

# Sauropod Marine Seismic Survey

## Invitation for Consultation

28 May 2021

### Introduction

CGG Services Australia (CGG) is proposing to undertake the Sauropod 3D marine seismic survey (MSS), which covers an area of 6,600 km<sup>2</sup> off the north-west coast of Western Australia. The purpose of the Sauropod 3D MSS is to collect 3D geophysical data about the underlying rock types, to inform oil and gas exploration in exploration permit area WA-527-P, which is located on the North West Shelf in the Roebuck Basin (Figure 1). An Environment Plan (EP) was previously accepted by NOPSEMA for this activity on 13 July 2020. It was developed and submitted by 3D Oil Limited (3D Oil). As part of the EP process, 3D Oil consulted with relevant stakeholders and closed out all consultation to the satisfaction of NOPSEMA. CGG is now planning to conduct and manage the survey in WA-527-P under a revised and updated EP.

CGG is inviting inputs from relevant persons regarding changes in the proposed activity, and particularly how proposed changes to the activity and controls that were presented in the accepted EP, detailed in Table 1, may affect your functions, interests and activities in the area. The full acoustic source power would only be used in the Acquisition Area in Figure 1.

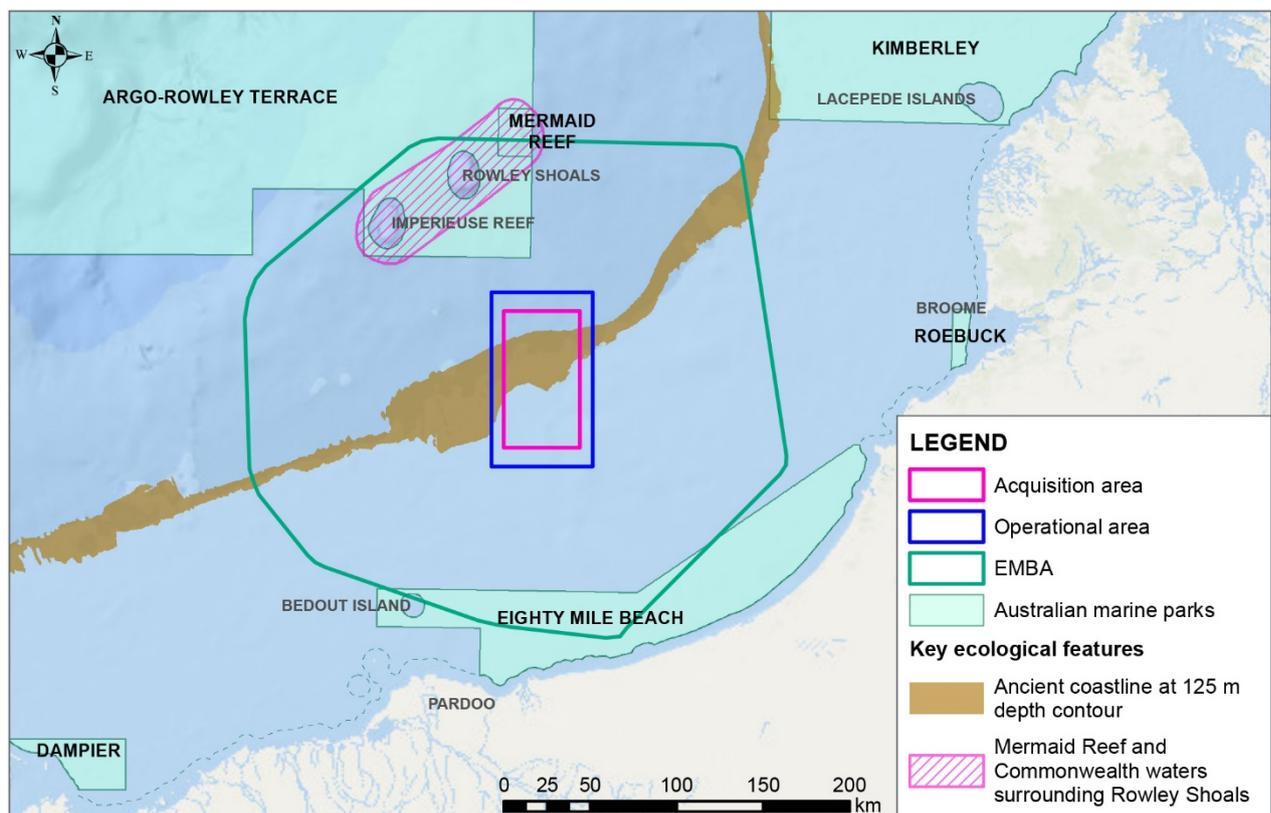


Figure 1 The Sauropod MSS acquisition and operational areas

**Table I Proposed changes to the Environment Plan**

Aspect	Accepted in 3D Oil EP	Proposed by CGG
Activity window	Jan - April 2021	Jan - May 2022
Source volume	3090 in <sup>3</sup>	2820 in <sup>3</sup> (approx. 10% smaller array volume)
Distance between sail lines	450 m	675 – 716 m (approx. 35-40% reduction in line density)
Distance between streamers	75 m	112.5 m (broader receiver array to reduce line number)
Distance from seismic vessel bow to tail	7,525 m	8,000 m

## Timing

The Sauropod 3D MSS will take a maximum of 60 days to acquire and will be undertaken within the acquisition window of January to May in 2022. The precise timing of the survey is subject to vessel availability, weather conditions and other operational considerations. The final timing of the survey will be communicated to stakeholders in advance of the survey commencing. The proposed schedule and temporal window for the Sauropod 3D MSS (January to May) was determined taking into account:

- The timing of sensitive periods for key environmental and socio-economic receptors;
- The hearing ability and sensitivity of those receptors to sound from the seismic survey;
- The proximity of sensitive areas to the seismic survey area;
- The likely presence of all life stages of protected species, based on their known distribution and range;
- Species vulnerability / conservation status;
- The potential for impacts to protected, commercially and ecologically important species, at an individual level and at a population level;
- Potential for effects on existing fishing activities in the survey area.

The proposed survey timing was selected primarily to avoid the humpback whale migration through the region (June to October), as well as to reduce potential exposure of pygmy blue whales during their migrations through the Operational Area (April – August and October – December). The spawning periods of the many different key indicator fish species for the commercial fisheries active in the region extend throughout the majority of the year but can vary significantly between species. It is noted that most key indicator species spawn between October and March, April or May. Analysis of DPIRD FishCube data for the fisheries monthly catch and effort since 2014 indicates very low levels of fishing effort in the survey area and, therefore, does not highlight key times for fishing activity or supporting processes.

## Survey details

The seismic survey vessel will tow the seismic source array with a total volume up to approximately 2,820 in<sup>3</sup> at 5-10 m beneath the sea surface. Twelve hydrophone streamers, each up to 7.05 km long and spaced 112.5 m apart, will be towed behind the vessel at a depth of approximately 15 m beneath the sea surface. When acquiring data, the vessel will travel at approximately 4.5 knots, discharging the seismic source approximately every 12.5 m (5.4 seconds).

The seismic survey vessel will typically acquire seismic data along a series of adjacent and parallel lines in a “race-track” pattern. At the end of each line, the vessel will turn in a wide arc to position for another parallel line in the opposite direction, offset approximately 1,350 – 1,432 m from the previous line. This pattern is repeated until the required coverage is completed.

The vessel will sail lines that have a north-south orientation.

## Environment Plan

In accordance with the OPGGS (E) Regulations, CGG will submit an EP to NOPSEMA for the seismic survey activity. The EP will include all records of stakeholder consultation, an assessment of the

environmental impacts and risks of the activity, control measures to manage the potential environmental impacts and risks to levels that are as low as reasonably practicable (ALARP) and acceptable.

## Environmental Impact Assessment

CGG will be conducting a detailed assessment of potential impacts and risks from the proposed Sauropod 3D MSS. In consultation with stakeholders, CGG will develop a range of management measures to be adopted to reduce the identified impacts and risks to ALARP and acceptable levels. Key environmental management measures to be adopted for the survey are summarised below.

### Environmental Sensitivities

The biological sensitivities for marine fauna that are expected to occur within the Operational Area and wider environment that may be affected by hydrocarbon spills (EMBA) are shown in Table 2.

**Table 2 Timing of Key Biological Sensitivities Relevant to the Operational Area and Wider EMBA**

Sensitivity	J	F	M	A	M	J	J	A	S	O	N	D
Proposed Sauropod 3D MSS timing	█	█	█	█	█							
Humpback whale (north migration) <sup>1</sup>						█	█	█				
Humpback whale (south migration) <sup>1</sup>								█	█	█		
Pygmy blue whale (north migration) <sup>2</sup>				█	█	█	█	█				
Pygmy blue whale (south migration) <sup>2</sup>										█	█	█
Whale shark foraging <sup>3</sup>								█	█	█	█	
Goldband snapper spawning (Pilbara stock) <sup>4</sup>	█	█	█	█	█					█	█	█
Rankin cod spawning <sup>4</sup>			█			█	█	█	█	█	█	█
Red emperor spawning <sup>4</sup>	█	█	█	█	█	█			█	█	█	█
Blue-spotted emperor spawning <sup>4</sup>	█	█	█				█	█	█	█	█	█
Giant ruby snapper spawning <sup>4</sup>	█	█	█	█								█
Other demersal fish species spawning <sup>4</sup>	█	█	█	█	█					█	█	█
Blacktip shark breeding <sup>4</sup>											█	█
Sandbar shark breeding <sup>4</sup>	█									█	█	█
White-tailed tropicbird foraging <sup>5</sup>					█					█		
Lesser frigatebird foraging <sup>5</sup>			█	█	█	█	█	█	█	█		
Flatback turtle internesting <sup>6</sup> (within EMBA only)	█	█	█							█	█	█
Spanish mackerel spawning (Pilbara stock) <sup>4</sup> (within EMBA only)									█	█	█	█
Peak period	█	█	█	█	█							

1 (Source: DoEE 2019); 2 (Source: DoE 2015, McCauley & Jenner 2010; McCauley & Duncan 2011; Double et al. 2012; Double et al. 2014);

3 (DoE, 2015; CALM 2005, Environment Australia 2002); 4 (Source: DPIRD 2019); 5 (Source: DoEE 2015); 6 (Source: DoEE 2017, CALM 2005, DSEWPaC 2012).

## Underwater sound

An independent acoustic modelling study was commissioned to assess the potential effects of underwater sound from the seismic source for the 3D Oil EP. CGG will use a smaller acoustic source array for the survey, from a different survey vessel (probably the *MV Geo Coral*), which will require re-assessment of the underwater sound effects. The assessment will estimate sound levels and the distances sound may travel to enable an evaluation of potential effects on sensitive receptors. Given the smaller source array, the field of effect from underwater sound is expected to be smaller than that assessed in the accepted 3D Oil EP. A full assessment will be presented in the revised EP, describing relevant management measures to be adopted. Management measures will include mitigation recommended in the Department of Fisheries (2013) *Guidance statement on undertaking seismic surveys in Western Australian waters* and will address specific advice from WAFIC, Recfishwest and individual fishers. Mitigation will include as a minimum:

- Precaution and observation zones, pre-start observations, soft-start procedures, low-power and shut-down procedures and night-time and low visibility procedures, in compliance with Environment Protection and Biodiversity Conservation (EPBC) Act Policy Statement 2.1
- Marine fauna observers on board the survey vessel during the survey
- Avoiding restricting movement of commercial value fish away from the source of seismic sounds – Fish movements will not be restricted
- Notifications and regular updates on the location of the seismic survey vessel to assist fishers in avoiding the temporary area of ensonification.

## Cumulative impacts of seismic surveys

Cumulative impacts from seismic surveys could occur as a result of two seismic surveys where the spatial footprint of impacts from another survey overlaps that of the Sauropod 3D MSS, thereby affecting the same receptors twice. The Keraudren Extension 3D MSS, performed by Santos WA Northwest Pty Ltd, overlaps the acquisition area of the Sauropod MSS. The survey commenced on the 28 May 2021, with the last possible date of acquisition on 31 July 2022. The 2021 portion of the survey could be completed approximately six months prior to the earliest commencement date of the Sauropod 3D MSS (i.e. by 31 July 2021). Therefore, cumulative impacts are not expected. Mitigation measures will include as a minimum:

- Development of a concurrent operations plan for any concurrent surveys identified within 40 km of the Acquisition Area
- Minimum separation distance of 40 km shall be maintained between the Sauropod 3D MSS seismic sources and other operating seismic sources (none identified at this point).

## Interactions with commercial fishing, shipping and other marine users

- Stakeholder consultation and notifications prior to commencement of the survey, during the survey and upon completion of the survey.
- Notice to Mariners issued prior to the survey.
- Maintaining a 24-hour visual, radio and radar watch.
- Tail buoys of the towed hydrophone streamers fitted with lights and radar reflectors and AIS.
- Vessels will maintain appropriate lighting and communication at all times, in compliance with Navigation Act 2012 and associated Marine Orders.
- Making regular vessel operations 'look-ahead' reports available to stakeholders throughout the survey to advise the location of the operating survey vessel and where it is planned to go next.
- Use of a support vessel when safe to do so.

## Interactions with marine fauna

- Vessels will not exceed a speed of six knots within the caution zone of a cetacean, in accordance with EPBC Regulations 2000 – Part 8 Division 8.
- Tail buoys on towed hydrophone streamers will be fitted with turtle guards.

### **Biosecurity management**

- Biofouling and ballast discharges will be managed in accordance with International Maritime Organisation guidelines and Australian government requirements.

### **Waste and discharges**

- Waste discharges and emissions will be managed in accordance with the requirements of the Protection of the Sea (Prevention of Pollution from Ships) Act 1983 and the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).
- All vessels will have Shipboard Oil Pollution Emergency Plans.
- Oil spill contingency planning will be managed in accordance with AMSA requirements under the National Plan for Maritime Environmental Emergencies.

### **Relevant persons consultation**

CGG is committed to consultation with all relevant stakeholders regarding the survey. Interested stakeholders will have the opportunity to participate in consultation throughout the stakeholder consultation period. If you would like to comment, or would like additional information, please do not hesitate to contact us using the details below.

Please advise if you do not want to receive further updates on this project or do not consider this project relevant to your interests, functions or activities.

CGG has endeavoured to reach all relevant persons but recognises that further persons may self-identify or come to our attention in coming weeks. Please advise CGG, or pass this update on, if you are aware of any other relevant parties whose interests, functions or activities may be affected by the survey.

### **Contact CGG**

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