Woodside Energy

Titleholder Report on Public Comment: Pluto 4D M3 Marine Seismic Survey Environment Plan

March 2026

Report on public comments

Woodside Burrup Pty. Ltd. (Woodside) proposes to undertake a third monitor 4D marine seismic survey (MSS) as part of a reservoir management and surveillance program of the Pluto gas field which straddles the WA-34-L and WA-49-L permits.

The Petroleum Activity will take place in Commonwealth waters within the North Carnarvon Basin, Exmouth Plateau, about 28 km north-west of the Montebello Islands and 150 km north-west of Dampier. The activity is expected to take 40 days from late December 2026 to February 2027, with a contingency covering the same period in the subsequent year.

An Environment Plan (EP) has been prepared in accordance with the Environment Regulations. In accordance with Regulation 30, public comments on the contents of the EP were invited by NOPSEMA from 3 February 2026 to 5 March 2026.

During the public comment period for this EP, six submissions were received. All submissions were reviewed as part of further preparations for the EP.

Matters raised in the submissions have been assessed in Table 1 below. Where similar matters were raised across multiple submissions, these have been grouped for consistent assessment.

One submission did not raise any matters relevant to the EP or the proposed activity and was therefore assessed as being wholly outside the scope of the EP. In addition, a number of comments raised across the remaining five submissions did not relate to the EP or the proposed activity and were therefore outside the scope of the EP. These matters related to:

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- General opposition to oil and gas, fossil fuels and seismic surveys;
- Climate change; and
- IUCN VI Multiple Use Zone policies.

No new measures or controls were required as a result of submissions received through the public comment process, as appropriate measures are already included in the EP. In response to feedback, Woodside has had made minor clarifying updates to sections of the EP, as outlined in Table 1.

Table 1

#	Comments received (in general terms)	Titleholder response
1	*Matter:* Potential impacts of underwater noise associated with the proposed seismic survey on marine fauna and marine ecosystems. *Claims:* Underwater noise generated by the activity: - May disturb or harm marine fauna, including protected species; - May have broader implications for marine ecosystems; and - Could contribute to cumulative pressures on sensitive or declining populations.	Woodside considers that the submitted EP contains a comprehensive evaluation of all impacts and risks—whether direct, indirect, or arising from potential emergency conditions, including accidents or other unforeseen circumstances—appropriate to the nature and scale of each impact or risk. Woodside remains committed to addressing feedback throughout the assessment process should NOPSEMA require additional information.
2	*Matter:* Impact to marine fauna *Claims:* - The proposed activity has the capacity to impact a range of conservation-significant marine species within the Operational Area. - The EP assessment does not adequately address potential indirect or cumulative impacts of underwater noise on marine fauna and associated ecological communities. - Further consideration needed to assess residual noise-related risks to threatened and migratory species.	Environmental impacts and risks associated with the Petroleum Activity have been identified and assessed in Section 6 of the EP for both planned and unplanned activities. The assessment considers the nature and scale of the activity, the characteristics of the receiving environment and the effectiveness of control measures. For each credible impact (direct, indirect and cumulative) and risk, control measures are identified and applied, and residual impacts and risks are evaluated to demonstrate that they are reduced to as low as reasonably practicable and are of an acceptable level. The EPBC Act Protected Matters Search Tool identified no listed threatened ecological communities occurring within the Operational Area or the EMBA and therefore listed threatened ecological communities were not specifically assessed as part of the impact and risk assessment. Noting this, the EP does assess receptor groups relevant to the impacts and risks of the Petroleum Activity, including habitats and communities, in Section 6.7.2, Section 6.7.5, Section 6.7.6, Section 6.8.2, Section 6.8.3, and Section 6.8.4 of the EP.
3	*Matter:* Light emissions *Claims:* - Lighting from vessels will impact habitat of species; and - Lighting could disorient seabirds, leading to changed behaviour.	Routine light emissions associated with external lighting from project vessels is assessed in Section 6.7.5 of the EP. Lighting from project vessels may be visible within the Operational Area as direct light spill or skyglow; however, impacts are expected to be localised and transient given the mobile nature and short duration of the Petroleum Activity. While artificial lighting has the potential to influence seabird behaviour through attraction or disorientation, the number of seabirds present at night within the Operational Area is expected to be low, with no emergent land or nesting habitat present. Accordingly, vessel lighting is not

		expected to result in displacement from important habitat or more than low-level behavioural disturbance to isolated individuals.
4	*Matter:* Impacts to whales *Claims:* - Many species of EPBC-listed whales could be affected by the peak dB levels, especially VHF cetaceans.	Marine mammals, including EPBC Act-listed whale species, are described in Section 4.6.3 of the EP. This includes information on distribution, biologically important areas and seasonal sensitivities relevant to the Operational Area and EMBA. Woodside recognises that it is possible other whale species may be in the Operational Area during survey acquisition. However, the presence of these species is likely to be limited to infrequent occurrences of individuals or small groups. Routine acoustic emissions from the seismic survey are assessed in Section 6.7.2 using receptor group specific noise effect thresholds for behavioural disturbance, TTS and PTS published by scientific and regulatory bodies. Acoustic modelling predicts the maximum spatial extent of noise levels exceeding these thresholds for LF, HF and very high-frequency (VHF) marine mammal hearing groups and are presented in Table 6-6. The maximum distance at which the NMFS (2024) TTS and PTS for VHF cetaceans was reached at 440 m (SEL24h) and 200 m (PK) respectively. Although VHF cetaceans have relatively lower TTS and PTS thresholds, the NMFS (2024) criteria apply auditory weighting functions by hearing group, and use weighted exposure metrics for assessing the onset of TTS and PTS. On this topic, the EP text in Section 6.7.2 has been amended for clarity and consistency but no new information has been added to the EP.
5	*Matter:* Impacts to whale sharks including prey species *Claims:* - EP should consider impact on forage sources, including impact to planktonic organisms or the habitat of plankton.	Whale shark distribution, biologically important areas and seasonal occurrence are described in Section 4.6.1.1 of the EP. Impacts from acoustic emissions on zooplankton including, fish eggs and larvae are described and assessed in Section 6.7.2 of the EP. Acoustic modelling results suggest that the potential impacts of noise emissions from the seismic source on zooplankton during the seismic acquisition are considered to be localised (≤110 m from the seismic source) and low-level. As a result, the activity is not likely to result in any ecologically significant population level impacts to zooplankton, fish eggs or larvae that may be in the water column within the ensonified area, due to capacity for rapid recovery. Furthermore, impacts to predator/prey interactions, including between whale sharks and zooplankton, fish eggs and larvae, given the highly localised impact (<110 m from seismic source) and temporary nature of the impacts (hours), are unlikely.
6	*Matter:* Impacts to marine turtles including prey species *Claims:* - EP should assess potential impacts on flatback turtle prey species	Marine turtle species, including flatback turtles, are described in Section 4.6.2 of the EP, including biologically important areas, habitat critical to survival and seasonal sensitivities. The Operational Area is located in water depths of 50 m to 1,185 m and is approximately 28 km from the nearest nesting beaches. Available tracking and habitat suitability studies indicate that inter-nesting flatback turtles occur in shallower waters closer to nesting beaches. Accordingly, the

		likelihood of inter-nesting flatback turtles occurring within the Operational Area is assessed as low. Potential impacts from MSS routine acoustic emissions on the flatback turtle prey species, specifically benthic invertebrates, are assessed in Section 6.7.2 of the EP. Potential impacts to the flatback turtle prey species, benthic invertebrates have been assessed in Section 6.7.2 of the EP. Given the water depths (>50 m) and natural cycle of death, recovery and recruitment, impacts are expected to be localised and low-level, and the seismic acquisition is not likely to result in any ecologically significant impacts at a population level for any benthic invertebrates that may be on the seafloor within or adjacent to the Active Source Area.
7	*Matter:* Impacts to sea snakes *Claims:* - Assessment based on inconclusive data on short-nosed sea snake distribution and sound thresholds. - Assessment needed on effects of unplanned hydrocarbon spill on sea snakes.	Sea snake species potentially occurring within the Operational Area and/or EMBA are outlined in Section 4.6.2 of the EP and the short-nosed sea snake is described in Section 4.6.2.2 of the EP. Woodside acknowledges that there are currently no published studies that directly assess the effects of marine seismic surveys on sea snakes. However, Chapius et al. (2019) investigated the hearing sensitivities of the marine sea snake Hydrophis stokesii. The results suggested that sea snakes are sensitive to low-frequency sounds, but have relatively low sensitivity compared with bony fish and marine turtles. As described in Section 4.6.2.2 of the EP and the Master Existing Environment (refer to Section 2.2.3 of the EP), most sea snake species tend to be found in the shallower waters to allow for increased benthic foraging time. Accordingly, the short-nosed sea snake rarely occurs in water depths exceeding 30 m and movement is typically restricted to within 50 m of reef flat habitat. Given that the Pluto M3 4D MSS will acquire seismic data in water depths between 73 m and 1,185 m acoustic impacts are not predicted to extend into habitat where the short-nosed sea snake is likely to be present. Any potential impacts would therefore be limited to individuals transiting through the area. The marine reptile section in Section 6.7.2 of the EP conservatively adopts turtle thresholds. The EP has been clarified to demonstrate how potential impacts and risks of underwater noise on sea snakes were considered. The impact assessment in Section 6.8.2 of the EP has been updated to clarify the potential impacts and risks of unplanned hydrocarbon release (from vessel collisions) on sea snakes.
8	*Matter:* Impacts to seabirds and migratory shorebirds *Claims:* - Proposed survey timing does not avoid all reproductive activities of the wedge-tailed shearwater - Insufficient measures to minimise harm to wedge-tailed shearwater	Seabirds and migratory shorebirds predicted to occur within the Operational Area and/or EMBA are outlined in Section 4.6.4 of the EP, and the wedge-tailed shearwater is described in Section 4.6.4.1 of the EP. The Operational Area overlaps with the wedge-tailed shearwater reproduction and foraging biologically important area and may be occasionally visited by migratory and oceanic birds. Although the PMST identified several threatened seabirds and migratory shorebirds that are likely to occur within the Operational Area, the open ocean environment and absence of roosting and

		nesting habitat (with the nearest roosting/ nesting habitat located on the Montebello Islands, ~28 km south-east of the Operational Area) means that any potential impacts are expected to be limited to foraging and transiting behaviours. Section 6.7.5 of the EP includes two controls (C 6.1 and C 6.2) to manage routine light emissions from external project vessel lighting, reducing impacts to seabirds and migratory shorebirds to as low as reasonably practicable (ALARP) and an acceptable level. Given the Operational Area does not contain any emergent land that could be used as roosting or nesting habitat, contains no known critical habitats for any species, and the large area of foraging habitat available, the risk of potential impacts to seabirds is considered low.
9	*Matter:* Impacts to demersal fish stocks and flow-on effects to fishing communities. *Claims:* - EP must consider cumulate risk to demersal fish communities. - Activity could adversely affect fishing communities by contributing to pressures on fish stocks and associated livelihoods.	The Continental Slope Demersal Fish Communities key ecological feature (KEF) is described in Sections 4.4 and 4.7.2 of the EP. Potential impacts from MSS routine acoustic emissions on the Continental Slope Demersal Fish Communities KEF are assessed within the key ecological features sub-section of Section 6.7.2 of the EP. Only a small portion (0.96%) of this KEF overlaps with the active source area, and the spatial and temporal overlap is limited to a 40-day acquisition period. Section 6.7.2 of the EP, the subsection on fish spawning, identifies a number of key indicator species for commercial fisheries that have the potential to spawn within the Operational Area. While there is some temporal overlap between the seismic acquisition period (up to 40 days) and extended spawning periods for certain species, spatial overlap with known or likely spawning habitat within the Operational Area is limited and represents a small proportion of the available spawning area. Any localised or low-level effects are expected to be indistinguishable from natural variation in spawning and recruitment observed over the long term. Broader declines in demersal scalefish spawning biomass associated with overfishing is outside the scope of this EP.
10	*Matter:* Impacts to migratory routes and breeding activity *Claims:* - Additional strategies needed to eliminate risk during critical migratory or breeding periods. - Limits to effectiveness of MFOs and PAM under certain conditions.	The timing of the Petroleum Activity is described in Section 3.7 of the EP, including the planned survey window and timing restrictions for discharge of the seismic source. Potential impacts and risks to the receptors listed have been assessed in Section 6 of the EP and controls measure applied as applicable. Woodside notes comments suggesting that visual monitoring strategies and the use of acoustic monitoring methods may have limitations under certain conditions, including reduced detectability and changes in animal behaviour during seismic operations. Section 6.7.2 of the EP identifies and applies several control measures, which together reduce the impact of routine acoustic emissions from the seismic survey array on environmental receptors, to ALARP and an acceptable level. The development and application of these controls are consistent with the management measures outlined in EPBC Act Policy Statement 2.1 (Part A and Part B).

11	*Matter:* Vessel collisions *Claims:* - Over-reliance on MFOs, timing and slow vehicle speed; and - Limits to effectiveness of MFOs and PAM.	Vessel activities associated with the Petroleum Activity are described in Section 3.9 of the EP, including the use of three vessels (seismic survey, support and chase vessel). The EP includes an assessment of unplanned events relating to vessel collision/entanglement with marine fauna in Section 6.8.6 of the EP. The impact assessment has determined that, given the adopted controls, the risk of vessel collision or entanglement with protected marine fauna is unlikely to result in a consequence greater than a localised and low-level disruption to a small proportion of the population, with no expected impact on critical habitat or biological activities. The adopted controls, including the use of MFOs and PAM, are considered good oil-field practice/industry best practice and meet the requirements of Part 8 (Division 8.1) of the *EPBC Regulations 2025* (Cth) and are consistent with the management measures outlined in EPBC Act Policy Statement 2.1 (Part A and Part B).
12	*Matter:* Cumulative impacts of activities *Claims:* - Broader impact assessment needed for cumulative impacts; - Light pollution could present as a cumulative risk; and - Synergistic, additive or antagonistic interactions between seismic sound impacts and other stressors not detailed.	Cumulative impacts from concurrent and/ or successive activities are assessed in Sections 6.3, 6.4 and 6.7.2 of the EP. Cumulative impacts from successive seismic surveys are assessed in Section 6.7.2 of the EP and are considered unlikely due to the interval between the Pluto 4D Monitor 2 MSS (2020) and the proposed Pluto M3 4D MSS. While the Sauropod 3D MSS may temporally coincide, it is located more than 400 km from the Pluto M3 4D MSS, and modelling indicates that acoustic overlap is not credible. No other seismic surveys are planned in proximity of the Operational Area. Cumulative impacts from acoustic emissions on marine fauna are assessed in Section 6.7.2 of the EP, in the subsection on cumulative assessment. Given that the proposed timing and duration of the Petroleum Activity is short (up to 40 days) and the transient nature of the seismic survey vessel, cumulative impacts over extended periods or in combination with other anthropogenic activities are not anticipated, and any potential impacts are expected to be localised and low-level. Potential impacts from light are described in Section 6.7.5 of the EP. Given that the proposed timing and duration of the Petroleum Activity is short (up to 40 days) and the transient nature of the seismic survey vessel, cumulative impacts over extended periods or in combination with other anthropogenic activities are not anticipated, and any potential impacts are expected to be localised and low-level. Woodside considers that the submitted EP contains a comprehensive evaluation of all impacts and risks—whether direct, indirect, or arising from potential emergency conditions, including accidents or other unforeseen circumstances—appropriate to the nature and scale of each impact or risk. Woodside remains committed to addressing feedback throughout the assessment process should NOPSEMA require additional information.
13	*Matter:* Risks to wildlife habitats	The EP describes habitats, biological communities, KEFs, protected places and protected species relevant to the Operational Area and EMBA in Section 4 of the EP. Environmental features

	Claims: - The proposed activity is in proximity to, and places at risk, a number of ecological features; - Mining activities contravene IUCN VI aims; and - Risk assessment needed for seabed ecological receptors given the activity involves sound waves passing through geological formations, including seabed.	identified in public comments are consistent with those described in Section 4 of the EP and assessed in Section 6 of the EP and do not introduce any additional credible impacts or risks beyond those already identified and assessed in the EP. The EP also identifies that the Director of National Parks has issued class approvals that allow petroleum activities in designated IUCN Category VI zones and identifies the North-west Marine Parks Network Mining Operations Class Approval as relevant to the Petroleum Activity (Section 1.7.2.2 of the EP). Conditions from the class approval are provided in Table 1-3 with references to the relevant EP sections demonstrating how conditions are met. Section 1.7.2.2 of the EP also describes that NOPSEMA is required to consider potential impacts from petroleum activities on Australian Marine Parks. An assessment of impacts and risks relevant to protected places is included in Section 6 of the EP. Matters raised in relation to broader policy positions (including references to IUCN motions) are not specific to the Petroleum Activity and are outside the scope of this EP. As outlined in Sections 4.5 and 6.7.1 of the EP, there is no planned physical seabed interaction or disturbance as part of the Petroleum Activity. Potential indirect disturbance from acoustic emissions is assessed in Section 6.7.2 of the EP. Seabed ecological receptors assessed include KEFs, including associated fish assemblages (demersal fish species, pelagic fish species and shark species) and benthic invertebrates (including crustaceans, bivalves, sponges and corals). Section 6.7.2 of the EP, subsection – key ecological features, has been amended to clarify that the indirect interaction with the seabed from acoustic emissions is not expected to impact the seabed features of the KEFs and to link benthic invertebrates and fish, sharks and rays as seabed ecological receptors.
14	*Matter:* Data gaps *Claims:* - Lack of research on impacts of seismic; - Risks unable to be accurately defined due to data gaps; and - Precautionary principle should be applied in the absence of data.	A substantial body of international and Australian peer-reviewed scientific research exists on the potential effects of underwater sound generated by seismic surveys on a variety of environmental receptors. Woodside has considered available research in determining potential impacts to receptors described in Section 6.7.2. While new research continues to emerge, Woodside acknowledges the inherent uncertainties, data limitations, and knowledge gaps where applicable, and applies the precautionary principle accordingly.
15	*Matter:* Opposition to fossil fuel extraction due to potential climate change impacts	Routine atmospheric and greenhouse gas emissions associated with fuel use for project vessels are assessed in Section 6.7.4 of the EP. The purpose of the marine seismic survey is ongoing monitoring of the Pluto reservoir. Production of this reservoir is detailed in the Pluto Facility Operations EP https://docs.nopsema.gov.au/A1197328. Broader considerations relating to climate change and climate policy are outside the scope of this EP.