

Galactic Hybrid 2D Marine Seismic Survey

1. Purpose of this report

NOPSEMA has accepted the Galactic Hybrid 2D Marine Seismic Survey (MSS) Environment Plan (EP) submitted by Woodside Energy Limited (the titleholder, WEL) for a seismic survey activity in the Bonaparte Basin within the period 1 May to 16 August 2022.

As required by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (the Environment Regulations), the public was provided with an opportunity to comment on the EP. After this period, the titleholder took into account public comments and prepared a Report on Public Comment which is published on NOPSEMA's website¹.

Following the public comment period, the titleholder submitted the EP for assessment by NOPSEMA on 26 October 2021. NOPSEMA has since completed its assessment of the EP and has determined that it is satisfied that the EP meets the criteria for acceptance² on 19 April 2022.

This report explains how NOPSEMA took into account comments received from the public during the public comment period in making its decision³. Comments have been grouped into 'key matters' that capture the key issues, concerns or new information provided during the public comment process.

This report accompanies the accepted Galactic Hybrid 2D MSS EP, Revision 2 submitted by WEL, which is available on the NOPSEMA website and should be referred to for further information.

1.1. Information relevant to NOPSEMA's decision

In making the decision to accept this EP, NOPSEMA took into account:

- the Environment Regulations;
- NOPSEMA Assessment Policy (PL0050), Environment Plan Assessment Policy (PL1347) and Environment Plan Decision Making Guidelines (GL1721);
- the Galactic Hybrid 2D MSS EP;
- the information raised by relevant persons, government departments and agencies that is relevant to making a decision;
- the information raised through public comment that is relevant to making a decision;
- the one public comment submission received during the public comment period with issues raised in relation to the key matters outlined in the below report; and
- relevant plans of management and threatened species recovery plans developed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and relevant guidance published by the Department of Agriculture, Water and the Environment (DAWE).

¹ [Galactic Hybrid 2D MSS Environment Plan: Public Comment Report](#) [dated: October 2021]

² Environment Regulations, Regulation 10A Criteria for acceptance of environment plan

³ Environment Regulations, Regulation 11(3) Publication of notice, etc.

2. Next steps

Responsibility for the ongoing environmental performance of the seismic survey activity remains, at all times, with WEL.

NOPSEMA has legislated responsibilities to inspect and investigate offshore petroleum and greenhouse gas storage activities, and to enforce compliance with environmental law. These functions will be applied to this activity in accordance with NOPSEMA's policies.

3. Sensitive information

Sensitive information received during the public comment period, such as the names and contact details of commenters and specific information identified by the commenter or relevant person as 'sensitive', is not published in this report. Sensitive information is contained in a sensitive information part of the EP which has been considered by NOPSEMA during its assessment process.

4. Further information

If you would like further information about the activity, please contact the titleholder's nominated liaison person specified in the EP and on NOPSEMA's webpage for the Galactic Hybrid 2D MSS.

If you would like to be notified of regulatory information on the activity, such as start and end dates and enforcement actions (if any), please subscribe to updates from the [Underway Offshore page](#) on NOPSEMA's website.

How NOPSEMA has taken into account key matters raised in public comments and the assessment and decision-making process for the Galactic Hybrid 2D MSS EP

#	Key matters raised	Titleholder response	NOPSEMA's assessment and decision
1	<p>Recommendation 1</p> <p>The Galactic Hybrid seismic survey program is delayed until additional research studying the short-term, long-term and cumulative impacts of seismic testing on marine animals and the marine environment is completed for the Timor Sea and mitigation strategies developed to address the findings of this research.</p>	<p>Section 6.4.3 of the EP includes a comprehensive assessment of the potential impacts of acoustic emissions from the seismic source on a range of sensitive receptors, including plankton, benthic invertebrates, fishes and elasmobranchs, fish spawning, cetaceans, turtles, seabirds and migratory shorebirds. This assessment was based on the most up-to-date research findings into the potential impacts of marine seismic surveys on marine life, including the recently published paper from the Australian Institute of Marine Science (AIMS) on the potential impacts of seismic acoustic emissions on tropical snapper on the North West Shelf (part of the North West Shoals to Shore Research Program [NWSSRP]).</p> <p>Recommendation 2 of the Senate Inquiry report, "Making waves: the impact of seismic testing on fisheries and the marine environment," recommended that the Australian Government significantly fund additional research to study the short-term, long-term and cumulative impacts of seismic testing on marine animals and the marine environment. It is not reasonable to suggest that acquisition of the Galactic Hybrid 2D MSS is delayed</p>	<p>NOPSEMA recognises that there is the potential for acoustic emissions of the operational seismic source during the activity, if not appropriately managed, to have an unacceptable impact on noise sensitive environmental receptors.</p> <p>In making a decision regarding this matter, NOPSEMA took into account relevant content of the EP (including the evaluation of acoustic impacts on biota and acoustic modelling report provided in Appendix I), NOPSEMA's Decision Making Guidelines (GL1721), relevant statutory conservation requirements for listed threatened and migratory species that may be affected, EPBC Act Policy Statement 2.1 (DEWHA, 2008), EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DEWHA, 2013) and relevant peer reviewed scientific literature.</p> <p>During the course of the assessment, NOPSEMA required WEL to identify and evaluate any potential cumulative and additive underwater noise impacts that may arise from historic and simultaneous seismic surveys, as well as all other noise generating activity types that could interact</p>

		<p>until additional research studying the short-term, long-term and cumulative impacts of seismic acquisition on marine fauna and the marine environment of the Timor and Arafura seas is completed. The timeframes for the scoping, implementation, analysis and reporting of robust, properly designed and funded scientific studies to understand these impacts are extensive. As an example, the NWSSRP commenced in 2017 and it took a period of 4-years for the first publication of results of these studies in a peer-reviewed journal.</p> <p>Woodside was awarded the NT/P86 permit on the basis of 6-year work program, which includes acquisition of new 2D seismic data in years 1-3. This means that Woodside has to acquire the Galactic Hybrid 2D MSS by the July 2023 to meet the requirements of the work program associated with this petroleum title.</p> <p>During development of this EP, relevant stakeholders were identified, provided information on the proposed activities and given the opportunity to provide comment. All feedback received is summarised in Section 5 of the EP, with any concerns taken into consideration in impact and risk assessment and to demonstrate impacts and risks are acceptable (Section 6).</p>	<p>with the environment that may be affected by acoustic emissions of the operational seismic source during the activity. In response to NOPSEMA's request, WEL provided a comprehensive evaluation of identified potential cumulative and additive underwater noise impacts to a range of noise sensitive environmental receptors, that were considered appropriate based on the nature and scale of the activity, such as zooplankton, benthic invertebrates, fishes and elasmobranchs, cetaceans, marine reptiles and commercial fisheries.</p> <p>In addition, NOPSEMA required WEL to demonstrate that the activity will be managed such that any cumulative and additive impacts will be acceptable and reduced to ALARP. This was demonstrated by WEL through adopting a range of control measures in the EP such as (but not limited to) whale and turtle detection methods coupled with operational actions to mitigate impacts consistent with EPBC Act Policy Statement 2.1 (DEWHA, 2008), seismic source validation, application of spatial and temporal buffers around shallow water reef formations to protect site attached fish and maintaining a 40 km separation distance between the activity and any concurrent seismic survey.</p>
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<p>2</p>	<p>Recommendation 2</p> <p>The full extent of NT/RL5 and NT/RL6 covering the Barossa and Caldita fields be removed from the operational area for the proposed Galactic Hybrid 2D seismic survey to limit impacts to marine biota from multiple seismic surveys.</p>	<p>The Galactic Hybrid 2D MSS will involve the acquisition of up to a maximum of 4475 line kilometres of 2D seismic data, mostly within the NT/P86 exploration permit. The proposed survey includes a limited number of well-to-seismic tie lines to link the 2D data acquisition with exploration data available at existing well locations in the region, including several within the NT/RL5 and NT/RL6 retention leases over the Barossa and Caldita gas fields. The majority of the proposed 2D lines (as shown in Figure 3-2 in the EP) are within the NT/P86 permit, and do not overlap NT/RL5 and NT/RL6. Whilst there has been some historic 2D seismic acquisition within the area covered by NT/P86, no 3D surveys have been acquired in the permit. The Caldita 3D survey (acquired 2006-2007) and the Caldita-Barossa 3D survey (acquired 2016) mainly covered the NT/RL5 and NT/RL6 retention leases, with a minimal amount of overlap with the western extent of the NT/P86 permit. Thus, there has been no previous 3D seismic acquisition that</p>	<p>Please refer to NOPSEMA's assessment and decision provided above which is considered relevant to this issue raised in relation to potential cumulative underwater noise impacts that may arise from historic seismic surveys within the environment that may be affected by acoustic emissions of the operational seismic source during the activity.</p>

		<p>overlaps the proposed maximum 4475 km line plan shown in Figure 3-2 of the EP.</p> <p>Section 6.4.3 of the EP includes a comprehensive assessment of the potential cumulative impacts of acoustic emissions from the eleven 3D seismic surveys acquired in the North Marine Region since 2006. Of these, as indicated above, only three surveys had spatial overlap with the Galactic Hybrid 2D MSS Operational Area – Caldita 3D, Caldita-Barossa 3D and Bethany 3D (acquired 2018). As outlined above, this overlap is restricted to the western side of the Operational Area, where the proposed well-to-seismic tie lines extend to historical wells in NT/RL5 and NT/RL6. Given the time that has elapsed since the last survey overlapping with the Galactic Hybrid 2D MSS Operational Area (Bethany 3D MSS), all receptors are expected to have recovered from the effects of previous surveys prior to commencement of the Galactic 2D survey. Therefore, cumulative impacts to ecological receptors are not expected to occur as a result of any previous seismic surveys in the region and the acquisition of the proposed Galactic Hybrid 2D MSS.</p>	
<p>3</p>	<p>Recommendation 3</p> <p>The operational area traversing the Oceanic Shoals Marine Park be withdrawn until such time as extensive public consultation on the</p>	<p>The management plans for Australian Marine Parks (AMP) provide for the Director of National Parks (DNP) to authorise allowable activities through a permit, class approval, activity licence or lease. The DNP has authorised offshore petroleum exploration</p>	<p>NOPSEMA recognises that there is the potential for the activity, if not appropriately managed, to have an unacceptable impact on values of the Oceanic Shoals Marine Park.</p>

	<p>matter shows conclusively that the proponent has a social license to conduct seismic surveys within the marine park.</p>	<p>activities to occur in certain marine park blue (IUCN category VI) zones by issuing class approvals. The class approvals themselves specify the relevant marine park zones where activities are allowable. The class approvals require that titleholders have, and operate in accordance with, EPs for the allowable activities accepted by NOPSEMA. Under the Class Approval for the North Marine Parks Network (https://parksaustralia.gov.au/marine/pub/class-approvals/North_Marine_Parks_Network.pdf) mining operations (including petroleum exploration) are allowable actions within the Multiple Use Zone (MUZ) and the Special Purpose Zone (Trawl) Zone of the Oceanic Shoals Marine Park (OSMP).</p> <p>Under the North Marine Parks Network Management Plan 2018, the objective of the MUZ is to provide for ecologically sustainable use and the conservation of ecosystems, habitats and native species. The Operational Area overlaps a large proportion of the MUZ on the north-eastern side of the OSMP. There is no overlap between the Operational Area and the National Park Zone or Habitat Protection Zone of the OSMP.</p> <p>Section 6.4.3 of the EP includes a comprehensive assessment of the potential impacts of acoustic emissions from the seismic source to the natural values of the OSMP, including Key Ecological</p>	<p>In making a decision regarding this matter, NOPSEMA took into account relevant content of the EP (including the evaluation of acoustic impacts on biota and the acoustic modelling report provided in Appendix I), NOPSEMA's Decision Making Guidelines (GL1721), NOPSEMA's guidance note on Petroleum activities and Australian Marine Parks (GN1785), the North Marine Parks Network Management Plan 2018 (DNP, 2018), Class Approval – Mining Operations and Greenhouse Gas Activities (28/06/2018), views expressed by the DNP in relevant persons consultation with the titleholder, relevant statutory conservation requirements for listed threatened and migratory species that may be affected, EPBC Act Policy Statement 2.1 (DEWHA, 2008), EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DEWHA, 2013) and relevant peer reviewed scientific literature.</p> <p>NOPSEMA notes that the proposed activity overlaps a part of the Oceanic Shoals Marine Park Multiple Use Zone. The DNP is the statutory authority responsible for the administration and management of the AMPs under the EPBC Act and has authorised offshore petroleum activities in this zone via a class approval. The class approval is conditional, including that the activity</p>
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<p>4</p>	<p>Recommendation 4</p> <p>The operational area is amended to exclude any Biologically Important Areas and to</p>	<p>As described in Section 4.4.4.3 of the EP, and illustrated in Figure 4-11, only one BIA overlaps the Operational Area – the flatback turtle internesting (likely to occur) around Melville Island and Cobourg</p>	<p>NOPSEMA recognises that there is the potential for the activity, if not appropriately managed, to have an unacceptable impact on marine turtles.</p>

	<p>comply with environmental protection legislation and international obligations.</p>	<p>Peninsula, defined by an 80 km internesting buffer around nesting sites.</p> <p>The Operational Area overlaps with the internesting buffer Habitat Critical to the survival of flatback turtles defined by a 60 km radius around Tiwi Islands, and a specific management control will be implemented to minimise the potential of acoustic emissions from the seismic source causing any behavioural disturbance to internesting flatback turtles within this Habitat Critical:</p> <ul style="list-style-type: none"> • During June to September, a 5 km exclusion zone will be applied around the flatback turtle internesting Habitat Critical, inside which the source will not be operated at full power. <p>Seven additional BIAs were identified to overlap with the EMBA:</p> <ul style="list-style-type: none"> • Olive ridley turtle internesting (likely to occur) around Bathurst Island/Melville Island. • Green turtle internesting (likely to occur) north-west of Melville Island. • Olive ridley turtle foraging (known to occur) Joseph Bonaparte Gulf (JBG), northern JBG and western JBG depression. • Green turtle foraging (known to occur) JBG. 	<p>In making a decision regarding this matter, NOPSEMA took into account relevant content of the EP, relevant peer reviewed scientific literature, NOPSEMA's Decision Making Guidelines (GL1721), information on the DAWE National Conservation Values Atlas and the Recovery Plan for Marine Turtles in Australia 2017–2027 (CA, 2017).</p> <p>The EP includes an assessment of the activity and its impacts against relevant requirements of the Recovery Plan for Marine Turtles in Australia 2017–2027 (CA, 2017), which considers potential impacts in the biologically important areas. The EP references scientific literature on internesting habitat for flatback turtles which indicates that environmental conditions (e.g. water depth, distance from shore) within the Operational Area are not preferred internesting habitat for adult flatback turtles. In relation to hatchlings, the nearest nesting beaches are approximately 40 km from the Operational Area. The EP concludes given this distance hatchlings would not detect the vessel lights from shore and therefore would not be attracted to it.</p> <p>Having considered the nature and scale of the activity, controls in place to manage the activity's noise impacts on turtles, adult internesting habitat preferences and distance from nesting beaches, NOPSEMA is reasonably satisfied that</p>
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5. References

CA. (2017). Recovery Plan for Marine Turtles in Australia 2017–2027. Commonwealth of Australia. Available at <https://www.awe.gov.au/sites/default/files/documents/recovery-plan-marine-turtles-2017.pdf>

DEWHA. (2008). EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales. Department of the Environment, Water, Heritage and the Arts. Available at <https://www.environment.gov.au/system/files/resources/8d928995-0694-414e-a082-0ea1fff62fc8/files/seismic-whales.pdf>

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DNP. (2018). North Marine Parks Network Management Plan 2018. Director of National Parks. Available at <https://parksaustralia.gov.au/marine/pub/plans/north-management-plan-2018.pdf>