Upwelling is another reason this EP and all seismic activity in the area should be refused. **Claim**: The Bonney Upwelling is a Key Ecological Feature that overlaps with the Environment Planning Area and abuts the OA. The upwelling provides the nutrient-dense water that is critical for primary production and zooplankton growth. Blue whales and pygmy blue whales feed on these zooplankton in the waters of the Bonney Upwelling and the OA. **Claim**: The EP misrepresents the environmentally significant Bonney Upwelling. It fails to acknowledge it's much larger geospatial range that sees it enter into the Operating Area. This indicates an increased likelihood of Baleen Whale species, such as the Pygmy Blue Whale being within the OA. Further, it indicates that plankton, a keystone species, would be at higher risk of seismic blasting. **Claim:** The Bonney Upwelling in fact enters into the operational area, as the distribution and productivity of its nutrient rich waters has an impact across a significant geospatial area. Given the close relationship of much of marine life with these waters there is an increased likelihood that key species will be found in the operational area.	CGG acknowledges claims regarding overlap with the Bonney Coast Upwelling Key Ecological Feature (KEF) and has reviewed the Environment Plan (EP) to ensure that the overlap and significance of this KEF was appropriately described in the EP. As stated in the response to Matter P01, the upwelling systems in the region are collectively known as the Great Southern Upwelling which is not a continuous system but rather 3 distinct systems (the Bonney Coast Upwelling, Kangaroo Island Upwelling and the Eyre Peninsula Upwelling) that ebb and flow in strength and extent within and between years, subject to wind conditions. Mapping of this area is appropriate based on the Australian Government's National Conservation Values Atlas. The importance of the Bonney Coast Upwelling KEF is described in detail in EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton) Section 4.3 (Bonney Coast Upwelling Key Ecological Feature), with predicted impacts detailed in Section 6 (Predicted Levels of Impact), on page13. CGG has committed to M#01: Activity Limitations, whereby there will be no discharge of the sound source within the Bonney Coast Upwelling KEF, based on NCVA mapping as described in response the Matter: P01, and no discharge of the sound source in January, February and March to protect the associated increase in biodiversity during this period. It is important to note that the upwelling systems are extremely variable, with their extent and strength varying considerably both within and between years. Such variability provides a mechanism and evolutionary driver for those animals reliant on the upwelling, to be mobile and willing to move. By utilising the geostationary Himawari-8 satellite, Leplastrier & Huang (2017), were able to map the BCU on a daily basis from Nov 2016-March 2017 and showed that the upwelling was actually made up of 3 distinct events each approximately 2 weeks in duration and covering a total area that ranged from 9460 to 12923 km^2. This is a 27% change in potential feeding ground extent within a single season. As noted in EP Appendix F3 (Acceptability Assessment) Section 5.2.7.1 (Species-specific Sensitivity), the areal and temporal extent of the upwelling can vary by over 50% from year to year (Huang & Wang 2019); however, the core of the system remains adjacent to Mt Gambier for the reasons previously outlined.

	THEME	PRODUCTIVITY
#	***Comments received***	***Titleholder response***
	Claim: The proximity of the OA to the Bonney Upwelling which produces a significant volume of zooplankton presents a real danger to the foraging opportunities for all marine species within and beyond the OA.	CGG has considered these claims and is satisfied that the overlap and importance of the Bonney Coast Upwelling KEF has been appropriately characterised in the EP, as outlined above and response to Matter P01. As a result, the EP has not been updated in response to these claims. *References:* *Huang, Z. and Wang, X.H., (2019) Mapping the spatial and temporal variability of the upwelling systems of the Australian south-eastern coast using 14-year of MODIS data. Remote sensing of environment, 227, pp.90-109.* *Leplastrier, Aero and Huang, Zhi (2017) Dynamics and connectivity of the Bonney Coast Upwelling on a daily scale using the Himawari-8 dataset. AMSA 2017 Conference Proceedings, Darwin NT.*
P03	**Matter**: Implementation of mitigation measures to avoid the Bonney Coast Upwelling Key Ecological Feature (KEF) **Claim:** CGG indicated in an email to the submitter (November 2023) that it "will implement an activity limitation for there to be no acquisition within 300m of the Bonney Coast Upwelling KEF." However, there is no indication in the EP of how CGG plans to implement this mitigation measure, given the timing and spatial extent of the Bonney Upwelling varies each season and is detected principally by satellite imagery analysis of chlorophyll-a prevalence, or aerial surveys to detect fronts and plankton blooms. The boundaries of the upwelling also change rapidly (i.e. timescale of days) in response to changes in oceanographic variables, such as wind speed and direction and temperature. Given the lack of clarity detailing how CGG plans to detect the spatial extent of the Bonney Upwelling and adjust acquisition accordingly within short timeframes**,** the submitter does not consider that CGG will be able to mitigate the impacts of seismic surveys on this KEF, and strongly recommends that the EP be refused. **Claim:** If this project were to go ahead the operating area would require a significant redfininition of the area to exclude [marine parks and] the Bonney Upwelling, the EP would require a substantial increase in mitigation methods that are backed by strong evidence, and the shutdown zones should be significantly increased to ensure these species are protected.	CGG acknowledges claims regarding implementation of mitigation measures to avoid the Bonney Coast Upwelling Key Ecological Feature (KEF), and has reviewed the Environment Plan (EP) to ensure that the Regia MSS area proposed takes into account the presence of the KEF and has established boundaries sufficiently distant from this system. As stated in the response to Matters P01 and P02 this KEF is a highly dynamic system that will vary in spatial and temporal extent every year. There are no hard boundaries to these systems hence an appropriate response is to locate a survey outside the upwelling areas as defined through examination of long-term satellite records, as was done by Huang & Wang (2019), and as established under the Australian Government's National Conservation Values Atlas (NCVA). Their data clearly shows the BCU to be located west of Cape Nelson. This does not preclude the existence and prevalence of smaller and/or more transient upwelling events in other areas as there is evidence of upwelling at a lower level across the greater shelf region and blue whales are known to aggregate for feeding along the Otway coast SE of Cape Nelson (Gill et al 2011). As detailed in EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton) CGG has committed to M#01: Activity Limitations, whereby there will be no discharge of the sound source within the Bonney Coast Upwelling KEF, based on mapping as described in response the Matter: P01, and no discharge of the sound source in January, February and March to protect the associated increase in biodiversity during this period. Appropriate timing of the MSS will also mitigate any potential effects by avoiding periods when upwelling is most prevalent. CGG has considered these claims and is satisfied that measures to mitigate impacts to the Bonney Coast Upwelling KEF have been appropriately considered and adopted in the EP, as outlined above and response to Matters P01 and P03. As a result, the EP has not been updated in response to these claims. ***References**:* *Gill PC, Morrice MG, Page B, Pirzl R, Levings AH, Coyne M. (2011) Blue whale habitat selection and within-season distribution in a regional upwelling system off southern Australia. Marine Ecology Progress Series 421:243-63.*
Key Matter: Impacts on Plankton, including krill		
P04	**Matter** No modelling of impacts to zooplankton **Claim:** The studies mention permanent sub- lethal effects on rock lobster and mortal injury to zoo plankton. The Environmental plan accepts these as non-critical risks however there seems to be no independent modelling of the impact of underwater sound as recommended by the preliminary environmental statement. **Claim:** CGG claims that larvae mortality is negligent when compared with natural mortality, based upon a study by DNV Energy (2007) and Hawkins & Popper (2012). The more recent study by Lara and Vasconcelos (2021) investigated zebra fish larvae (a reference model species in biology) and their physiological and behavioural response to sound. Lara and Vasconcelos (2021) found larvae exposed to 150dB increased 1) mortality by approximately 33%, 2) heart rate, 3) yolk consumption and 4) cortisol levels. In summary, exposure to loud noises resulted in negative physiological responses within larvae. **Claim:** GG has failed to incorporate highly relevant research to accurately inform an assessment on mortality impacts of seismic activity on larval fish.	CGG acknowledges the claims regarding modelling of seismic impacts and has reviewed the Environment Plan (EP) to check that all available and relevant modelling studies on seismic effects have been included in the knowledge base used to develop the EP. There have been a number of modelling studies that have investigated the effects of sound in the marine environment and its impact across numerous taxa, although there remains a bias towards adults/juveniles rather than planktonic communities. As part of this EP, modelling was commissioned to understand the likely seismic propagation profiles within the proposed MSS area and this output matched to known levels of Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) impairment as described in the scientific literature (EP Appendix B7a and B7b – Sound Modelling Report, Jasco 2023 and 2024). From this modelling, effect distances were established for all identified groups including for fish eggs and larvae, and this has informed the EP. The largest targeted modelling study looking specifically at seismic effects on zooplankton was done by Richardson et al (2017) as a direct response to an experiment by McCauley et al. (2017) which found seismic caused significant mortality in zooplankton out to 1.2km from the source. Richardson et al (2017) also found significant declines of up to 22% of plankton biomass within their survey area of 86km x 30km, reducing with distance thereafter, but remaining within natural mortality rates. The outcomes of the McCauley et al (2017) work have not been repeated elsewhere hence, while clearly significant and relevant to the question of impacts, there remain multiple inconsistencies in this work that need to be tested and verified through repeated experiments.

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	Claim: CGG has failed to identify cause and effect pathways from the impacts of anthropogenic noise on important behavioural mechanisms and has not modelled potential mortality or injury through these pathways (such as settlement cues). **Claim:** Sources referenced such as Sætre and Ona (1996) are outdated and CGG fails to incorporate more recent literature when completing the risk analysis on larvae. We therefore recommend the risk assessment and mitigation procedures are revised based on recent literature relevant to the seismic location.	**EP Appendix F3, Section 5.2.10 (formerly 5.2.7) has been updated to include results from a very recent, major research program (ZoopSeis - https://www.hi.no/hi/nettrapporter/toktrapport-en-2022-9) commissioned by the Institute of Marine Research in Norway, to specifically test the general validity of the outcomes of the McCauley et al (2017) experiment. This program used a combination of modelling and laboratory work to address what forces can induce injury and mortality in zooplankton, and at what ranges from a seismic survey such forces could be strong enough to have a lasting impact. Results to date support the model of declining impacts with increasing distance from the seismic source.** In totality, there is a significant body of work - as outlined in the EP - that illustrates a consistent pattern of harmful but variable effects close to seismic sources but attenuating with distance. To date there has been no evidence found of population-level effects on plankton communities nor any subsequent trophic cascading as a direct result of any MSS. While the evidence is clear that MSS will cause injury and/or mortality to plankton in close proximity to seismic signals these impacts are substantially less than natural mortality rates. EP Appendix F3 (Acceptability Levels of Impact and Risk) Section 5.2.7 (Plankton Communities and the Bonney Upwelling System) further discusses the risks associated with seismic surveys and plankton communities. Mitigating effects, no matter what their size, is still the preferred outcome under the principals of ALARP and hence the motivation to avoid any MSS surveys within central upwelling areas and during periods of peak upwelling intensity. Consequently, CGG has committed to M#01: Activity Limitations, whereby there will be no discharge of the sound source within the Bonney Coast Upwelling KEF, based on NCVA mapping as described in response the Matter: P01, and no discharge of the sound source in January, February and March to protect the associated increase in biodiversity during this period. **CGG has considered these claims and is satisfied that all available and relevant modelling studies on seismic effects have been included in the knowledge base used to develop the EP, as outlined above, and the EP has been updated to include reference to recent publications.** ***References:*** *McCauley RD, Day RD, Swadling KM, Fitzgibbon QP, Watson RA, Semmens JM (2017) Widely used marine seismic survey air gun operations negatively impact zooplankton. Nature Ecology & Evolution 1(7):0195.* *Richardson AJ, Matear RJ, Lenton A (2017) Potential impacts on zooplankton of seismic survey.CSIRO, Australia 34 pp.* *Vereide EH and Kuhn S (2024) Effects of Anthropogenic Noise on Marine Zooplankton in Popper, Arthur N. et al. (Ed.) The effects of noise on aquatic life. Springer Cham. 500 pp.* *Vereide EH, Khodabandeloo B, de Jong K (2024) The copepod Acartia sp. is more sensitive to a rapid pressure drop associated with seismic airguns than Calanus sp. Marine Ecology Progress Series 730:15-30.*
P05	**Matter:** Impacts to plankton (and marine life in general) from seismic survey **Claim**: Research has shown that seismic blasting results in serious harm to a variety of marine life, deafening whales and disrupting their feeding and migration, damaging the ability of southern rock lobsters to function and navigate, and causing mortality in small fish and zooplankton. **Claim:** Evidence suggests that seismic blasting harms marine life, including deafening whales, disrupting their feeding and migration, and causing mortality in small fish and zooplankton. **Claim:** Research suggests seismic blasting can cause harm to various marine whales, rock lobsters, fish, and zooplankton. It can disrupt their feeding patterns, migration routes, and even lead to mortality in some cases. **Claim:** Research demonstrates its adverse impact on various marine species, including the deafening of whales, disruption of their feeding and migration patterns, impairment of southern rock lobsters' functioning and navigation abilities, and mortality among small fish and zooplankton. As such, repercussions extend to industries such as commercial fishing and tourism. Given that this project benefits a select few at the expense of the wider community, including residents along the South-west Victorian coastline, it needs to be refused by NOPSEMA. **Claim:** CGG claims that larvae mortality is negligent when compared with natural mortality, based upon a study by DNV Energy (2007) and Hawkins & Popper (2012). The more recent study by Lara	CGG acknowledges the claims regarding impacts to a variety of marine life from seismic discharges, including plankton, and has reviewed the Environment Plan (EP) to ensure these were appropriately assessed. There is sufficient science available to demonstrate that seismic discharges can cause impairment and/or mortality to marine animals at various stages in their life-cycles. However, the scale of such impacts varies widely and is dependent on a multitude of factors that influence the dynamics at any given location and time period. Populations (of fish and invertebrates) and processes (Upwelling events, water temperatures, wind strength) within the southern Australian marine environment vary greatly, both within and between years, and between locations. This variability is well-documented and of much greater magnitude than hitherto reported effect sizes for MSS impacts. The EP provides an extensive assessment of the literature on underwater sound effects to Plankton, Fish, Invertebrates, Birds, Turtles, Marine Mammals and People, as documented in Appendix E (Environmental Impact Assessments). Based on community consultation these broad groupings are further split into species, or taxa specific sections that enable a more detailed assessment of the potential effects of seismic. Further to this a specific assessment was done to first define and then address acceptable levels of environmental impact and risk, as documented in EP Appendix F3 (Acceptability Assessment), which provides further assessment of key environmental values and sensitivities in recognition of their significance to the community. Specifically, more details have been provided on impacts and risks from seismic surveys on Southern Right Whales, Blue Whales, Southern Rock Lobsters, Giant Crab, Glass Eels (incl. adults), Gould's Squid, Plankton Communities and the Bonney Coast Upwelling, Snapper, Black Lip Abalone, Pale Octopus

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	and Vasconcelos (2021) investigated zebra fish larvae (a reference model species in biology) and their physiological and behavioural response to sound. Lara and Vasconcelos (2021) found larvae exposed to 150dB increased 1) mortality by approximately 33%, 2) heart rate, 3) yolk consumption and 4) cortisol levels. In summary, exposure to loud noises resulted in negative physiological responses within larvae. **Claim:** GG has failed to incorporate highly relevant research to accurately inform an assessment on mortality impacts of seismic activity on larval fish. **Claim:** CGG has failed to identify cause and effect pathways from the impacts of anthropogenic noise on important behavioural mechanisms and has not modelled potential mortality or injury through these pathways (such as settlement cues).	and King George Whiting. These assessments also include investigations of commercial fishing catches and correlations with seismic activity across the region, all of which found zero relationship. There is no evidence to support the premise that a 60 day MSS in the location outlined in the Regia MSS is likely to cause critical impacts to populations of fish species, invertebrate species and any associated commercial fisheries of these organisms. This is not to deny impacts from the Regia MSS will occur but rather that all likely or potential impacts will be immeasurably small relative to the variability that populations and processes display on multiple scales of space and time. CGG have utilised all available published and peer reviewed scientific information to provide the appropriate context for any potential seismic effects on key organisms and to draw conclusions. Nevertheless, we remain open to further analysis should new and compelling information be forthcoming. CGG has considered these claims and is satisfied that impacts to plankton (and marine life in general) have been appropriately considered in the EP, as outlined above and as detailed extensively in responses to Matters within the Themes of Fish, Sharks, Invertebrates and Fisheries and Marine Mammals. As a result, the EP has not been updated in response to these claims.
P06	**Matter**: Extent of impacts to zooplankton **Claim**: Research shows that zooplankton experience death 1.2 km away from seismic blasting sources (and potentially further), but the maximum distance used by CGG to evaluate risk is 230m - vastly underestimating the impacts to zooplankton. The EP must be rejected due to its errors in estimating zooplankton mortality, including the percentage of the population affected, recovery time, and the degree of wider ecosystem impacts such as food source availability for foraging whales. **Claim**: After seismic blasts, many zooplankton are found dead , as far away as 1.2 kilometres from the blast site. (Reference: McCauley, R., Day, R., Swadling, K. et al. Widely used marine seismic survey air gun operations negatively impact zooplankton. Nat Ecol Evol 1, 0195 (2017). https://doi.org/10.1038/s41***-***-****, https://www.nature.com/articles/s41***-***-****) **Claim**: Seismic blasting kills zooplankton (the foundation of biodiversity & life in the ocean) within a radius of 1.2 kilometres. Studies show that seismic blasting has the following impacts; Death of zooplankton. **Claim:** Evidence that seismic blasting harms marine life is growing. The sound travels under water faster than it does through air, and can travel for hundreds to thousands of kilometres. It can kill or injure marine animals close by – even tiny zooplankton more than a kilometre away. **Claim:** Investigations conducted in Australia in conjunction with a full scale marine seismic survey suggested decreases in zooplankton abundance extending as far as 15km from the seismic source. Richardson AJ, Matear RJ and Lenton A. 2017. Potential impacts on zooplankton of seismic surveys. CSIRO, Australia. **Claim:** The pelagic fauna in the water do not maintain positions based on the substrate, but rather move with the water. This is the nature of pelagic environments. The outcome of this irrefutable natural law may be likened to a conveyor-belt impact providing a continual source of fresh zooplankton to the impact zone thus creating vast areas down stream depleted of life. The Pygmy blue whale and the Southern Right Whales are currently listed as Endangered under the Australian Environment Protection and Biodiversity Conservation (EPBC) Act. These species frequent the area of the CGG proposal AND feed almost exclusively on krill. NOPSEMA is entrusted with safeguarding species listed under the EPBC Act and must consider the 'conveyor belt' impact as having a direct and detrimental impact on the diet of these protected and endangered species. **Claim:** As the width and depth of the seismic blasts from a small single air gun kills krill at 1.2 km distance, the survey with its wide array of large guns would kill the plankton and krill across the whole area as it went backwards and forwards in a manner comparable to mowing a lawn. The much larger array that will be used in the proposed survey will certainly cause large-scale kills of fish, plankton, and the larval forms of eels and shellfish over a much longer distance.	CGG acknowledges the claims regarding impacts of mortality of zooplankton from seismic surveys and has reviewed the Environment Plan (Ep) to ensure these were appropriately assessed. To ensure that a thorough assessment of seismic effects to zooplankton has been completed CGG has utilised all available scientific peer-reviewed literature and reporting from government agencies such as Fisheries Authorities, which are considered authoritative and credible sources of information. EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton) provides 50 references that were key to assessing the impact of underwater sound/seismic on plankton. EP Appendix F3 (Acceptability Assessment) further interrogates available information to define what is an acceptable level of impact for plankton communities of the region (Section 5.2.7). A key piece of work that is being cited to inform claims of extensive mortality is that of *McCauley et al. (2017) Widely used marine seismic survey air gun operations negatively impact zooplankton. Nature Ecology & Evolution 1(7): 0195*. This work presents an outcome more extreme than other published studies investigating seismic effects on zooplankton, concluding that seismic caused uniform mortality of larval krill species up to 1.2km away from the source. There have been other studies since that experiment and none of them have found an extended mortality range as described by McCauley et al (2017). The extensive mortality reported by McCauley et al (2017) was of larvae of Australian Krill, *Nyctiphanes australis*, while other studies have focussed on copepods. There has been multiple feedback from this work as to the effectiveness and thoroughness of the experimental design because of the unparalleled outcome relative to other studies. This has included multiple studies to check the general validity of McCauley et al (2017) with none being able to find a similar result either through modelling (Richardson et al 2017) or further experimental work (Fields et al 2019). The Norwegian Institute of Marine Science, which is one of the largest marine research institutes in Europe, has just completed a dedicated 3-year program of research called Zoopseis (https://app.cristin.no/projects/show.jsf?id=2517155) which was designed to look at the effects of seismic sound on zooplankton. It was largely motivated by the contradictory results of McCauley et al (2017) and a subsequent study by Field et al (2019) which suggested that seismic effects are highly variable and dependent on multiple factors. The project has combined modelling and experimental work to gain further insights, and some results are already available with the final report due within the next 12 months. **The EP has incorporated relevant information from all peer-reviewed scientific papers produced from this work so far. (Vereide et al. (2023) and Vereide et al. (2024a)) assessed seismic effects on copepods, and found there was significant damage at close quarters to seismic discharges but no evidence to support extensive and unattenuated mortality out to 1km + as reported in McCauley et al (2017). Mortality levels reported were also lower than natural mortality rates and hence are predicted to be difficult to separate from background mortality levels. Both papers also note that effects are highly variable according to many factors such as size and power of the seismic array, what species are being looked at and what stage of their life cycle is present. A review paper by Vereide et al (2024b) highlighted the vexed issue of extrapolating experimental results to real-life situations. They noted that although a seismic survey may cover up to 3000 km² and shoot continuously for many weeks the animals will not be constantly exposed throughout that period. The duration of exposure in the reviewed studies lasted for a maximum of 3–4 days, which could be considered too long to be transferred into a real-life setting, considering advection and migration processes that typically occur in the plankton.** Weight of scientific evidence shows that the effects of seismic on zooplankton are clearly not ubiquitous nor unrelenting through the entire signal range. Weight of scientific evidence also indicates that mortality rates linked to seismic remain substantially

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	Claim: Krill, a critical food source for many larger species, have been found dead up to 1.5km from seismic blasting operations, zooplankton are liquified and larger species such as whales have been deafened or killed outright. **Claim:** In a peer-reviewed paper published in the prestigious journal Nature, Ecology and Evolution, McCauley et al. (2017) showed that all krill larvae suffer complete (100%) mortality out to at least 1.2 km from a seismic survey blast discharge. Regia (and others) use a modelling exercise to try to negate a real physical world experiment – this is an abuse of the scientific process. **Claim:** Tasmanian research found seismic blasting also triggers extensive death in plankton and krill, two crucial foundations of marine food webs, from more than a kilometre away. **Claim**: Recent Australian studies have shown that seismic blasts kill shellfish and zooplankton more than a kilometre away and "there is a significant and unacknowledged potential for ocean ecosystem function and productivity to be negatively impacted by present seismic technology."[1]. 1 Robert D. McCauley et al., 'Widely Used Marine Seismic Survey Air Gun Operations Negatively Impact Zooplankton', Nature Ecology & Evolution 1, no. 7 (22 June 2017): 1–8, https://doi.org/10.1038/s41559-017-0195. **Claim:** Invertebrates make up 92% of marine species and play a critical role in providing food for larger species. There is a wealth of evidence of impacts on invertebrates by seismic blasting operations. **Claim:** Problems that I foresee include: Killing off zooplankton that is a food supply for their prey of fish, squid and octopus (McCauley et.al. 2017). **Claim:** Seismic blasting causes significant death of zooplankton, with research showing this effect out to a distance and depth of 1.2km from the seismic source. (McCauley et.al, 2017). With the extent of passes to be conducted through the Operating Area, there would be significant mortality to the zooplankton, which contains not only next generation larvae of many marine species, but is a food supply for small fish, filter feeding shellfish such as scallops, jellyfish, baleen whales and certain seabirds such as the Short-Tailed Shearwater. **Claim:** The EP on page 33 states there may be permanent mortal injury and mortality to zooplankton within 200m from the sound blasts. If zooplankton is affected so are other species that rely upon the zooplankton as a food source. **Claim:** If the zooplankton suffer mortal injury will this impact the animals in this zone as they may not have access to the same volume of food (zooplankton)? **Claim:** As a result of the seismic blasting, the whole area would end up devoid of the plankton and krill that form the basis of the food chain for everything from fish to whales. **Claim:** Considering that even the geographical range that needs to be considered is still not adequately defined, it becomes even more difficult to compile an exhaustive list of potentially affected species. Additionally, as these species interact with other species which may be outside the buffer zone (for example plankton as a food source for other animals) the impact zone needs to be considered as reaching far beyond the impact zone of seismic blasting that may be initially and incorrectly narrowly defined as where the sound waves reach. **Claim:** The blast destruction of krill will result in a cascade of possibly irreversible, catastrophic consequences to the ecosystem. This process has been widely demonstrated in studies of keystone species across the world. We presume that Regia are aware of these facts since they were raised during public consultation processes and they state that they are working closely on them. This is not the case. The term "keystone" does not appear anywhere in Regia's application, despite being informed of their critical importance. **Claim:** I am conscious that seismic testing is known to harm everything from zooplankton right up the food chain to charismatic mammals.	lower than natural mortality rates and not distinguishable from background mortality levels. The McCauley et al (2017) study remains highly germane to the issue of seismic effects on zooplankton but there remains much work to be done before its outcomes could be extrapolated. Relative to the whole scientific literature base it has provided an 'outlier point' which needs further validation through repeated experiments that also improve on the original study design. Time and space are equally important to consider when assessing the potential impacts of a MSS survey on marine life. Plankton dynamics are extremely variable or 'patchy' in both time and space (as articulated in the Regia MSS EP, Appendix F3 Section 5.2.7.2) and this ensures there are no uniform outcomes from a disturbance such as a MSS. Short-lived organisms such as zooplankton have extremely high population turnover rates as they are reproducing continuously. This provides a mechanism for population growth and resilience to local scale disturbances. The relative importance of the Regia MSS area to keystone fish and invertebrate species in the region and the importance of this region to the planktonic stages of these species has been assessed in the EP. There is no scientific evidence to support the premise that the area encapsulated by the Regia MSS is critical to the population health of these species and this is articulated in the Regia EP for each species. Further, annual fisheries catches and recruitment data for a number of commercial species have been compared with annual seismic activity, with no evidence of a relationship found. To further decrease any potential risks, CGG has committed to M#01: Activity Limitations, whereby there will be no discharge of the sound source within the Bonney Coast Upwelling KEF, based on NCVA mapping as described in response the Matter: P01, and no discharge of the sound source in January, February and March with the timing of the Regia MSS aligned to a period of the year when recruitment and larval dynamics are at their lowest for the greatest number of species. Historical outcomes can also provide insights into potential impacts from seismic activity across the greater region. This assessment found no evidence for changes in population levels of any key fisheries species that can be correlated to seismic activity. Rather, annual variation in commercial catches or counts of recruits have been linked to historical levels of fishing effort and changes in large-scale climate variables. From the exhaustive investigation of the literature and historical fishing records it is concluded that, while there will be negative effects to plankton within close proximity to the seismic source, there is no evidence that the level of any impacts will create population level effects to plankton communities nor precipitate trophic cascades. Regarding claims that the Regia MSS covers an area of 7.7 million hectares, as stated in Section 6.4.1.4 of the Regia MSS EP (Part 2: Contents of the Plan), the Regia MSS active source area is only approximately 304,100 hectares in size (3,401 km^2). **CGG has considered these claims and is satisfied that the extent of seismic effects on zooplankton have been appropriately assessed, as outlined above, and the EP has been updated to include reference to recent publications.** ***References:*** *Fields DM, Handegard NO, Dalen J, Eichner C, Malde K, Karlsen Ø, Skiftesvik AB, Durif CM, Browman HI (2019) Airgun blasts used in marine seismic surveys have limited effects on mortality, and no sublethal effects on behaviour or gene expression, in the copepod Calanus finmarchicus. ICES Journal of Marine Science 76(7):2033-44.* *McCauley RD, Day RD, Swadling KM, Fitzgibbon QP, Watson RA, Semmens JM (2017) Widely used marine seismic survey air gun operations negatively impact zooplankton. Nature Ecology & Evolution 1(7):0195.* *Richardson AJ, Matear RJ, Lenton A (2017) Potential impacts on zooplankton of seismic survey.CSIRO, Australia 34 pp.* *Vereide EH and Kuhn S (2024) Effects of Anthropogenic Noise on Marine Zooplankton in Popper, Arthur N. et al. (Ed.) The effects of noise on aquatic life. Springer Cham. 500 pp.* *Vereide EH, Khodabandeloo B, de Jong K (2024) The copepod Acartia sp. is more sensitive to a rapid pressure drop associated with seismic airguns than Calanus sp. Marine Ecology Progress Series 730:15-30.*

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	Claim: Plankton communities, essential for marine food webs, face significant harm from seismic blasting. **Claim:** Furthermore, the seismic blasting project poses an undeniable threat to zooplankton, a keystone species and the building block for all marine ecosystems. **Claim:** The seismic blasts harm all levels of the food chain from marine plankton (phytoplankton and zooplankton) and krill through to whales. As plankton are main sources of food for many larger animals and birds harm to the bottom of the food chain would cause a catastrophic chain reaction that would affect the entire marine ecosystem. **Claim:** Plankton communities, foundational to marine food webs, are also at risk from seismic blasting. The EP\'s assessment of zooplankton mortality underestimates the true impact, and mitigation measures are insufficient to protect these vital ecosystems. **Claim:** Seismic blasting does not have community licence. In the proposed operation area, it will impact: whale habitat, endangered marine life, Southern Sea Country, the Zeehan Marine Park, the Budj Bim Eel conservation area, and commercial fisheries. The food chain will be severely affected, with carry-on effects from zooplankton to fish, to whales. **Claim:** We are aware that the proposed seismic blasting survey would be the largest such operation ever conducted: 7.7 million hectares. The impact on the food base and ecosystem would be immense and devastating. **Claim:** Furthermore, the adverse effects of seismic blasting extend beyond the immediate vicinity of the operation. Studies have shown a direct correlation between seismic activity and increased mortality rates in shellfish and marine mammals, as well as significant disruptions to the marine food chain. **Claim**: The EP\'s failure to accurately assess the impacts on plankton communities and their role in marine food webs a glaring oversight that further underscores the inadequacy of the proposal. **Claim**: Research has shown that sonar activity, seismic blasting and well drilling are invasive and result in serious harm to marine ecosystems. They have been implicated in destruction of baseline food sources, disrupting feeding and migration patterns from southern rock lobsters through to whales, penguins, seals, and coastal birds. **Claim:** There are thousands of different marine animal species in the proposed CGG survey area. All of the marine animals will be affected either directly or indirectly through the food chains, as a result of physical harm or mortality, or through behavioural changes in trying to avoid the harmful effects of the seismic blasting, or by a flow-on food chain effect from relying on another species to survive. **Claim:** At the level of intensity at which seismic blasting operates, there may be significant impact upon marine life, which in turn will have a flow-on effect to other species through the food chains, including humans with our local fisheries. **Claim:** CGG claims that larvae mortality is negligent when compared with natural mortality, based upon a study by DNV Energy (2007) and Hawkins & Popper (2012). The more recent study by Lara and Vasconcelos (2021) investigated zebra fish larvae (a reference model species in biology) and their physiological and behavioural response to sound. Lara and Vasconcelos (2021) found larvae exposed to 150dB increased 1) mortality by approximately 33%, 2) heart rate, 3) yolk consumption and 4) cortisol levels. In summary, exposure to loud noises resulted in negative physiological responses within larvae. **Claim:** CGG has failed to investigate prolonged exposure impacts, an impact highly relevant to larval fish, higher order consumers, and fisheries in the operational area (and surrounds). CGG has also failed to identify potential cause and effect pathways that could increase mortality rates. **Claim:** GG has failed to incorporate highly relevant research to accurately inform an assessment on mortality impacts of seismic activity on larval fish.	

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	Claim: CGG has failed to identify cause and effect pathways from the impacts of anthropogenic noise on important behavioural mechanisms and has not modelled potential mortality or injury through these pathways (such as settlement cues). **Claim:** Sources referenced such as Sætre and Ona (1996) are outdated and CGG fails to incorporate more recent literature when completing the risk analysis on larvae. We therefore recommend the risk assessment and mitigation procedures are revised based on recent literature relevant to the seismic location.	
P07	**Matter**: Life cycle and recoverability of krill **Claim:** The issue of krill has been raised by Regia , without their mentioning that krill is the keystone species. Their arguments are essentially identical, that is, krill form part of the zooplankton community, zooplankton are ubiquitous and zooplankton will recover in a matter of weeks. This conflates the life cycles of short-lived zooplankton, such as copepods, with those that have annual life cycles, such as krill. All three companies use work on short-lived copepods and not on longer-lived krill to justify their applications**.** **Claim:** The industry must be aware that krill are a vital part of the food chain for fish, birds, and whales. If the immature generation is killed over the huge area proposed, and krill are wiped out for around a year, then this would inevitably affect the krill-dependent species' survival. Despite this, Regia states that krill grow fast which is not relevant, as elimination of the immature forms across the huge area proposed would not leave any alive to reach maturity. **Claim:** Regia's statement that krill killed by seismic blasts will recover in four weeks is ludicrous. This is despite scientific and community awareness that the lifecycle of krill is totally different from short-lived copepods. The evidence from different environments, different ocean ecosystems and highly active ocean areas cannot be used as a base for modelling the ecosystem of the Bonny Upwelling. **Claim**: The sheer size of the survey area would preclude the possibility of plankton and krill from further afield replenishing the field of operation within the ludicrously short time of four weeks that is quoted by another titleholder. **Claim:** While it has been suggested in the CGG EP that zooplankton will recover within four days, this assumption is based upon the lifecycle of small copepods living in a high current and there is a misunderstanding of the life cycle of krill. **Claim:** Another instance of misrepresentation is the dismissive statement by the proponents that the phytoplankton and zooplankton will recover in four days. That statement is based on studies of krill in high energy areas of ocean. Conditions in and around the Bonny Upwelling are quite different. Zooplankton killed by the seismic blasting would not be replaced in the relatively lower energy area in and around the Bonny Upwelling for a considerable time. **Claim:** Krill has a breeding season of about 5 months. Once the eggs are fertilised, they sink to depths between 100-2000m. When the eggs hatch, they move towards the surface growing through four developmental stages. The adults spawn multiple times across the breeding season and reach maturity after 2 years (8) (9). Therefore, as the time that the krill spend in the areas of seismic blasting covers the whole year, entire classes of larvae would potentially be killed and would not recover in 4 days as mentioned in the EP (10). (8) Department of Climate Change, Energy, the Environment and Water. Australian Antarctica Program. Retrieved February 10th, 2024 from https://www.antarctica gov.au/about-antarctica/animals/krill (9) Kawaguchu, S. et al (2023 Dec) Australian Antarctic Program. Retrieved February 10th, 2024 from https://www.antarctica.gov.au/news/2023/antctic-krill-south/ (10) Laurenson, L. (2023). Associate Professor Marine Science. Personal Communication.	CGG acknowledges claims regarding the life cycle and recoverability of krill, and has reviewed the Environment Plan (EP) to ensure these were appropriately assessed. As stated in the response to Matters P02, P04 and P06, CGG has utilised all available scientific peer-reviewed literature and reporting from government agencies to inform the assessment of potential seismic effects to zooplankton, including krill. The main krill species in southern Australia is *Nyctiphanes australis* which is recognised as a keystone species in the trophic chains of the region, serving as a primary food source for Pygmy Blue Whales, Jack Mackerel, Short-tailed Shearwater, Fairy Prion, Australian Salmon, Skipjack Tuna and Tiger Flathead, amongst others as is described in EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton). Significant fluctuations in *N. australis* abundance patterns can therefore affect the abundance and distribution of dependent predators. As described in the EP Appendix E2, Section 4.1 (Krill - Nyctiphanes australis), life-history characteristics of *N. australis* include one of the highest production-to-biomass ratios among all krill genera which is ~10 times higher than for the more well known Antarctic krill *Euphausia superba*. This species has the fastest growth rate of all Nyctiphanes species at 40 days to max size with a maximum age of ~ 1year. This species also has the highest fecundity of the genus capable of carrying more eggs than the other species. Females reproduce continuously throughout the year with highest abundances during late spring/early summer when primary productivity from upwelling is at its highest in the region. There are up to 3 generations produced each year. These characteristics are what enable krill to form extremely dense swarms that facilitate feeding by predators and support extensive food chains. These same characteristics also enable rapid rebuilding of locally depleted populations when environmental conditions are favourable. The Bonney Coast Upwelling and Great Southern Upwelling system in general provides the mechanism for krill to thrive and grow in predictable locations and time periods each year, as they feast on the phytoplankton blooms. The relative consistency of the upwelling systems both in time and place provides the driver for migrating whales, birds and other predators to congregate at these zones each year to take advantage of the extraordinary abundance of food. The core upwelling zones have been identified as located outside the proposed Regia MSS survey area as stated in response to Matter P01 and P02. Nevertheless, Blue Whales have been noted as feeding along a narrow depth range from Robe in South Australia down to Port Cambell in Victoria (Gill 2002) which does include part of the proposed Regia MSS area. Hence moving the timing of the survey to the part of the year when upwelling is not at peak will be a highly effective mitigation response in keeping with an ALARP approach to risk management. Avoiding peak upwelling season will avoid any interaction between seismic and krill populations when they are at their most abundant, along with those animals that aggregate to take advantage of this system. Nevertheless, there will be zooplankton, including krill, present in local waters all year around and a small percentage of regional stocks are expected to be present in the proposed Regia MSS area. The science is clear that there will be lethal and sub-lethal effects to zooplankton within close proximity to the seismic source, as stated in response to Matter P05. However, there is no evidence to suggest that this area will be holding a critical mass of zooplankton such that seismic effects could cascade into population-level changes. Weight-of-evidence suggests a range of effects will occur that will be patchy in scope. Mortality levels from seismic as measured across multiple studies and multiple species have all indicated levels less than occurs within zooplankton populations normally. As stated in response to Matter P06 links to population-level changes in populations of fish and invertebrates and occurrence of seismic have not been found, going back over many years. CGG has considered these claims and is satisfied that the life cycle and recoverability of krill have been appropriately characterised in the EP using scientific peer-reviewed literature and reporting from government agencies, as outlined above. As a result, the EP has not been updated in response to these claims. ***References:***

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#	***Comments received***	***Titleholder response***
		Gill PC, Morrice MG, Page B, Pirzl R, Levings AH, Coyne M. Blue whale habitat selection and within-season distribution in a regional upwelling system off southern Australia. Marine ecology progress series. 2011 Jan 17;421:243-63.
P08	**Matter**: Compounded and cumulative impacts on plankton **Claim**: There is no acknowledgment in the EP that seismic-induced mortality of zooplankton will compound natural mortality levels and thus have a greater impact on plankton reproduction than natural mortality alone. The continuous nature of the blasting (i.e. every 10 to 15 seconds for 60 days in a row) will affect the ability of zooplankton communities to recover beyond what is presented in the EP, which considers seismic-induced mortality as separate (but within the parameters of) natural mortality. **Claim**: The EP should be refused for its failure to consider the cumulative and additive impacts of continuous seismic surveys on plankton communities, and therefore its failure to fully and comprehensively assess the effects of these surveys on a trophic level that is integral to broader ecosystem health and function. **Claim:** In their plan, CGG argues that Zooplankton are abundant and will only be affected over a small area. This reasoning ignores the fact that there will be multiple companies seismic blasting in the area, and each will have an effect on the population of marine species such as the Zooplankton. **Claim:** Recommendation: Request studies of the effect of multiple companies seismic testing in the same area and plankton populations. **Claim**: Furthermore, in addition to ignoring the keystone species, Regia state that krill will recover from disturbances because they are part of the zooplankton and the seismic blasts will impact only 0.2% of the bioregion per day. This day value is meaningless as the impacted area is the cumulative area of impact not only from Regia surveys, but for all those that preceded them and those that will subsequently occur (see Figures 1 and 2 below), covering most of the region west of Bass Strait. **Claim**: Whilst CGG addresses the issue of mortality to fish larvae, no cumulative impacts are assessed despite the large body of literature indicating sound pollution has the ability to alter many important behaviours that are paramount to fish larvae survival, such as settlement and orientation cues, predator response and the ability to find food (Jung and Swearer, 2011; Anderson et al., 2021).	CGG acknowledges claims relating to cumulative effects of seismic on zooplankton populations and has reviewed the supporting scientific peer-reviewed literature and reporting within the Regia MSS Environment Plan (EP). Following this review, CGG remains confident that the Regia MSS will not be a source of measurable impact, and that the outcomes described within the claims are not consistent with what is known about plankton life-histories and population dynamics in the region. As reported in EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2.7 (Plankton Communities and the Bonney Upwelling System), zooplankton populations in the region are dominated by copepods and cladocerans (herbivorous zooplankters commonly called 'water fleas') all year, although community composition is significantly different over spring-summer as upwelling provides conditions for krill (*N. australis*) biomass to expand exponentially. The key dynamic with plankton communities in the region is the Great Southern Upwelling System where plankton productivity becomes turbocharged because of concentrated upwelling of nutrient-rich deep waters during spring/summer months. As reported in EP Appendix F3 Section 5.2.7, the areal extent and length of the upwelling season varies enormously both within and between seasons. These differences can be as high as 50%, indicating there are huge reductions in the total biomass of plankton that is available to those animals targeting these systems. In 2008-09 the Bonney Coast Upwelling was restricted to the month of February only, while the geographic extent of this system has ranged between 5000km^2 and 13000 km^2 from year to year. The zooplankton community is therefore capable of responding positively, even after 50% reductions in its total population size from one year to the next. These dynamics indicate there is little cumulative effect of negative years being 'stored' in the population. Rather, the system is being moderated by large-scale climate forcing which is responsible for prevailing wind patterns and water temperatures, both of which are the key drivers of plankton dynamics in the region. Because krill population dynamics in the region are heavily influenced by the strength of the upwelling events which themselves can be highly variable, krill have evolved reproductive behaviours and modes to respond rapidly to improved conditions yet survive and thrive when conditions are less favourable. Any effects to zooplankton from the proposed Regia MSS must be measured against this background variability and hence why we have concluded that there is no evidence to support cumulative impacts to plankton communities from the proposed Regia MSS. The potential for cumulative impacts is also described in EP Appendix F3 Section 5.2.7.3 (Cumulative Impacts). CGG has considered these claims and is satisfied that the life cycle and recoverability of krill have been appropriately characterised in the EP using scientific peer-reviewed literature and reporting from government agencies, as outlined above. As a result, the EP has not been updated in response to these claims.
P09	**Matter**: Application of the precautionary principle for plankton **Claim**: While the EP acknowledges there is a high degree of plankton community diversity within the proposed OA and Environment Planning Area, its statement that comprehensive data for the area is not available should trigger application of the precautionary principle, given the critical role that plankton communities play in wider ecosystem function. **Claim**: When this concern was raised with CGG via email in November 2024, CGG's response indicated that their assessment of plankton communities in the OA was based on assumptions made in reference to knowledge of plankton communities in other oceanographic regions. Submitter does not consider that CGG has adequately described the vital plankton communities within the OA, and as such has not accurately assessed the potential impacts of seismic activity. **Claim:** Sources referenced such as Sætre and Ona (1996) are outdated and CGG fails to incorporate more recent literature when completing the risk analysis on larvae. We therefore recommend the risk assessment and mitigation procedures are revised based on recent literature relevant to the seismic location.	CGG acknowledges claims regarding the application of the 'precautionary principle' in respect of plankton communities in the proposed Regia MSS area and has undertaken to review the environment Plan (EP) to confirm appropriate consideration was given to this principle. Section 3A of the Environment Protection and Biodiversity Conservation Act 1999 defines the precautionary principle as: *If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* The Regia EP has provided a thorough review of all existing literature pertinent to understanding the marine environment within the proposed Regia MSS and greater surrounds. This includes over 50 references relating to plankton communities and the impacts of seismic on these communities, as detailed in EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton). The annual upwelling events are the most important systems in the region with respect to plankton dynamics, as this is where phytoplankton and zooplankton are able to take advantage of upwelled deep-water nutrients to undergo exceptional growth and productivity, which in turn underpins a significant proportion of the regional food chains. Because of the importance of this system there have been multiple studies that have quantified the composition of plankton communities across the region and described the primary drivers of these systems. As stated in response to Matters P01 to P08, all evidence available indicates firstly that natural variability in plankton dynamics is vastly greater than localised impacts on plankton communities, and secondly that plankton communities resident in the Regia

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		MSS area are not exceptional in either biomass or extent. While there will be impacts to this community if seismic testing is undertaken, they will be immeasurably small relative to the natural fluctuations that are happening at far greater scales on a month-by-month and year-by-year basis. The available evidence, as presented in the EP, demonstrates that there is no evidence to support an outcome of serious and irreversible damage to plankton communities from the proposed Regia MSS. Further, through the implementation of M#01 as described above, the Regia MSS can also be scheduled to run outside peak upwelling periods and outside relevant upwelling Key Ecological Features which are effective measure to further reduce the levels of any possible seismic-related impacts. CGG has considered these claims and is satisfied that the Regia MSS will not result in serious or irreversible damage to plankton communities, as outlined above. As a result, the EP has not been updated in response to these claims.
P10	**Matter:** Inaccurate/ Inappropriate literature for plankton/ krill **Claim:** The three companies are conflating the issue of individual growth rate of krill and the increase in numbers of individuals from reproduction. Despite the fact that Bass Strait krill are fastest growing species in size of all the krill species, this is not the issue. The issue is the high mortality rate of individuals as a result of seismic blasts and the slow annual recovery of numbers. **Claim**: The industry is wilfully repeating the same misleading science despite our efforts to correct it. Just because these three companies use the same misleading science doesn't mean that it is correct. Equally, repeatedly ignoring the critical aspects of the ecosystems, such as the importance of the keystone species, is flawed. We use the word wilful because the industry has access to the best marine scientists in the world but chooses not to use them, or to use them to discredit research when it is convenient to them. **Claim: "**Furthermore, Regia has presented the findings of Fields et al. (2019) to negate the findings of McCauley et al. (2017). Major limitations of the relevance and comparability of the Fields et al. (2019) study include: 1. Fields et al. (2019) assess the mortality of copepods when exposed to seismic activity. Copepods are not a species of zooplankton present in the proposed survey area. 2. McCauley et al. (2017) highlight the substantial issue of krill mortality when exposed to seismic activity. Krill was not included in the study by Fields et al. (2019). **3.** Fields et al. (2019) examined copepods five times larger than copepods assessed in the McCauley et al. (2017) study, with McCauley et al. (2017) stating smaller copepods were more susceptible to damage. Vereide et al. (2023) observed similarly higher mortality as McCauley et al. (2017) when they examined the impacts of seismic on smaller copepods. **Claim:** I note that Regia relies on gas industry funded work by Richardson et al (2019) that is not peer-reviewed or published. Modelling exercises using copepods are used to suggest that krill population numbers would be quickly replenished. Firstly, krill are different species from the copepods cited as examples in the work of Richardson et al. Unlike copepods, their numbers would not be quickly replenished, as their life cycle from larval to adult forms takes around a year. **Claim**: The application gives disinformation about the purported renewal of zooplankton populations and krill, using the idea/model that zooplankton populations reproduce uniformly in the ocean around Australia. That model is simplistic and not based on reality. **Claim**: The companies quote the work industry-funded of Richardson et al. (2019) that is neither published nor peer reviewed in the scientifically accepted use of the terms. It is just an 5 opinion piece that used a series of modelling exercises (using short-lived species such as copepods and not krill) to suggest that there is little to be concerned about. **Claim**: CGG offers a biased and inaccurate assessment of the threat to plankton and inadequate recognition of the effect on the entire marine ecosystem in their environmental plan. **Claim**: Submitter recommends CGG amends the impact assessment and mitigation actions to address our concerns and ensure the risk assessment reflects site-specific and species-specific	CGG acknowledges claims regarding the use of literature to inform decisions and has reviewed the Environment Plan (EP) to ensure the literature cited is appropriate. As stated in response to Matter P06, to ensure that a thorough and complete assessment of seismic effects to zooplankton has been completed CGG has utilised all available peer-reviewed, published scientific literature and reporting from government agencies such as Fisheries Authorities, which are considered authoritative and credible sources of information. We have continued to source updated literature since the Regia EP was submitted, which includes communicating with and accessing the very latest research on seismic effects on zooplankton from a major European Research Agency, as can be seen in the response to Matter P06. Further, CGG has accessed over 50 references relating to plankton communities and the impacts of seismic on these communities to form our conclusions. Decisions have been based on an assessment of the entirety of the literature base available and have used a weight-of-evidence approach to draw conclusions. As stated in responses to all key matters above, while there is a high probability of lethal and sub-lethal damage to plankton communities within cited ranges of a seismic program, the weight-of-evidence indicates that there is low probability of serious or irreversible damage to plankton populations from a 60-day seismic survey in the location proposed by Regia. This probability will be further reduced by ensuring scheduling of the survey to avoid the peak upwelling season. Regarding claims associated with literature on copepods, zooplankton populations in the region are dominated by copepods and cladocerans (herbivorous zooplankters commonly called 'water fleas') all year (van Ruth and Ward 2009). Regarding claims associated with impacts on krill, as stated in response to Matter P08 and as described in EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton) Section 4.1, life-history characteristics of *N. australis* include one of the highest production-to-biomass ratios among all krill genera which is ~10 times higher than for the more well known Antarctic krill *Euphausia superba*. This species has the fastest growth rate of all Nyctiphanes species at 40 days to max size with a maximum age of ~ 1year. This species also has the highest fecundity of the genus capable of carrying more eggs than the other species. Females reproduce continuously throughout the year with highest abundances during late spring/early summer when primary productivity from upwelling is at its highest in the region. There are up to 3 generations produced each year. CGG has considered these claims and is satisfied that the Regia MSS EP refers to relevant peer-reviewed, published scientific literature, as outlined above. As a result, the EP has not been updated in response to these claims. ***References**:* *Van Ruth, P., and Ward, T.M., 2009, Meso-zooplankton abundance, distribution and community composition in the eastern Great Australian Bight. Transactions of the Royal Society of South Australia · November 2009. DOI: 10.1080/03721426.2009.10887124*

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#	***Comments received***	***Titleholder response***
	scientific literature, rather than cherry picking papers to support the incorrect conclusion that seismic has minor impacts to zooplankton. **Claim**: The scientific literature provided in the EP attempts to refute the findings of McCauley et al. (2017), and presents research that is 1) inappropriately interpreted and 2) incomparable. For example, CGG has presented the work of Richardson et al. (2017) to negate the important and highly relevant findings of McCauley et al. (2017). Major limitations include: 1. McCauley et al. (2017) presents real-world, direct observations from site-relevant Tasmanian waters, whereas Richardson et al. (2017) presents modelled findings. Models cannot negate direct observations, with any inconsistencies between the two highlighting a fundamental omission in data used to inform the model. 2. Richardson et al. (2017) focus on zooplankton from the North West Shelf, a tropical region, with vastly faster zooplankton recovery times in comparison to the proposed survey area (and McCauley et al. (2017)). 3. Krill was omitted from the simulation run by Richardson et al. (2017), resulting in significant omissions and irrelevance to the survey area (and the Bonney Upwelling, by extension). 4. McCauley et al. (2017) has undergone peer review and scrutiny from the scientific community. Richardson et al. (2017) is a study funded by the oil and gas lobby group, the Australian Petroleum Production and Exploration Association (APPEA). **Claim**: Misleading information has been given by Regia in trying to refute the real threat to krill, the ocean food chain, and krill-dependent species.	
P11	**Matter:** Recommendations for further research **Claim:** Given the importance of plankton, in particular krill, there should be further independent long termed scientific studies, prior to and following seismic testing, in the area(s) surveyed. **Claim:** Recommendation: Request studies into the effects of seismic blasts on plankton populations. **Claim:** Recommendation: Request studies into impacts of a reduction in plankton populations in the Operational Area on ocean health, biodiversity and environment. **Claim:** Recommendation: Request studies into impacts of a reduction in plankton populations in the Operational Area on other marine animals and birds for whom they are an important food source. **Claim**: Submitter request that Regia demonstrate that no lasting harm will occur to all the species dependent upon plankton and krill in subsequent years after seismic testing.	CGG acknowledges claims regarding research into the effects of seismic on marine communities and has reviewed the Environment Plan (EP) to ensure that adequate consideration was given to identifying areas for further research. Research into the effects of seismic on plankton communities is ongoing and responsive to environment-industry-government needs. This is exemplified by the work of the Norwegian Institute of Marine Science which commissioned a three-year research program to further investigate the outcomes of work by McCauley et al. 2017 and Field et al 2019, as stated in response to Matter P06. This program has just concluded, and reporting is pending. By using a weight-of-evidence approach, as has been demonstrated in EP Appendix E2 (Impact Assessment – Underwater Sound: Plankton) based on the significant evidence presented in EP Appendix B8 (Seismic Study Report), it is possible to make informed decisions that have a high level of certainty with respect to the likelihood of significant or irreversible damage happening to the plankton communities within the proposed Regia MSS area. The weight-of-evidence, as detailed in EP Appendix F3 (Acceptable Levels of Impact and Risk) Section 5.2.7 (Plankton Communities and the Bonney Upwelling System), clearly demonstrates that significant impacts to zooplankton (including krill, and the Bonney Coast Upwelling and the role they both play in ecosystem function and productivity) are not predicted as a result of the proposed Regia MSS. CGG has considered these claims and is satisfied that concerns raised have been adequately addressed in the EP, as outlined above. As a result, the EP has not been updated in response to these claims. ***References:*** *Fields DM, Handegard NO, Dalen J, Eichner C, Malde K, Karlsen Ø, Skiftesvik AB, Durif CM, Browman HI (2019) Airgun blasts used in marine seismic surveys have limited effects on mortality, and no sublethal effects on behaviour or gene expression, in the copepod Calanus finmarchicus. ICES Journal of Marine Science 76(7):2033-44.* *McCauley RD, Day RD, Swadling KM, Fitzgibbon QP, Watson RA, Semmens JM (2017) Widely used marine seismic survey air gun operations negatively impact zooplankton. Nature Ecology & Evolution 1(7):0195.*

8. Fish, Sharks, Invertebrates and Fisheries

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	*Comments received*	*Titleholder response*
Key Matter: Underwater sound impacts on fish, sharks and invertebrates		
F01	**Matter**: Impacts of underwater sound (general) **Claim:** Research has shown that seismic blasting results in serious harm to a variety of marine life, deafening whales and disrupting their feeding and migration, damaging the ability of southern rock lobsters to function and navigate, and causing mortality in small fish and zooplankton. **Claim**: Seismic testing is deadly for marine life and decimates seafood populations. It is well known that seismic blasting changes the behaviour of fish, can disorientate and destroy them; kill scallops and impact upon the immune systems of southern rock lobsters. (12)(13). (12) Davis, R. (2020 Aug.). Seismic surveying reduces whiting catch rate by 99.5 percent, research finds Retrieved November 11, 2923 from Seismic surveying reduces whiting catch rate by 99.5 per cent, research finds - ABC News. (13) University of Tasmania (2023, Sept). Whales stop singing, Rock Lobsters lose their balance: How seismic testing can harm marine life. Retrieved Dec. 8th 2023 from Whales stop singing and rock lobsters lose their balance: how seismic surveys can harm marine life - Institute for Marine and Antarctic Studies | University of Tasmania (utas.edu.au) **Claim:** Seismic blasting does not have community licence. In the proposed operation area, it will impact: [whale habitat, endangered marine life, Southern Sea Country, the Zeehan Marine Park, the Budj Bim Eel conservation area], and commercial fisheries. The food chain will be severely affected, with carry-on effects from [zooplankton to] fish, [to whales]. **Claim:** Approval of this application will have disastrous impacts on marine species, the local fishing industry and, ultimately, the climate. [**Claim:** At the level of intensity at which seismic blasting operates, there may be significant impact upon marine life, which in turn will have a flow-on effect to other species through the food chains, including humans with our local fisheries **Claim**: NO TO SONIC BLASTING! IT KILLS THE KRILL, AND OTHER FISH AND SEA CREATURES.	CGG acknowledges claims regarding seismic effects on fish (incl. Sharks/rays) and invertebrates associated with the Regia MSS and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. Potential impacts and risks to fish, sharks and invertebrates from underwater sound are described in the following sections: • Seismic Studies Summary (Appendix B8) provides a comprehensive review of the best available scientific, peer-reviewed literature, reports from government agencies (such as Fisheries Authorities) and other data sources to describe how seismic surveys can affect ecological receptors, including zooplankton, invertebrates, fish, birds, marine reptiles and marine mammals. • Impact Assessment Underwater Sound: Fish (Appendix E3) describes and assesses potential impacts and risks to fish from underwater sound generated by the Regia MSS • Impact Assessment Underwater Sound: Invertebrates (Appendix E4) describes and assesses potential impacts and risks to invertebrates from underwater sound generated by the Regia MSS In addition to these assessments further interrogation of the literature was undertaken for a number of species and groups that were highlighted, through community consultations, as being of particular importance. For these groups we defined acceptable levels of impact and risk to provide a clear framework for understanding what effects seismic might have on individual health and population-level health. These assessments can be found in Regia EP: Appendix F3 and include Southern Rock Lobster, Giant Crab, Glass Eels, Gould's Squid, Plankton Communities (including krill) and the Bonney Upwelling System, Octopus, Snapper, Abalone and King George Whiting. In summary CGG noted that seismic can cause lethal and sub-lethal effects to animals within close proximity to the seismic pulses, however these types of responses attenuate with distance from the seismic source and are not uniformly manifest. Secondly, the scale of lethal or sub-lethal effects measured across multiple scientific studies and species indicates seismic effects are significantly lower than natural rates of mortality (~variation) to be found in regional populations of fish and invertebrates and will be immeasurable in this context. Thirdly, we have found no evidence to support the proposed Regia MSS area being a "critical" area for populations of fishes and invertebrates, whereby population-level stability would be at risk from any potential damage sustained by fish or invertebrates within the Regia MSS area. There are clearly many important species that inhabit the proposed Regia MSS area, however when assessed from a population sustainability level this location is only a small part of much greater population ranges for these species. There are nevertheless parts of the Regia MSS area that will contain significant numbers of key species, such as whales at certain times of the year. Mitigation measures will be implemented to significantly reduce the risk to individuals in these locations during sensitive periods, as outlined in the Fauna Management Plan (Appendix G2). M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection). M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. Where data was available, such as annual estimates of recruitment of key fish/invertebrate species, CGG also investigated whether there was any link to be seen with levels of seismic activity across the Victorian South Coast greater region. CGG found zero correlation between recruitment and seismic activities with large increases in recruitment during this period often coinciding with high levels of seismic activity. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims
F02	**Matter**: Impacts associated with particle motion are not addressed **Claim**: CGG has concluded throughout the EP that a range of species (including bivalves, sharks, crustaceans, fish, and invertebrates) are sensitive to particle motion, and have mentioned in multiple cases that the impact of partial motion on marine fauna could be greater than the impacts of sound. Despite acknowledging the known impacts of particle motion on marine fauna within the survey area, CGG have failed to make any attempt to understand or mitigate these impacts.	CGG acknowledges claims that the particle motion aspect of seismic surveys has not been described and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of seismic effects to fish and invertebrates has been completed (as described in Appendix B8; Seismic Studies Summary). Particle motion has been far less studied than sound pressure as a source of impacts on species from marine seismic surveys. This is because measuring pressure, particle motion, and ground motion energy levels from a seismic survey source is logistically and technically complex. CGG has endeavoured to include all relevant literature on particle motion as part of its review and continues to monitor international databases to stay abreast of new studies as they become published.

	THEME	**FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)**
#	***Comments received***	***Titleholder response***
	Claim: There are currently no threshold guidelines established for particle motion for marine animals, despite acknowledgement that particle motion can negatively impact various marine species. The onus should fall upon the proponent (CGG) to sufficiently address the threat particle motion presents to marine fauna. **Claim**: Submitter requests CGG to engage the Institute of Marine and Antarctic Studies (with established site-specific knowledge) to establish particle motion guidelines relevant to this application, ensuring both scientific literature and professional knowledge is used to inform these guidelines. **Claim**: Submitter recommends CGG conduct a literature review and establish threshold guidelines for particle motion relevant to threatened and protected species, as well as all fauna known to inhabit the area.	Recent research by McCauley et al (2021), has concluded that at distances of hundreds of metres or greater, measurements of Sound Exposure Levels (SEL) are appropriate proxies for other metrics of interest, including particle motion. This is not the case within near-shore fields (i.e., closer to the seismic sources) where acoustic signals are much more complicated, being affected by water depth, bathymetry profile along the propagation path, the geological layering of the seabed and the associated geo-acoustic properties, and the sound speed profile of the water column. Different taxa also detect different components of the acoustic signal, further complicating assessments. While there is clearly a need for more research into separating and clarifying the effects of the various components of seismic discharge on individual taxa, knowledge of the overarching effects of these components on various taxa is already substantial and hence can be assessed, as has been done for the Regia MSS EP. There is considerable evidence to support the manifestation of lethal and/or sub-lethal effects of seismic (irrespective of the exact mechanisms) on individual animals within proximity to a seismic source, as CGG have consistently noted. However, multiple scientific studies across multiple species indicates seismic effects are significantly lower than natural rates of mortality (~variation) to be found in regional populations of fish and invertebrates and will therefore be immeasurable in this context. As stated in response to Matter #01, CGG has been unable to find any correlation of seismic activity across the region with measures of recruitment and/or CPUE which would indicate that seismic impacts are having quantifiable impacts on the sustainability of populations of fish, invertebrates and sharks. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *McCauley RD, Meekan MG, Parsons MJ (2021) Acoustic pressure, particle motion, and induced ground motion signals from a commercial seismic survey array and potential implications for environmental monitoring. Journal of Marine Science and Engineering 9(6):571.*
F03	**Matter**: Additional information to support impact assessment for fish **Claim**: Provide fish species list relevant to the proposed survey area, classifying fish into groups based on known information of their biology (presence of swim bladder; proximity and connections to ear) with the addition of a group IV, for species whose biology remains unknown. **Claim**: CGG should carry out a thorough analysis of pelagic (and migratory), reef (or site attached) and demersal species over the survey area and how these patterns differ due to habitat, depth, and wave exposure over the spatial area of the survey in order to make accurate considerations around the impacts to fish and assess areas where mitigation bay be required. **Claim**: CGG has failed to provide evidence to confirm there are no aggregations of breeding sites that are critical for the ongoing viability of fish species. We recommend this statement be revised. **Claim**: CGG have also stated "significant spawning aggregation areas are not known to occur in the vicinity of the survey area". The evidence source for this claim is not cited.	CGG acknowledges claims that more information is required to understand the potential impacts of the Regia MSS on fish and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. To ensure that a thorough assessment of seismic effects on fish was possible CGG utilised all available scientific peer-reviewed literature, and reporting from government agencies such as Fisheries Authorities, which are considered authoritative and credible sources of information. The Regia MSS EP (Appendix B6: Commercial Fisheries Review), provides a comprehensive assessment of all Commercial Fisheries Species that are operating within the Environmental Planning Area which also includes the Activity Planning area where active sonar would operate. Maps of fishing effort are included allowing for visual understanding of the extent of fishing range for each fishery and its overlap within the proposed Regia MSS area. The Regia MSS EP (Appendix E3: Underwater Sound – Fish) provides a general assessment of the biological behaviour of 27 key species and whether they are found in the proposed Regia MSS area. Additionally, the Regia MSS EP (Appendix F3: Acceptability Assessment) provides a more detailed assessment of key species or groups identified through consultation as being of particular importance to the region. In combination these Appendices provide an extensive listing of those species relevant to the proposed survey area. **Re-assessment of the literature clarifies that there is no evidence of significant spawning aggregations occurring within the proposed Regia MSS area.** CGG define 'significant' as referring to aggregation events that have been identified as core to the population sustainability of each species in question. For further clarity around this Matter, CGG has provided reference to literature confirming this re-assessment for those species that have an established presence in the proposed Regia MSS area. **Blue Warehou** – highly mobile species that is genetically well-connected over its range. Larval sampling has found that the major spawning locations are along the west coast of Tasmania (Bruce et al 2001. Marine and Freshwater Research Vol 52: 631-636) **Orange Roughy** – incidental catch in the area only. Main spawning location is on Tasmania east coast (Knucky & Smith 1997. FRDC Pilot egg survey of OR in Western Zone) **Gulper Shark** – mostly taken as bycatch in the trawl fishery. Overfishing has been overwhelmingly the biggest driver of declines in this species **School Shark** - mostly taken as bycatch, also because of overfishing. Birthing happens in summer in inshore nursery areas (https://www.afma.gov.au/species/school-shark) **Australian Sardine** – spawning occurs in spring-summer, with the major fishing grounds out of South Australia. 4 recognised sub-populations centred on South Western Australia, Eastern Australia, South Eastern Australia and Southern Australia. Stocks are considered sustainable (https://www.afma.gov.au/species/australian-sardine).

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		Blue Grenadier - Catch rates in Australia are highest off the west coast of Tasmania on the shelf slope during winter where the species aggregates to spawn, and this region has been confirmed as a major spawning ground for the species (Gunn et al. 1989, MFR Vol 40(1):97-112 and Bulman et al. 1999, MFR Vol 50(3):197-207). **Blue-eye Trevalla** - Most spawning activity occurs in waters from central New South Wales to north-eastern Tasmania. Part of SESSF with majority of catches from Tasmania and East Coast (https://www.afma.gov.au/species/blue-eye-trevalla) **Elephant fish** - Elephant Fish has a broad distribution across much of southern Australia, but actual biological stock structure is unknown. The species is caught in relatively low quantities in NSW, Victoria and Tasmania. In Victoria, Elephantfish were historically landed in low to moderate quantities by commercial bay and inlet fisheries, particularly in Western Port Bay (WPB). Elephantfish are oviparous, and females move inshore to lay pairs of leathery egg cases on sandy or muddy bottoms (https://www.afma.gov.au/species/elephant-fish). **Gummy Shark** – Gummy Shark are considered a single genetic stock across their entire range from Bunbury, WA to Jervis Bay, NSW, with 3 sub-stocks consisting of Bass Strait, Tasmania and Southern Australia. Gummy shark are born during the summer months after an 11-12 month gestation period. They are capable of moving large distances in excess of 2000 km but average is mostly around 100-200 km. Targeted in the SESSF Gillnet Hook and Trap (https://www.fish.gov.au/report/301-Gummy-Shark-2020). Catches have remained stable over many years. **Pink Ling** - Spawning aggregations have been reported by commercial fishers off Strahan, Tasmania, Lakes Entrance Victoria, and Gabo Island NSW (Bruce et al 2002 Targeted review of fisheries research in SE Australia region.) Ling are found throughout the Southeast marine region on the outer shelf and slope out to 900 m but are mostly caught between 300-600m (Daley et al 2000 FRDC Report 97/117). **Tiger Flathead** - a demersal species that is found at depths of 10-400 metres. Spawning occurs over an extended period from spring to autumn, with some variation on the timing of spawning depending on location. The exact locations of spawning are unknown, however more large mature fish are found in inshore waters during the spawning period (Morton et al 2005 Tasmanian Aquaculture & Research Institute). Tiger Flathead is primarily caught by the Commonwealth managed Southern and Eastern Scalefish and Shark Fishery (SESSF) with small catches from New South Wales, Tasmania and Victoria. The southern Australian population is considered sustainable under current fishing effort (https://www.fish.gov.au/report/325-Tiger-Flathead-2020). **The EP Appendix E3 (Impact Assessment Underwater Sound: Fish) has been updated to clarify that there is no evidence of significant spawning aggregations occurring within the proposed Regia MSS area, as detailed in the above information.**
F04	**Matter**: Impacts of underwater sound on fish **Claim**: There is an absence of knowledge regarding the impact of seismic blasts on marine fish and a need for CGG to conduct more studies into the impact of seismic blasts on fish, before conducting any seismic blasts. **Claim**: Using a single study from 1996 that investigated a single species in the northern hemisphere (Cod in Norway) is not an acceptable and complete assessment on impacts to a group of fishes within the proposed survey area. **Claim**: CGG states they have used metrics from Popper et al. (2005) to help establish guidelines. The research carried out in this survey were on 3 freshwater species only found in the Northern Hemisphere: a pike, whitefish, and a lake chub. The paper clearly states, “Care must be taken, however, in extrapolation to other species and to fishes exposed to airguns in deeper water or where the animals are exposed to a larger number of airgun shots over a longer period of time.” Given this proposal will be impacting marine species, in depths greater than 100 m, further investigation and research is required to establish real world effects to bony fish in the Otway basin. **Claim**: As stated in the EP, the guidelines used to determine injury or mortality to fish are based on Popper et al. (2014) classifications. These classifications were based on pile driving, not seismic activity, with pile driving considerably less impactful than seismic (Hildebrand, 2009). Whilst the guidelines provide some guidance,	CGG acknowledges claims that more information is necessary to understand the potential impacts of seismic sound on fish in the proposed Regia MSS area and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG utilised all available scientific peer-reviewed literature, and reporting from government agencies such as Fisheries Authorities, which are considered authoritative and credible sources of information, to ensure that a thorough assessment of seismic effects on fish has been undertaken. Potential impacts and risks to fish from underwater sound are described and assessed in the following sections: • Modelling Report Sound Emissions (Appendix B7a and B7b) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. Noise exposure guidelines have been estimated for all groups based on all the available scientific literature. The criteria for fish are taken from Popper et al (2014) and represent thresholds at which damage can occur to fish, these values do not represent peak source levels. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including fish. • Impact Assessment Underwater Sound: Fish (Appendix E3) describes and assesses potential impacts and risks to fish from underwater sound generated by the Regia MSS • Acceptability Assessment (Appendix F3) provides a more detailed interrogation of seismic effects on select taxa identified through community consultations as very important. These sections provide a thorough examination of seismic effects from which our assessments have been made. They reference the latest literature available. Mitigation measures will be implemented to significantly reduce the risk to individuals as outlined in the Fauna Management Plan (Appendix G2). M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection.). M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

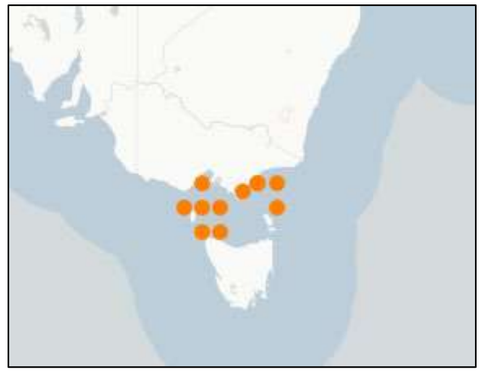
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	there are many caveats that are not addressed and evidence in relation to this is extrapolated and taken out of context. For example, CGG claims it is possible to use guidelines "extrapolated from simulated pile driving signals which have a more rapid rise time and greater potential for trauma than pulses from a seismic source". However, the studies referenced to support this claim (Popper et al., 2014) do not reflect this information. **Claim**: The information provided by CGG in relation to sound effects on fish is inadequate, many statements provided lack references, whilst other references do not support the claims made by CGG. Furthermore, many information gaps are not appropriately acknowledged, and information provided is not relevant to the acquisition area. **Claim**: Claims that due to the depth of the survey site attached fish are not at risk of mortal injury or mortality should be revised, given both the lack of evidence and the inappropriate extrapolation of cited study findings. **Claim**: It is well known that seismic blasts kill fish (10). We also know that these surveys change the behaviour of fish: they can disorient them, make them avoid reef sites and they can make them more vulnerable to predators (1). 1. https://www.gcrc.uga.edu/wp-content/uploads/2021/02/Effect-of-Seismic-Surveys-o n-Marine-Organisms.pdf; 10. https://www.courthousenews.com/wp-content/uploads/2021/07/Seismic-factsheet. -fish-and-invertebrates.-Oct19.pdf **Claim**: There is evidence of damage to fishes ears at a distance of 500m to several kilometres from the seismic blasts. (43). Risk evaluation and management strategies in the environmental plan do not appear to adequately explore the long-term impacts that changes to fish populations will have on other species and on ocean health overall, nor how to mitigate them. 43. https://bowmanslaw.com/insights/shipping-aviation-and-logistics/seismic-testing-effect-marine-environment/ **Claim:** Sources referenced such as Sætre and Ona (1996) are outdated and CGG fails to incorporate more recent literature when completing the risk analysis on larvae. We therefore recommend the risk assessment and mitigation procedures are revised based on recent literature relevant to the seismic location.	
F05	**Matter**: Impacts of underwater sound on blue warehou **Claim**: Notably, the EPBC Act specifically states that lack of scientific knowledge is no reason to allow a particular activity to proceed. In conclusion, there is inadequate evidence regarding impacts on blue warehou provided by the applicants. **Claim**: The Stock Rebuilding Strategy notes both short- and long-term environmental variability as a key threat to the ongoing management of the population. The legislation also states that impacts of environmental variability on blue warehou are unknown and further research is required to gain an understanding of threats to the recovery of the species (AFMA, 2022). Given this information, CGG	CGG acknowledges claims that more information is necessary to understand the potential impacts of seismic sound on Blue Warehou in the proposed Regia MSS area and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of seismic effects to fish has been completed. The Regia MSS EP (Appendix E3: Underwater Sound – Fish) provides an assessment of the impacts of underwater sound on blue warhou. To summarise the information provided on Blue Warehou; this species has been classified as a depleted stock from overfishing with standardised CPUE being below the limit reference point since 1995. Commercial catches are small and included as part of incidental catch in the Western Zone which extends from western Tasmania northward to western Victoria (Hartmann & Chick 2020 Stock status overview; https://www.fish.gov.au/report/266-Blue-Warehou-2020)

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	should undertake further investigation to confirm that the change in environmental variability by increased background noise and potential displacement of spawning aggregations will not negatively impact the vitality of future populations for this species, both for spawning events, early life stage developments and migration to settlement areas **Claim**: CGG failed to adequately assess impacts in relation to EBPC species (such as blue warehou) in line with stock rebuilding strategies.	Recruitment is the means by which the population of Blue Warehou is renewed. If indiscriminate harvesting of a population occurs, the number of animals that reach maturity can be reduced to the extent that the reproductive capacity of the population is diminished. Fishing is the overwhelming driver behind the lack of adult standing stock and subsequent poor health of Blue Warehou populations. There have not been any specific studies on seismic effects to Blue Warehou, nor many other species common to the region. However, weight-of-evidence approaches allow for informed decisions to be made on the level of risk associated with seismic to fish species and there have been no recorded seismic-related fatalities to free-swimming fish that have caused measurable changes to population health. What is known about Blue Warehou is that they are a highly mobile species with a patchy distribution and a wide range of spawning/breeding areas. This type of stock structure and behaviour is going to promote mitigation of any potential seismic effects. Evidence also indicates that the main spawning area for the general region is off the NW coast of Tasmania (Bruce et al. 2001) although larvae can be found as far west as Kangaroo Island. Mitigation measures will be implemented to significantly reduce the risk to individuals, as outlined in the Fauna Management Plan (Appendix G2). M#01 Activity Limitation stipulates the seismic source will not be operated within the West Tasmania Canyons Key Ecological Feature (KEF). This is protective for fish species associated with this KEF. M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection.) M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. CGG conclude that the risk to the short and long-term stability of regional Blue Warehou populations, from the proposed Regia MSS, is minimal. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References:*** *Bruce BD, Neira FJ, Bradford RW. Larval distribution and abundance of blue and spotted warehous (Seriolella brama and S. punctata: Centrolophidae) in south-eastern Australia. Marine and Freshwater Research. 2001;52(4):631-6.*
F06	**Matter**: Impacts of underwater sound on eels **Claim**: A quantitative longitudinal study to explore the impact of seismic blasting on the lifespan of eels should be conducted prior to further exploration for gas. **Claim**: Eels subject to seismic blasts have shown a reduction in anti-predator avoidance, which makes them susceptible to predators. Seismic blasts block out the noise of approaching predators and the additional, unexpected noise causes more stress to the eels (14). 14. https://pubmed.ncbi.nlm.nih.gov/26686756/ **Claim**: The Plan concentrates on the mortality rate caused by seismic blasts, rather than other impacts. If seismic blasts make Short-fin eels more susceptible to predators, this will be a direct cause of their mortality. This could move the Short-fin eels into a category classed as vulnerable, an increase from the current level of near threatened, as noted in CGG's plan. **Claim**: Submitter recommends CGG conducts studies into the effects of seismic blasts on eel behaviours and populations; and Formulate a plan for risk mitigation and management of the risks that seismic blasting has on eel behaviour and populations. **Claim**: Mortality of eels (both immediate and delayed) is not predicted based on no documented cases of mortality in free-swimming fish exposed to seismic source emissions under experimental or field conditions (DFO 2004; Boeger et al. 2006; Popper et al. 2014; Popper et al. 2016; Carroll et al. 2017; Popper and Hawkins 2019).â€ This statement is not acceptable and does not	CGG acknowledges claims that more information is necessary to understand the potential impacts of seismic sound on eels in the proposed Regia MSS area and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of seismic effects to eels has been completed. Potential impacts and risks to eels from underwater sound are described and assessed in the following sections of the EP: • Cultural Heritage Assessment (Appendix B10:) provides cultural context to historical eel fishing in the area through a description and recognition of the Budj Bim National Heritage Landscape and the historical fishing traps found therein. • Underwater Sound – Fish: Section 4.1.9 (Appendix E3:) provides a synopsis of the life cycle of the Short-finned Eel which highlights the incredible journey that adult eels make to the Coral Sea to spawn each year. After community consultation further highlighted the importance of the eels in the public consciousness a more detailed interrogation of seismic effects on Short-finned eels was undertaken and included in the EP: Acceptability Assessment (Appendix F3). While there have not been any specific studies on seismic effects to short-fin eels, weight-of-evidence approaches allow for informed decisions to be made on the level of risk that a seismic program such as the proposed Regia MSS might have on the health of glass eel populations. As outlined in the EP Acceptability Assessment (Appendix F3), the lifecycle of eels predisposes this species to incredibly high mortality rates. Because individual animals die after spawning, and they are many thousands of kilometres from their natal streams, they must produce extraordinary amounts of larvae such that a critical proportion will survive the journey and settle into rivers to become adults who can contribute to the cycle again. This lifecycle requires production of enough larvae and survival of enough adults to ensure the population remains viable year-on-year. Mortality of migrating adults has been estimated to be as high as 30% (Koster et al 2021) while larval mortality could easily be >80-90% as shown by many studies into survival rates in plankton communities. Hence any potential mortality rates by the proposed Regia MSS will be immeasurably small compared to the very large natural mortality which operates year-on-year to these populations. Australasian Short-Finned Eels are listed as 'near threatened' on the IUCN Red List of Threatened Species, with barriers to riverine movement and freshwater habitat loss identified as key threats. These are land-based sources of impacts. In addition, changes in ocean currents, primary production, and thermal regimes may affect eel migration, spawning success, and recruitment (Koster et al 2021). These processes operate at landscape scales and are heavily influenced by long term climate trends. Changes to riverine flows and water quality are affected not only by changing climates but also land management

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	assess the impact on glass eels migration. There is no data / scientific evidence available. **Claim**: An absence of long-term monitoring data of the effects of seismic on eels in the presence of frequent seismic surveys, and other anthropogenic sound generating activities, in the region.	regimes adjacent to riverine systems. The most powerful test of the significance of climate drivers was the millennium drought through the late 90's and 2000's where commercial catches declined from a pre-drought peak of >300 tonnes/year to current levels of ~50 tonnes/year. Adult eels are undertaking their migrations over an extended period of 5 months and the work of Crook et al (2014) indicates that migration from estuaries is a highly variable process. Given the extended and volatile timing of migration from estuaries and the high mobility of individual animals CGG do not anticipate any critical effects to the local populations of eels from the Regia MSS. Mitigation measures will be implemented to significantly reduce the risk to individuals, as outlined in the Fauna Management Plan (Appendix G2). M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *Crook DA, Macdonald JI, Morrongiello JR, Belcher CA, Lovett D, Walker A, Nicol SJ (2014) Environmental cues and extended estuarine residence in seaward migrating eels (A nguilla australis). Freshwater Biology 59(8):1710-20.* *Koster WM, Aarestrup K, Birnie-Gauvin K, Church B, Dawson D, Lyon J, O'Connor J, Righton D, Rose D, Westerberg H, Stuart I (2021) First tracking of the oceanic spawning migrations of Australasian short-finned eels (Anguilla australis). Scientific Reports 11(1):22976.*
F07	**Matter**: Impacts of underwater sound on elasmobranchs (sharks, rays, etc) (general) **Claim**: The risk assessment does not consider cause and effect pathways for potential negative impacts to elasmobranchs as a result of the survey. [**Claim**: CGG has not taken a conservative or precautionary approach to assessing potential impacts to elasmobranchs. **Claim**: There is severe lack of evidence in relation to the impact of seismic activity on elasmobranchs, for example, issues around impact of particle motion, mentioned below. Notably, the word "skate" is not utilised within the Regia Environmental Plan at all, and "elasmobranch" is mentioned only twice. When no available evidence is available, the proponent should take a conservative approach to assess potential impacts. **Claim**: Given that most fish species are expected to display avoidance behaviour and there is the potential for particle motion to interfere with sensory receptors in elasmobranchs, cumulative impacts of seismic surveys may negatively/ detrimentally affect populations of elasmobranchs in the area. **Claim**: Submitter recommends CGG reassess the risk to elasmobranchs based on the principle that there is currently very limited evidence available to make accurate risk assessments for the species. Both a conservative approach and the precautionary principle needs to be applied. **Claim**: There is an absence of knowledge regarding the impact of seismic blasts on sharks and we request that CGG conduct more studies into the impact of seismic blasts on sharks, before conducting any seismic blasts. **Claim**: Submitter recommends studies into the effects of seismic blasts on shark behaviours and populations; a plan is formulated for	CGG acknowledges claims that more information is necessary to understand the potential impacts of seismic sounds on elasmobranchs in the proposed Regia MSS area and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of seismic effects to elasmobranchs has been completed. Potential impacts and risks to elasmobranchs from underwater sound are described and assessed in the following sections of the EP: • Modelling Report Sound Emissions (Appendix B7) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including sharks. • Impact Assessment Underwater Sound: Fish (Appendix E3) describes and assesses potential impacts and risks to elasmobranchs from underwater sound generated by the Regia MSS Recent research by McCauley et al (2021) has concluded that at distances of hundreds of metres or greater, measurements of Sound Exposure Levels (SEL) are appropriate proxies for other metrics of interest, including particle motion. This is not the case within near-shore fields (i.e., closer to the seismic sources) where acoustic signals are much more complicated, being affected by water depth, bathymetry profile along the propagation path, the geological layering of the seabed and the associated geo-acoustic properties, and the sound speed profile of the water column. Different taxa also detect different components of the acoustic signal, further complicating assessments. CGG considers sharks and rays as similar with respect to assessing the impacts of the proposed Regia MSS on elasmobranchs. Rays/ Skates are not a targeted group for commercial fisheries in the region and are taken as bycatch only. There is limited information on the population dynamics of these species. However, the evidence is overwhelming that (over)fishing is the singular largest impact on elasmobranch populations. There is no evidence that the area encompassing the proposed Regia MSS is holding significantly large populations of elasmobranchs that would require a precautionary approach to be taken. White Sharks are targeting seal colonies in the region centred around Lady Julia Percy Island, so this has been recognised as a Biologically Important Area (BIA) for White Shark foraging. Accordingly, the proposed Regia MSS area has been adjusted to provide appropriate mitigation of any possible effects from seismic (M#01: Activity Limitation). **The EP has been updated to highlight activity limitation M#01 and it's mitigating effect against potential impacts to sharks and rays.** Sharks and rays are most sensitive to low frequency sounds which are sensed through particle-motion only as they do not have a swim bladder. Sharks especially are attracted to sounds that suggest struggling prey, but they do not like large changes in sound intensity, such that they will swim away, even from a favourable sound, if its intensity suddenly increases by more than 20dB (Myrberg 2001). Slow ramping up of seismic pulse intensity over a period of time is a standard procedure with MSS and eliminates sudden changes in intensity. Chapuis et al (2018) tested the effects of underwater sound on a variety of shark species including White Sharks, by playing artificial sounds including Orca calls, through a speaker attached to a baited underwater camera system. Ultimately, the large variability shown in the results agrees with other studies investigating the effects of sounds and noise on marine fauna, where interspecific differences, intrapopulation variation, context of exposure and prior experience may change the responses of the animals to the stimulus. There is no uniform response.

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	risk mitigation and management of the risks that seismic blasting has on shark behaviour and populations.	The hearing sensitivity of some rays and bottom-feeding sharks has been examined and found to be less sensitive than species of sharks that feed throughout the water column (Casper et al 2003). While a study by Bruce et al (2018) looking at seismic effects on behaviour found little evidence for consistent behavioural or catch rate changes induced by the seismic survey in the targeted species of shark. For those elasmobranch species caught in commercial fisheries there is no evidence for moderate or high risks to their populations from MSS. **CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above, but has include reference to activity limitation M#01 and it's mitigating effect against potential impacts to sharks and rays in EP Appendix E3, Section 8.** ***References:*** *Bruce B, Bradford R, Foster S, Lee K, Lansdell M, Cooper S, Przeslawski R (2018) Quantifying fish behaviour and commercial catch rates in relation to a marine seismic survey. Marine Environmental Research 140:18-30.* *Casper BM, Lobel PS, Yan HY (2003) The hearing sensitivity of the little skate, Raja erinacea: a comparison of two methods. Environmental Biology of Fishes. 68:371-9.* *Chapuis L, Collin SP, Yopak KE, McCauley RD, Kempster RM, Ryan LA, Schmidt C, Kerr CC, Gennari E, Egeberg CA, Hart NS (2019) The effect of underwater sounds on shark behaviour. Scientific Reports 9(1):6924.* *McCauley RD, Meekan MG, Parsons MJ (2021) Acoustic pressure, particle motion, and induced ground motion signals from a commercial seismic survey array and potential implications for environmental monitoring. Journal of Marine Science and Engineering 9(6):571.* *Myrberg AA (2001) The acoustical biology of elasmobranchs. Environmental Biology of Fishes 60:31-45.*
F08	**Matter**: Impacts of underwater sound on white sharks **Claim:** Firstly, it should be established that the presence of sound clearly and directly modifies the habitat that great white sharks reside in. Satellite tracking data taken from Bruce et al. (2018; Figure 2) indicates a clear and substantial overlap of tracked sharks. This is site-specific, and important information around the species necessary - by law - for their assessment and protection. **Claim**: White sharks are listed as vulnerable and are protected in Australian waters under the EBPC Act and the Marine Bioregional Plan for the South West Marine Bioregion. It is a requirement under the EBPC to "implement measures to reduce adverse impacts of habitat degradation and/or modification." Despite this, the EP does not state how CGG plans to implement measures to reduce impacts to their critical habitat. **Claim**: The Marine Bioregional Plan for the South-West Marine Region outlines that white sharks have a low reproductive rate, which contributes to their vulnerability and identifies human disturbance as a potential pressure of concern to the species. The points considered above (under elasmobranchs) are all relevant to the white shark, which indicates a potential for adverse risks to the white shark from the proposed seismic survey. Advice provided in this instance from the Marine Bioregional Plan for the South-West Marine Region is to complete an EPBC Federal Referral of the proposed action for thorough assessment. **Claim**: Submitter recommends that CGG submits an EPBC Federal Referral pertaining to their proposed action and subsequent impacts to white sharks.	CGG acknowledges claims that White Sharks are protected and hence should not be subject to adverse impacts to population health and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of seismic effects to white sharks from the proposed Regia MSS has been completed. Potential impacts and risks to white sharks from underwater sound are described and assessed in the following sections of the EP: • Modelling Report Sound Emissions (Appendix B7) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including sharks. • Impact Assessment Underwater Sound: Fish (Appendix E3) describes and assesses potential impacts and risks to white sharks from underwater sound generated by the Regia MSS The White Shark is widely but not evenly distributed in Australian waters including in and around some fur seal and Australian Sea Lion colonies such as: the Neptune Islands (South Australia); areas of the Great Australian Bight as well as the Recherche Archipelago and the islands off the lower west coast of Western Australia (Malcolm et al., 2001; EA, 2002). Juveniles aggregate seasonally in certain key areas including the Corner Inlet to 90 Mile Beach area of eastern Victoria and the coastal region between Newcastle and Forster in New South Wales (Bruce & Bradford, 2008, 2012). These regions of higher concentration have been mapped as part of the Australian Government's marine bioregional planning process. Appendix B12 (Regia MSS EP: Map –REG-EPM-077_A) shows the Biologically Important Areas (BIAs) for White Sharks within the EPA for the proposed Regia MSS. This map shows the broad distribution of White Sharks within the region and identifies the high-density foraging sites, around seal and sea lion colonies, notably Lady Julia Percy Island. The White Shark is not known to form and defend territories and is only a temporary resident in areas it inhabits. However, its ability to return on a highly seasonal or more regular basis implies a degree of site fidelity that has implications for repeat interactions with site-specific threats (Bruce et al., 2005). This behaviour has been identified for the areas around Lady Julia Percy Island and hence the Regia MSS program has been modified to avoid this important aggregation zone (M#01: Activity Limitation). **EP Appendix E3 (Impact Assessment Underwater Sound: Fish) Section 6.3 (and 8) has been updated to include the following information:** • **The White Shark foraging BIA within the area that may be impacted by underwater sound above the behavioural threshold for sharks, is centred on Lady Julia Percy Island / Deen Maar which is a known seal breeding colony. The sound source will not be discharged within 17 km of Lady Percy Julia Island / Deen Maar (M#01 Activity Limitation) which will significantly reduce the potential impacts of underwater sound on White Shark behaviour in close proximity to the foraging BIA.**

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
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		It remains the case that fishing is and was the primary driver of depleted White Shark populations across Australia and the globe (e.g. Reid et al 2011). Protections afforded to this species have halted declines in Australia, however it remains unclear what the rates of recovery are (Braccini et al 2017, Davenport et al 2020). Having assessed all the available literature on White Shark behaviour within the regional context, CGG have concluded that the only likelihood of a potentially significant impact from seismic on White Shark behaviour is if the survey was to be conducted within the nearshore bounds of Lady Julia Percy Island and this likelihood has been addressed through modification of the proposed area for seismic to occur (M#01 Activity Limitation). **CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above, but has include additional information on the White Shark BIA and activity limitation M#01, and it's mitigating effect against potential impacts to White Sharks, in EP Appendix E3, Sections 6.3 and 8.** ***References:*** *Braccini M, Taylor S, Bruce B, McAuley R (2017) Modelling the population trajectory of West Australian white sharks. Ecological Modelling 360:363-77.* *Bruce BD, Stevens JD, Bradford RW (2005) Site Fidelity, Residence Times and Home Range Patterns of White Sharks Around Pinniped Colonies. Final Report to Australian Govt. Dept. Env. Her. CSIRO, Hobart, Tasmania. 46 pp.* *Bruce BD, Bradford RW (2008) Spatial dynamics and habitat preferences of juvenile white sharks - identifying critical habitat and options for monitoring recruitment. Final Report to the Dept. Env. Water Her. & Arts, CSIRO, Hobart Tasmania 75 pp.* *Bruce BD, Bradford Russell W (2012) Ch 17: Habitat use and spatial dynamics of juvenile White Sharks, Carcharodon carcharias, in Eastern Australia in Global Perspectives on the Biology and Life History of the White Sharks Ed. Domeier M, CRC Press.* *Davenport D, Butcher P, Andreotti S, Matthee C, Jones A, Ovenden J (2021) Effective number of white shark (Carcharodon carcharias, Linnaeus) breeders is stable over four successive years in the population adjacent to eastern Australia and New Zealand. Ecology and Evolution 11(1):186-98.* *Malcolm H, Bruce BD, Stevens JD (2001) A review of the biology and status of white sharks in Australian waters. CSIRO, Hobart, Tasmania 113 pp.* *Reid DD, Robbins WD, Peddemors VM (2011) Decadal trends in shark catches and effort from the New South Wales, Australia, Shark Meshing Program 1950–2010. Marine and Freshwater Research 62(6):676-93.*
F09	**Matter**: Impacts of underwater sound on scallops, the scallop fishery, and squid **Claim**: Not mentioned in the Regia application is the fact that seismic blasting [has been connected to temporary and permanent hearing loss, habitat abandonment, mating and feeding disruption and possible death in marine mammals like whales.] It is linked to scallop deaths by compromising their immune systems [and has been found to irreversibly damage the organs of lobsters]. **Claim**: CGG have opposed the findings of Day et al. (2017) citing a study conducted by Przeslawski et al. (2018), stating "no evidence of increased scallop mortality … attributable to exposure to seismic disturbance." Not only did the Przeslawski et al. (2018) study not examine any long-term effects, but assessed the impacts of a 2D seismic survey, not a 3D seismic survey. By contrast, the study by Day et al. (2017) assessed the impacts of a 3D seismic survey on scallops, and is therefore significantly more relevant to this EP given CGG are proposing a 3D seismic survey. 3D seismic surveys are more intense and create far greater environmental impacts in comparison to 2D seismic surveys, and the findings of a 2D survey should not be used to discredit the findings of a 3D seismic survey, as CGG have done. **Claim**: CGG has contested the findings of Day et al. (2017) by referencing a study conducted by Przeslawski et al. (2018), which reported no evidence of increased scallop mortality due to seismic disturbance. However, it's crucial to recognize that the Przeslawski et	CGG acknowledges claims that seismic has been found to cause damage to scallop and squid and this this must be appropriately addressed in the Regia MSS EP and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on scallops and squid from the proposed Regia MSS has been completed. Potential impacts and risks to scallops and squid from underwater sound are described and assessed in the following sections of the EP: • Modelling Report Sound Emissions (Appendix B7a and B7b) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including scallops and squid. • Impact Assessment Underwater Sound: Invertebrates (Appendix E4) describes and assesses potential impacts and risks to scallops and squid from underwater sound generated by the Regia MSS Acceptability Assessment (Appendix F3) provides a more detailed interrogation of seismic effects on select taxa identified through community consultations including scallops and squid. There have been multiple studies into the effects of seismic surveys on scallops with key work published by Harrington et al. (2010), Przeslawski et al. (2016a, 2016b, 2018) and Day et al (2016b, 2017). The results of this work are in keeping with studies on seismic effects to other invertebrates with impacts clearly noted within very close proximity to seismic pulses. However estimated mortality rates in all cases remained well below natural mortality rates which can be as high as 50% in wild scallop populations (Day et al 2016b). Appendix B8: Regia MSS Seismic Studies gives a thorough review of the relevant literature and the outcomes as briefly summarised here with full citation information available. Overfishing remains the largest anthropogenic influence on scallop stocks across the region, which can naturally fluctuate by several orders of magnitude, as has been demonstrated in Port Philip Bay stocks (Coleman 1998). The Victorian Scallop (Ocean) Fishery which operates out to 20nm from the coast is considered a depleted stock with fishing effort severely restricted. With respect to the potential influence of the proposed Regia MSS on scallop populations in the region the risk is very low. The map of commercial scallop fisheries (see below; https://fish.gov.au/report/280-Commercial-Scallop-2020) indicates they are all operating to the east of the proposed survey area within Bass Strait. Bass strait is the centre of *Pecten fumatus* distribution in Australia because of the combination of suitable habitat and the convergence of three major oceanic currents which are a key requirement for filter feeders (Ovenden et al 2016).

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
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	al. (2018) study did not examine long-term effects and evaluated the impacts of a 2D seismic survey, not a 3D survey like the one proposed by CGG. Given that CGG is proposing a 3D seismic survey, the study by Day et al. (2017) is more relevant as it specifically assessed the effects of 3D seismic surveys on scallops. It's inappropriate to dismiss the findings of a 3D survey based on the results of a 2D survey, as the environmental impacts and intensity of these surveys differ significantly. **Claim**: Submitter recommends the mortality and impacts of 3D seismic surveys on scallops are appropriately represented within the EP. We recommend Regia reassess the risks and impacts of seismic on scallops following appropriate representation of the scientific literature. **Claim**: Physiological damage and behavioural changes have been observed in molluscan species such as scallops [15] and squid [16] in response to intense sound exposure, however long-term implications for a typical seismic survey on survivability are yet to be ascertained. 15. Day RD, McCauley RD, Fitzgibbon QP, Hartmann K and Semmens JM. 2017. Exposure to seismic air gun signals causes physiological harm and alters behavior in the scallop, Pecten fumatus. Proceedings of the National Academy of Sciences, 114. 16. Mooney TA, Hanlon RT, Christensen-Dalsgaard J, Madsen PT, Ketten DR and Nachtigall PE. 2010. Sound detection by the longfin squid (Loligo pealeii) studied with auditory evoked potentials: sensitivity to low-frequency particle motion and not pressure. Journal of Experimental Biology, 213. **Claim**: Another fishing industry staple, scallops are more profoundly affected by seismic blasting than rock lobsters. They are also less able to escape an impacted area. **Claim**: Scallops and other bivalves are filter feeders and so feed on plankton. If zooplankton stocks are killed off significantly in the Operating Area from seismic blasting, this could affect food supply for scallops and other bivalves and affect the fisheries industry in the Port Fairy area. **Claim**: Submitter recommends the mortality and impacts of 3D seismic surveys on scallops are appropriately represented within the EP. We recommend Regia reassess the risks and impacts of seismic on scallops following appropriate representation of the scientific literature. **Claim**: Studies show that seismic blasting has the following impacts; • Lowering of scallop immune system resulting in death **Claim**: Regarding scallops, CGG states “scallops are not commercially fished in this area indicating an absence of commercial quantities”. This is factually incorrect. An absence of fishing does not indicate an absence of commercial quantities of scallops, without a spatial and temporal survey of the region. Given the absence of such a survey, this assumption by CGG warrants removal, and impacts to scallop populations reassessed. **Claim**: The Bass Strait Central Zone Scallop Fishery region extends over the proposed survey area (AFMA, 2024). Based on the known	 **Figure 3:** Distribution of reported catch of commercial scallop On the basis of all the information assessed, CGG have concluded that the risk to scallop populations from the proposed Regia MSS is very low. Appendix B8: Regia MSS Seismic Studies also gives a thorough review of the relevant literature on seismic effects to squid. However, based on community consultation concerns a further analysis was conducted on Gould’s Squid (Appendix F3-Acceptability Assessment; 5.2.6 Gould’s Squid), which is the primary squid species targeted by the Southern Squid Jig Fishery and an important contributor to the regional economy. This species only lives for a year and reproduces 4 times over that period. Modelling of fishing effort in the fishery has shown that 90% of biomass can be removed without impeding stock recovery and sustainability. CGG have therefore assessed risk to squid populations from the proposed Regia MSS as low. Mitigation measures will be implemented to significantly reduce the risk to individuals, as outlined in the Fauna Management Plan (Appendix G2). M#01 Activity Limitation stipulates No discharge of the sound source at full power in water depths of less than 50 m. This is protective for immobile or short ranging invertebrate species that are more likely to be present in water depth < 50 m. M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection. M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *Coleman N (1998) Counting scallops and managing the fishery in Port Phillip Bay, south-east Australia. Fisheries Research 38(2):145-57.* *Ovenden JR, Tillett BJ, Macbeth M, Broderick D, Filardo F, Street R, Tracey SR, Semmens J (2016) Stirred but not shaken: population and recruitment genetics of the scallop (Pecten fumatus) in Bass Strait, Australia. ICES Journal of Marine Science 73(9):2333-41.*

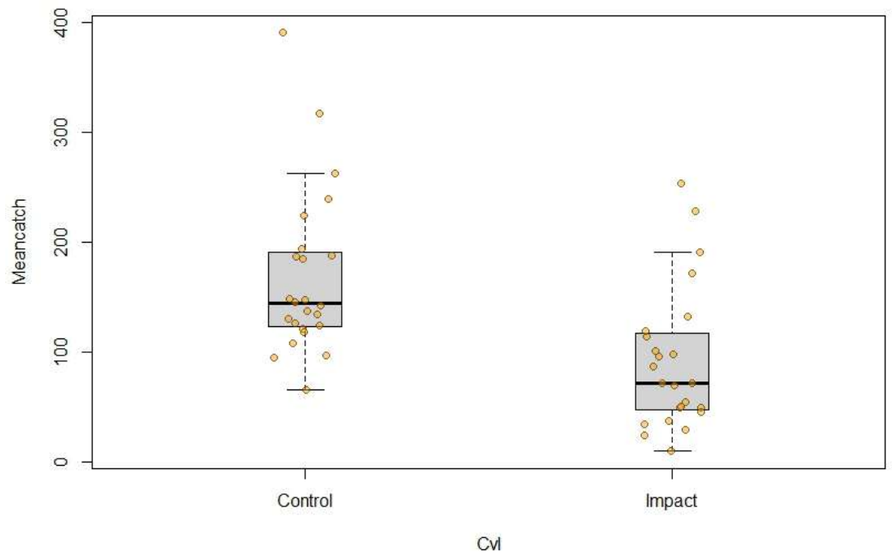
	THEME	**FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)**
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	impacts of seismic to scallops, Fisheries and communities should be made aware of the likely damage to stocks throughout the operational and surrounding areas. **Claim**: The proposed survey area overlaps with the Bass Strait Central Zone Scallop Fishery region. Considering the known impacts of seismic activity on scallops, it's imperative to inform fisheries and communities about the potential damage to scallop stocks within the operational and surrounding areas. **Claim**: The scallop fishers of Bass Strait have previously reported the loss of hundreds of millions of tonnes of scallops following seismic blasting operations. **Claim**: Dr. Ryan Day, himself at the University of Tasmania informed me that CGG's claim of: "The "increased mortality was within natural variation" is not a correct interpretation of the results of that study. You are correct in your interpretation that our results showed significantly elevated mortality and physiological harm in scallops following exposure." To me, this sounds like a gross and misleading misinterpretation of the expected effects of seismic blasting on scallops by CGG CLAIM which was concerning 3 fold: 1. What may actually happen to the scallops. 2. What may happen to the local scallop fishing industry. 3. That CGG was either not capable of using scientific research correctly to base their activity on in as safe a manner as possible for marine species OR that they were intentionally misleading the Port Fairy community to allay fears and carry on with their activity regardless of the effect on the scallops.	
F10	**Matter**: Impacts of underwater sound on crustacea, including lobsters **Claim**: Not mentioned in the Regia application is the fact that seismic blasting [has been connected to temporary and permanent hearing loss, habitat abandonment, mating and feeding disruption and possible death in marine mammals like whales.] It [is linked to scallop deaths by compromising their immune systems and] has been found to irreversibly damage the organs of lobsters. **Claim**: Recent studies funded by CGG found uncontrollable impacts from seismic blasting. Seismic blasting causes lasting injuries to lobsters as well as slowing their development and growth, and causing physiological stress.[3] Ryan D Day et al., 'Examining the Potential Impacts of Seismic Surveys on Octopus and Larval Stages of Southern Rock Lobster - Part A Southern Rock Lobster' (Fisheries Research and Development Corporation,2021), https://www.frdc.com.au/sites/default/files/products/2019-051-Examining-potential-impacts-of-sesmic-PART%20A-SRL-larval-stages-15July2021.pdf. **Claim**: At present there is little data available on the impacts of seismic exposure on longer-term survivability of crustacea, however, mounting evidence for impacts to normal physiology and behaviour suggests that species such as Southern Rock Lobster are likely to incur elevated levels of mortality for unknown periods following exposure to a seismic source.	CGG acknowledges claims that seismic has been found to cause damage to southern rock lobsters and other species of crustacea and has reviewed the Environment Plan (EP) to ensure that this has been adequately considered. As stated in response to multiple other Matters, CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on lobster and other relevant crustaceans from the proposed Regia MSS has been completed. Potential impacts and risks to lobster from underwater sound are described and assessed in the following sections of the EP: • Modelling Report Sound Emissions (Appendix B7a and B7b) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including lobsters. • Impact Assessment Underwater Sound: Invertebrates (Appendix E4) describes and assesses potential impacts and risks to lobster from underwater sound generated by the Regia MSS • Acceptability Assessment (Appendix F3) provides a more detailed interrogation of seismic effects on select taxa identified through community consultations including lobster. The scientific evidence is clear that seismic surveys can cause semi-lethal effects on various crustaceans when they are within proximity to a seismic source, which has been well documented within the Regia MSS EP. Such effects have also been shown to be highly variable and will operate differently depending on what life-stages are involved. It is also the case that testing of seismic effects has required caging of animals which makes extrapolation to free-roaming populations problematic. Outcomes from caged individuals cannot be directly extrapolated to effects on wild populations and especially population-level effects. CGG have utilised a weight-of-evidence approach to assess the likelihood of adverse effects from the proposed Regia MSS Survey on resident crustacean populations. Appendix B8 – Regia MSS Seismic Studies provided a general summary of seismic effects on rock lobsters and snow crabs and concluded that while sub-lethal effects as noted by experimentation are likely in a seismic survey, they will be highly variable with no evidence of large-scale mortality that would be considered detrimental to population health.

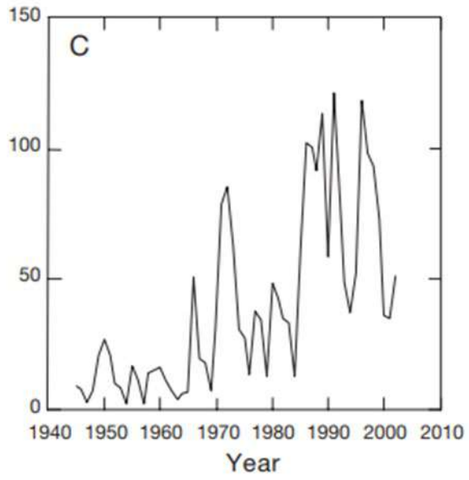
	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
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	Claim: Research has shown impairment to the righting reflex used by Southern Rock Lobster to orient themselves following exposure to an acoustic source [12] . This was linked to damage to the sensory hairs of the statocyst that may also result in other impairments that have not yet been quantified, which in turn may adversely affect a range of reflex and behavioural responses important for lobster to locate food and escape predators. In adults this damage is present after one moult, however juveniles appear to show a more persistent impact [10] . Juveniles exposed directly to a seismic source have also showed an increased intermoult duration, indicating impaired development or growth [10]. 10. Richardson AJ, Matear RJ and Lenton A. 2017. Potential impacts on zooplankton of seismic surveys. CSIRO, Australia. 12. Day RD, McCauley RD, Fitzgibbon QP, Hartmann K, Semmens, JM. 2019. Seismic air guns damage rock lobster mechanosensory organs and impair righting reflex. Proceedings of the Royal Society Biological Sciences, 286. **Claim**: ROCK LOBSTERS – Seismic blasting causes significant damage to the special organ, called the mechanosensory organ, which provides a sense of balance, body position and movement, which are critical for predator avoidance (Day et.al, 2021). This affects their ability to avoid predation and may affect the populations of lobsters, which are an important part of the local fishing industry in Moyne. **Claim**: Southern Rock Lobsters, a significant fishing resource in Victorian waters and food source for numerous marine species, show damage to the sensory organ responsible for their buoyancy and balance (Day, R. et. al., Seismic air guns damage rock lobster mechanosensory organs and impair righting reflex, The Royal Society, 20198). This reduces their ability to avoid predation and in some cases led to their floating belly up on the surface of the ocean resulting in their being easy prey for seabirds. **Claim**: Preliminary findings regarding impacts of seismic sources to Western Rock Lobster (highly related to Southern Rock Lobster) reported significantly greater righting time and greater limb loss [13] . In the same study, an approximate 30% reduction in recapture rates of exposed animals after one month suggested elevated mortality. 13. Consultation Update: Eureka 3D MSS - November 2023. **Claim**: Prior research has also reported negative impacts of seismic sources on the nutritional condition and immune competency of Southern Rock Lobster for months following seismic air gun exposure [14]. 14. Fitzgibbon QP, Day RD, McCauley RD, Simon CJ and Semmens JM. 2017. The impact of seismic air gun exposure on the haemolymph physiology and nutritional condition of spiny lobster, Jasus edwardsii. Marine Pollution Bulletin, 125. **Claim**: The environment plan does not appear to adequately assess the long-term impacts of seismic testing on rock lobster populations and therefore any discussion of risk management strategies is inadequate and incomplete. **Claim**: Submitter recommends studies into the effects of seismic blasts on rock lobster health, behaviours, and populations; and a plan is formulated for risk mitigation and management of the risks	In response to community feedback an additional assessment was done on Southern Rock Lobsters and Giant Crab to provide greater certainty around potential seismic effects from the proposed Regia MSS (see Appendix F3 - Acceptability Assessment: Sections 5.2.3 & 5.2.4). All Southern Rock Lobster (SRL) located within the MSS operational area are considered part of a single genetic stock spread across southern Australia (Ovenden et al. 1992; Thomas & Bell 2013). The huge geographical spread of this species means that larval supply to any individual area, such as the MSS operational area, comes from many other areas and hence is not linked to the number of reproductively active animals in any one place. Research has highlighted the complex processes affecting settlement strength in SRL which indicate that environmental conditions that reduce settlement strength in one region of the fishery often increases settlement strength in other regions. A system such as this is extremely resistant to localised disturbances as it receives larvae each year from what is effectively, a 'bank' of SRL stretching across southern Australia. Commercial fishing statistics from the VFA 20/21 season SRL Stock Assessment Report also highlight that CPUE has almost tripled from 2009/10 even though over 14 marine seismic surveys have been conducted along the Victorian coastline over this time period. Hence our assessment has concluded that the risk profile for SRL from the proposed Regia MSS is low. Giant crabs are a long-lived slow growing species that is found across southern Australia inhabiting depths between 120-370m. Genetic studies have indicated that the species is effectively a single stock with little evidence of sub populations. This is likely due to the 3-4 month larval phase and the ability of individual adults to move up to 400km. Seismic effects on individuals have been shown to be limited to larvae within very close proximity to the discharge source. Timing the MSS to avoid the peak period in the reproductive cycle period will mitigate any potential impacts during this critical period. Fishing days within the Regia MSS Active Source Area have also decreased from 17.3 % of total fishing days from 2011-2022 to 7.5% of total fishing days from 2018-2022. As discussed above there is no evidence to support an expectation of significant and measurable cumulative impacts to P. gigas as a result of the Regia MSS. Large scale environmental drivers driven by a changing climate, and fishing effort, will continue to be the major influences on the population health of giant crab. Mitigation measures will be implemented to significantly reduce the risk to individuals, as outlined in the Fauna Management Plan (Appendix G2. M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection. M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References**:* *Ovenden JR, Brasher DJ, White RW (1992) Mitochondrial DNA analyses of the red rock lobster Jasus edwardsii supports an apparent absence of population subdivision throughout Australasia. Marine Biology 112:319-26.* *Thomas L, Bell JJ (2013) Testing the consistency of connectivity patterns for a widely dispersing marine species. Heredity. 111(4):345-54.*

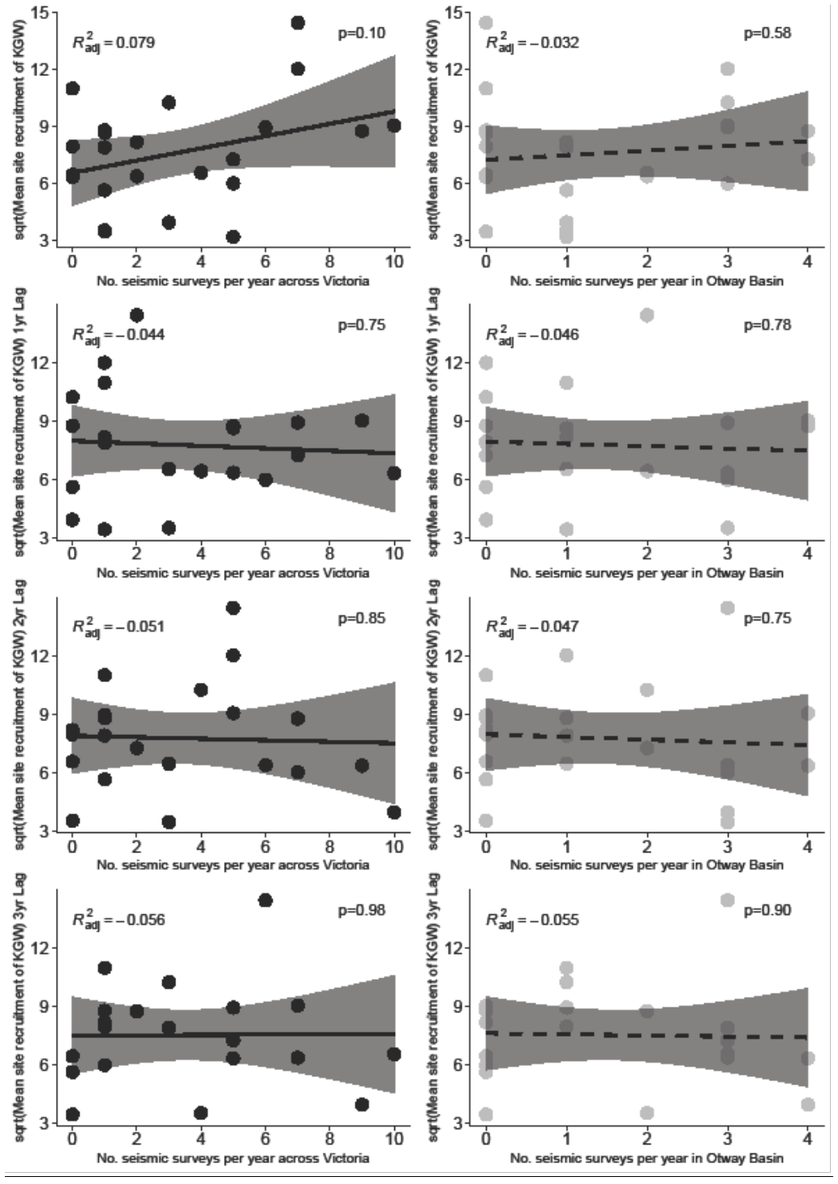
	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	***Comments received***	***Titleholder response***
	that seismic blasting has on rock lobster health, behaviour and populations. **Claim:** Research demonstrates its adverse impact on various marine species, including the deafening of whales, disruption of their feeding and migration patterns, impairment of southern rock lobsters' functioning and navigation abilities, and mortality among small fish and zooplankton. As such, repercussions extend to industries such as commercial fishing and tourism. Given that this project benefits a select few at the expense of the wider community, including residents along the South-west Victorian coastline, it needs to be refused by NOPSEMA. **Claim**: The adverse effects of seismic blasting extend beyond the immediate vicinity of the operation. Studies have shown a direct correlation between seismic activity and increased mortality rates in shellfish and marine mammals, as well as significant disruptions to the marine food chain. **Claim**: Studies show that seismic blasting has the following impacts; • Rock lobster lose their ability to quickly right themselves if they find themselves upside down leaving them open to predation, • Delayed moul3ng of larval rock lobster which results in death **Claim:** The studies mention permanent sub- lethal effects on rock lobster and mortal injury to zoo plankton. The Environmental plan accepts these as non-critical risks however there seems to be no independent modelling of the impact of underwater sound as recommended by the preliminary environmental statement.	
F11	**Matter**: Impacts of underwater sound on octopus **Claim**: Recent studies funded by CGG found uncontrollable impacts from seismic blasting. Another study from the same research program tested effects on octopus from blasting up to one kilometre away. It found that blasting cause developmental delays in octopus eggs, and exposed octopus showed significantly reduced feeding, maternal care of eggs and adventurous behaviour. Octopus' sensory systems were significantly damaged. This study was not able to determine a safe operating distance for seismic blasting. [3] Ryan D Day et al., 'Examining the Potential Impacts of Seismic Surveys on Octopus and Larval Stages of Southern Rock Lobster - Part A Southern Rock Lobster' (Fisheries Research and Development Corporation,2021), https://www.frdc.com.au/sites/default/files/products/2019-051-Examining-potential-impacts-of-sesmic-PART%20A-SRL-larval-stages-15July2021.pdf. **Claim**: Potential impacts to "pruning" of egg clutches by female octopus is of particular concern given octopus populations rely on a small number of well-developed offspring [7]. 7. Day RD, McCauley RD, Leon R, Fitzgibbon QP, Baker K, Hartmann K, Semmens, JM. 2023. Examining the potential impacts of seismic surveys on octopus and larval stages of southern rock lobster. FRDC Project No. 2019/051. Institute for Marine and Antarctic Studies, University of Tasmania, Hobart.	CGG acknowledges claims that experiments on seismic testing effects on octopus have found some impacts. CGG has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. As stated in response to multiple other Matters, CGG utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on octopus from the proposed Regia MSS has been completed. Potential impacts and risks to octopus from underwater sound are described and assessed in the following sections of the EP: • Modelling Report Sound Emissions (Appendix B7a and B7b) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including octopus. • Impact Assessment Underwater Sound: Invertebrates (Appendix E4) describes and assesses potential impacts and risks to octopus from underwater sound generated by the Regia MSS Acceptability Assessment (Appendix F3) provides a more detailed interrogation of seismic effects on select taxa identified through community consultations including octopus. In response to community feedback further assessment of the literature was undertaken to clarify any potential effects of the proposed Regia MSS (Appendix F3: Acceptability Assessment: Section 5.2.7). This assessment was updated with the release of the final report by Day et al. (2023) *Examining the potential impacts of seismic surveys on Octopus and larval stages of Southern Rock Lobster.* Day et al. 2023 found no impact of seismic on Octopus fishery CPUE, they also found no mortality in either male or female octopus, and no indication of harm to offspring, with hatches generally completing fully with live, competent hatchlings. There was some indication of a reduction in maternal care of eggs and changes in blood chemistry associated with immunity to pathogens. The overall level of impact was considered negligible at 500m from the seismic source. From a fisheries perspective, the main fishery for Octopus is in Eastern Victoria with fishing in central and western Victoria less established and managed through exploratory, temporary permits. There is therefore no established fishery for Octopus across the coastal areas adjacent to the proposed Regia MSS.

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	***Comments received***	***Titleholder response***
	Claim: Characterising the mechanism and effects of seismic sources on behaviour of brooding octopus is a priority for future research, as this could have the potential to affect octopus at a population level. **Claim**: Reports on the impacts of a commercial seismic survey off the coast of Victoria on the Pale Octopus indicated inhibition of enzyme activity that suggested a sub-lethal neurotoxic effect capable of altering behaviour and locomotor abilities [5]. As cephalopods demonstrate a high level of intelligence and are reliant on neuromuscular coordination, impairment of normal neurotransmitter systems could have severe impacts on their ability to find and capture food, escape predators and manipulate their environment. 5. Hamer PA and Jenkins GP. 2007. Migratory dynamics and recruitment of snapper, Pagrus auratus, in Victorian waters. FRDC Project No. 199/134. Primary Industries Research Victoria, Marine and Freshwater Systems, Queenscliff. **Claim**: Research has been conducted by Associate Professor Jayson Semmens et.al. at the University of Tasmania into the effect of seismic blasting on octopus where males were found to have reduced adventurousness and depressed feeding, females were shown to have reduced maternal care of their eggs, there were significant increases in stress as shown by pH levels and neuromuscular function was affected (Day et.al., 2023). Given that octopi are limited with their ability to move quickly out of a given area, seismic blasting would be a cruel practice for them to experience, with a potential impact on populations in relation to behavioural changes that may affect survival and reduced care of unhatched young. **Claim**: In the few months following the seismic blasting conducted by CGG at Lakes Entrance in 2020, the ABC reported on fishers saying that their octopus catch was down by 80% (Davis & Burns, 2020).	This species has no pelagic larval life so there is no planktonic component to consider. As is the case with the majority of targeted fisheries species, the greatest threat to stocks is localised heavy fishing pressure which can lead to a progressive reduction in female fecundity, which would eventually impact upon recruitment. Control measures to reduce impacts to octopus are outlined in in EP Appendix E4 (Impact Assessment – Underwater Sound: Invertebrates). M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection. M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. CGG have therefore concluded that the risk level for Regia MSS effects to octopus is low. **CGG has considered these claims and to ensure that the most up-to-date assessment has been made has provided an extra Acceptability Assessment within Appendix F3 of the EP, which more clearly defines the levels of risk to Octopus from the proposed Regia MSS.** ***References**:* *Day RD, McCauley RD, Leon R, Fitzgibbon QP, Baker KB, Semmens JM (2023) Examining the potential impacts of seismic surveys on Octopus and larval stages of Southern Rock Lobster. FINAL REPORT for FRDC Project no. 2019/051.*
Key Matter: Impacts on Fishers and Fisheries		
F12	**Matter**: Impacts on Fisheries (general) **Claim**: The proposed operational area for the Regia MSS overlaps sensitive habitats important to the life cycle for several species integral to the economic and social benefits derived from sustainable Victorian fisheries. Of primary concern is the paucity in knowledge regarding potential impacts of seismic survey methods to recruitment and long-term survivability of species such as Southern Rock Lobster (Jasus edwardsii), Giant Crab (Pseudocarcinus gigas), Pale Octopus (Octopus pallidus), King George Whiting (Sillaginodes punctatus) and Australasian Snapper (Pagrus auratus). **Claim**: Additional research on the impacts of seismic sources on important biological processes such as migration, reproduction and larval development, along with longer-term survival rates associated with normal foraging, predator evasion and communication are clearly lacking for key species sustainably harvested in Victoria and adjacent Commonwealth waters. This knowledge is required to	CGG acknowledges claims that seismic testing will have some effects on fisheries species that are an important part of the regional economy. CGG has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. As stated in response to multiple other Matters, CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on fisheries species has been completed. Additionally, CGG continue to monitor the relevant databases and websites to ensure new scientific information is captured as it comes to light. The Regia MSS EP contains multiple sections that summarise and review fisheries species and what is known about the impacts of seismic to these species (see Regia EP: Appendix B6, Appendix B7a and B7b, Appendix B8, Appendix E3 and Appendix F3). Where specific information is not available on a particular species then a weight-of-evidence approach is used where results from a broad range of similar species or taxa are used to make informed assessments. Government fisheries assessments are a key reference tool for this as they provide up-to-date assessments of the fisheries health and links to relevant scientific literature to understand the life-history and distribution of the targeted species. Appendix B6 – Regia MSS Commercial Fisheries Review provides an assessment of all the fisheries species that are targeted within the Environmental Planning Area. Of 9 fisheries managed by the Commonwealth, 6 of them overlap with the Activity Planning Area while of 10 fisheries managed by the Victorian Fisheries Authority 5 of them overlap with the Activity Planning Area. Thus ~57% of commercial fisheries overlap spatially with all or part of the Regia MSS Activity Area. Appendix B8 – Regia MSS Seismic Studies provides a detailed assessment of the literature on seismic effects to fish, invertebrates and plankton amongst others. The weight-of-evidence from studies across multiple fish and invertebrate species – including plankton communities – indicates highly variable, but mostly negative outcomes within proximity to a seismic source but dissipating with distance.

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	***Comments received***	***Titleholder response***
	establish appropriate guidelines for seismic surveying in areas such as that proposed for the Regia MSS. **Claim**: The Regia application shows no acceptance of the damage done to fisheries around the world and Australia from seismic tests and the consequent need for the elimination of seismic blasting. **Claim**: The CGG proposal is totally senseless in every respect, unless they deliberately intend to destroy Australian fisheries. **Claim**: If fish populations were negatively affected either directly or indirectly from seismic blasting, it would not only affect the marine ecosystems, but the local fisheries industry. **Claim**: Seismic blasts also reduce catch rates of commercial fish).	There is no uniform effect of seismic detected, with acoustic signals being affected by water depth, bathymetry profile along the propagation path, the geological layering of the seabed and the associated geo-acoustic properties, and the sound speed profile of the water column. Then there are the inter-species differences and lifecycle stage-specific differences, and these are all in turn affected by powerful and large-scale environmental parameters such as water temperature. Appendix F3 of the EP- Acceptability Assessments provides a more detailed and species-specific examination of what the likely level of seismic impacts are and whether population stability is threatened. These species have been identified as important through ongoing community consultation and include the Southern Rock Lobster, Giant Crab and Gould's squid, all of whom have overlap with the Regia MSS Area of Activity. The assessments of these species in Appendix F3 provide detailed arguments as to why the proposed Regia MSS is unlikely to deliver medium or high risks to the stability of resident populations. While there is a high probability of lethal and/or semi-lethal effects for individuals that will be very close to the seismic pulses these outcomes dissipate with distance from source and are further mediated by the huge variability in environmental and geophysical properties that make up the system. CGG investigated potential correlations between long term recruitment data and long term seismic data for a number of species but found no relationship; good recruitment to a fishery (e.g. King George Whiting and Snapper) was just as likely when seismic activity was high in any given year. For those species of commercial interest fishing effort remains the single biggest driver of population-level changes with reduced fishing effort almost always improving the health of a targeted species. The southern ocean has also been identified as a climate change hotspot so associated changes in water temperatures are also becoming increasingly important to the long term health of marine populations. Mitigation measures will be implemented to significantly reduce the risk to individuals, as outlined in the Fauna Management Plan (Appendix G2). M#01 Activity Limitation stipulates No discharge of the sound source at full power in water depths of less than 50 m. This is protective for immobile or short ranging invertebrate species that are more likely to be present in water depth < 50 m. M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For mobile species such as octopus and squid they would move away from the source before it is at full power, providing them a level of protection. M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. **CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. Nevertheless, CGG have added specific analyses of further species including Abalone, Snapper and Octopus to the Acceptability Assessment Appendix F3 to ensure all concerns have been investigated and level of risk has been clarified according to the available evidence.**
F13	**Matter**: Impacts on catch rates of whiting **Claim**: Hugely reduced catch rates and decreased abundance have subsequently been reported near seismic surveys. For example, the flathead and whiting all but disappeared from the coast of Lakes Entrance after CGG conducted a seismic blasting regime for 6 months in 2020 (Davis, 2020). Whiting catch went down 99.5% and flathead catch went down 71%, as found in research conducted by FRDC. **Claim**: Fish catch has been negatively affected both in Australia and elsewhere in the world as a result of seismic blasting. https://www.abc.net.au/news/2020-08-04/whiting-catch-down-because-of-seismic-testing/12502930 **Claim**: King Island fishers have reported losing an entire year class of pelagic fish following previous seismic blasting operations.	CGG acknowledges claims that seismic testing within the proposed Regia MSS area will affect catch rates of whiting and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. As stated in response to multiple other Matters, CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on fisheries species has been completed. Additionally, CGG continue to monitor the relevant databases and websites to ensure new scientific information is captured as it comes to light. Impact Assessment Underwater Sound: Fish (Appendix E3) describes and assesses potential impacts from underwater sound generated by the Regia MSS. In response to general concerns over seismic survey impacts to fisheries in the region around Lakes Entrance on Victorias East coast, an FRDC funded project was implemented in 2019 to look at the effects of seismic testing on Danish Seine catch rates for Eastern School Whiting (ESW) and Tiger Flathead (TF). The preliminary results suggested there was a large initial drop in catch rates of whiting > 95% and this drop took ~100 days to dissipate, while flathead catch rates dropped by >75% and took up to 200 days to dissipate. These results do indicate that seismic testing can cause disruption to the natural distribution of ESW and TF for a period of time. However, the size of this effect both spatially and temporally remains unclear. Historically, catches of ESW and TF show very large year-to-year variation, for e.g. ESW seine catches dropped 85% in the Control Area of the study between 2016 and 2017 and by 95% in the Impact Area of the study between 2016 and 2018. These declines are equal in magnitude to any declines suggested by the study and have occurred without the presence of seismic. Box plots illustrating the range of mean catches shows how variable they can be and with this background variability it is extremely difficult to quantify changes specific to an external event.

	THEME	**FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)**
#	***Comments received***	***Titleholder response***
		 **Figure 4:** Boxplots illustrating the range of mean annual catches between 2014 and 2021, of Eastern School Whiting from the designated Control and Impact areas for the FRDC funded BACI study, before the seismic experiment. The results of this study clearly indicate that seismic can have a displacement effect on ESW and TF however the report of this study remains preliminary and has not yet been completed nor subject to vigorous review as is standard for such work. Box plots illustrating the range of mean catches - before the seismic test - illustrates how variable they can be and with this background variability it is extremely difficult to quantify changes specific to an external event. With respect to the proposed Regia MSS, this is located over 500km from Lakes Entrance and does not encompass key Eastern Sand Whiting habitat. In summary, CGG has considered these claims and is satisfied that the concerns raised are not applicable to the Regia MSS for the reasons outlined above. Nevertheless, CGG notes the outcome of the FRDC preliminary report and its relevance to obtaining a better understanding of potential seismic effects on whiting and flathead species. CGG await a final report that has been through appropriate review to gain a better understanding of the scale of effects that can be attributed to seismic testing. Mitigation measures will be implemented to significantly reduce the risk to individuals, as outlined in the Fauna Management Plan (Appendix G2). M#03: Fauna Management System stipulates The Fauna Management System includes the requirement from the EPBC Act Policy Statement 2.1 - Interaction between offshore seismic activities and whales, where the seismic source is required to be slowly ramped up to full power over 30 minutes. For demersal and pelagic fish species including eels, they would move away from the source before it is at full power, providing them a level of protection. M#07: Adjustment Protocol stipulates an adjustment process will be implemented if a commercial fisher has a financial loss due to the Regia MSS. The adjustment process will be developed in consultation with the fishery associations that represent the commercial fishers that fish within the Operational Area. It is important to acknowledge that the Regia 'Adjustment Protocol' provides a mechanism for compensation to fishers if they are deprived of access to regular fishing returns in any way. However, the effectiveness of this protocol is predicated on quality data to ensure any adjustments represent an unbiased appraisal process. CGG has considered these claims and is satisfied that the potential impacts have been adequately addressed in the EP for the reasons outlined above. As a result, the EP has not been updated in response to these claims
F14	**Matter**: Impacts on spawning aggregation areas for King George Whiting	CGG acknowledges claims that seismic testing within the proposed Regia MSS area will affect spawning, recruitment and catch rates of King George Whiting in the Corner Inlet Fishery. CGG has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP.

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	***Comments received***	***Titleholder response***
	Claim: My comment and concern relates to the impact of the proposed seismic survey on our business which relies on King George Whiting recruitment that according to scientific surveys, comes from the area in question. The proposed survey would possibly severely impact spawning and recruitment success for our fishing business. We have approximately ten workers and five fishing vessels in Corner Inlet, Victorian Inshore Trawl and Tasmanian Purse seine and beach seine A fisheries. Nuch of our catch is King George Whiting. We would need to be adequately and pre-emptively compensated for losses. Please see the paper: Determination of spawning areas and larval advection pathways for King George whiting in southeastern Australia using otolith microstructure and hydrodynamic modelling. I. Victoria, Gregory P. Jenkins, Kerry P. Black and Paul A. Hamer, Marine Ecology Progress Series. Vol. 199 (June 26 2000), pp. 231-242 (12 pages). **Claim**: While Klarite may try and put a lobbyist spin on the survey that the larval King George Whiting actually like seismic blasting, that is not supported by any research. It is beholden on CGG to demonstrate that our businesses will not be destroyed by their seismic testing. This has to be independent science. Reference: Determination of spawning areas and larval advection pathways for King George whiting in southeastern Australia using otolith microstructure and hydrodynamic modelling. I. Victoria, Gregory P. Jenkins, Kerry P. Black and Paul A. Hamer, Marine Ecology Progress Series. Vol. 199 (June 26 2000), pp. 231-242 (12 pages). **Claim**: We fish mainly in the Corner Inlet Fishery which relies on larval advection from the spawning grounds between Western Victoria and South Eastern South Australia. So we have spawning stock traveling through the proposed survey site and then planktonic juveniles drifting back through the site. While consultants Klarite claim any impact will be small from this overlap, there is no science to demonstrate there will be a small impact on our stock and therefore businesses in Corner Inlet, the Inshore Trawl Fishery and Tasmania. Such claims by Klarite are without any scientific merit or basis. **Claim**: What we do know is that there is significant overlap of the site of the proposed survey and the advection pathway for the larvae. This is an unacceptable risk. Previous surveys have not covered the advection pathway for our species so thoroughly and to dismiss the risk to the species would be a rejection of the onus of proof that the proponent has to demonstrate their activities will not impact existing stakeholders and businesses.	As stated in response to multiple other Matters, CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on fisheries species has been completed. Additionally, CGG continue to monitor the relevant databases and websites to ensure new scientific information is captured as it comes to light. As described in the seminal work on spawning locations for King George Whiting (KGW) (Jennings et al 2000) a significant proportion of recruitment to Victorian KGW habitats in Western Port Bay and Port Philip Bay is derived from spawning grounds to the far west of Victoria around an area adjacent to the Victoria/ SA border. These spawning grounds are distinct from the known spawning grounds in SA although they are still genetically similar. As the most easterly bay for significant KGW populations in Victoria, Corner Inlet still receives a significant supply of larvae from the Vic/SA border region, however it is also highly likely to be receiving larvae from spawning stock located much closer to the Inlet. The drivers of measurable population level impacts remain regional climate patterns such as decadal wind changes, SST changes and unmanaged commercial fishing or large-scale pollution of essential habitat.  **Figure 5: Graph taken from from (Jenkins et al 2005) showing the changes in annual catch of KGW from Corner Inlet.** Figure 3 from Jenkins et al (2005) shows the changes in annual catch of KGW from CI and illustrates how it is not possible to 'measure' or distinguish a potential effect on KGW populations from the proposed Regia MSS. There have been many seismic surveys across the greater region for decades yet the dynamics of interannual patterns in KGW catches remain clearly linked to these large-scale climate events. This is not to say that seismic surveys won't have some effect on KGW populations, but that these effects will be immeasurably small and extremely unlikely to have any influence on population dynamics. **Nevertheless, in response to community feedback/concerns further interrogation of the literature has been undertaken for King George Whiting and other highlighted taxa. For these groups CGG defined acceptable levels of impact and risk to provide a clear framework for understanding what effects seismic might have on individual health and population-level health. The updated assessment can be found in Appendix F3 Section 5.2.10, which now includes King George Whiting.** CGG sought to understand if there was any relationship between the annual frequency of seismic programs running in Victorian waters and the annual recruitment levels of King George Whiting in Port Philip Bay (PPB). PPB is the main area for KGW stocks in Victoria and hence where any correlations would be most likely to show up. One of the arguments used by both sides of the "effects of marine seismic testing" issue is that the persistent presence of seismic testing in Victoria over a prolonged period has either been a primary driver of declines in fishing catches or it is evidence that the systems are relatively resilient to the scale of these effects. Providing a direct cause and effect is virtually impossible given the scale of the operating environment and the large number of confounding factors that are also acting at any given point in time and/or space. In lieu of this, one approach is to look at long term datasets of a resource such as fish and see if the patterns revealed have any coherency with long-term patterns of MSS in the greater region. If seismic testing is having a significant effect on a stock at population level, then it might be argued that the more seismic testing that is done then the greater any likely impact will be. Hence in years of multiple seismic there will be a greater impact than in years where there has been little or no seismic.

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	***Comments received***	***Titleholder response***
		To investigate this hypothesis CGG compared a long-term dataset of annual counts of newly settled King George Whiting recruits within Port Philip Bay as described in VFA 2021 – Review of key Victorian fish stocks. Patterns of recruitment into this bay are representative of the other 2 catchments of Western Port Bay and Corner inlet as described in multiple papers and reports already submitted as part of the EP. A simple linear regression approach was used to test for any correlations between the annual recruitment of KGW to Port Philip Bay and the annual count of seismic surveys across Victorian waters. For each of the two seismic datasets CGG compared KGW recruitment counts in the same year and then lagged by 1 year, 2 years and 3 years. For example, with a 1-year lag CGG compare the seismic accounts from 1999 with the recruitment counts in 2000, 2000 with 2001, 2001 with 2002 and so on. For a 2-year lag CGG compared seismic in 1999 with KGW recruitment in 2001 and so on. 

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	*Comments received*	*Titleholder response*
		Figure 6: Relationship between frequency of seismic surveys and KGW recruitment levels in PPB CGG found no evidence of a relationship between annual recruitment levels of KGW to PPB and annual seismic levels, whether in the same year or lagged by multiple years. High recruitment of KGW was just as evident during years with high seismic activity or low seismic activity. **CGG has considered these claims and has added specific analyses for King George Whiting to the Acceptability Assessment within Appendix F3 (Acceptable Levels of Impact and Risk) to ensure all concerns have been investigated and the level of risk has been clarified according to the available evidence.** ***References:*** *Jenkins GP, Black KP, Hamer PA (2000) Determination of spawning areas and larval advection pathways for King George whiting in southeastern Australia using otolith microstructure and hydrodynamic modelling. I. Victoria. Marine Ecology Progress Series 199:231-42.* *Jenkins GP (2005) The influence of climate on the fishery recruitment of a temperate, seagrass-associated fish, the King George whiting Sillaginodes punctata. Marine Ecology Progress Series 288:263-71.*
F15	**Matter**: Impacts on lobster fisheries **Claim**: Not to mention my local community relies on the lobster fishing industry to provide many jobs in this area. **Claim**: This proposal is putting at risk out Southern Lobster fisheries. **Claim**: Not to mention my local community relies on the lobster fishing industry to provide many jobs in this area	CGG acknowledges claims around concerns for the impacts of the Regia MSS on the viability of the Southern Rock Lobster Fishery and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. Appendix B8 – Regia MSS Seismic Studies provides an assessment of seismic impacts to crustacean species as reported in the scientific literature, including studies on Southern Rock Lobsters (SRL). Impacts to SLR's is extensively addressed in Matter F10 above. Given the high profile and community concerns associated with SRL a further analysis was done (Appendix F3- Acceptability Assessments) which provides a more detailed and species-specific examination of what the likely level of seismic impacts are and whether population stability is threatened. The Acceptability Assessment identifies: • Mitigation of MSS effects to SRL can best be implemented by limiting the spatial boundaries of the survey to minimise interaction with areas of high SLR density and fishing activity, which is predominantly located shoreward of the 40m depth contour. Additionally, timing the MSS to avoid the June-September period when peurulis are settling is also advisable. The period after release of fertilised eggs is the preferred window as this is when natural mortality is extremely high and localised seismic effects are likely to be subsumed into this mortality schedule. SRL is a highly dispersed genetically homogenous population. A system such as this is extremely resistant to localised disturbances as it receives larvae each year from what is effectively, a 'bank' of SRL stretching across southern Australia. Commercial fishing statistics from the VFA 20/21 season Stock Assessment Report highlight that CPUE has almost tripled from 2009/10. The fishery is characterised as stable and healthy. With respect to the area where the proposed Regia MSS will operate it is lightly fished for SRL with only ~2% of total fishing days occurring within this area over the past 12 years which largely reflects the lack of suitable habitat within. CGG has considered these claims and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
F16	**Matter**: Impacts on abalone fisheries **Claim**: The impact upon commercial fisheries, such as Abalone, whose diet consists almost exclusively of seaweed (see recent research published Dr. Holland, Deakin university), has also not been noted. **Claim**: As has been highlighted in previous correspondence, submitter is concerned about the cumulative impact of the multiple surveys proposed for the Otway basin area in the coming years. Of particular concern is the impact that Marine Seismic Surveys (MSS) have on abalone during their early life stages, when they are most vulnerable to stressors. **Claim**: To date, there has been no research undertaken studying the impacts of MSS on abalone, juvenile or mature. **Claim**: We appreciate the measures taken by CGG where by seismic operations will not be undertaken in waters less than 50m to reduce	CGG acknowledges claims regarding impacts of the Regia MSS on Black Lip Abalone stocks and the associated fishery, and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. As stated in response to multiple other Matters, CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on fisheries species has been completed. Additionally, CGG continue to monitor the relevant databases and websites to ensure new scientific information is captured as it comes to light. Potential impacts and risks to molluscs from underwater sound are described and assessed in the following sections of the EP: • Modelling Report Sound Emissions (Appendix B7a and B7b) provides a detailed numerical modelling study of underwater sound levels and their anticipated effects on relevant taxa and/or species. • Seismic Studies Summary (Appendix B8) provides a general review of seismic effects to all taxa of noted importance, including molluscs. • Impact Assessment – Underwater Sound: Invertebrates (Appendix E4) describes and assesses potential impacts and risks to molluscs from underwater sound generated by the Regia MSS. Mitigation measures will be implemented to significantly reduce impacts to abalone fisheries, including M#01: Activity Limitation, which stipulates no discharge of the sound source at full power in water depths of less than 50 m. This is protective for immobile or short ranging invertebrate species that are more likely to be present in water depth < 50 m.

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	***Comments received***	***Titleholder response***
	impacts on abalone, although we remain concerned about Abalone Viral Ganglioneuritis (AVG), and the potential of an outbreak as a stress response to seismic activity in the vicinity. This is a key concern for our industry noting this devastating virus has been directly responsible for in excess of $100 million in lost revenue. **Claim**: Notwithstanding, uncertainty remains with regard to how any MSS activity impacts mature blacklip abalone, juvenile blacklip abalone and their planktonic larvae. Until such time that this research has been completed, our members will not be fully satisfied that the impacts of any Marine Seismic Survey are non-detrimental to the abalone resource.	**Given concerns from abalone fishers about potential seismic effects, further assessment was done (see Appendix F3- Acceptability Assessments, Section 5.2.8) providing a more detailed species-specific examination of likely impacts.** Blacklip Abalone (*Haliotus rubra*) stocks in Victoria are in relatively poor condition having suffered greatly from disease and overfishing. In addition, the southeast coast of Australia is in a climate change 'hot-spot' where sea surface temperatures (SST's) are experiencing rapid warming at rates 3–4 times the global average. Increasing SST's are predicted to have negative impacts on the abundance of *H. rubra* in South coast waters. There has not been any direct testing of seismic effects on Abalone so a weight-of-evidence approach is utilised where results from testing on other molluscs, notably scallops and pearl oysters are used, Testing outcomes on scallops were consistent with studies on seismic effects to other invertebrates, with impacts clearly noted within very close proximity to seismic pulses (i.e. hundreds of metres) but then rapidly dissipating (see response to Matter F09). Estimated mortality rates in all cases remained well below natural mortality rates. A recent, major study into seismic effects on silverlip pearly oysters found no evidence of reduced productivity or mortality (Parsons et al. 2024). CGG do not therefore, find compelling evidence for a high likelihood of significant lethal or sub-lethal effects to abalone stocks from the proposed Regia MSS. As already stated, Abalone stocks are being influenced by climate, overfishing and disease and these remain the areas of concern. The fishery for *H. rubra* within Victoria is divided into three active commercial fishing zones (Western, Central and Eastern). Two of those zones (Western and Central) have suffered major recent declines due to the disease Abalone Viral Ganglioneuritis and the third from range expansion of an urchin species *Centrostephanus rodgersii* which overgrazes kelp beds (creating 'barrens' or underwater deserts) and indirectly impacts abalone and other associated species. The latest assessments for the Western Zone leading into the 2023/24 season indicate that catches are highly variable between locations, with the Portland Zone suffering most from the disease outbreak. The pelagic larval duration of abalone is short at ~10 days, however genetics studies have shown that abalone stocks along Victorias south coast are well connected with high levels of gene flow within and between reef patches. Gene flow and dispersal/connectivity are aided by the marine physical environment of the south coast, which is highly variable, driven by converging ocean currents, strong environmental gradients, habitat discontinuities and varying degrees of exposure to wave energy. The spawning/recruitment period for *H. rubra* falls within the Spring /Summer months from September to February with the peak from November – January. Given that many key species target the austral summer period for spawning and recruitment, CGG weights this period accordingly, when managing the scheduling and location of the proposed Regia MSS. **CGG has considered these claims, and is satisfied that through scheduling management of the proposed Regia MSS any potential interaction with abalone stocks can be minimised; and has conducted a further assessment on abalone in EP Appendix F3 (Acceptability Assessment), Section 5.2.8,which provides a more detailed species-specific examination of impacts.** ***References:*** *Parsons MJ, Barneche DR, Speed CW, McCauley RD, Day RD, Dang C, Fisher R, Gholipour-Kanani H, Newman SJ, Semmens JM, Meekan MG (2024) A large-scale experiment finds no consistent evidence of change in mortality or commercial productivity in silverlip pearl oysters (Pinctada maxima) exposed to a seismic source survey. Marine Pollution Bulletin 199:115480.*
F17	**Matter**: Impacts to dive-based fisheries **Claim**: It is necessary to ensure divers are not within the vicinity of any type of seismic activity. As has been suggested previously, this can be achieved simply by surveying outside daylight hours.	CGG acknowledges claims around concerns for impacts on diver-based fisheries from the Regia MSS. The Regia MSS EP: Appendix E8: Underwater Sound – Divers, provides an assessment of the effects of seismic activity on areas where swimmers, divers and/or surfers may be found. Based on feedback from community consultation about areas of concern, sound propagation modelling identified a number of areas where there was potential for received sound levels to exceed the (medically) recommended safe level of 145dB. **Further sound modelling has been undertaken to provide an appropriate response framework for minimising potential impacts to divers (EP Appendix B7b Sound Emissions Secondary Modelling Report).** **CGG has considered this claim and, based on the updated sound modelling, has updated EP Appendix E8 (Impact Assessment – Underwater Sound: Surfers, Divers and Swimmers), Appendix A2 (Description of the Activity) and M#01: Activity limitation, to reflect that the sound source will not be discharged from areas which result in an exceedance of the safety criterion for recreational divers and swimmers along the coastline. CGG has also made updates to modelling in Appendices (E1, E2, E3, E4, E5, E6, E7, F1, F3 G1, and G2.**
F18	**Matter**: Impacts on recreational fishers	CGG acknowledges claims around concerns for impacts on recreational fisheries from the Regia MSS and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP.

	THEME	FISH, SHARKS, INVERTEBRATES AND FISHERIES (F)
#	*Comments received*	*Titleholder response*
	Claim: I have serious concerns that this testing could have serious impacts upon recreational fisheries in the Warrnambool and Port Fairy region.	As stated in response to Matter F12, the Regia EP has provided extensive documentation and interpretation of potential impacts of seismic on marine fauna in the region (see Regia EP: Appendix B6, Appendix B7a and B7b, Appendix B8, Appendix E3 and Appendix F3). It follows that those species that are targeted by recreational fishers are commonly targeted by commercial fisheries. These fisheries are subject to management oversight and continual research and assessment. Results of such research demonstrate that overfishing remains the single biggest contributor to declining fisheries stocks. There is no evidence to support seismic testing, as proposed by the Regia MSS, having serious (i.e. measurable) impacts on recreational fishers in the Warrnambool and Port Fairy region. CGG reiterate that the Regia MSS EP, provides detailed and extensive analysis of seismic effects on groups and/or individual species all of which provide relevant information to adequately address recreational fishers concerns. In the event of the proposed Regia MSS operating when a fisher/s may be targeting the same area, there is a multiple layered system of communication available that will use spotter vessels and geospatial SMS coverage to reduce and/or remove potential impacts. CGG has considered this claim and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no further changes have been made to the EP in response to these claims.
Other Matters Related to Fish, Sharks, Invertebrates and Fisheries		
F19	**Matter**: Impacts on migratory pathways **Claim**: **Claim**: The proposed operational area for the Regia MSS will likely conflict with migratory patterns of mature fish transitioning to spawning areas. In the case of King George Whiting (KGW), juveniles are known to migrate from bays and inlets in central Victoria to deeper water where they mature and reproduce within key spawning grounds in the West of the State4 . Adult Australasian Snapper migrate from deeper water into Victoria's largest estuary, Port Phillip Bay, to undertake spawning activity that supports the entire Western Victorian stock [5]. 5. Hamer PA and Jenkins GP. 2007. Migratory dynamics and recruitment of snapper, Pagrus auratus, in Victorian waters. FRDC Project No. 199/134. Primary Industries Research Victoria, Marine and Freshwater Systems, Queenscliff. **Claim**: It has been acknowledged that the potential for behavioural changes in fish exposed to seismic sources to alter distributions or migratory paths is poorly understood [6] making it difficult to assume a negligible impact of the proposed Regia MSS on population recruitment of species such as King George Whiting and Australasian Snapper. 6. Fewtrell J and McCauley R. 2012. Impact of air gun noise on the behaviour of marine fish and squid. Marine Pollution Bulletin, 64	CGG acknowledges claims around concerns for impacts on migratory pathways of some species from the Regia MSS and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. As stated in response to multiple other Matters, CGG has utilised all readily available scientific peer-reviewed literature and reporting from government agencies to ensure that a thorough assessment of potential seismic effects on fisheries species has been completed. Additionally, CGG continue to monitor the relevant databases and websites to ensure new scientific information is captured as it comes to light. As stated in response to Matters F14 and F15 and discussed within Regia MSS EP Appendix F3 (Acceptability Assessment), the risk level for the Proposed Regia MSS on King George Whiting (KGW) and Pink Snapper health has been assessed as minimal. This is based on extensive examination of the literature around seismic effects and life-history dynamics of each species. Nevertheless, in response to community feedback/concerns further interrogation of the literature was undertaken for KGW and Pink Snapper, amongst others. For these groups CGG defined acceptable levels of Impact and Risk to provide a clear framework for understanding what effects seismic might have on individual health and population-level health. In brief, the drivers of measurable population level impacts on KGW stocks remain regional climate patterns such as decadal wind changes, sea surface temperature (SST) changes and unmanaged commercial fishing or large-scale pollution of essential habitat. There was also no evidence of a relationship between annual recruitment levels of KGW to PPB and annual seismic levels, whether in the same year or lagged by multiple years. High recruitment of KGW was just as evident during years with high seismic activity or low seismic activity. For Pink Snapper, there was also no relationship between long-term recruitment levels and annual seismic levels, with research identifying local-scale processes (i.e. at the estuary level) as having more influence. CGG has considered this claim and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no further changes have been made to the EP in response to these claims.
F20	**Matter**: Vessel collision with sharks **Claim**: The National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (CoA 2017a mentioned in the plan identifies sharks as being vulnerable to vessel strikes, however the Plan makes no mention on how these strikes are to be avoided.	CGG acknowledges claims around concerns for sharks being at risk of vessel strikes from the proposed Regia MSS and has reviewed the Environment Plan (EP) to ensure that this was adequately considered within the EP. The Regia MSS EP: Appendix D2 – Collisions with Marine Fauna; Section 8 - Identification of Mitigation and Management Measures and Demonstration of ALARP, indicates that seismic vessel speed would be reduced to a maximum of 5 knots during acquisition periods which is recognised as good industry practice where fauna are undertaking important behaviours. The National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna does not consider sharks to be an at-risk group from vessel strikes. Whale sharks, Cetaceans, Dugongs and Turtles are the most at-risk groups identified. CGG has considered this claim and is satisfied that the concerns raised were adequately addressed, for the reasons outlined above. As a result, no further changes have been made to the EP in response to these claims.

9. Birds

	THEME	BIRDS (B)
#	***Comments received***	***Titleholder response***
Key Matter: Little Penguins		
B01	**Matter**: Encounter rates and impacts on little penguins **Claim**: Little penguins breed from August to February and travel long distances to feed in continental shelf waters, making it highly likely that penguins will travel through the proposed blasting area. In contrast, the EP states that "encounter rates with little penguin[sic] in the Activity Planning Area is considered unlikely", and "seabirds spend very little time underwater", and that despite evidence that African penguins exhibit behavioural responses to seismic blasting, "impacts to birds from underwater sound emissions are not predicted and will not be evaluated further" (p.186). The EP should be refused based on this egregious failure to acknowledge not only the presence of penguin colonies in close proximity to the OA, but also the impacts that seismic blasting might have on these animals as they migrate and forage through the area. **Claim:** This proposal, if approved, poses an imminent threat to our [marine ecosystems and endangered marine species, including southern right whales, pygmy blue whales, Australian sea lions, and] little penguins. **Claim**: There are studies showing significant impacts on animals from seismic blasting, such as one that observed penguins affected who were 100km away from a seismic blasting site. Prohibit blasting within a minimum 100 km range plus precautionary principle buffer distance of Little Penguins. https://theconversation.com/are-seismic-surveys-driving-penguins-from-their-feeding-grounds-90864 **Claim**: Scientific research demonstrates that seismic blast noise travels over 100 km's in the oceans. The impact to marine life is well beyond the described zone in this EP. **Claim**: Despite evidence that African penguins exhibit behavioural responses to seismic blasting, the plan states that impacts to birds from underwater sound emissions are not predicted and will not be evaluated further https://www.wildlife.vic.gov.au/__data/assets/pdf_file/0023/91391/Little-Penguin.pdf **Claim**: Due to their largely aquatic existence and lack of flight ability, Little Penguins are expected to be more susceptible to effects from seismic blasting than other seabirds. **Claim**: Contact calls have been primarily recorded for penguins at the surface when at sea (Jouventin, 1982 and Bronti, 1985). As seismic testing may impair hearing ability, this may lessen an individual's ability to detect socially relevant signals which therefore could affect biologically important processes. **Claim**: There are significant concerns that seismic blasting will cause the disruption of essential behaviours for Little Penguin survival such as breeding, foraging, displacement from crucial habitat and physical injury including temporary or permanent hearing loss.	CGG acknowledges claims regarding impacts on Little Penguins and has reviewed the Environment Plan (EP) to ensure that these was adequately considered and addressed. The Preliminary Impact and Risk Assessment (PEIRA), prepared in March 2023 to support consultation, predicted that encounter rates with Little Penguins in the Activity Planning Area would be 'unlikely' and did not predict impacts to birds from underwater sound emissions. During relevant person consultation CCG learned more about the importance of Little Penguins and the presence of other colonies along the Victorian coastline. We also identified that, even though these colonies do not represent breeding or foraging Biologically Important Areas (BIAs), they are of significant value to local communities. Consequently, we committed to conducting an underwater sound impact assessment for Little Penguins which was included in EP Appendix 5 (Impact Assessment – Underwater Sound: Birds), Section 6 (Predicted Levels of Impact) which found: • Underwater sound modelling for Little Penguins did not predict any mortality or injury impacts, although the Temporary Threshold Shift (TTS) criteria was reached within 50 – 60 m of the source. However, it would be highly unlikely for a diving bird or penguin to be within that limited distance from the source, particularly given the use of soft starts. • Impacts to diving birds and penguins were predicted to be limited to behavioural impacts which could range from startle response to moving away from the seismic survey to forage in other areas, and would be expected to revert to normal foraging behaviours after the cessation of the survey, and • A temporary increase in foraging distances associated with a seismic survey is unlikely to have a significant impact on individual penguins or the population. CCG also included requirements for MMOs to spot for seabird activity, which would indicate a food source for Little Penguins rather than detect the penguins themselves, and for the seismic source to be reduced to the low power setting if foraging birds are within 500 m of the source. This will ensure that foraging birds are not startled by the seismic source and can continue to forage once the vessel has moved passed. Regarding claims around contact calls, referenced material (e.g., Broni 1985) state that penguins are highly vocal species that have been recorded to emit vocalisations at the sea surface, a behaviour possibly associated with group formation and group foraging, and suggest that it is likely they also communicate socially underwater. However, no evidence is provided. While assessing this claim a more recent study was found which assessed the emission of vocalisations underwater by three species of penguin (Thiebault et al. 2019). A total of 203 underwater vocalisations were emitted, 50% of which were directly linked to foraging behaviours. However, there was no recorded underwater vocalisations concomitantly to synchronised diving activity (even when such activity was recorded) and it is therefore unlikely that these vocalisations could have been used to coordinate feeding activities. Thiebault et al. (2019) concluded the function of vocalisations to be speculative and were unable to demonstrate the significance of the behaviour. Although this study provides first evidence of underwater vocalisations in penguin species, penguins species are anticipated to exhibit avoidance to impulsive sound sources (Pichegru et al. 2017). Regarding claims of effects out to 100 km, Pichegru et al. (2017) assessed the foraging behaviour of African Penguins before, during and after an MSS that occurred within 100 km of breeding colonies. Penguins foraging within 100 km of the active acoustic source showed a change in foraging direction, increasing the distance between feeding areas and the Seismic Vessel. Displaced penguins reverted to normal foraging behaviours following the cessation of seismic activities, suggesting effects are relatively short-lived. The avoidance behaviour by penguins observed in this study may be explained by either a direct disturbance from the noise generated by the operation or a change in fish distribution during that period (possibly because of seismic activities). Small-scale acoustic fish surveys assessing distribution and abundance of small pelagic fish in Algoa Bay around both penguin colonies did not show a significant change in distribution and/or abundance of small pelagic fish in the region in March 2013 compared to a few months prior to or after the seismic operations. Therefore, African Penguins likely relocated away from their traditional feeding zone to avoid the disturbance generated by the noise of the seismic vessels, rather than to follow their prey. It is important to note that the specific acoustic source used in the Pichegru et al. (2017) study had a total volume of 4,230 in^3 compared to the 2,820 in^3 proposed for the Regia MSS and this, along with a difference of bathymetry, would account for the smaller distances of 10.4km-72.6 km to the behavioural criteria for the Regia MSS. Consequently, the application of a 100 km distance for assessment of effect would be inappropriate. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References:*** *Broni, S. C. Social and spatial foraging patterns of the jackass penguin, Spheniscus demersus. South Afr. J. Zool. 20, 241–245 (1985).* *Pichegru, L., Nyengera, R., McInnes, A.M. et al. Avoidance of seismic survey activities by penguins. Sci Rep 7, 16305 (2017). https://doi.org/10.1038/s41598-017-16569-x*

	THEME	BIRDS (B)
#	***Comments received***	***Titleholder response***
	https://www.nzherald.co.nz/nz/seismic-surveys-could-be-hurting-penguins-experts/ KEB5TG25QPAQLUVL7DW4SIFFCQ/ https://theconversation.com/are-seismic-surveys-driving-penguins-from-their-feedin g-grounds-90864 https://www.nature.com/articles/s41598-017-16569-x **Claim**: In addition to the impacts on marine mammals, the proposal neglects to adequately address the potential consequences for other marine species, such as [pinnipeds and] penguins. Endangered species like [Australian sea lions and] little penguins are at risk of significant harm from seismic activities in their habitats, yet the EP fails to implement adequate measures to protect these vulnerable populations.	*Thiebault A, Charrier I, Aubin T, Green DB, Pistorius PA. 2019. First evidence of underwater vocalisations in hunting penguins. PeerJ 7:e8240 https://doi.org/10.7717/peerj.8240*
B02	**Matter**: Acknowledgement of breeding colonies **Claim**: Little penguins are an EPBC-listed marine species endemic to Australia and New Zealand. They have breeding and foraging BIAs within the Environment Planning Area. The EP fails to acknowledge the breeding colonies present at Middle Island (Warrnambool), Port Campbell/London Bridge, and Gibson Steps near the Twelve Apostles. **Claim**: FAIRY PENGUINS – There are a number of breeding colonies along the Western Victoria coastline: Middle Island (Warrnambool) - a breeding colony which is of great significance to the township of Warrnambool. It already has significant challenges with fox predation. They made a movie out of the wonderful achievement of the community saving the colony using a maremma dog! "Oddball". Any adverse effects from seismic blasting will add negatively to their already challenging living and breeding situation. **Claim**: The Environment Plan identifies areas important for breeding and foraging for the Little Penguin and their presence around King Island on page 186, however it is important to note the Warrnambool (Middle Island) breeding colonies have not been recognised in the Plan, which incorrectly states that the Little Penguin is outside of the Activity Planning Area. **Claim**: Recommendations: Recognise the Middle Island Little Penguin population, and consider them during the development of risk evaluation and management strategies.	CGG acknowledges claims regarding Little Penguin breeding colonies and has reviewed the Environment Plan (EP) to ensure that impacts to the identified colonies were adequately assessed. During relevant person consultation CCG learned more about the importance of Little Penguins and the presence of other colonies along the Victorian coastline. Relevant persons consultation is intended to identify additional environmental values and sensitivities that we would not otherwise be aware of. This proved effective in capturing this information that was not available via the federal government's Species Profile and Threats (Database) Tool (SPRAT) as this species is not listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 nor the Victorian Flora and Fauna Guarantee Act. Information on the Middle Island and Deen Maar (Lady Percy Island) colonies is included in Appendix E5 (Impact Assessment – Underwater Sound: Birds) and Appendix D4 (Accidental Release of Fuel). CCG identified that, even though these colonies do not represent breeding or foraging Biologically Important Areas (BIAs), they are of significant value to local communities. Consequently, CCG committed to conducting an underwater sound impact assessment for Little Penguins which was included in EP Appendix 5 (Impact Assessment – Underwater Sound: Birds), Section 6 (Predicted Levels of Impact). In summary, this assessment found: • Underwater sound modelling for Little Penguins did not predict any mortality or injury impacts, although the Temporary Threshold Shift (TTS) criteria was reached within 50 – 60 m of the source. However, it would be highly unlikely for a diving bird or penguin to be within that limited distance from the source, particularly given the use of soft starts. • Impacts to diving birds and penguins were predicted to be limited to behavioural impacts which could range from startle response to moving away from the seismic survey to forage in other areas, and would be expected to revert to normal foraging behaviours after the cessation of the survey, and • A temporary increase in foraging distances associated with a seismic survey is unlikely to have a significant impact on individual penguins or the population. Studies by Hoskins et al. (2008) show that Little Penguins were found to forage in discrete areas within a maximum distance of 5.6 km to 36 km from breeding colonies while travelling total distances of 17.7 to 80.4 km. A study by McCutcheon et al. (2011) reported that during the winter non-breeding period, some individuals conduct single-day trips of between 8 – 14 km from the colony, while other individuals conducted longer trips of 2 – 49 days with maximum distances of 62–147 km with movements generally alongshore and within continental shelf waters. Poupart et al (2017) noted that while primarily an inshore forager, Little Penguins had a range generally limited to 30 km of breeding sites during the nesting period but some nesting birds travelled up to 214 km to feed. Whilst the noise EMBA for behavioural disturbance may overlap Little Penguin foraging areas, studies have shown that Little Penguins are capable of foraging over large distances. In addition, any behavioural disturbance caused by the Regia MSS will be short-term and temporary. Although other colonies, such as those mentioned in the claims, are not specifically listed, the EP does state that the species occurs from Western Australia (Carnac Island) to New South Wales (Broughton Island) and Tasmania but that the distribution is not continuous, with sections of the southern coast of Australia without occurrence of breeding colonies (CoA 2020a). Declared Biological Important Areas (BIAs) for Little Penguins, shown in Figure MAP-REG-EPM-064, are located well outside of the operational area. CGG has considered these claims and is satisfied that the concerns raised in relation to underwater noise emissions have been adequately addressed in the EP, for the reasons outlined above. **However, for information the noise EMBA has been added to Figure MAP-REG-EPM-064 to show that the declared BIAs occur outside of the noise EMBA.** **In addition, during the review of EP Appendix E9 (Impact Assessment – Light Emissions), it was identified that impacts associated with light were assessed for declared biologically important areas (BIAs), i.e. those near King Island, and that impacts to Little Penguins at other locations such as Middle Island and Deen Maar (Lady Julia Percy Island) were not explicitly addressed. Consequently, CGG has included additional detail in EP**

	THEME	BIRDS (B)
#	*Comments received*	*Titleholder response*
		Appendix E9, Section 5.1.5 (Little Penguin) and 6.1.1 (Birds) and to assess impacts to breeding colonies at Middle Island and Deen Maar and other coastal locations in response to these claims. ***References*:** *Hoskins A, Dann P, Ropert-Coudert Y, Kato A.C, Costa A and Arnould J (2008). Foraging behaviour and habitat selection of the little penguin Eudyptula minor during early chick rearing in Bass Strait, Australia. Marine Ecology-Progress Series. 366. 293-303. 10.3354/meps07507.* *McCutcheon, C., Dann, P., Salton, M., Renwick, L., Hoskins, A. J., Gormley, A. M., & Arnould, J. P. Y. (2011). The foraging range of Little Penguins (Eudyptula minor) during winter. Emu - Austral Ornithology, 111(4), 321–329. https://doi.org/10.1071/MU10078* *Poupart TA, Waugh SM, Bost C, Bost C-A, Dennis T, Lane R, Rogers K, Sugishita J, Taylor GA, Wilson KJ, Zhang J, Arnould JPY (2017) Variability in the foraging range of Eudyptula minor across breeding sites in central New Zealand. New Zealand Journal of Zoology 44(3):225-244*
B03	**Matter**: Impacts on prey species **Claim**: Protect the West members request that Regia guarantees that the local penguin population, which is dependent upon sardines in the region, would not be affected by seismic testing and destruction of their food source. **Claim**: As well as being potentially affected directly, their food supply may well be impacted by seismic blasting too, whether directly or in a flow-on effect up the food chain from zooplankton being killed in the Operating Area.	CGG acknowledges claims regarding impacts on prey for Little Penguins and has reviewed the Environment Plan (EP) to ensure that impacts to the prey species were adequately assessed. As stated in EP Appendix E (Impact Assessment – Underwater Sound: Birds), Little Penguins are a generalist feeder, with large variability in diet amongst colonies and even between years at the same colony. They feed mainly on clupeids, such as anchovy and sardines, when feeding chicks, but they may also feed on krill and several species of cephalopods at all stages of breeding (CoA 2020a). Impacts to prey species, such as krill (*Nyctiphanes australis*), are expected to be limited by intermittent exposure, dispersive characteristics of the open water in the operational areas, and high reproductive rates. The magnitude of noise impacts on species such as krill, will be highly localised with mortality and sub-lethal injury limited to within tens of metres of seismic sources as detailed in Appendix E2 (Impact Assessment Underwater Sound: Plankton). Impacts will be not be discernible at the regional scale when considering natural variation in their spatial and temporal abundance. Continuous reproduction through the year coupled with a high growth rate means krill have very high productivity (IMAS 2011). Considering the localised and temporary impact to krill with rapid replacement of the species, any impacts from short term activities are not expected to be ecologically significant. If plankton species are impacted, localised predicted impacts to plankton do not remove them from the food web. Nutrients and energy they contain are retained in the water column for several days as their carcasses remain are likely scavenged before any remaining matter sinks to the seafloor to be consumed by opportunistic benthic organisms (Kirillin et al. 2012, Tang et al. 2014, Dubovskaya et al. 2015). Thus, impacts to primary production and ecosystem function are not predicted. Mortality or physiological damage to other prey species such as cephalopods (squid) is not predicted with impacts limited to behavioural startle response and potentially inking. Therefore, long term population impacts to this prey species are not expected. For fish species considered prey for the Little Penguin, it is highly unlikely that there would be physical damage as a result of the Regia MSS unless the animals are very close to the source (perhaps within a few meters). However, if temporary threshold shift (TTS) does take place, the duration of exposure to the most intense sounds that could result in TTS will be over just a few hours. Thus, accumulation of energy for fish species, over longer periods than a few hours, is probably not appropriate. The distribution of spawning areas for sardines is extensive across the south and southeast coast and connected at a much larger scale than the Regia MSS area with the scale of any effects to the spawning output of sardines across the greater region expected to be immeasurable. Therefore, long term population impacts to this prey species are also not predicted. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References***: *Citation: Dubovskaya OP, Tang KW, Gladyshev MI, Kirillin G, Buseva Z, Kasprzak P, et al. (2015) Estimating In Situ Zooplankton Non-Predation Mortality in an Oligo-Mesotrophic Lake from Sediment Trap Data: Caveats and Reality Check. PLoS ONE 10(7): e0131431. doi:10.1371/journal. pone.0131431* *IMAS (Institute for Marine and Antarctic Studies) (2011) 'Zooplankton, Nyctiphanes australias', IMAS, University of Tasmania, Hobart.* *Kirillin G, Grossart H-P, Tang KW. Modeling sinking rate of zooplankton carcasses: Effects of stratification and mixing. Limnol Oceanogr 2012; 57: 881–894.* *Tang KW, Gladyshev MI, Dubovskaya OP, Kirillin G, Grossart H-P. Zooplankton carcasses and nonpredatory mortality in freshwater and inland sea environments. J Plankton Res 2014; 36: 597–612.*
B04	**Matter**: Cumulative impacts on little penguins and their habitat **Claim**: The effect of continued seismic testing operations by multiple companies, over a sustained period could have a significantly detrimental effect on the penguin population, their foraging habits and their welfare. Further studies and monitoring must be undertaken to	CGG acknowledges claims regarding cumulative impacts on Little Penguins and their habitat and has reviewed the Environment Plan (EP) to ensure that cumulative impacts were appropriately considered. EP Appendix E10 (Otway Cumulative Impact assessment) did not identify any cause-effect pathway for cumulative impacts associated with the Regia MSS and one other reasonably foreseeable future seismic survey located in waters off the continental shelf. The Regia MSS is a short-term, temporary activity that

	THEME	BIRDS (B)
#	***Comments received***	***Titleholder response***
	assess the welfare of the penguins as a result of sustained seismic testing by multiple operators. **Claim**: Recommendation: Undertake further studies and monitoring, to assess the welfare of the penguins as a result of sustained seismic testing by multiple operators in the same area.	is not 'sustained' over an extended duration and no other surveys are proposed to occur in the 'same' area'. Further, CGG will implement the industry standard control of a 40 km separation distance between operating seismic sources. The commitment from CGG and other operators in the region to maintain a separation between activities of 40 km results in a low likelihood of cumulative effects. When coupled with the unlikely concurrence of the Regia MSS with the other survey, the overall cumulative impact is considered low. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
B05	**Matter**: Additional controls near little penguins and their colonies **Claim**: Fairy Penguins forage at NIGHT! (As I have already informed you on the Social Pinpoint map). They would be impossible to spot and prone to harm with any seismic blasting within their range. The plan to turn down the seismic blasting sound level as detailed in your Environmental Plan, if and when Fairy Penguins are spotted, is ridiculous. Even if it was broad daylight, they would be hard to see, being underwater swimmers and so small. **Claim**: Marine Mammal Observers will be useless in locating any in the suggested way of noting the presence of seabird activity to maybe indicate a food source. The suggestion is preposterous. They won't be out and about in broad daylight. The only way I can see is to not seismic blast at night within Fairy Penguin colony foraging areas. This would be an extreme minimum of 20km from the colonies, plus whatever the safe distance is from the blast source for them.	CGG acknowledges claims regarding additional controls near Little Penguins and their colonies and has reviewed the Environment Plan (EP) to ensure that measures to protect this species were appropriately considered. As detailed in response to Matter: B01, there are no predictions of harm i.e., injury, to seabirds, including Little Penguins, as a result of seismic noise with underwater sound impact assessment included in EP Appendix 5 (Impact Assessment – Underwater Sound: Birds), Section 6 (Predicted Levels of Impact) which found: • Underwater sound modelling for Little Penguins did not predict any mortality at any distance from the source, although the Temporary Threshold Shift (TTS) criteria was reached within 50 – 60 m of the source. However, it would be highly unlikely for a diving bird or penguin to be within that limited distance from the source, particularly given the use of soft starts. • Impacts to diving birds and penguins were predicted to be limited to behavioural impacts which could range from startle response to moving away from the seismic survey to forage in other areas, and would be expected to revert to normal foraging behaviours after the cessation of the survey, and • A temporary increase in foraging distances associated with a seismic survey is unlikely to have a significant impact on individual penguins or the population. Seabird activity associated with aggregations of prey typically involve multi-species and CCG believe these would be visible within near distances (i.e. 300-500 m) depending on the elevation of the bridge of the vessel. It is understood that most penguins return to their colony at night, however during summer, most of the adults are out at sea feeding for the next breeding. Whilst the noise EMBA for behavioural disturbance may overlap Little Penguin foraging areas, studies have shown (as detailed in response B02), that Little Penguins are capable of foraging over large distances and multiple locations with any behavioural disturbance by the Regia MSS being short-term and temporary. CGG has committed to reducing the seismic source to the low power setting if foraging birds are within 500 m of the source, with full power recommencing when the seismic source is > 500 m from any foraging birds. This measure was adopted in response to feedback from consultation as detailed in EP Appendix E5 (Impact Assessment – Underwater Sound: Birds). The objective of this control is to mitigate startle response. Whilst CCG recognise this measure is only effective in daylight hours, the adopted control measures reduce the likelihood of interactions with marine fauna and are considered effective and appropriate to the nature and scale of predicted environmental impacts. In accordance with the control measures set out within the EP, the Regia MSS will be managed so that the potential impacts and risks will be mitigated to ALARP and Acceptable Levels in accordance with all environmental regulatory requirements. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
B06	**Matter**: Additional studies and regulation **Claim**: Recommendations: Request comprehensive studies into the effects of seismic blasts on Little Penguins and their prey species; Establish regulatory thresholds to assess potential hearing impairment or behavioural responses by diving birds to underwater noise. **Claim**: NOPSEMA should reject the Environment Plan by CGG if a safe plan for the Fairy Penguin colonies is not formed. This should be in conjunction with knowledgeable penguin scientists from Victoria that are familiar with the colonies.	CGG acknowledges claims regarding additional studies and regulations on Little Penguins and has reviewed the Environment Plan (EP) to ensure that this was appropriately considered. CGG considers that EP Appendix E5 (Impact Assessment – Underwater Sound: Birds), along with previous responses to Matters B01- B05, provide sufficient justification that predicted impacts to diving birds and penguins will be temporary / reversible and small-scale behavioural response that are likely to be within natural variation of foraging behaviours. CGG is not in authority to set regulatory thresholds. However, through the ALARP process and as detail is responses to Matters: B01 – B05, CGG believes it has shown sufficient justification that there will be negligible residual consequences associated with noise emissions to seabirds, including Little Penguins. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
Key Matter: Shearwaters		
B07	**Matter**: Acknowledgement of breeding colonies	CGG acknowledges claims regarding information on additional shearwater colonies and has reviewed the Environment Plan (EP) to ensure that the claims are appropriately considered.

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	Claim: The Environment Plan recognises the shearwater breeding grounds at Lady Julia Percy Island but fails to recognise the colony at Middle Island, Warrnambool. **Claim:** Recommendation: Recognise the Middle Island shearwater population and consider them during the development of risk evaluation and management strategies.	EP Appendix E5 (Impact Assessment – Underwater Sound: Birds), Section 4.7 (Shearwaters) acknowledges that Short-tailed Shearwaters are common in the South-east Marine Region and largely found on numerous islands off Victoria and Tasmania during breeding (Baker and Hamilton 2013, Skira et al. 1996). Section 4.7 has been updated to include specific mention of the Short-tailed Shearwater colony on Middle Island, Victoria. This amendment does not affect impact assessment which did not predict mortality or injury for birds, with impacts to diving birds limited to temporary behavioural impacts such as startle response or moving away from the seismic survey to forage in other areas, being reversible and likely within natural variation of foraging behaviours. **CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, the Short-tailed Shearwater colony on Middle Island has been added to EP Appendix E5 (Impact Assessment – Underwater Sound: Birds), Section 4.7, however, no changes have been made concerning the impact assessment in response to these claims.** ***References***: *Baker B & Hamilton S. (2013). South-east Marine Region — Review of Biologically Important Areas [for EPBC-listed seabirds]. Reports I and II. Unpublished reports to the Department of Sustainability, Environment, Water, Population and Communities. Latitude 42 Environmental Consultants Pty Ltd, Hobart.* *Skira IJ, Brothers NP and Pemberton D. (1996). Distribution, abundance and conservation status of Short-tailed Shearwaters Puffinus tenuirostris in Tasmania, Australia. Marine Ornithology 24:pp 1–14.*
B08	**Matter**: Underwater sound impacts on shearwaters **Claim**: The Short Tailed Shearwater colony at Griffiths Island are a significant species for the township of Port Fairy. They arrive late Sept and stay until April, before their huge migration. Shearwaters feed on tiny crustaceans in the zooplankton, small fish and squid. They immerse their heads before diving up to 20m deep in search of prey. Foraging from just before sunrise through to sunset, both near and far from their nesting colony, they wouldn't necessarily be easy to spot and in such numbers, they would be nigh on impossible to avoid harming whilst underwater, when in the vicinity of the blasting. **Claim**: Recommendation: Request comprehensive studies into the effects of seismic blasts on all relevant shearwater populations.	CGG acknowledges claims regarding impacts to shearwaters and their prey and has reviewed the Environment Plan (EP) to ensure that these impacts were adequately assessed. The Wildlife Conservation Plan for Seabirds (CoA 2020) does not identify underwater sound as a threat to these species. However, an assessment of potential impacts associated with underwater sound as been conducted in EP Appendix E5 (Impact Assessment – Underwater Sound: Birds). Section 4.7 provides information on the behaviours and distribution of shearwaters. As explained in EP Appendix E5, there are no regulatory thresholds for underwater sound for bird species with other carnivores in water (OCW), from Southall et al. (2019), used as a proxy. This hearing group has been selected for assessment within the EP, due to similar hearing sensitivity in the frequency bands of underwater hearing for diving birds and otariid pinnipeds. Similarly, as there are also no regulatory thresholds or criteria established to assess potential behavioural responses by diving birds to underwater sound, an onset criterion for behavioural responses of 120 dB re 1 µPa (SPL) for impulsive sources was used based on information from Sørensen et al. (2020). The impact assessment demonstrated that permanent threshold shift criteria were not reached, and temporary threshold shift criteria were only reached within 50 – 60 m of the sound source. Consequently, injury to diving shearwaters is not predicted, with impacts limited to behavioural impacts which could range from startle response to moving away from the seismic survey to forage in other areas. CGG considers that EP Appendix (Impact Assessment – Underwater Sound: Birds) demonstrates sufficient justification that predicted impacts will minor, with no long-term, serious, or irreversible impacts to seabirds. **CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, the Short-tailed Shearwater colony on Griffiths Island has been added to EP Appendix E5 (Impact Assessment – Underwater Sound: Birds), Section 4.7; however, no changes have been made concerning the impact assessment in response to these claims.** *References:* CoA (2020). Wildlife Conservation Plan for Seabirds, Commonwealth of Australia 2020. Accessed at: <https://www.dcceew.gov.au/environment/biodiversity/publications/wildlife-conservation-plan-seabirds-2022> *Sørensen K., Neumann C., Dähne M., Hansen K.A., Wahlberg M, "Gentoo penguins (Pygoscelis papua) react to underwater sounds" Royal Society Open Science, vol. 7, no. 2, Feb. 2020.* *Southall, B.L., Finneran, J.J., Reichmuth, C., Nachtigall, P.E., Ketten, D.R., Bowle,s A.E., Ellison, W.T., Nowacek, D.P., Tyack, P.L., (2019). 'Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects'. Aquatic Mammals 45(2): 125-232.*
B09	**Matter**: Impacts on prey species **Claim**: The shearwaters' food supplies would be affected by the seismic blasting and could have a substantial effect on the health of the adult birds and their chicks.	CGG acknowledges claims regarding impacts on prey species for shearwaters and has reviewed the Environment Plan (EP) to ensure that these impacts were adequately assessed. Shearwater feed on fish particularly mycotphids, crustaceans, squid, cephalopods, insects, jellyfish and prawns (DCCEEW 2023, Weimerskirch and Cherel 1998). EP Appendix E3 (Impact Assessment – Underwater Sound: Fish) predicts a minor effect level on fish, including potential prey species for shearwaters, as impacts are not considered significant or at a level to affect the population. Any behavioural impacts are likely to be short-lived as fish would return to normal behaviours once the vessel has moved away based on research by Miller and Cripps (2013) and Wardle et al. (2001). EP Appendix E4 (Impact Assessment – Underwater Sound: Invertebrates) predicts a negligible effect level on invertebrates including potential prey species such as crustaceans and squid. Impacts will be localised and temporary.

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		Information has been added to EP Appendix E5 Section 6 on the assessment of impacts associated with increased energy expenditure of shearwaters at sea to locate food as follows: **Seabirds feed on multiple prey species and have widespread foraging areas. Indirect impacts including displacement of prey species such as fish will be limited to the close proximity of the sound source. While displacement of some prey species may result in the displacement of these birds, this impact is localised, temporary and recoverable in any one location after the survey vessel moves past. Given their widespread foraging areas (ACAP 2020) and the small area possibly affected by prey displacement, seabirds are not expected to be impacted by reduced net foraging opportunities.** ***References:*** *ACAP. 2020. ACAP Species Assessment. Agreement on the Conservation of Albatrosses and Petrels, Last updated September 2020. www.acap.aq.* *DCCEEW 2023. Ardenna pacifica, Wedge-tailed Shearwater -- Species Profile and Threats Database. Department of Climate Change, Energy, the Environment and Water.* *Miller IR and Cripps E. 2013. Three-dimensional marine seismic survey has no measurable effect on species richness or abundance of a coral reef associated fish community. Marine Pollution Bulletin, 77(1-2), 63-70. 10.1016/j.marpolbul.2013.10.031.* *Wardle CS, Carter TJ, Urquhart GG, Johnstone ADF, Ziolkowski AM, Hampson G and Mackie D. 2001. Effects of seismic air guns on marine fish. Continental Shelf Research 21: 1005-1027.* Weimerskirch, H. & Cherel, Y., 1998. Feeding ecology of short-tailed shearwaters: breeding in Tasmania and foraging in the Antarctic? Marine EcologyProgress Series, 167: 261-274.
B10	**Matter**: Consideration of multiple species **Claim**: Recommendations: Ensure that where multiple subspecies share the habitat, for example Sooty Shearwaters and Short tailed Shearwaters, the impacts on both are evaluated as there may be differences in the risks and impacts based on behaviours, habitat and vulnerability status of the different subspecies.	CGG acknowledges claims regarding impacts on multiple species, particularly when they share habitats, and has reviewed the Environment Plan (EP) to ensure that impacts to these species were adequately assessed. CGG recognises that although species may belong to the same genus, they may display different behaviours (i.e. movement patterns, prey or habitat preferences) or be susceptible to different threats. The Short-tailed Shearwater was specifically identified in EP Appendix E5 (Impact Assessment – Underwater Sound: Birds) as this species was identified to have a foraging Biologically Important Area (BIA) that overlaps the operational area, with the Protected Matter Search Tool (PMST) (DCCEEW 2024) reporting that breeding is known to occur within the Light Environment that May Be Affected. Whereas, foraging and breeding BIAs identified for the Sooty Shearwater are located on the southern coast of Tasmania and NSW which are hundreds of kilometres from the operational area. BIAs are designed to inform decision making about actions which may impact protected marine species. Therefore, as the Short-tailed Shearwater has BIAs located within the operational area it was assessed as a higher priority species. Regardless of potentially different lifestyle characteristics of the two species, considering they are subspecies, any control measure or mitigation approach that has been applied to protect the Short-tailed Shearwater will also subsequently protect the Sooty Shearwater. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. ***References:*** *DCCEEW 2024. Protected Matter Search Tool. Department of Climate Change, Energy, the Environment and Water. Available at <https://pmst.awe.gov.au/ >*
B11	**Matter**: Light and collision impacts on shearwaters **Claim**: A further example is the impact of artificial light on shearwaters. The management plan appears to summarise the risk management as applying inward facing lights where possible, and a statement that they are then no worse than other boats. Aiming to simply cause no more harm than others is not an adequate risk management strategy. **Claim**: Investigate the cumulative impacts of artificial lighting on migratory shorebirds' populations. **Claim**: Collision and strike risk is also an issue where lit structures intersect flight paths when foraging and during migration (Collins et al., 2022). Despite the plan referencing the impacts on shearwaters, the plan does not adequately address or offer solutions on how to mitigate these issues. Specify the control measures needed to reduce the	CGG acknowledges claims regarding impacts associated with light and risks associated with vessel collision (ship strike) and has reviewed the Environment Plan (EP) to ensure that these impacts and risks to shearwaters were adequately assessed. The control measures associated with industry best practice are considered appropriate to ensure the environmental impacts relating to light emissions from survey vessels are considered to be ALARP and at Acceptable Levels; these control/mitigation measures are provided in EP Appendix EP (Impact Assessment – Light Emissions). In addition, contracted vessels are require to have Light Management Plan to minimise light emissions while meeting vessel navigational requirements, in consideration of the National Light Pollution Guidelines for Wildlife. Light emissions will be reduced to a level where wildlife will not be disrupted within, nor displaced from, important habitat; and will be able to undertake critical behaviours such as foraging, reproduction and dispersal. All incidents involving seabirds will be recorded and reported, and handling and release procedures will be detailed within the Light Management Plan. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

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	impact of seismic vessels and towed vessels for shearwater populations.	
Key Matter: Diving Seabirds		
B12	**Matter**: Impacts to diving birds and their prey **Claim:** Recommendation: Reassess the risk to albatross and giant petrels given the close relationships between prey distribution, energetic costs and breeding success. **Claim:** Recommendation: Review and address potential impacts to the life history of albatrosses and petrels. The survey should not overlap with breeding or important breeding related foraging times for these protected species. **Claim**: Whilst CGG addresses the potential for seabirds to be on the surface or above the water (leading to reduced impacts), they have failed to thoroughly address details of diving birds. CGG have failed to identify two important considerations for birds utilising the area, and potential shift in their food source due to the presence of seismic activity: 1) mitigation efforts to prevent harm to diving birds, and 2) sea birds reliance on food sources. **Claim**: In the case of the Albatross, it has been found that changes in food distribution, leading to increased foraging times, has resulted in lower reproductive outcomes for populations with increased energetic expenditures (Thorne et al., 2015). Therefore, the statement that reduced foraging within the vicinity of seismic operations would minimise impacts to these species is false and holds substantial flaws. **Claim**: Given the lack of knowledge on the direct impacts of seismic noise on sea birds, it is impossible to determine a range that is adequate to minimise physiological impacts to seabirds. Therefore, a few key points should be considered, for example, sea birds are able to travel very long distances to forage and find prey, and diving is the primary mechanism used to do this. **Claim**: Furthermore, within the predicted levels of impact on birds, CGG state (without reference) "mortality and injury impacts are not predicted for birds" and suggest that seabirds may be startled by the presence of a vessel, therefore fly away, and cease diving activities. This assumption is not supported by peer-reviewed literature. **Claim**: Request studies into the effects of seismic blasts on fish behaviours and populations. **Claim**: Request studies into the impacts of a reduction in fish populations in the Operational Area on ocean health, biodiversity and environment. **Claim**: Request studies into the impacts of a reduction in fish populations in the Operational Area on other marine animals and birds with whom they may share a symbiotic relationship.	CGG acknowledges claims regarding impacts to diving birds and their prey and has reviewed the Environment Plan (EP) to ensure that these impacts were adequately assessed. The National Recovery Plan for Albatrosses and Petrels (CoA 2022) does not identify underwater sound as a threat to these species. However, an assessment of potential impacts associated with underwater sound as been conducted in EP Appendix E5 (Impact Assessment – Underwater Sound: Birds). Section 4.1 provides information on the behaviours and distribution of albatrosses and petrels, with all waters within Australian jurisdiction being considered foraging habitat, and the most critical foraging habitat being waters south of latitude 25° where many species spend much of their foraging time (CoA 2022). Further, the breeding season of albatrosses and petrels is typically protracted. As explained in EP Appendix E5, there are no regulatory thresholds for underwater sound for bird species with other carnivores in water (OCW), from Southall et al. (2019) used as a proxy. This hearing group has been selected for assessment within the EP, due to similar hearing sensitivity in the frequency bands of underwater hearing for diving birds and otariid pinnipeds. Similarly, as there are also no regulatory thresholds or criteria established to assess potential behavioural responses by diving birds to underwater sound, an onset criterion for behavioural responses of 120 dB re 1 µPa (SPL) for impulsive sources was used based on information from Sørensen et al. (2020). The impact assessment demonstrated that permanent threshold shift criteria were not reached and temporary threshold shift criteria were only reached with 50 – 60 m of the sound source. Consequently, injury to diving birds is not predicted, with impacts limited to behavioural impacts which could range from startle response to moving away from the seismic survey to forage in other areas. Regarding impacts to prey species, albatrosses feed mainly on cephalopods, fish and crustaceans, using surface feeding or plunge diving to seize their prey (ACAP 2020). Petrel species feed on small fish, cephalopods (octopus, squid and cuttlefish) and crustaceans. EP Appendix E3 (Impact Assessment – Underwater Sound: Fish) predicts a minor effect level on fish including potential preys species, as impacts are not considered significant or at a level to affect the population, with any behavioural impacts likely to be short-lived as fish would return to normal behaviours once the vessel has moved away based on research by Miller and Cripps (2013) and Wardle et al. (2001). EP Appendix E4 (Impact Assessment – Underwater Sound: Invertebrates) predicts a negligible effect level on invertebrates including potential preys species such as octopus and squid. Impacts will be localised and temporary, and octopus and squid have the capacity to recover from the impact without significant harm. **Information has been added to EP Appendix E5 on the assessment of impacts associated with increased energy expenditure at sea to locate food as follows:** **Seabirds feed on multiple prey species and have widespread foraging areas. Indirect impacts including displacement of prey species such as fish will be limited to the close proximity of the sound source. While displacement of some prey species may result in the displacement of these birds, this impact is localised, temporary and recoverable in any one location after the survey vessel moves past. Given their widespread foraging areas (ACAP 2020) and the small area possibly affected by prey displacement, seabirds are not expected to be impacted by reduced net foraging opportunities.** ***References:*** *ACAP. 2020. ACAP Species Assessment. Agreement on the Conservation of Albatrosses and Petrels. Last updated September 2020. www.acap.aq.* *Miller IR and Cripps E. 2013. Three-dimensional marine seismic survey has no measurable effect on species richness or abundance of a coral reef associated fish community. Marine Pollution Bulletin, 77(1-2), 63-70. 10.1016/j.marpolbul.2013.10.031.* *Wardle CS, Carter TJ, Urquhart GG, Johnstone ADF, Ziolkowski AM, Hampson G and Mackie D. 2001. Effects of seismic air guns on marine fish. Continental Shelf Research 21: 1005-1027.*
B13	**Matter**: Consideration of olfactory foraging in seabirds **Claim**: The proponent has also failed to address olfactory foraging in seabirds, it is known that many sea birds use scents (sometimes known	CGG acknowledges claims regarding olfactory foraging in seabirds and has reviewed the Environment Plan (EP) to ensure that impacts to these species were adequately assessed.

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	as chemical tracers) to help find food and follow migration pathways, this works by a combination of scents from other species and wind directions and a variation of flight patterns by the individual to efficiency utilise this mechanism. The sudden displacement of prey could negatively impact this process in both migrating and foraging birds, which has not been assessed within the EP. **Claim**: Depending on the species, life history, and reproductive habits, impacts to olfactory foraging and migration could have varying results at a population level, a topic that CGG has also not addressed.	Seabirds have the ability to travel vast distances including across oceans or continents in order to perform biologically important behaviours such as migration, breeding or foraging. Many seabirds, particularly in the order Procellariiformes utilise a range of environmental cues, including their olfactory senses, to assist with foraging and navigational activities (Van Buskirk and Nevitt, 2007; Reynolds et al., 2015). Research suggests that navigational activities are often linked to olfactory cues influenced by naturally released odours when prey such as phytoplankton are consumed by zooplankton. This initially elevates the concentration of compounds on the water surface before becoming airborne enabling detection by seabirds alerting them to a potentially productive foraging location (Nevitt, 2000; Van Buskirk and Nevitt, 2007). However, airborne odour concentrations are highly intermittent due to the presence of atmospheric turbulence, and, as a result, olfactory cues for navigation will not always be present (Reynolds et al., 2015). Considering the characteristic metocean conditions of the Otway Basin atmospheric turbulence is expected to be a common natural influence on the ability of seabirds to utilise olfactory cues in detecting prey assemblages. Further, outside of upwelling events, prey resources are often dispersed patchily throughout species foraging ranges. Activities associated with Regia MSS will not result in the displacement of prey across the entire foraging range and seabirds will be able to continue to utilise olfactory cues to detect prey away from the Regia MSS survey vessel. Any displacement of prey by the proposed activity will be short term and temporary and is therefore not expected to cause population level impacts to seabirds foraging or navigational habits. Impacts to prey populations such as small fish and zooplankton have been assessed in Themes: Fish, Sharks, Invertebrate and Fisheries; and Productivity. In summary, although seismic activities can cause lethal and sub-lethal effects to animals within proximity to the seismic pulses, these types of responses decrease with distance from the seismic source and are not rigid. The scale of lethal or sub-lethal effects measured across multiple scientific studies and species indicates seismic effects are significantly lower than natural rates of mortality (~variation) to be found in regional populations and will be immeasurable in this context. Further, there has been no evidence to support the proposed Regia MSS operational area or underwater sound EMBA for fish being a “critical” area for populations of fishes and invertebrates and therefore is not expected to cause population-level effects. **Information has been added to EP Appendix E5 on the assessment of impacts associated with foraging as follows:** **Seabirds feed on multiple prey species and have widespread foraging areas. Indirect impacts including displacement of prey species such as fish will be limited to the close proximity of the sound source. While displacement of some prey species may result in the displacement of these birds, this impact is localised, temporary and recoverable in any one location after the survey vessel moves past. Given their widespread foraging areas (ACAP 2020) and the small area possibly affected by prey displacement, seabirds are not expected to be impacted by reduced net foraging opportunities.** ***References:*** *ACAP. 2020. ACAP Species Assessment. Agreement on the Conservation of Albatrosses and Petrels, Last updated September 2020. www.acap.aq.* *Buskirk, R.W and Nevitt, G.A (2007) ‘The influence of developmental environment on the evolution of olfactory foraging behaviour in procellariiform seabirds’, Journal of Evolutionary Biology, 21 (1) 67-76. https://doi.org/10.1111/j.1420-9101.2007.01465.x* *Nevitt, G.A (2000) ‘Olfactory Foraging by Antarctic Procellariiform Seabirds: Life at High Reynolds Numbers’, Biology Bulletin, 198(2): 245-253. doi: 10.2307/1542527* *Renyolds, A.M, Cecere, J.G, Paiva, V.H, Ramos, J.A and Focardi, S (2015) ‘Pelagic seabird flight patterns are consistent with a reliance on olfactory maps for oceanic navigation’, Proceedings of the Royal Society B, 282(1811). https://doi.org/10.1098/rspb.2015.0468*
B14	**Matter**: Community level and cumulative impacts **Claim**: Research indicates seabirds within Bass Strait utilise varying niches due to factors such as life history, flight ability, prey availability, reproductive habits and environmental variability (Fromant et al., 2020). It is a baseline principle in biology and ecology that species competing for the same resources cannot co-exist within the same ecological niche because of competition. Therefore it is reasonable to suggest that disturbance and displacement to prey species could have community level impacts to species vulnerable to increased competition (such as the albatross discussed later). **Claim**: Many species of albatross and petrel found within the proposed survey area are protected under the EPBC Act and the National Recovery Plan for Albatrosses and Petrels (2022). CGG has highlighted marine pollution as a relevant threat from the proposed activity. In addition to marine debris, CGG must also consider the relevant key	CGG acknowledges claims regarding community level and cumulative impacts and has reviewed the Environment Plan (EP) to ensure that community level and cumulative impacts to seabirds were adequately assessed. The baseline principal referred to by the relevant persons is termed the competitive exclusion principle which states that two species with identical niches cannot coexist indefinitely (Kneitel, 2008). This is supported by the segregation of foraging niches which is reported to have occurred within the Bass Strait across 4 types of seabirds (Fromant et al., 2020). This study found that these species occupy different tropic niches but note that prey availability is not the singular factor that influences resource separation in species. Several dimensions such as diving depth and time of breeding also influence resource separation and the segregation of foraging niches which can vary significantly between regions, years and seasons as a result of changes in prey availability driven by natural environmental variation (Fromant et al., 2020). The activities proposed by the Regia MSS survey will be short-term, temporary and localised and will not result in the long-term displacement of prey and therefore will not ‘indefinitely’ impact the trophic niche of species by increasing competition as the principle requires. Although impacts to prey species, which are limited to within close proximity of the sound source, may result in the displacement of seabirds, this impact is localised, temporary and recoverable in any one location after the survey vessel moves past allowing individuals to return, therefore community level impacts to seabirds from increased competition are not expected. Threats defined by the National Recovery Plan for Albatrosses and Petrels (2022) via human disturbance, competition and environmental variability are defined and discussed below. • Human disturbance: ‘*Threats from human disturbance at or adjacent to breeding sites including direct habitat destruction, damage, and disturbance, as well as interactions with built structures and artificial lighting’ (DCCEEW, 2022).*

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	threats to the recovery plan, including human disturbance, environmental variability and competition. **Claim**: Although CGG claim they have assessed impacts to foraging behaviours, we argue that this has not been done in a thorough manner or with any relevance to sea birds. Cumulative impacts are completely disregarded in this context. **Claim**: Although, CGG uses the above study and evidence that the penguins will revert to normal behaviour after cessation of the seismic testing activity, we would like to draw NOPSEMA's attention to the fact that CGG is not the only company proposing a seismic test in the area close to the Middle Island population. There are many other companies such as ConocoPhillips, TGS etc. who have submitted environmental plans to conduct seismic tests and they cannot be looked at in isolation.	○ Coastal development is not within the scope of the Regia MSS survey and therefore does not result in any coastal impacts including direct habitat destruction, damage or disturbance to albatross and/or petrel species breeding sites. Further there are no built structures with artificial lighting associated with the proposed activity. • Competition: '*Threats from competition with fisheries for prey species' (DCCEEW, 2022).* ○ Marine threats to albatross and petrels from competition are defined by competition with fisheries for prey species and are therefore not relevant to the Regia MSS survey. • Environmental variability and change: *'Threats from climatic changes resulting in significant weather changes beyond historical variance, with effects on food dispersion and availability' (DCCEEW, 2022).* ○ The National Recovery Plan for Albatrosses and Petrels (2022) lists climate variability and change as a threat to these species. Although the Regia MSS survey will result in atmospheric emissions they were assessed within the EP Appendix B4 (Preliminary Environmental Assessment) as negligible and will not result in a threat to albatross and petrel species. Therefore, as defined by the National Recovery Plan for Albatrosses and Petrels (2022) the Regia MSS survey does not result in a threat to albatross and petrel species via human disturbance, competition or environmental variability. EP Appendix E10 (Otway Cumulative Impact assessment) did not identify any cause-effect pathway for cumulative impacts associated with the Regia MSS and another reasonably foreseeable future seismic survey located in waters off the continental shelf. The Regia MSS is a short-term, temporary activity that is not 'sustained' over an extended duration and no other surveys are proposed to occur in the 'same' area'. Further, CGG will implement the industry standard control of a 40 km separation distance between operating seismic sources resulting in a low likelihood of cumulative effects. Given the widespread foraging areas of seabirds (ACAP 2020) and the small area possibly affected by prey displacement across all reasonably foreseeable future projects occurring during the Regia MSS survey, no cumulative effect pathway was identified for the displacement of foraging seabirds. Regarding the claim that other companies have submitted environment plans to conduct seismic tests close to Middle Island, CGG is aware on only one other company proposing a marine seismic survey, being TGS which is located 59 km from Middle Island. Other titleholders in the region are proposing drilling with short-term well formation evaluation (<20 hours per well) using vertical seismic profiling, production drilling and tie-in, and decommissioning activities. This information is detailed in EP Appendix E10 (Otway Cumulative Impact Assessment). This assessment evaluated the potential for cumulative impacts associated with elevated levels of light on Albatrosses, Petrels and Shearwaters but did not identify a cumulative impact pathway. Further, there was no cumulative effect pathway identified for underwater sound with the consequence of underwater sound on birds, including little penguins, assessed as minor in EP Appendix E5 (Impact Assessment – Underwater Sound: Birds), Section 6. **Information has been added to EP Appendix E5 on the assessment of impacts associated with foraging as follows:** **Seabirds feed on multiple prey species and have widespread foraging areas. Indirect impacts including displacement of prey species such as fish will be limited to the close proximity of the sound source. While displacement of some prey species may result in the displacement of these birds, this impact is localised, temporary and recoverable in any one location after the survey vessel moves past. Given their widespread foraging areas (ACAP 2020) and the small area possibly affected by prey displacement, seabirds are not expected to be impacted by reduced net foraging opportunities.** ***References:*** *ACAP (2020). ACAP Species Assessment. Agreement on the Conservation of Albatrosses and Petrels, Last updated September 2020. www.acap.aq.* *DCCEEW (2022)* 'The National Recovery Plan for Albatrosses and Petrels' Commonwealth of Australia, Department of Climate Change, Energy, the Environment and Water, Canberra. *Kneitel, J (2008) 'Gause's Competitive Exclusion Principle', Encyclopaedia of Ecology, 3: 110-113. https://doi.org/10.1016/B978-008045405-4.00794-1* *Fromant, A., Schumann, N., Dann, P., Cherel, Y and Arnould, J.P.Y (2020) 'Trophic niches of a seabird assemblage in Bass Strait, south-eastern Australia', Peer Journal, 8: e8700. doi: 10.7717/peerj.8700*
B15	**Matter**: Mitigating sound exposure impacts to seabirds **Claim**: As most sea birds spend most of the time in flight or at the sea surface, it is likely that soft start will not help mitigate sound exposure impacts. Furthermore, the additional requirement for MMOs to spot and control for seabirds within 500m of the source is a significant addition to an existing capacity-intense role, especially given the rapidity of flight and foraging behaviours, and double-counting bias that foraging behaviour can cause during surveys. **Claim**: Additional bird-specific MFOs should be stationed onboard if this mitigation technique is employed to ensure seabirds are	CGG acknowledges claims regarding mitigation measures for seabirds and has reviewed the Environment Plan (EP) to ensure that measures were appropriately considered. A soft start procedure, as defined in EP Appendix A2 (Description of Activity), will provide early warning to diving birds and penguins in the area, allowing them to move away from the source before it is at full power. This is a precautionary approach to mitigate behavioural impacts, such as startle response, as underwater noise modelling for bird species shows that permanent threshold shift (PTS) thresholds are not reached and temporary threshold shift (TTS) thresholds are within 50-60 m of the sound source, as described in response to Matter: B12 above. CGG does not agree with the claim that Marine Fauna Observers (MFO) would not be able to visually detect flocks of rafting or foraging birds within 500 m of the vessel. **Clarification has been provided in EP Appendix E5 (Impact Assessment – Underwater Sound: Birds) and EP Appendix G2 (Fauna**

	THEME	**BIRDS (B)**
#	***Comments received***	***Titleholder response***
	adequately controlled for during acquisition. The effectiveness of this mitigation strategy can be assessed by deploying recording equipment at the stern of the ship (close to the source) to cross check bird-specific MFO controls.	**Management Plan) that the acoustic source will be reduced to the low power setting if flocks of foraging birds are observed by the Marine Fauna Observer within 500 m of the source. Full power can commence when the seismic source is > 500 m from any flocks of foraging birds.** Further, the presence of a Survey Environment Advisor (SEA) on the vessel, as detailed in the EP Appendix (Implementation Strategy) and Appendix G2 (Fauna Management Plan) provides for any additional actions or reporting requirements associated with observations for and detections of other fauna.

10. Spills

	THEME	SPILLS (S)
#	*Comments received*	*Titleholder response*
Key Matter: Risk assessment for oil spills		
S01	**Matter**: Lack of project specific modelling **Claim**: As a mitigation measure, CGG has said it will keep the fuel volume under 250 m3, though this will be almost impossible to enforce. Coupled with CGG's failure to properly evaluate the specific risk of an MDO spill through custom modelling, this failure to implement stringent mitigation measures to protect the region's significant ecological value is cause for the EP to be refused. **Claim**: The report continues with an extraordinary statement that highlights the unsuitability of using other projects' modelling to assess the risks of the present project: "However, as the Regia MSS Activity Planning Area extends out ~120km from the Victorian Coast and ~100 km from King Island, the Annie-1 location [which was used to model an MDO spill] may not accurately predict oil exposure to King Island or Tasmania." (Oil Spill Modelling Review, p.851). This lack of effort to properly model MDO spill risk for this specific project is an extraordinary failure to fully explore and consider potential impacts to the marine environment. All risk assessment based on this incomplete evaluation must be rejected outright. **Claim**: According to the EP, the size of the Environment Planning Area was established "using professional judgement and a review of previous impact and risk assessments for similar activities in the region" (EP, p. 849). As a result, no independent modelling of a marine diesel oil spill was conducted for this project. Incredibly, the EP acknowledges that the modelling by these proponents used slightly different parameters and thresholds to calculate the maximum extent of an MDO spill, which was 60 km in one instance; however, the EP then asserts without any evidence that "even if this distance was double it would still be within the 150 km used for the Environmental Planning Area'', an assumption which fails to acknowledge the complexity of hydrocarbon modelling and assumes the distance can simply be doubled. **Claim**: The EP has failed to adequately model the impact of a fuel spill from the survey vessel or supporting vessels. **Claim**: We are shocked to note the absence of credible modelling for potential fuel spills from the operating vessel, or its support vessels and believe that this is a sufficient omission on the part of the titleholder and their environmental consultant, Klarite, as to warrant a refusal to award a title.	CGG acknowledges claims regarding a perceived lack of project specific spill modelling and has reviewed the Environment Plan (EP) to ensure that the method for assessing the extent of credible worst-case spill scenarios was adequate and appropriately detailed. In addressing the critiques presented, it's crucial to recognise the complexity and nuance inherent in environmental risk assessments such as those conducted for the Regia MSS. Isolating individual statements or findings from the broader context of comprehensive environmental planning and analysis can inadvertently misrepresent the meticulous and holistic approach undertaken (shown in Appendix B11). Such out-of-context interpretations may lead to misconceptions or perceived errors that do not reflect the entirety of the diligent, science-based evaluation and planning efforts. Our approach integrated a wide array of data, modelling outcomes, and expert judgments to ensure a robust understanding of the risks presented, and it is within this comprehensive framework that our findings and strategies should be considered. The environmental planning for the Regia MSS meticulously incorporated a range of oil spill models from similar projects within the region. This decision was underpinned by a detailed analysis of these models' applicability to the Regia MSS's specific conditions, including the geographical and oceanographic context. The models selected for our review were identified based on rigorous criteria, ensuring their relevance to the environmental and operational parameters of the Regia MSS. Such a methodology allows for leveraging extensive existing research and modelling efforts, providing a more robust foundation for understanding the nature and scale of the consequence from only one modelling report, and without unnecessarily duplicating effort. It would be irrational to ignore the statistical power achieved by evaluating all these data points. Critically, the approach to modelling and risk assessment for the Regia MSS was not solely reliant on extrapolation from previous projects. The decision to set the Environmental Planning Area at 155 km was grounded in application of the precautionary principle and is conservative, factoring in the potential maximum extent of diesel dispersion based on the most comprehensive data available. This distance exceeds the extents suggested by several models, underscoring our commitment to environmental protection. The assertion regarding the 250 m^3 fuel volume limit reflects our dedication to minimising potential spill volumes; this commitment is a testament to our proactive management strategies, which are designed to be enforceable and practical within operational contexts. Regarding the criticisms of not conducting project-specific modelling, it's important to clarify that the reliance on existing, validated models is a common practice within the industry, especially when those models closely mirror the conditions of the current project. This approach is not only efficient but also ensures that risk assessments are based on scenarios that have been meticulously reviewed and accepted in similar contexts. Furthermore, the continuous reference to professional judgment and review of previous assessments underscores a reliance on expert consensus and a deep understanding of the regional environmental dynamics, reinforcing the robustness of our planning process. The critique regarding the absence of evidence for the assertion that spills would be contained within the 150 km Environmental Planning Area fails to consider the comprehensive analysis and conservative assumptions that underlie our environmental planning. This boundary was not arbitrarily chosen but was based on a thorough review of historical data, spill scenarios, and the latest oceanographic understanding, which collectively inform a prudent and cautious approach to environmental risk management. Lastly, the assertion of insufficient effort in modelling specific to the Regia MSS overlooks the extensive groundwork laid by Appendix B11 and adaptation of existing, relevant oil spill models. These models, place in the context of the Regia MSS, provide a sound and scientifically valid basis for anticipating and mitigating environmental impacts. It's also critical to note that our approach is in line with NOPSEMA's guidelines, which advocate for the use of established, peer-reviewed models wherever applicable. In conclusion, the environmental planning and risk assessment for the Regia MSS has been conducted with a high degree of diligence, scientific integrity, and adherence to regulatory standards. The strategies for mitigation, including the management of fuel volumes and the adoption of existing, validated oil spill models, are grounded in a commitment to environmental stewardship and the precautionary principle. We are confident that our methodologies not only meet but exceed the requirements for assessing and mitigating the environmental impacts associated with the Regia MSS, demonstrating our unwavering commitment to protecting the marine environment in which we operate. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. Note: Mitigation measures are address in response to Matters: S07 – S11; Claims regarding the volume of a spill are addressed in response to Matter: S07.
S02	**Matter**: Likelihood of a spill	CGG acknowledges claims regarding the oil spill risks and has reviewed the Environment Plan (EP) to ensure that the information provided allows for an appropriate analysis of likelihood.

	THEME	SPILLS (S)
#	***Comments received***	***Titleholder response***
	Claim: There is always a risk of oil spills simply from the presence of the seismic blasting vessels for significant periods of time in sensitive environmental areas where marine animals, such as whales, penguins, etc., feed and breed.	EP Appendix D4 (Accidental Release of Fuel) predicts the levels of risk to environmental receptors, establishing criteria for sensitivity and has predicted level of risk to be medium. This is mainly due to the rare likelihood of a spill event occurring based on the absence of any reported collision of a seismic vessel leading to an oil spill in Australia, based on historical data. A rare likelihood is defined as: the event is expected to occur only in exceptional circumstances, or it may have never occurred before in similar circumstances. This level of likelihood implies that the event is highly unlikely to occur, with a probability of less than 1%. CGG recognises that it cannot eliminate the risk of a spill and has developed detailed response plans to demonstrate preparedness in the highly unlikely event that a spill occurs. In the highly unlikely event of a spill, the response would be integrated with local and national control agencies as required, to mobilise resources including experts and specialist equipment. Details on resourcing and response arrangements for a spill are included in the Oil Pollution Emergency Plan (OPEP) in EP Appendix G3. Further, additional mitigation and management measures such as adoption of the vessel bunkering procedure, the marine assurance system, and the comprehensive OPEP and operational and scientific monitoring program (OSMP) provide for reducing the consequences of a spill. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
Key Matter: Oil spill risks		
S03	**Matter**: Risks to marine flora and benthic sediments **Claim**: Spills also smother mangrove roots, asphyxiate kelp forests, and accumulate in benthic sediments, harming the species living within them. **Claim**: CGG admits in their environmental plan that the Giant Kelp Marine Forests of South East Australia are endangered. These marine forests overlap the Operational Area, but because CGG believes the giant kelp requires clear, shallow water no deeper than 35m in depth and they are outside of the depths for the Regina MSS Operational Area, the threat has not been assessed further. CGG has not identified and conducted research into the effects of an oil spill on Kelp Forests, and no mitigation strategies have been put in place. **Claim**: If there is an oil spill from a seismic blasting vessel, this will have a devastating impact on the health of South East Australia's Kelp Forests. CGG has stated that with a dense canopy extending upwards to surface waters, Giant kelp are vulnerable to the effects of an oil spill. In the event of a worst-case scenario oil spill, the surface extent of any canopy may be exposed to shallow dissolved and entrained hydrocarbon fractions, which can cause damage to the kelp forests, or even their destruction.	CGG acknowledges claims regarding the risks to marine flora and benthic sediments from an oil spill and has reviewed the Environment Plan (EP) to ensure that the information provided allows for an appropriate analysis of likelihood. EP Appendix D4 (Risk Assessment – Accidental Release of Fuel) presents the risk assessment for an accidental release of fuel and describes the potential impacts to sediment quality (Section 6.2) and benthic assemblages including marine flora (Section 6.3). Section 6.2 (Sediment Quality) provides a detailed assessment of the predicted level of risk for sediment quality which found that, as the majority of surface oil will have evaporated or entrained in the water column within ~ 24 hours, only a small proportion is likely to move to shoreline areas above the low threshold. Furthermore, wave action in shoreline areas will further breakdown the remaining oil. Consequently, predicted level of consequence to sediment quality from a 250 m^3 MDO spill is assessed as minor as consequences will be short-term (< 30 days) within a localised area with full recovery. Section 6.3 (Benthic Assemblages) provides a detailed assessment of the predicted level of risk for marine flora including kelp, and concludes that the predicted level of consequence to benthic assemblages, including marine flora, from a 250 m^3 spill is assessed as moderate as the consequences could be longer lasting (> 30 days) if kelp and other macroalgal areas are exposure to oil above the low threshold level. The likelihood is assessed as rare (based on the absence of any reported seismic vessel collisions in Australia) resulting in a predicted level of risk of medium. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
S04	**Matter**: Risks to areas of conservation significance and species **Claim**: The Area also includes 4 Commonwealth Marine Parks, 4 Ramsar wetlands, 11 Threatened Ecological Communities, 6 Commonwealth Heritage Places, 2 Key Ecological Features and other Matters of National Environmental Significance (MNES). These highly biodiverse species and habitats would be harmed by any marine diesel oil spills or incidents during proposed operations, as well as any time vessels are in the area preparing for seismic blasting, refuelling, resupplying or in transit. Such a spill could stay in the water column for up to 30 days, coating seabirds and contaminating plankton, fish, crustaceans, and invertebrates that provide food for higher trophic levels	CGG acknowledges claims regarding the risks to protected areas from an oil spill and has reviewed the Environment Plan (EP) to ensure that the information provided allows for an appropriate assessment of this risk. EP Appendix D4 (Risk Assessment – Accidental Release of Fuel) presents the risk assessment for an accidental release of fuel and describes the potential impacts to protected areas (Section 6.17). The predicted level of consequence to protected areas and their values from a 250 m^3 MDO spill is assessed as moderate as exposure to oil above low thresholds could occur in protected areas nearshore of the Operational Area, though if consequences occurred, they are likely to only affect a small portion of coastal areas or marine areas for a short duration (hours to days) due to the low spill volume and short duration of any exposure, the likelihood is assessed as rare (based on the absence of any reported seismic vessel collisions in Australia) resulting in a predicted level of risk of medium. The predicted level of consequences for species and food sources is assessed in: - Section 6.5 (Plankton) - Section 6.6 (Invertebrates) - Section 6.7 (Fish) - Section 6.8 (Birds) - Section 6.9 (Marine Reptiles)

	THEME	SPILLS (S)
#	*Comments received*	*Titleholder response*
		- Section 6.10 (Marine Mammals) CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
S05	**Matter**: Risks to recreational activities and coastal habitats **Claim**: The coastlines connected and adjacent to the Operational Area and the Environment Planning Area are used for various socially and recreational activities, including surfing, important to the coastal communities surrounding the Otways region. These areas include highly biodiverse habitats which would be harmed by any marine diesel oil (MDO) spills or incidents during proposed operations, as well as any time vessels are in the area preparing for seismic blasting, refuelling, resupplying or in transit. **Claim**: Such a spill could stay in the water column for up to 30 days, which would disrupt use of those coastal areas by recreational marine users, including surfers.	CGG acknowledges claims regarding the risks to protected areas from an oil spill and has reviewed the EP to ensure that the information provided allows for an appropriate assessment of this risk. EP Appendix D4 (Risk Assessment – Accidental Release of Fuel) presents the risk assessment for an accidental release of fuel and describes the potential impacts to protected areas (Section 6.17). This assessment states that, although visible nearshore and shoreline hydrocarbons have the potential to reduce the visual amenity of the area for tourism and discourage recreational activities within protected areas, the low volumes, light nature of marine diesel and substantial wave action with the nearshore areas mean that impacts are likely to only affect a small portion of the coastal area, be short term and not require intrusive clean-up response. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
S06	**Matter**: Risks and response plans for birds and their habitat **Claim**: The potential for oiling, or external contamination of seabirds is particularly problematic and could lead to a loss of insulation, buoyancy and the ability to fly or swim (as observed for penguins).15 On page 2700, the Plan notes that penguins are especially vulnerable to oil because they spend a high portion of their time in the water and will lose insulation and buoyancy if their feathers are oiled. **Claim**: Another risk that has not been accurately identified is the risk of hydrocarbon spills on the nesting habitat of these species. Although the risk of a spill is low, if it were to occur, there is risk to all 3 breeding grounds for albatross in Tasmania, including Mew stone, Pedra branca and Albatross Island. **Claim**: Submitter recommends development of a recovery plan in the event of an oil spill for Mew stone, Pedra Branca and Albatross Island.	CGG acknowledges claims regarding mitigation strategies to protect of birds and their habitat in the event of a spill and has reviewed the Environment Plan (EP) to ensure that impacts to birds and oiled wildlife response measures were adequately described. EP Appendix D4 (Risk Assessment – Accidental Release of Fuel) presents the risk assessment for an accidental release of fuel and describes the potential impacts to birds. Section 6.8 (Birds) provides a detailed assessment of the predicted level of risk for birds within the assessment area. Little Penguins are most likely to encounter the low concentration of hydrocarbons due to its broader extent than moderate and high concentrations, and the low threshold level of exposure is not expected to result in the lethal impacts of feather matting and hypothermia. Further, given the offshore location of the spill, the small volume and area of exposure, and temporary nature of the release on the sea surface (~ 24 hrs) it is unlikely that a spill would limit Little Penguins ability to forage for unaffected prey, nor will the unlikely event of exposure at the sea surface result in permanent injury or mortality. Regarding impacts to habitat, the predicted maximum extent that fuel spill could extend from the operational area is 150 km in any direction. The basis for this distance is explained in Section 3.2 of the Appendix D4. Due to the proximity to the Victorian coastline, the predicted level of consequence to shorebirds from a 250 m^3 fuel spill is assessed as moderate as consequences could be longer lasting (> 30 days) if shorebirds are exposure to oil above low threshold, though if consequences occurred, they are likely to only affect a small portion of the shorebird population due to the low volume of oil that would come onshore. The accumulation of hydrocarbons on shorelines within the 150 km distance is considered unlikely (rare) based on the absence of any reported seismic vessel collisions in Australia. Further, Pedra Branca, Albatross Island and Mew Stone are well beyond this distance and are not predicted to affected in the extremely unlikely event of a release. EP Appendix G3 (OPEP and OSMP) describes the spill response preparedness, proposed response strategies and operational and scientific monitoring that would be employed in the extremely unlikely event of an accidental release of fuel. Section 8.3.1 (Oiled Wildlife Response) describes how the relevant control agencies will determine if an oiled wildlife response is required. The accumulation of hydrocarbons on shorelines is considered unlikely based on the credible scenarios; however, to allow for an adaptable response, consideration will be given to migratory shorebird feeding and roosting sites/nesting colonies and any seal colonies in and adjacent to the environment that may be affected (EMBA), and species protected under Part 3 of the EPBC Act will be given particular attention. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Project specific modelling is addressed in response to Matter: S01.
Key Matter: Preparedness for and mitigation of oil spill risk		
S07	**Matter**: Minimising spill volumes **Claim**: As a mitigation measure, CGG has said it will keep the fuel volume under 250 m^3, though this will be almost impossible to enforce. Coupled with CGG's failure to properly evaluate the specific risk of an MDO spill through custom modelling, this failure to implement stringent mitigation	CGG acknowledges claims regarding enforceability of fuel volumes and has reviewed the Environment Plan (EP) to ensure that these were adequately described such that the grounds for enforcement could be reasonably ascertained by both CGG and NOPSEMA. When a vessel refuels (called bunkering) there are international protocols and marine orders which govern the procedures and record keeping. Detailed records of the product bunkered must be maintained and tank inventories recorded before and after bunkering events. Vessels carefully monitor and record tank levels for ballast requirements and an electronic record of fuel levels in all tanks is routinely kept onboard. This is often supplemented by

	THEME	SPILLS (S)
#	*Comments received*	*Titleholder response*
	measures to protect the region's significant ecological value is cause for the EP to be refused.	manual soundings of tanks on a routine basis. CGG's Marine Assurance System (M#05) is the primary control measure that will ensure that all vessels contracted for the survey will comply with the legislative requirements in Australia and will maintain accurate records of bulk fuel tank levels throughout the activity. Therefore, the commitment to maximum fuel levels is able to be easily monitored and, if breached, can be enforced. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Project specific modelling is addressed in response to Matter: S01.
S08	**Matter**: A plan to mitigate and manage spill risk is needed **Claim**: Submitter recommends a plan is formulated to mitigate and manage the potential risk of oil spills caused by seismic blasting.	CGG acknowledges claims regarding spill risk and has reviewed the Environment Plan (EP) to ensure that the measures to mitigate and manage this risk were adequately described. EP Appendix D4 (Risk Assessment – Accidental Release of Fuel) presents the risk assessment for an accidental release of fuel and describes the measures that will be in place to mitigate the risk of a spill, e.g. the marine assurance system, and the plans that will be in place to respond in the extremely unlikely event of a spill, i.e. the Oil Pollution Emergency Plan (OPEP) and Operational and Scientific Monitoring Plan (OSMP). These plans are provided in EP Appendix G3 (OPEP and OSMP). CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
S09	**Matter**: Oil spill mitigations for marine fauna **Claim**: The EP has failed to adequately model the impact of a fuel spill from the survey vessel or supporting vessels. It has failed to offer adequate mitigation strategies to protect cetaceans, seals and sea lions, or invertebrates.	CGG acknowledges claims regarding mitigation strategies to protect marine fauna in the event of a spill and has reviewed the Environment Plan (EP) to ensure that the oiled wildlife response measures were adequately described. EP Appendix G3 (OPEP and OSMP) describes the spill response preparedness and proposed response strategies to be used in the extremely unlikely event of an accidental release of fuel. Section 8.3.1 (Oiled Wildlife Response) describes how the relevant control agencies will determine if an oiled wildlife response is required. The accumulation of hydrocarbons on shorelines is considered unlikely based on the credible scenarios; however, to allow for an adaptable response, consideration will be given to migratory shorebird feeding and roosting sites/nesting colonies and any seal colonies in and adjacent to the environment that may be affected (EMBA), and species protected under Part 3 of the EPBC Act will be given particular attention. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims. NOTE: Project specific modelling is addressed in response to Matter: S01.
S10	**Matter**: Access for clean-up **Claim**: In the case of an oil spill, much of the Victorian and Tasmanian coastlines are inaccessible to enable amelioration of the damage.	CGG acknowledges claims regarding shoreline protection and clean up and has reviewed the Environment Plan (EP) to ensure that this proposed response strategy was adequately described. EP Appendix G3 (OPEP and OSMP) describes the spill response preparedness and proposed response strategies to be used in the extremely unlikely event of an accidental release of fuel. Table G3-1 (Assessment of Spill Response Strategies) explains that the spreading and relative thickness of Marine Gas Oil (fuel) slicks on shorelines would mostly be below the 10 g/m^2 impact threshold and that this, along with the exposed and high energy shorelines of the Otway coast, make this strategy ineffective. Further, the accumulation of hydrocarbons on shorelines is considered unlikely. Consequently, CGG is not proposing shoreline protection or clean up. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
S11	**Matter**: Chemical dispersants are carcinogenic **Claim**: Many of the chemicals utilised by industry to clean up oil spills are known carcinogens. (39)(40) 39. https://hub.jhu.edu/2022/06/03/deepwater-horizon-oil-spill-cleanup/ 40. https://scienceline.org/2017/11/clean-chemical-bp-oil-spill-tied-health-problems/	CGG acknowledges claims regarding spill response strategies and has reviewed the Environment Plan (EP) to ensure that the proposed response strategies were adequately described. EP Appendix G3 (OPEP and OSMP) describes the spill response preparedness and proposed response strategies to be used in the extremely unlikely event of an accidental release of fuel. Table G3-1 (Assessment of Spill Response Strategies) explains that due to the spreading and relative thickness of slicks on water, chemical dispersants would not be used as they are unlikely to be effective on a marine gas oil (fuel) spill (CSIRO 2016) and that this, along with the exposed and high energy shorelines of the Otway coast, make this strategy ineffective. Consequently, CGG is not proposing the use of dispersant. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

11. Climate Change

	THEME	CLIMATE CHANGE (CL)
#	*Comments received*	*Titleholder response*
CL01	**Matter:** Impacts associated with global warming **Claim:** Seismic blasting poses irreparable harm to ocean ecosystems and is incompatible with global warming and zero extinction targets. **Claim:** Approval of this application will have disastrous impacts on marine species, the local fishing industry and, ultimately, the climate. **Claim**: I think it is insanity to under go operations such as this in such a crucial marine ecosystem with total disregard for not only the inhabitants it will effect but also the devastating impact this and other projects like this one will contribute to the climate crisis. **Claim**: The oil and gas exploration plans proposed by REGIA will contribute DIRECTLY to global warming and have a negative impact on Australia's land, environment, community and economy. **Claim**: Allowing REGIA and other companies to explore and extract oil and gas will contribute greatly to global warming.	CGG acknowledges claims regarding global warming and has reviewed Environment Plan (EP) Appendix B4 (Regia MSS Preliminary Environmental Impact and Risk Assessment (PEIRA)), which provided preliminary information on the potential impacts and risks to support consultations with relevant persons and provided the context to the subsequent impact and risk assessments. An assessment of atmospheric emissions was conducted as part of the PEIRA which concluded that, while emissions from the use of fuel to power vessel engines, generators and mobile and fixed plant add to the GHG load in the atmosphere which adds to global warming potential, they are relatively small on a state, national and global scale, representing an insignificant contribution to overall GHG emissions. Emissions will be small in quantity and short-term. The emissions from up to three vessels for 90 days will not significantly contribute to climate change. Therefore, impacts to ecological components of the environment from atmospheric emissions from the Regia MSS are not predicted and have not been evaluated further. CGG acknowledges claims regarding the concerns about the future potential for natural gas extraction; however, CGG is not proposing the commercial extraction of natural gas as part of the Regia MSS. The activity presented in the Environment Plan is for a short-term, temporary marine seismic survey. Consequently, this claim is not relevant to the adverse effects of the proposed Regia MSS to which the EP relates and is beyond the scope of this assessment. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.
CL02	**Matter**: Consideration of existing pressures associated with climate change **Claim**: In the enormous volume of pages within the EP there is no consideration for marine ecosystems already under the stress of warming oceans facing additional pressure from seismic blasting operations. Further, we as relevant persons for the purposes of industry consultation on this and other similar projects are instructed that climate change is not a consideration for our submissions. We argue that given that this operation is to locate oil and gas reserves, climate should certainly be a consideration. Oil and gas are key drivers of climate change and the consequences of their production would not be possible without exploration projects such as this one proposed by CGG Regia. **Claim**: On the grounds that this EP fails to consider how the impacts of current and rising ocean temperatures, combined with the likely impacts of the operational plan (OP) under deployment we urge NOPSEMA to reject this EP and refuse to award the SPA.	CGG acknowledges claims regarding existing pressures associated with climate change and has reviewed the Environment Plan (EP) to ensure that these pressures were adequately considered. Appendix F3 (Acceptable Levels of Impact and Risk) included a number of species-specific sensitivity analyses to evaluate the potential for the Regia MSS, in conjunction with existing pressurise and threats, to result in cumulative impacts on those species, for example: - Section 5.2.1.3 (Cumulative impacts) assesses the cumulative impacts of the Regia MSS with the other highest rated threats identified within the updated draft National Recovery Plan for the southern right whale (DCCEEW 2023), which includes anthropogenic climate change and climate variability. - Section 5.2.3.3 (Cumulative impacts) assesses the cumulative impacts of the Regia MSS on southern rock lobster in light of the long-range forecast for sea surface temperatures. - Section 5.2.4.1 (Species-specific sensitivity) assesses the cumulative impacts of the Regia MSS on giant crab in light of the southerly shift of the austral subtropical high-pressure belt, with models predicting more upwelling-favourable winds which has the potential to increase productivity at the population level. Section 5.4 (Search for unacceptable impacts) provides for additional consideration of potential ecosystem vulnerabilities to ensure that ecosystem integrity, meaning the ability of all species within an ecosystem to survive and reproduce such that the overall health of their ecosystem, is maintained and that potential unacceptable impacts are identified. This included an evaluation of potential ecosystem weaknesses, including vulnerability to climate change, and concluded that no measurable changes to ecological integrity or population structures are likely because of the Regia MSS. CGG has considered these claims and is satisfied that the concerns raised have been adequately addressed in the EP, for the reasons outlined above. As a result, no changes have been made to the EP in response to these claims.

12. Other

	THEME	OTHER (O)
#	*Comments received*	*Titleholder response*
O01	**Matter**: Consideration of alternative survey technology **Claim**: If such proposed projects are necessary now at all, alternative, proven, far less harmful methods of surveying should be utilised in place of seismic blasting, instead of assuming that marine species and ecosystems are robust enough to handle it. **Claim**: There is no need to blast seismically when more modern USA technology exists that uses low frequency harmonic vibrations that are less energetic and less harmful that still enables the strata to be identified without injuring sea creatures. **Claim**: It should also be pointed out there are much less destructive, and also much more effective, ways of generating the seismic images of that area. Namely using ocean bottom cables (3 axis geophones plus hydrophone) and a low level continuous wave seismic source. That seismic source can be as little as near field monitored ship noise.	CGG acknowledges claims regarding the consideration of alternative survey technologies and has reviewed the Environment Plan (EP) to ensure that this was adequately addressed. As stated in Ep Appendix F2 (ALARP Assessment), the technology that will be utilised for the Regia MSS involves a series of acoustic sources that create acoustic emissions within a specified frequency and amplitude, to detect geological formations. The technology that will be used is the only technology currently available that is feasible for the Regia MSS. Alternative technologies are in development, are unproven and are technically unfeasible. Further, the non-optimal data generated by alternative technologies increases the likelihood that additional surveys and exploration wells would be required, and presents an increased risk when drilling. **EP Appendix F2 (ALARP Assessment) has been updated to include additional information on the assessment of alternative technologies.** A comprehensive assessment of the potential impacts and risks associated with seismic surveys is provided in the EP. In accordance with the control measures set out in EP Appendix G1 (Control Measures and Environmental Performance) that will be adopted for the duration of the Regia MSS, seismic activities will be managed so that potential impacts and risks are mitigated to levels that are as low as reasonably practicable and acceptable in accordance with environmental regulatory requirements.
O02	**Matter**: Consideration of bubble curtains **Claim**: I am asking why the government hasn\'t insisted on bubble curtaining for this project as is used extensively in the North Sea to protect the sea dwellers. **Claim**: Has no one heard of bubble curtaining to protect the whales and their calves? Look at how it is used in the North Sea.	CGG acknowledges claims regarding alternative controls and has reviewed the Environment Plan (EP) to ensure these are adequately considered. It is understood that bubble curtains have been used in shallow water offshore wind farm installations during pile driving operations. CGG is not proposing to conduct pile driving. The activity presented in the Regia MSS EP is for a short-term, temporary marine seismic survey. During these surveys the seismic vessel and acoustic source move continuously through the survey area. The Bureau of Ocean Energy Management (CSA Ocean Sciences Inc. 2014) examined current and emerging technologies that have the potential for reducing noise generated during certain ocean activities and concluded that for mobile seismic sound sources bubble curtains showed generally poor performance at reducing sound levels except at short distances from the source. More recent tank experiments focussed on stationary changes to high-frequency sound (Wehner et al 2020), with acknowledgement that the important practical issue (of a moving source) needs consideration. Consequently, given that the application of bubble curtains to a moving sound source has yet to be demonstrated as effective in practice, the use of bubble curtains has not been considered further and no changes have been made to the Regia MSS EP in response to these claims. ***References:*** CSA Ocean Sciences Inc. 2014. Quieting Technologies for Reducing Noise During Seismic Surveying and Pile Driving Workshop. Summary Report for the US Dept. of the Interior, Bureau of Ocean Energy Management BOEM 2014-061. Contract Number M12PC00008. 70 pp. Daniel Wehner and Martin Landrø, (2020), "The impact of bubble curtains on seismic air-gun signatures and its high-frequency emission," GEOPHYSICS 85: P1-P11. https://doi.org/10.1190/geo2019-0451.1

13. Out of Scope

	THEME	OUT OF SCOPE (OS)
#	***Comments received***	***Titleholder response***
Key Matter: The regulatory/approvals process		
OS01	**Matter**: Special Prospecting Authorities **Claim**: The proposal to conduct seismic blasting using a Special Prospecting Authority (SPA) permit sidesteps the usual government bidding and decision making process, facilitating hasty and highly damaging oil and gas exploration proposals to progress rapidly through the regulatory approvals process. **Claim**: Furthermore, the proposal to conduct seismic blasting under a Special Prospecting Authority (SPA) permit circumvents standard government bidding processes, enabling expedited approval of potentially harmful exploration activities. **Claim**: The SPA process does not take into consideration the cumulative impact of multiple seismic blasting projects on ocean ecosystems or marine life. Any previous seismic blasting conducted in a given location is not considered in the environmental impacts of new proposed seismic blasting in that same area. https://www.marineconservation.org.au/what-is-a-special-prospecting-authority-spa-everything-you-need-toknow/ **Claim**: It is of great concern to both the fishing industry and the local community that the seismic blasting companies aim to use the cheap and fast permit called a Special Prospecting Authority (SPA) to conduct some of the world's largest seismic blasting projects in the south-east oceans between Tasmania and Victoria. **Claim**: That SPAs mean a lack of oversight of conduct and methods used in surveys, it would be unethical and unprofessional if NOPSEMA were to grant exploration licences and SPAs to Regia and members of the offshore gas and oil industries.	Claims regarding Special Prospecting Authorities do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims they have not been considered further in preparing the EP. An EP is required for all offshore activities. An EP is an activity-specific permissioning document that provides a detailed environmental impact and risk assessment of the proposed offshore activity and demonstrate how those impacts and risks will be reduced to a level that is as low as reasonably practicable and acceptable for the life of the activity. The Regia MSS will be conducted in accordance with the control measures set out within an accepted EP to ensure that impacts and risks, including cumulative impacts, are managed to levels that are as low as reasonably practicable and acceptable, in accordance with relevant environmental regulatory requirements.
OS02	**Matter**: The right of the Australian government to approve impacting processes. **Claim**: No politician or government bureaucrat has any real world authority to approve any environmental impacting process anywhere any time. Due processes call for all stakeholders or representatives to be involved in any decision. **Claim**: Seismic blasting and fracking cannot be approved by any state or federal government in Australia."	Claims regarding the rights of the Australian government do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Petroleum activities conducted in offshore waters are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA is Australia's independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOPSEMA's acceptance of the EP provides the authorisation necessary for the activity to begin and forms legally binding requirements by which CGG must undertake the activity. Further, CGG is not proposing fracking as part of the Regia MSS. The activity presented in the EP is for a short-term, temporary marine seismic survey. Consequently, the claims are not relevant to the adverse effects of the Regia MSS to which the EP relates and are beyond the scope of this assessment.
OS03	**Matter:** The government continuing to approve new fossil fuel projects in light of climate change and biodiversity losses. **Claim**: Further, as the federal government, with any sense of environmental protection, should ban drilling and permanent extraction of gas so close to the coast and sensitive marine areas, there is no point in seismic blasting this area. For the future environmental protection of the area this proposal, Regia MSS, should therefore be rejected. **Claim**: I implore governments and NOPSEMA to abandon this notion and seriously consider the detrimental impacts this propsal (sic) would have on our environment.	Claims regarding Australian government processes do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Petroleum activities conducted in offshore waters are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA is Australia's independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006.

	THEME	OUT OF SCOPE (OS)
#	***Comments received***	***Titleholder response***
	Claim: It is well proven, by the latest IPCC reports and Australian State of The Environment Report that the future stability of our climate and biodiversity are critically endangered. We cannot continue with business-as-usual in this climate. NOPSEMA must base its decisions on the well-being and prosperity of all Australians, now and into the future, not on the profitability of corporations. **Claim**: October of every year the federal government opens bidding to oil and gas companies to make bids for more projects, which leads to more exploration with seismic blasting. An appalling approach to managing the greatest environmental crisis (global warming) of our time. **Claim**: Our government has the power to protect our unique marine life from seismic blasting projects and the expansion of the fossil fuel industry. Stop listening to the fossil fuel lobbyists, making decisions that support a select few and irreversibly destroy our marine environment. **Claim**: The fact that this proposal by CGG has progressed to this level reflects very poorly on our federal and state governments to have measures in place to protect both conservation and community interests and those of future generations. **Claim**: Allowing this project to proceed would be an admission by this Government that it has learnt nothing at all about the imminent dangers to our planet and its suitability as a home for our human, as well as all animal species, despite all the talk.	The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOPSEMA's acceptance of the EP provides the authorisation necessary for the activity to begin and forms legally binding requirements by which CGG must undertake the activity.
OS04	**Matter**: Independence of the regulatory process **Claim**: The current system in which proponents act as their own judge and jury on these matters is not acceptable.	Claims regarding the independence of regulatory processes do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Petroleum activities conducted in offshore waters are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA is Australia's independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA's regulatory processes have long been regarded as world-class. The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements.
OS05	**Matter**: NOPSEMA considering comments as irrelevant **Claim**: Furthermore I am appalled that NOPSEMA considers any comments on oil and gas activity in submissions to the environment plan as 'irrelevant'.	Claims regarding NOPSEMA's consideration of comments do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. NOPSEMA provides advice on how its processes adhere to the principles of good administrative decision-making and how it does not consider information provided through consultation with relevant persons and/or public comment that is irrelevant to the specific offshore project or activity and the requirements of the Environment Regulations. Some examples provided by NOPSEMA include: • statements of fundamental objection • information that contains personal threats or profanities • SPAM mail and petitions, and • comments made through online social media channels.
Other Out of Scope Matters		

	THEME	OUT OF SCOPE (OS)
#	***Comments received***	***Titleholder response***
OS06	**Matter**: No need for new gas supplies/ no benefit to Australia. **Claim**: There is no need to go looking for new oil and gas in the Southern Ocean or anywhere else. This submission acknowledges that this consideration is outside of the scope of the public comment process for an EP under a Special Prospecting Authority, however we believe that it is relevant so explicitly mention it here. For the bargain price of $8250, an applicant with a history of prior breaches can commit one of the most damaging activities permitted in oceans today over an area previously mapped by seismic surveys and with little in the way of meaningful interventions by the community. **Claim**: Our southern oceans are teaming with sensitive species and the cumulative impacts imposed by fossil fuels is not necessary. **Claim**: Investing in new gas is unlikely to be financially viable in the future, so why are local communities bearing the environmental, tourism and industry impacts for little-to-no benefit? **Claim**: Not only is it against everything we should eb doing to limit warming, it is extremely damaging for the natural environment In this time when the focus is on moving to net zero in order to save all species on earth from a catastrophic future, it beggars belief that we would engage in these devastating practices in search of more fossil fuel. We ahem more than enough energy to power Australia without resorting to such drastic and detrimental measures.and all the unique and precious marine life it houses.	Claims regarding the ongoing role of gas do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. CSS is not proposing to extract commercial quantities of gas as part of the Regia MSS. The activity presented in the EP is for a short-term, temporary marine seismic survey. Consequently, the claims are not relevant to the adverse effects of the proposed Regia MSS to which the EP relates and are beyond the scope of this assessment. Exploration activities in the Otway Basin are undertaken to help meet Australia's ongoing energy needs. Australia is facing challenges to the security of its domestic gas supply, specifically in the east coast gas market and a domestic gas supply shortfall could have serious consequences for Australians (DISR, 2022). Australians rely on gas for residential heating and cooking. Australian industry and manufacturers rely on gas as feedstock and for energy. Insufficient gas supply could impact the stable operation of Australia's electricity network. ***References:*** *DISR, 2022. Securing Australia's domestic gas supply – Options to improve the Australian Domestic Gas Security Mechanism (1 August 2022), Australian Government Department of Industry, Science and Resources. https://consult.industry.gov.au/securing-australias-domestic-gas-supply*
OS07	**Matter:** Seismic surveys lead to fossil fuel extraction, which is incompatible with the Paris Agreement/ limiting global warming. **Claim**: As seismic blasting is the stepping stone to fossil fuel extraction, plans to continue exploration are incompatible with achieving the Paris target of limiting global warming to 1.5 °C. **Claim**: Seismic blasting not only poses a significant threat ecosystems but also contradicts efforts to limit 1.5°C as outlined in the Paris Agreement. **Claim**: Summary purpose of oil and gas exploration is contrary to the terms of the 2015 Paris Agreement To be clear, the purpose of oil and gas exploration is to identify oil and gas deposits, the exploitation of which is contrary to the intent of the legally binding (https://www.un.org/en/climatechange/paris-agreement) 2015 Paris Agreement to limit the extent of global warming to 1.5Â°C above pre-Industrial global average temperature, . The International Energy Agency has already found that it is not possible to achieve the goal of the Paris Agreement if any new fossil fuel projects are permitted to proceed (see, for example, â€œThe path to limiting global warming to 1.5 Â°C has narrowed, but clean energy growth is keeping it openâ€, International Energy Agency News statement, 26 September 2023, https://www.iea.org/news/the-path-to-limiting-global-warming-to-1-5-c-has-narrowed-but-clean-energy-growth-is-keeping-it-open). As such, should NOPSEMA approve CGGâ€™s Regia Marine Seismic Surveying then Australia may arguably be in breach of its obligations under the 2015 Paris Agreement. **Claim**: Plans to continue gas exploration are incompatible with achieving Australia'a commitment to the 2015 Paris target of limiting global warming to 1.5°C. They are also inconsistent with the agreement at the COP28 climate talks last November to reduce global consumption of fossil fuels for which Australia was reportedly disappointed that 'the deal' didn't include a universal commitment to phase out fossil fuel use. **Claim**: Seismic blasting is a pathway to fossil fuel extraction, plans to continue exploration go against Australia's commitments to reduce greenhouse gas emissions by 43% from 2005 levels, and net zero emissions by 2050. **Claim**: By allowing projects such as this to go ahead, it is one step closer to contributing unnecessarily to climate change and the subsequent demise of our marine species and ecosystems. You may say this point about CGG contributing indirectly to climate is irrelevant for this project, but by doing so, you are using the current submission process as a way to side-step responsibility and accountability on this issue. **Claim**: This plan contradicts the goal of achieving the Paris target of limiting global warming to 1.5°C. **Claim**: This CCG is the gateway to fossil fuel exploration, which is incompatible with the Paris climate target. It will fast track climate change.	CGG is not proposing to extract gas as part of the Regia MSS. The activity presented in the Environment Plan (EP) is for a short-term, temporary marine seismic survey. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Petroleum activities conducted in offshore waters are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA is Australia's independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOPSEMA's acceptance of the EP provides the authorisation necessary for the activity to begin and forms legally binding requirements by which CGG must undertake the activity. NOPSEMA have provided an overview of the offshore petroleum lifecycle: A653855.pdf (nopsema.gov.au). This document explains the staged approach taken by offshore developments, whereby the impacts and risks of each stage are assessed. CGG is proposing to conduct a marine seismic survey which is the first stage of exploration.

	THEME	OUT OF SCOPE (OS)
#	***Comments received***	***Titleholder response***
	Claim: By facilitating the expansion of the offshore oil and gas industry, this undermines our collective efforts to mitigate climate change and protect our planet\'s future. **Claim**: The proposal to conduct seismic blasting [using a Special Prospecting Authority (SPA) permit sidesteps the usual government decision making process, and] will contribute also to the climate crisis we are all facing. **Claim**: NOPSEMA must reject this because it vital ecosystems and enable the extraction of polluting fossil fuels which will continue to damage our climate in the immediate and long term. **Claim**: Global oil and gas exploration should cease immediately if we are to save our planet from catastrophic man made global warming. **Claim**: Gas is a fossil fuel, which means producing and burning gas helps contribute to climate change (33). Which is a This concern must be be addressed, as despite the direct threat to marine animals in the observation area, climate change is an indirect threat to them, and this poses a fundamental threat to whales, dolphins and porpoises. (34) 33. https://www.climatecouncil.org.au/resources/why-is-gas-bad-for-climate-change-an d-energy-prices/ 34. https://au.whales.org/our-4-goals/create-healthy-seas/climate-change/#:~:text=The %20rapid%20warming%20of%20the,even%20their%20ability%20to%20reproduce **Claim**: Moreover, we cannot achieve our targets to stop rising temperatures, if we open up new resources to burn fossil fuels. **Claim**: The object of this assault is to allow the burning of huge quantities of fossil fuels which are not only endangering this ecosystem but are already compromising the very existence of ourselves on this planet. **Claim**: When the fossil fuels are finally extracted, much of it will presumably be burned and exacerbate our already seriously damaged climate. **Claim**: Seismic blasting for oil and gas exploration in our oceans is not acceptable to met Paris target we cannot extract more fossil fuels. **Claim**: By facilitating the expansion of the offshore oil and gas industry, this undermines our collective efforts to mitigate climate change and protect our planet\'s future.	
OS08	**Matter**: Australia’s greenhouse gas and fossil fuel commitments **Claim**: Plans to continue gas exploration are incompatible with achieving Australia’a commitment to the 2015 Paris target of limiting global warming to 1.5°C. They are also inconsistent with the agreement at the COP28 climate talks last November to reduce global consumption of fossil fuels for which Australia was reportedly disappointed that ’the deal’ didn't include a universal commitment to phase out fossil fuel use. **Claim**: Primarily, we should not be opening up new areas for gas mining if Australia is to meet its planned emissions targets. **Claim**: The proposal to explore gas and extract this from our oceans is extremely alarming and will mean that Australia cannot meet its green house emission reductions. **Claim**: Seismic blasting is a pathway to fossil fuel extraction, plans to continue exploration go against Australia's commitments to reduce greenhouse gas emissions by 43% from 2005 levels, and net zero emissions by 2050. **Claim**: Emissions from the extraction, processing and export of gas have been one of the main drivers behind Australia’s official emissions level staying so high. If Australia is heading to net zero, this plan will compromise this aim.	CGG is not proposing to extract gas as part of the Regia MSS. The activity presented in the Environment Plan (EP) is for a short-term, temporary marine seismic survey. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Petroleum activities conducted in offshore waters are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA is Australia’s independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOPSEMA’s acceptance of the EP provides the authorisation necessary for the activity to begin and forms legally binding requirements by which CGG must undertake the activity. NOPSEMA have provided an overview of the offshore petroleum lifecycle: A653855.pdf (nopsema.gov.au). This document explains the staged approach taken by offshore developments, whereby the impacts and risks of each stage are assessed. CGG is proposing to conduct a marine seismic survey which is the first stage of exploration.
OS09	**Matter**: No fossil fuel development/ unspecified impacts **Claim:** I am simply against this type of survey due to the impacts on marine life and don’t believe we need to be mining in this part of Australia.	CGG is not proposing mining or extracting gas as part of the Regia MSS. The activity presented in the Environment Plan (EP) is for a short-term, temporary seismic survey. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.

	THEME	OUT OF SCOPE (OS)
#	***Comments received***	***Titleholder response***
	Claim: We have already destroyed forever many of our unique and beautiful flora, fauna and marine life. You have the power to say enough, the damage from this blasting will overwhelm any perceived benefit that is to come from it. **Claim**: l would like to add that these inoffensive creatures have been on the earth far longer than we have, we don\'t have the right to wipe them out just for the sake of continuing old technologies we simply do not need any more, in fact, we should scaling these technologies back not creating more l am bitterly opposed to this project in every way so l ask you to use common sense and reason to stop this before it is to **Claim**: PLEASE do NOT allow oceans. The damage it is potentially huge and irreparable. Considering it is outrageous and shows no thought for our children and future generations. **Claim**: Fossil fuel is a liability for the future, The approval of seismic blasting at this sensitive location by the Victorian government confirms a lack of understanding of issues of such importance, that it condem\'s them to being a liability. **Claim**: These plans are an attack on all young citizens of Australia who will suffer as a result of future gas and oil extraction with a lower standard of living and poorer health outcomes **Claim**: I vehemently disagree with seismic blasting and indeed any operations relating to the development of fossil fuels. **Claim**: This blasting is for oil and gas. And these operation and what they fuel have done damage to the earth and our climate which is becoming more noticeable each day. **Claim**: I REJECT SIESMIC BLASINTING ANYWHERE, BUT ESPECIALLY IN SENSITIVE MARINE LIFE ZONES. **Claim**: This sort of activity will negatively impact the environment in totally unacceptable ways including the fossil fuels it is trying to discover. **Claim**: Development of any fossil gas sources that might be found would be even more damaging to ocean life, and also politically highly contentious. **Claim**: The mining and use of fossil fuels generate an unacceptable risk not just to marine life, but to tourism, farming, fishing, and the cultural values of first nation peoples. We can control the amount **Claim**: Australia needs any resources but not at the cost of our precious environment. We can have both if we are smart but this is not a smart idea. **Claim**: I am simply against this type of survey due to the impacts on marine life and don't believe we need to be mining in this part of Australia.	Petroleum activities conducted in offshore waters are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA is Australia's independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOPSEMA's acceptance of the EP provides the authorisation necessary for the activity to begin and forms legally binding requirements by which CGG must undertake the activity.
OS10	**Matter:** Unethical behaviour by companies and regulators. **Claim**: On the grounds of facilitating significant environmentally irresponsible projects alone, this seismic blasting project should not be allowed to proceed. **Claim**: There is no reason to conduct damaging testing for a Fossil fuel Gas that should be phased out. The Seismic Blasting will then pave the way for even more devastating gas extraction for an even more remote multi national Company and the local consumer will not benefit as we have seen recently the gas companies make the local consumer pay international prices for our natural resource that we allow them to profit from. **Claim**: This utterly irresponsible and betrayal to humanity. Your company will be responsible for the destruction of a liveable world. It will create a world in which I will experience a higher frequency and intensity of catastrophic weather and environmental disasters. **Claim:** Finally, with the importance of our Government and industry ambition to reach net zero by 2050, projects like this not only destroy valuable marine habitat and potentially wipe out a variety of marine animal species for nothing more than GREED. **Claim**: It\'s 2024 - and over 2 decades since the world became enlightened to the gas and oil industries disasters for the environment. The above information will be read, and received, over and over, yet I can\'t imagine if those profiting from the decision, if their children and family members knew that their financial existence is at the expense of wildlife and the environment. Destruction for oil and gas need to end. **Claim**: I think that this proposal discussed below should be rejected outright, we have endangered our precious ocean wildlife enough with our disregard & abuse of the planet, we dont need more oil/gas rigs in our oceans they should be diversifying into clean energy sources instead of forcing, coercing & pushing the government to approve their greedy new	These claims do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Activities conducted on petroleum titles are regulated by the Commonwealth National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA). NOPSEMA is an independent expert statutory authority established under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. NOPSEMA's regulatory processes have long been regarded as world-class. NOPSEMA is regularly subject to a range of external reviews and audits to ensure it continues to be effective in bringing about improvements in occupational health and safety, well integrity, and environmental management across the offshore oil and gas industry. The Offshore Petroleum and Greenhouse Gas (Environment) Regulations 2023 impose a duty on CGG to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOPSEMA's acceptance of the EP provides the authorisation necessary for the activity to begin and forms legally binding requirements by which CGG must undertake the activity.

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	dirty fuel projects. [Not to mention my local community relies on the lobster fishing industry to provide many jobs in this area] and havent we tortured whales enough over the past centuries!! **Claim**: I cannot express how discussed I am at this company\'s proposal, and their greed for Australia\'s resources to sell overseas. All the while showing a complete disregard for other regular uses. **Claim**: We can no longer close our eyes to the devastating impacts of Climate Change that are manifest internationally . If we are to have a world fit to pass on to our grandchildren ,we must draw the line at the rapacious demands of the extractive Fossil fuel lobby that knows no bounds in it\'s mindless pursuit of profit . **Claim**: What is wrong with our Govermant Dept\'s & the Government in general, giving their \"OK\" for this seismic activity to go ahead, anywhere near marine life of any kind. As usual they think of \"MONEY\", ahead of the ENVIRONMENT, which affect EVERYONE. I am disgusted & angry that this keeps happening today, with all the knowledge we have about looking after our environment. Shame on you!!!!!! **Claim**: Don\'t allow the poisoning of our future generations for financial convenience and corruption. **Claim**: I am very concerned at this proposed foolhardy venture by yet another multinational geotechnical company who have zero concerns about the damage their seismic blasting will do. **Claim**: The planet is not a mere resource to be consumed ad lib until exhausted. Other values exist, such as behaving as wise stewards of the biosphere: this percussive project is anything but. Additionally, it is simply too late for yet more fossil fuels. Much damage is being done. We must change course. **Claim**: This seismic blasting proposal must not be approved, a multinational company.? Their only interest is monetary profits, blowing up the ocean would be catastrophic for the southern right whales. **Claim**: The proposal, is a deceptive and disingenuous attempt at cloaking the proposal in legitimacy. Please do not allow this con to proceed. We have a responsibility to protect the ocean for the good of all mankind and future generations, allowing this to proceed would be outrageously irresponsible to the future. **Claim**: There is no comparison between the permanent massive damage this would do to ecosystems and the narrow corporate greed which would be the beneficiaries if this dreadful proposal were to go ahead. **Claim**: It is ridiculous that thousands of people are calling out for our corrupt and influenced government to allow the devastation of our marine food webs for the sake of multinational profiteering for so few powerful and elite people. **Claim**: There is evidence that the Oil and Gas industry were advised about the adverse effects on climate caused by their activities. They chose to not only ignore the science but to supress it. **Claim**: You are short-sighted and guilty of destroying this environment and earth for pathetic, short term gain. Your greed should be a curse upon your head.	
OS11	**Matter**: Unspecified/ unreferenced science / impacts/ claims **Claim:** There is enough evidence in the scientific literature that indicates that loud noises interfere with the growth and development of marine and coastal ecological patterns. Independent longitudinal worldwide scientific studies, are needed to actually determine that harvesting of the oceanic riches is causing little to no harm. **Claim**: I am shocked that such operations are still being allowed to occur when scientifically and from our experiences we know what irreparable damage they can cause. **Claim:** The evidence about both climate chnage and the changing situration of the oceans is irrefutable as is the evidence that the oil an gas industries are major contributors to both ecological destruction and the inevitable effects of global climate chaos. **Claim**: The evidence is abundant illustrating the harm that underwater seismic testing does to numerous species an ecosystems. That\'s before you even consider the wisdom of allowing exploration for more oil and gas, when those two things have been clearly identified by the United Nations, the IPCC and any number of other world-leading authorities as the primary causes of our current climate crisis. **Claim**: I am shocked that such operations are still being allowed to occur when scientifically and from our experiences we know what irreparable damage they can cause.	These claims do not provide specific references to scientific literature related to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the inability to substantiate the claims, they have not been considered further in preparing the EP. CGG is not proposing to extract gas as part of the Regia MSS. The activity presented in the Environment Plan is for a short-term, temporary seismic survey. The EP for the proposed activity includes references to peer reviewed, published literature to support the impact and risk assessment process.

	THEME	OUT OF SCOPE (OS)
#	***Comments received***	***Titleholder response***
	Claim: It is unacceptable that knowing the scientific knowledge on the ongoing ecological and irreversible collapse of the marine ecosystems **Claim**: I urge NOPSEMA to reject the REGIA (MSS) Environment Plan in the basis that it fails to adequately protect and preserve the marine environment of Bass Strait and the sea life that live there.	
OS12	**Matter**: The state of the planet. **Claim:** It is unacceptable that knowing the scientific knowledge on the ongoing ecological and irreversible collapse of the marine ecosystems. **Claim:** Our ocean produces more than 50% of the oxygen we breathe and controls the climate and weather that provides us with water to drink and sustain crops. Without a healthy ocean, ecosystems and economies will collapse worldwide. **Claim**: Use the power you have to ensure a healthy future for all generations and deny approval for the blasting must Human life is not separate to the intricate weave of land based and ocean based ecosystems. Our survival depends on healthy ecosystems, including those in the ocean. **Claim**: I am deeply concerned for the future of those children, the environment they grow up in and all the creatures that live in this space, be it on land, in the air or in the water. **Claim**: We are supposed to share this earth with all other life forms. We are the custodians of this land and water. We need to care for it and leave it in pristine condition for following generations. **Claim**: Our ocean produces more than 50% of the oxygen we breathe and controls the climate and weather that provides us with water to drink and sustain crops. Without a healthy ocean, ecosystems and economies will collapse worldwide. **Claim**: Please do not allow this proposal to be passed, we are after all suppose to changing our ways & not causing further harm to our already distressed plant. **Claim**: Scientists tell us we are facing an existential triple planetary crisis of climate change, pollution, and biodiversity loss. Each of these issues must be addressed and resolved if we are to have a viable future on this planet. It follows that the age-old precautionary principle applies now more than ever	Claims regarding the state of the planet do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. The comments do not raise specific issues relevant to the short-term, temporary, nature of the proposed Regia MSS, nor the localised and recoverable environment impacts, as described in EP, nor the environmental management and monitoring of the activity. CGG has a duty to demonstrate to NOPSEMA that petroleum activities will be carried out in a manner that is consistent with the principles of ecologically sustainable development (as set out in section 3A of the Environment Protection and Biodiversity Conservation Act 1999), and by which the impacts and risks of the activity will be reduced to ALARP, and separately, that the impacts and risks of the activity will be of an Acceptable Level, among other considerations and requirements. NOTE: Impacts to lobster fishing industry addressed in fish, Sharks, Invertebrates and Fisheries.
OS13	**Matter:** Transition to renewables **Claim**: It is also worth noting that at a time when we are moving towards net-zero targets and renewable forms of energy production whilst lessening our reliance on fossil fuels, there is no reasonable justification for approving this EP and proceeding with this project. **Claim**: Recommendations: 16. Reject this proposed seismic testing proposal and divert resources towards clean energy proposals instead. **Claim**: These gas mining operations usually operate for 50 or so years, long after Australia is projected to replace gas with more environmentally friendly sources such as solar and wind, yet there is no mention by CGG as to whether this project helps or hinders the government goal to replace gas.	Claims regarding the transition to renewable energy do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. Exploration activities in the Otway Basin are undertaken to help meet Australia's ongoing energy needs. If commercially viable gas reserves are discovered, additional approvals and further consultation would be required to support the development of a commercial project by the relevant titleholder/s. Australia is facing challenges to the security of its domestic gas supply, specifically in the east coast gas market and a domestic gas supply shortfall could have serious consequences for Australians (DISR, 2022). Australians rely on gas for residential heating and cooking. Australian industry and manufacturers rely on gas as feedstock and for energy. Insufficient gas supply could impact the stable operation of Australia's electricity network. ***References**:* *DISR, 2022. Securing Australia's domestic gas supply – Options to improve the Australian Domestic Gas Security Mechanism (1 August 2022), Australian Government Department of Industry, Science and Resources. https://consult.industry.gov.au/securing-australias-domestic-gas-supply*
OS14	**Matter**: Use seismic for other purposes onshore **Claim**: Victoria has so much to offer by using siesmic exploration to start Geothermal energy plants, that are safe and non polluting. Why is this technology not being used. Leave the oceans alone. We all know what happened in the Gulf of Mexico. It can happen again.	Claims regarding alternative energy projects do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.

	THEME	OUT OF SCOPE (OS)
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	Claim: Why not use the technology to search fir Geothermal spots on land. It's safe, no polluting and without risk to the environment.	Exploration activities in the Otway Basin are undertaken to help meet Australia's ongoing energy needs. If commercially viable gas reserves are discovered, additional approvals and further consultation would be required to support the development of a commercial project by the relevant titleholder/s. Australia is facing challenges to the security of its domestic gas supply, specifically in the east coast gas market and a domestic gas supply shortfall could have serious consequences for Australians (DISR, 2022). Australians rely on gas for residential heating and cooking. Australian industry and manufacturers rely on gas as feedstock and for energy. Insufficient gas supply could impact the stable operation of Australia's electricity network.
OS15	**Matter**: Consideration of blue whales outside of the BIA **Claim**: MFOs on a recent 2D seismic survey in the Otway region in 2020 recorded over 100 blue whales in a total of 58 sightings (Seiche Environmental, 2020). Of the 58 blue whale sightings on this survey, more than double occurred outside of the blue whale BIA and buffer zone, indicating widespread habitat usage in the area. The 2020 report recommended the number of blue whales sighted outside of the BIA warrants consideration in relation to future seismic surveys in the area (Seiche Environmental report, 2020).	Claims regarding blue whale activity in areas not affected by the proposed Regia MSS do not relate to the Environment Plan (EP), or the activity to which the EP relates. The activity and the area that may be affected by underwater sound from the activity do not occur outside of the Pygmy Blue Whale foraging (annual high use) biologically important area (BIA) (Appendix B12 MAP-REG-EPM-068). Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.
OS16	**Matter**: Impacts associated with other projects in other locations. **Claim**: Oil extraction in the Great Australian Bight presents unacceptable risks to our marine life, coastal communities, fisheries and tourism across Australiaâ€™s south-east. While oil giants BP and Chevron have dropped their plans to drill in the Bight, Equinor (formerly known as Statoil) has taken over the oil and gas leases that BP discarded and still intends to drill in this iconic Australian area. An oil spill here would be catastrophic. Equinorâ€™s own draft Environment Plan shows that an oil spill in the Great Australian Bight could reach as far as Bondi! Placing such an immense stretch of the Australian coast at risk is clearly unacceptable. To date, 17 South Australian councils and 3 in Victoria, representing well over half a million people, have expressed concern or outright opposition to risking the Great Australian Bight. In addition, thousands of individual Australians have voiced their own opposition to industrialisation of the Bight. All political parties need to support a ban on oil and gas in the Great Australian Bight given its importance for coastal communities, fisheries, tourism, internationally significant ecosystems and some of Australiaâ€™s most threatened marine life. I urge you to do all you can to ensure your party opposes Equinorâ€™s plans, and supports a ban on drilling for oil and gas in the Great Australian Bight." **Claim**: The Great Australian Bightâ€™s extraordinary waters are a haven for 36 types of whales and dolphins, including the worldâ€™s most important nursery for the endangered southern right whale. Theyâ€™re also home to Australiaâ€™s most important sea lion nursery. In fact, 85% of the marine species in the Bight are unique, and exist nowhere else in the world. Oil extraction in the Great Australian Bight presents unacceptable risks to our marine life, coastal communities, fisheries and tourism across Australiaâ€™s south-east. **Claim**: I respectfully ask that NOPSEMA requests a revised map to be provided by the [another proponent] that includes the full geospatial area of the Bonney Upwelling. **Claim**: I reject most strongly to the granting of a licence which will allow seismic blasting to occur in the Great Australian Bight in valuable breeding grounds of whales and other marine species.	Claims regarding oil extraction, the Great Australian Bight, other projects and other project proponents do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. CGG is not proposing the extraction of oil (or gas) within the Great Australian Bight as part of the Regia MSS EP. The activity presented in the Environment Plan (EP) is for a short-term, temporary marine seismic survey in the Otway Basin. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.
OS17	**Matter**: Seismic is stepping stone to drilling **Claim**: Moreover, as seismic blasting is the stepping stone to fossil fuel extraction as evidenced by CCG's Otway Exploration Drilling Program Environmental Plan submitted to NOPSEMA last year. https://docs.nopsema.gov.au/A1032340 **Claim**: This seismic blasting project by CGG is being undertaken to support a gas drilling project by ConocoPhillips, the extraction and burning of which, will contribute to global warming, which will further threaten marine species and ecosystems.	Claims regarding drilling and the activities of other proponents do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. CGG is not proposing to undertake drilling as part of the Regia MSS EP. The activity presented in the Environment Plan (EP) is for a short-term, temporary marine seismic survey. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.
OS18	**Matter**: Impacts of sonic waves	Claims regarding sonic waves or sonic blasting do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. The activity presented in the Environment Plan (EP) is for a short-term,

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	Claim: Especially whales are known to be sensitive to sonic waves and the impact to them from the strong blasts is unknown. **Claim**: NO TO SONIC BLASTING! IT KILLS THE KRILL, AND OTHER FISH AND SEA CREATURES. DEAFENS AND DISORIENTATES WHALES, WHO END UP BEACHING THEMSELVES DUE TO LOSS OF COMMUNICATION WITH OTHER WHALES.	temporary marine seismic survey using airguns which do not do not produce sonic waves, booms or blasts. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP. ***References***: Senate Inquiry into Seismic Testing (nopsema.gov.au)
OS19	**Matter**: Use of air horns **Claim**: Have you ever stood next to an air horn blown into your ear at regular intervals all day for consecutive days? You should - then youâ€™d think twice about causing such detrimental damage to marine life like whales.	Claims regarding air horns do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. The activity presented in the Environment Plan (EP) is for a short-term, temporary marine seismic survey using airguns in water, not air horns in air. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.
OS20	**Matter**: Risk of project becoming a stranded asset. **Claim**: Putting aside the fact that continued fossil fuel exploration is pointless because it will only yield trapped \"assets,\" the effect on marine wildlife is unknown but highly likely to be detrimental. **Claim**: The IPCC clearly states as have many international authorities, that to have any chance of achieving the Paris goal of 1.5C, we must not allow any new investments in fossil fuels. All investment should be diverted to the development of renewable energy and storage backup. So this seismic blasting is a waste of money. Any exploration asset will simply become a stranded asset.	Claims regarding the viability of future assets do not relate to the Regia MSS Environment Plan (EP), or the activity to which the EP relates. The activity presented in the Environment Plan (EP) is for a short-term, temporary marine seismic survey. Consequently, due to the irrelevancy of the claims, they have not been considered further in preparing the EP.
OS21	**Matter**: Increase in asset value and unreliability of technology **Claim**: At the moment the offshore mining of in the form of gas is problematic for a number of reasons but mainly due to the current technology still in its infancy! The stage is hit & miss unknown long term consequences for compounded by the unreliable technology to effectively capture&harness the gas for storage and/or transport once located! Please consider the increase in value of our assets, ie resources in the ground both on&offshore but particularly offshore when the technology to access & capture all of the resource for storage & use is refined & improved to prevent the current unknown loss of the valuable resource while attempting to harness the gas and the unpredictable loss over the of the mine. To reiterate my point, surely we can afford to wait until the offer is more favourable to Australians and our marine life. The asset carries neglible risk of deterioration and therefore guaranteed to increase in value over time so there\'s less benefit to us if we accept this first offer! Conversely the interested parties will be just as keen in future when competition will surely improve Australia\'s position at the negotiation stage hence the possibility of REDUCING our RISK & INCREASING our RETURN on our priceless ASSETS.	CGG is not proposing to install infrastructure, mine for gas, nor capture or harness gas as part of the Regia MSS. The activity presented in the Environment Plan (EP) is for a short-term, temporary seismic survey. Consequently, the claims are not relevant to the Regia MSS to which the EP relates and are beyond the scope of this assessment.
OS22	**Matter**: Methane leaks/ emissions **Claim**: Please do not allow seismic blasting which is potentially very cruel and lethal to ocean life in the vicinity. There is also always a risk that methane could continue to escape without containment and contribute further to the dangerous increase in greenhouse gases in the atmosphere. **Claim**: Methane spillage into the atmosphere will further exacerbate climate change. **Claim**: As indicated in the EP the concentrations of the two most common GHGs carbon dioxide (CO2) and methane (CH4) continue to grow. What the EP plan did not state, was that in Australia CH4 emissions in particular, with a high global warming potential (GWP), have increased almost four times faster than CO2 since 2005.	CGG is not proposing to install infrastructure nor extract gas as part of the Regia MSS. The activity presented in the Environment Plan (EP) is for a short-term, temporary seismic survey. Consequently, the claims are not relevant to the proposed Regia MSS to which the EP relates and are beyond the scope of this assessment.
OS23	**Matter**: Fugitive emissions from other activities and infrastructure **Claim**: The EP indicated that there would several measures to reduce the GHG emissions from Regia MSS exploration processes. However, fugitive emissions, in particular, have been generally underestimated and likely have grown due to new gas wells, converting Gas to LNG, fracking, decommissioning old wells, and extending pipelines as well as leakages from aging pipelines.	CGG is not proposing to drill to install new wells, convert gas to LNG, frack, decommission old wells, nor install or extend pipelines as part of the Regia MSS. The activity presented in the Environment Plan (EP) is for a short-term, temporary seismic survey. Consequently, the claims are not relevant to the proposed Regia MSS to which the EP relates and are beyond the scope of this assessment.

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	Claim: The Federal Government data assumes that leaky pipes or cracked pipes do not release gas and never have. This is a false statement, but because the monitoring is so poor, there is no evidence to say how much additional greenhouse gas is added to the atmosphere each year. The plan makes no mention how this will be avoided. **Claim**: The EP needs to be clearer in stating how fugitive emissions will be monitored and moderated over the entire duration of the testing and drilling.	