



# Claudius 3D Marine Seismic Survey Environment Plan Summary

**Geotechnical Operations**

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# 1 BACKGROUND

Woodside Energy Ltd (hereafter referred to as (Woodside) proposes to undertake a three dimensional (3D) marine seismic survey (MSS) entitled Claudius 3D MSS covering an area of approximately 3,700 kilometres squared (km<sup>2</sup>) in Commonwealth waters 300 km offshore from the North West Cape, Western Australia in water depths ranging approximately 1,400 to 2,500 meters. The objective of the Claudius 3D MSS is to map the subsurface geology of the survey area, to enable potential subsurface oil and gas reserves to be identified.

This document provides a summary of the Claudius 3D MSS Environment Plan which was assessed by Department of Mines and Petroleum (DMP) (on 9 October 2009) as meeting the requirements for an Environment Plan (EP) b under Regulation 11(1) of the Commonwealth *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999*. In addition the EP also describes how the survey is being planned and conducted in line with Woodside's Corporate Environment Policy and the Woodside Environmental Management Sub-Process (i.e. Environmental Management System).

The EP presents the findings and conclusions of the environmental impact assessment undertaken by Woodside for the Claudius 3D MSS. This environmental impact assessment process is designed to ensure that any environmental impacts associated with the proposed activities, during both routine and non-routine operations, are identified and appropriately assessed. In doing so, relevant preventative and management measures can be developed and implemented to ensure that any adverse impacts are managed to be as low as is reasonably practicable (ALARP).

Beyond these overall objectives, the EP is designed to fulfil the following critical objectives:

- provide a description of the proposed activities;
- provide a description of the existing environment in the area of proposed activities;
- identify significant environmental aspects and potential environmental effects of the seismic survey;
- identify and assess environmental risks associated with the marine seismic survey;
- develop appropriate environmental management and mitigation measures that will allow identified environmental risks and effects to be avoided, or reduced to ALARP;
- communicate clearly with stakeholders the schedule and scope of the activities; and
- Provide a document that will serve as a practicable environmental management tool for contractors to use throughout the seismic survey to achieve targeted environmental performance.

The Claudius 3D MSS was not been referred to DEWHA for assessment under the *Environmental Protection and Biodiversity Conservation Act (EPBC) Act 1999* on the basis of the survey area is located in a remote offshore location and the risk assessment conducted for the survey, as detailed in the EP, did not identify any significant impacts from the proposed activities on matters of environmental significance and the environment listed under the *EPBC Act*.

## 2 DESCRIPTION OF THE ACTIVITY

### 2.1 Location

The Claudius 3D MSS will be conducted entirely in Commonwealth waters over an area of approximately 3,700 km<sup>2</sup>. Data will be acquired within the survey area located within Exploration Permit Area WA-434-P and a section of Exploration Permit Area WA-364-P (Figure 1).

A larger operational area will be required for the Claudius 3D MSS in order to allow for vessel turning and soft start procedures (Figure 1). The operational area will cover an area of 24,800 km<sup>2</sup> extending into the Exploration Permit Areas W 08-22, WA-364-P and WA-366-P. Boundary coordinates of the Claudius 3D MSS acquisition and operation areas are provided in Table 2-1 and Table 2-2.

The Claudius 3D MSS operational area (at its closest point) is located approximately 220 km from nearest section of mainland, and approximately 300 km from the nearest town (Exmouth). The water depth across the Claudius 3D MSS acquisition area ranges approximately 1,400 m to 2,500m.

**Table 2-1: Boundary coordinates for the Claudius 3D MSS acquisition area (GDA94)**

Location Point	Longitude	Latitude
1	111° 45' 04.74" E	19° 19' 55.35" S
2	112° 05' 04.75" E	19° 19' 55.34" S
3	112° 05' 04.77" E	19° 53' 03.63" S
4	112° 08' 48.76" E	19° 53' 20.37" S
5	112° 15' 50.81" E	19° 53' 52.18" S
6	112° 15' 24.48" E	19° 54' 48.12" S
7	112° 05' 04.77" E	19° 54' 07.21" S
8	112° 05' 04.78" E	20° 14' 55.37" S
9	111° 15' 04.77" E	20° 14' 55.40" S
10	111° 15' 04.76" E	19° 49' 55.38" S
11	111° 30' 04.76" E	19° 49' 55.37" S
12	111° 30' 04.75" E	19° 34' 55.37" S
13	111° 45' 04.75" E	19° 34' 55.36" S
14	111° 45' 04.74" E	19° 19' 55.35" S

**Table 2-2: Boundary coordinates for the Claudius 3D MSS operational area (GDA94)**

Location Point	Longitude	Latitude
1	110° 58' 37.58" E	19° 03' 27.70" S
4	110° 58' 37.58" E	20° 31' 16.59" S
5	110° 58' 37.58" E	19° 03' 27.70" S
2	112° 26' 36.57" E	19° 03' 27.70" S
3	112° 26' 37.76" E	20° 31' 17.78" S

*Boundary coordinates start from the SW corner (1) of the survey area in a clockwise direction.*

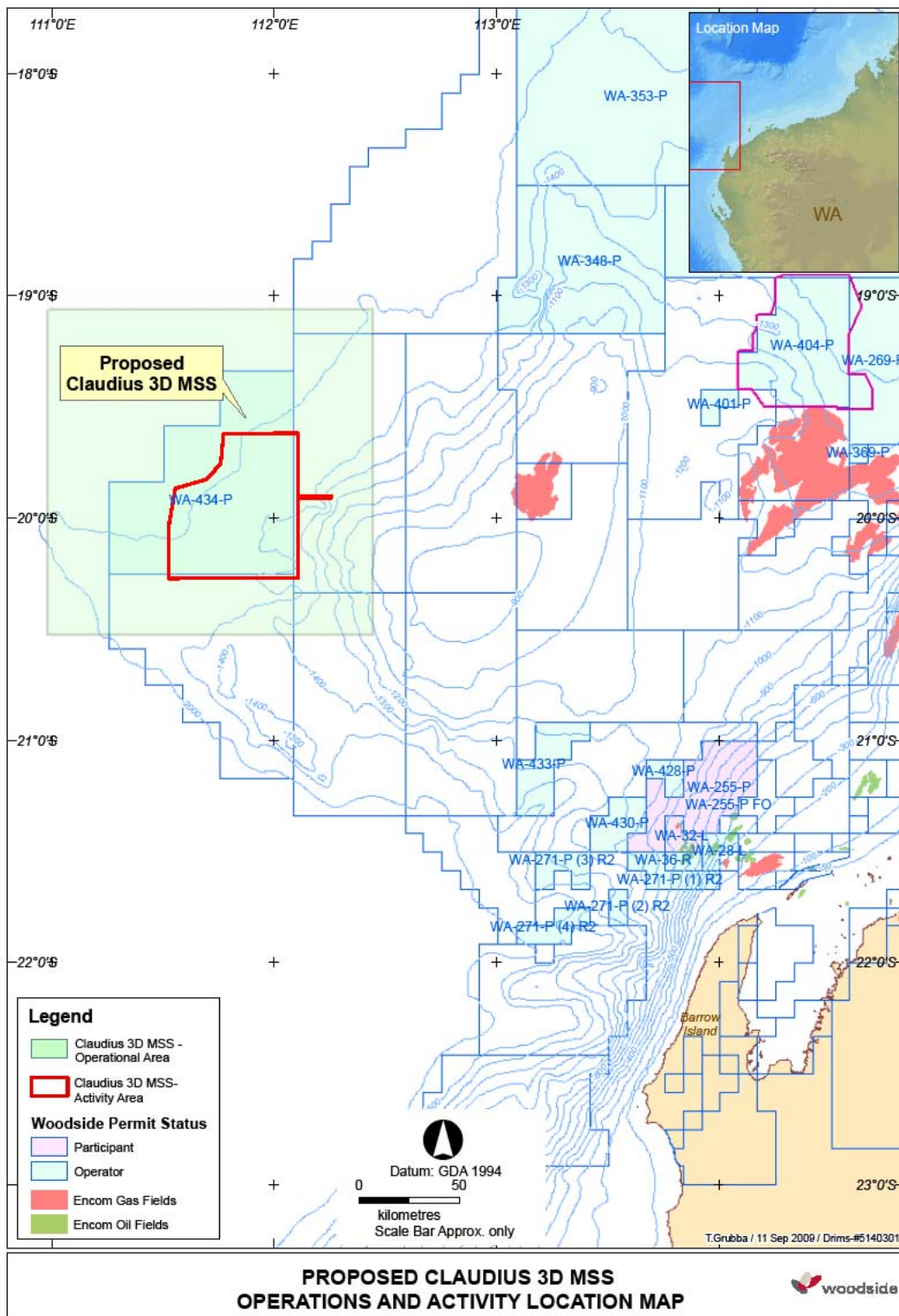


Figure 1: Location of the Claudius 3D MSS

## 2.2 Proposed operations

The Claudius 3D MSS will be undertaken over a 12 week period (operating up to 24 hours dependent on sea/weather conditions) commencing in October 2009 with an anticipated completion by early 2010. The survey will be conducted by a geophysical contractor, Western Geco using a specialised 3D capable seismic vessel *M/V Geco Eagle* (94.8m in length) and support vessel *OMS Discovery* (48 m in length) to provide logistical, safety and gear management. Additional support vessels may also be used during the survey.

The seismic vessel will tow dual acoustic source arrays at a depth of five or six meters. The acoustic source uses compressed air, with an operating pressure of approximately 2,000 psi and a volume of approximately 3,147 cubic inches (in<sup>3</sup>). The source produces acoustic pulses within a few meters in the order of 261 db re 1uP<sup>2</sup> at frequencies extending up to approximately 110Hz. These sound pulses decrease to levels in the order of 201 db re 1uP<sup>2</sup> within 1km of the source and approximately 181 db re 1uP<sup>2</sup> within 10km, dependent on the sound propagation characteristics of the area (Pers. Comm. R. Weiss). The acoustic pulses are reflected from the boundaries of the geological layers in the sub-surface and the reflected signals are recorded by a series of hydrophones in eight fluid filled cables (streamers) each a maximum length of 6,000 m towed behind the vessel at a depth of eight meters.

The vessels will transverse the survey area in a series of pre-determined lines within the survey area at a speed of approximately nine km/hour (4.7 knots). The survey lines have been defined on the basis of survey optimisation. The survey parameters for the Claudius 3D MSS are summarised in **Table 2-3**.

The Claudius 3D MSS will be conducted in accordance with all relevant Commonwealth Acts and regulations, with procedures in place to govern the survey activities that involve potential environmental impacts, including cetacean interaction, refuelling operations, streamer handling and maintenance, and vessel encounters.

**Table 2-3: Survey Parameters**

Parameter		Value
Survey area (acquisition)	State waters	0 Km <sup>2</sup>
	Commonwealth waters	3,700 Km <sup>2</sup>
Survey area (operation)	State waters	0 Km <sup>2</sup>
	Commonwealth waters	24,800 Km <sup>2</sup>
Range of surveyed waters depths		1,400 – 2,500 m
Timing and duration of survey		Commence mid October 2009 for 12 weeks and ending by January 2009
Acoustic emission	Airgun capacity	Dual source (3,147 in <sup>3</sup> )
	Operating pressure	13,800 kPa (2,000 psi)
	Airgun tow depth	5-6m
	Planned distance between seismic lines	525 m
	Shotpoint interval	18.75m flip-flop (37.5m per source)
	Peak source sound pulse	220dB re 1µPa rms (99.1 Bar-m)
	Frequency range	3 -200Hz
Acoustic reception	No. of streamers	8
	Streamer length	6,000 m
	Streamer depth	8m average
	Distance between streamers	150
	Streamer type	Fluid filled Nessie IV

## 3 EXISTING ENVIRONMENT

### 3.1 Climate and meteorology

The survey area lies in the Indian Ocean, where regional sea temperatures in summer range from 26 to 31°C and in winter from 19 to 24°C. Winds during winter are predominantly from the east and southeast, while westerlies prevail in summer. The area is situated in a subtropical environment with tropical cyclone activity from November to April. The summer and winter seasons fall into the periods September-March and May-July, respectively. Weather is largely controlled by the seasonal oscillation of an anti-cyclonic belt.

### 3.2 Bathymetry and oceanography

The survey area is located in deep offshore waters with water depths ranging from approximately 1,400 to 2,500 m. The offshore marine environment of the North West Shelf is very dynamic being subject to large tidal ranges and strong currents. Offshore swells in the region are consistently from the south-west with a height of 1 to 2 m, rising to 3 m during the winter. Extreme swell conditions of greater than 8 m can be encountered during cyclones.

### 3.3 Benthic habitat

The benthic habitats in the Claudius MSS area have not been previously surveyed, however given the site location in deepwater on the outer continental shelf and slope areas it is likely to comprise of flat and featureless thick unconsolidated fine grained sands, as described by benthic surveys conducted to the west in Exploration Permit Area WA-269-P (BBG, 2000). The water depth (i.e. light does not reach to the seabed), lack of hard substrate and low nutrient availability (associated with the outer continental shelf and slope) means that significant benthic communities (seagrass, algae and scleractinian (reef building) corals) will be absent.

Sandy benthic communities are likely to contain a range of infauna (dominated by mobile burrowing species, including molluscs, crustaceans and worms) and isolated larger fauna (free swimming cnidarian, demersal fish and benthic crustaceans) as documented during a remote operated vehicle (ROV) survey of the seafloor in Exploration Permit WA-269-P to the west (BBG 2000) and other NWS regional sampling studies of the benthos over similar substrate and at similar depths.

### 3.4 Threatened, migratory and listed species

The Claudius 3D MSS is **not likely** to have a significant impact on threatened, migratory or listed species. A search of the DEWHA protected matters search tool (DEWHA 2009a) (search date 13/08/2009) indicated that seven 'threatened', eleven migratory and four listed marine species (eleven species in total) under the *EPBC Act* may occur within, adjacent to or migrating through the survey area (**Table 3-1**).

**Table 3-1: EPBC Act threatened, migratory and listed marine fauna that may occur within, adjacent to or migrating through the Claudius 3D MSS area**

Common Name	Scientific Name	Threatened Species Status	Listed, Migratory Species
Blue whale	<i>Balaenoptera musculus</i>	Endangered	Migratory
Humpback whale	<i>Megaptera novaeangliae</i>	Vulnerable	Migratory
Sei whale	<i>Balaenoptera borealis</i>	Vulnerable	Migratory
Antarctic Minke whale, Dark-shoulder Minke whale	<i>Balaenoptera bonaerensis</i>		Migratory
Bryde's whale	<i>Balaenoptera. edeni</i>		Migratory
Killer whale	<i>Orcinus orca</i>		Migratory
Sperm whale	<i>Physeter macrocephalus</i>		Migratory
Green Turtle	<i>Chelonia mydas</i>	Vulnerable	Listed Migratory
Leatherback Turtle,	<i>Dermochelys coriacea</i>	Vulnerable	Listed Migratory
Flatback Turtle	<i>Natator depressus</i>	Vulnerable	Listed Migratory
Southern Giant-Petrel	<i>Macronectes giganteus</i>	Endangered	Listed

### 3.4.1 Threatened migratory cetaceans

The DEWHA protected matters search tool (DEWHA 2009a) identified three threatened and migratory baleen whale species, the blue whale (*Balaenoptera musculus*), humpback whale (*Megaptera novaeangliae*), and sei whale (*Balaenoptera borealis*), that may occur within, adjacent to or migrate through the survey area.

It is **unlikely** that significant numbers of the three species will be present in the Claudius 3D MSS area as the survey will be undertaken when the majority of animals are expected to be nearing the completion of or have completed their southern migration to higher latitude feeding areas. In addition the main humpback whale southern migratory pathways are >200 km away along the WA coast. While blue and sei whales do occur in offshore locations their abundance/density is generally low. While it is possible that feeding may periodically occur in the region, feeding areas can vary greatly in size/location dependent on local conditions (i.e. localised up-welling). As the Claudius 3D MSS is relatively small in area and of a short duration any localised/temporary displacement of animals present is **unlikely** to significantly impact on either species.

### 3.4.2 Migratory cetacean species

The DEWHA protected matters search tool (DEWHA 2009a) identified seven migratory species which may occur within, adjacent to or migrate through the survey area. These include the three previously discussed species, the humpback, blue and sei whales (**Section 3.4.1**) and an additional four migratory species including two baleen whale species, the Antarctic minke (*Balaenoptera bonaerensis*) and Bryde's whales (*B. edeni*) and two toothed whale species, the killer whale (*Orcinus orca*) and sperm whale (*Physeter macrocephalus*) discussed below.

It is **unlikely** that significant numbers of the four species will be present in the Claudius 3D MSS area as the survey will be undertaken at a time when the majority of animals are expected to be nearing the completion of or have completed their southern migration to higher latitude feeding areas. While Bryde's and sperm whales may feed in the region, feeding areas can vary greatly in size/location dependent on local conditions (i.e. localised up-welling and prey distribution). Given the relatively small survey area and duration any potential localised/temporary displacement of animals is **unlikely** to significantly impact either species.

The Antarctic minke whale is not known to feed in the region as they feed almost exclusively on Antarctic krill found predominantly in higher latitudes. Killer whale numbers/density is expected to be low given the low abundance/density of whales in the region which form a key component



of their diet. Instead killer whales are more likely to have moved southwards following the whale migration.

### **3.4.3 Threatened migratory turtles**

The DEWHA protected matters search tool (DEWHA 2009a) identified three threatened, migratory and listed marine turtle species, the green (*Chelonia mydas*), flatback (*Dermochelys coriacea*) and leatherback (*Natator depressus*), that may occur within, adjacent to or migrate through the survey area.

It is **unlikely** that significant numbers of green and flatback turtles will be present in the Claudius 3D MSS area which is located in deep water and >200km west of known important habitats for mating, nesting, feeding and resting. The leather back turtle which is a pelagic feeder and is not known to nest in Australia is likely to have a very low abundance/density in the region. Given the relatively small survey area and duration any potential localised/temporary displacement of animals present is **unlikely** to significantly impact the three turtle species.

### **3.4.4 Threatened listed seabirds**

The DEWHA protected matters search tool (DEWHA 2009a) identified one threatened and listed seabird species the southern giant petrel (*Macronectes giganteus*), that may occur within or adjacent to the survey area. It is **unlikely** that significant numbers of the southern giant petrel will be present in the Claudius 3D MSS area, as the survey timing corresponds to a time when southern giant petrels are in subantarctic to Antarctic waters for the summer breeding season.

## **3.5 Conservation reserves**

The Claudius 3D MSS area is located greater than 200km from the nearest marine conservation reserve, the Ningaloo Marine Park and Murion Islands Marine Management Area.

## **3.6 Cultural environment**

### **3.6.1 Shipwreck and heritage**

A search of the Australian Heritage Database did not reveal any sites listed as National Heritage Places, within the Claudius 3D MSS operational areas (Australian Heritage Council, 2009) (Site last accessed on 23/08/2009).

### **3.6.2 Indigenous issues**

A search of the Department of Indigenous Affairs Aboriginal Heritage Sites Register did not identify any indigenous heritage values within the Claudius 3D MSS area (DIA, 2009) (Site last accessed on 23/08/2009).

## **3.7 Socio-economic environment**

### **3.7.1 Commercial fisheries**

The Claudius 3D MSS area overlaps the operating areas of two Commonwealth managed fisheries including the Western Deepwater Trawl and Western Tuna and Billfish fisheries. The fishing areas for each of these fisheries are large (regional scale) and the relatively small and remote survey area is not known to overlap any significant fishing sites. The fishing industry has been notified of the survey and has not raised any issues.

### **3.7.2 Recreational fisheries**

The Claudius 3D MSS area is not accessed by recreational fisheries (private and charter vessels) due to its remote location 220 km offshore, water depth and no significant populations of targeted fish species.

### 3.7.3 Petroleum and gas

No other petroleum or gas operations are known to be occurring within the immediate vicinity of or during the Claudius 3D MSS.

### 3.7.4 Shipping

Deep offshore areas are subject to regular coastal shipping traffic. Coastal trading vessels would be expected to pass through the general area as the main shipping lane is located approximately 100 km to the east of the Claudius 3D MSS area.

## 4 POTENTIAL ENVIRONMENTAL EFFECTS

The principal environmental hazards (aspects) and potential environmental impacts of the Claudius 3D MSS have been determined on the basis of Woodside's previous seismic experience in the region, the generic environmental risks outlined in Swan *et al.* (1994) and specific literature related to acoustic disturbance.

The principal environmental risks have been determined to be associated with noise generated by the seismic source arrays. Other environmental aspects of the marine seismic survey include:

- operation of the vessels and towing of the acoustic and streamer arrays through the survey area;
- routine waste discharges from the seismic and support vessels;
- accidental fuel and oil spills from the seismic and support vessels;
- accidental loss of streamers and associated equipment; and
- Ballast water discharge and hull bio-fouling.

Potential environmental effects associated with the identified environmental risks include:

- disturbance to marine fauna and habitats;
- marine pollution;
- introduction of invasive marine species; and
- Interactions with commercial activities including fisheries, shipping and oil and gas.

The impact assessment undertaken as part of the EP development has indicated that the potential impacts arising from the Claudius 3D MSS can be categorised as having raw risk levels of low and medium. Implementation of the mitigation/management measures identified in this EP will ensure that residual risks are low. There are no impacts identified as having a high or severe risk level (raw and residual).

The impacts of sound generated by the acoustic source and vessel operation will be minimal given the expected low abundance/density of marine fauna in the survey area, low sound propagation due to water depth, survey duration and compliance with *EPBC Act Policy Statement 2.1 Interaction between offshore seismic exploration and whales* (DEWHA, 2008).

The Claudius 3D MSS area is located in remote deep offshore waters and does not contain sensitive benthic habitats or significant habitat for threatened and/or migratory species (i.e. feeding, breeding, resting, and migratory, etc.). The Claudius 3D MSS will be undertaken when the majority of whale species are expected to be nearing the completion of or have completed their southern migration to higher latitude feeding areas. In addition other marine fauna species that maybe present are likely to have a low abundance/density within and adjacent to the survey area. As the Claudius 3D MSS is relatively small in area and of a short duration any localised/temporary displacement of animals due to the survey is **unlikely** to result in significant impacts.

The routine discharge of sewage and putrescible wastes from survey vessels will comply with MARPOL requirements. The rates and volumes of discharge will be low and occur in deep

offshore waters and any increase in nutrients will be localised and short term. Discharges will not impact water quality and benthic habitats. Vessel management procedures, equipment and personnel are in place to prevent and mitigate against any potential accidental discharge of pollutants.

The survey area does overlap the waters of two Commonwealth fisheries (trawl and long-line). The survey area is not considered a significant (“core”) fishing area for these fisheries due to its remoteness and low abundance of target species and their required habitats. Woodside will communicate the details of the survey to the relevant fisheries prior to and during the survey.

The survey area does lie within waters transited by commercial shipping, however the survey area lies to the west of the major shipping route. The survey is not expected to impact on commercial shipping or other commercial activities due to the timing and duration of the survey, the low level of commercial activity in the area and commercial shipping and industry being advised of the survey details through appropriate communication channels.

## **5 SUMMARY OF MANAGEMENT APPROACH**

Woodside’s environmental management strategies and procedures to be used for the Claudius 3D MSS include responsibilities, training, reporting frameworks, mitigation and response activities and monitoring and auditing procedures. Commitments associated with these (Table 5) will be used to reduce environmental risk to As Low As Reasonably Practicable (ALARP).

A series of environmental management controls will be implemented by Woodside and its survey contractors to ensure that no significant environmental effects are realised from the survey. Table 5 details the environmental management commitments.

## **6 STAKEHOLDER CONSULTATION**

The Claudius 3D MSS is being conducted in a remote offshore deep water area where stakeholder access/usage is low and where stakeholders have not previously raised environmental concerns in regards to appropriately managed seismic surveys being undertaken.

The development of the EP is based on stakeholder consultation undertaken during the preparation of environment plans for the previous Cazadores 3D and Armagnac 2D marine seismic surveys.

The rationale for the use of historic consultation is based on the similarities of the surveys (activity and operational area) and short interval between surveys (i.e. approximately 6-12 months). The initial consultation targeted:

- Government regulators and other decision making authorities
- Government and non-government scientific institutions
- Relevant commercial enterprises; and
- Non-government organisations (NGOs)/environmental or conservation groups as required.

The following stakeholders were consulted during the preparation of previous EPs and will be advised (fact sheet) of the Claudius 3D MSS:

- Department of the Environment, Water, Heritage and the Arts (DEWHA);
- Department of Mines and Petroleum (DMP) (formally Department of Industry and Resources (DoIR));
- Australia Fisheries Management Authority (AFMA);
- Commonwealth Fisheries Association;
- Western Australia Fishing Industries Council (WAFIC);

- Western Australian Northern Trawl Owners Association; and
- Austral Fisheries.

## 7 CONTACT DETAILS

For further information on this proposal please contact:

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## 8 REFERENCES

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Swan, J. M., Neff, J. M. and Young, P. C. (eds.). 1994. *Environmental implications of offshore oil and gas development in Australia - the findings of an independent scientific review*. Australian Petroleum Exploration Association, Sydney. 696 pp.

**Table 8-1: Claudius 3D Marine Seismic Survey – Summary of Proponents Commitments**

No	Objective	Commitments/Criteria
1.	Project personnel understand and comply with the scope contained in the EP and understand the procedure to be followed if a change in scope is required.	<ul style="list-style-type: none"> <li>• All relevant Woodside and contractor personnel receive an induction that outlines the approved activity scope.</li> <li>• All relevant Woodside and contractor personnel understand the 'management of change procedure' contained in this EP (</li> </ul>
2.	Woodside and contractor personnel understand and comply with the environmental objectives, standards and commitments within this EP.	<ul style="list-style-type: none"> <li>• All Woodside and contractor personnel undertake an HSE induction that will include an overview of environmental sensitivities of the project area, management procedures and standards and commitments detailed in this EP.</li> </ul>
3.	No significant impact to marine fauna	<ul style="list-style-type: none"> <li>• Adherence to <i>EPBC Act Policy Statement 2.1</i> and the following additional mitigation measures: <ul style="list-style-type: none"> <li>• Precautionary zones (Observation zone: 3km+; Low power zone: 2km; and Shutdown zone: 500m</li> <li>• Survey personnel (marine and seismic) provided with pre-survey induction on Policy 2.1; and</li> <li>• Woodside MSS Guidelines on the implementation of EPBC Act Policy Statement 2.1</li> </ul> </li> <li>• Adherence to the Whale Interaction/Watching Guidelines (DEWHA 2005);</li> <li>• Detailed reports of all cetacean and turtle sightings will be recorded using the DEWHA Cetacean Sightings Application – database (<a href="http://data.aad.gov.au/aadc/ammc/index.cfm">http://data.aad.gov.au/aadc/ammc/index.cfm</a>)</li> </ul>
4.	No significant impact to marine habitats	<ul style="list-style-type: none"> <li>• Anchoring will only occur in the event of an emergency and where vessel(s) enter shallow coastal waters. All measures will be taken to avoid areas of sensitive habitat.</li> <li>• Vessels will use approved navigation systems and depth sounders.</li> <li>• Adherence to standard maritime safety/navigation procedures.</li> <li>• Strict adherence to equipment handling and acquisition procedures.</li> <li>• Where possible equipment lost will be recovered.</li> <li>• Detailed records of equipment lost overboard will be maintained.</li> </ul>
5.	Minimise emissions to atmosphere from operation of vessels	<ul style="list-style-type: none"> <li>• Compliance with MARPOL 73 / 78 Annex VI. In particular: <ul style="list-style-type: none"> <li>• Use of low sulphur fuel when it is available to minimise emissions from combustible sources.</li> <li>• Engines maintained to operate at optimum efficiency to minimise emissions.</li> <li>• Emissions managed by the implementation of a preventive maintenance system. Records kept of inspections and preventative maintenance.</li> </ul> </li> </ul>
6.	No introduction of marine introduced marine species or spread of existing introduced marine species	<ul style="list-style-type: none"> <li>• A risk assessment process will be applied to all vessels, and immersible equipment to assess the potential to introduce IMS of concern to Australian waters or to translocate IMS of concern between areas within Australia. If the risk assessment level obtained is unacceptable further actions will be applied commensurate with the risk.</li> <li>• Vessels will comply with the requirements of the mandatory AQIS Australian Ballast Water Management Requirements to minimise the risk of introducing IMS of concern via ballast water exchange.</li> </ul>

No	Objective	Commitments/Criteria
7.	No significant impact on marine environment from routine operational discharges e.g. putrescible wastes	<ul style="list-style-type: none"> <li>• All sewage and putrescible wastes will be managed and disposed of in accordance with MARPOL 73/78. In particular: <ul style="list-style-type: none"> <li>• discharge of sewage and putrescibles waste will be of short duration with high dispersion and biodegradability;</li> <li>• All sewage and putrescible waste treatment systems and holding tanks are to be fully operational prior to survey commencement;</li> <li>• Onboard sewage treatment plant approved by the International Maritime Organisation (IMO)</li> </ul> </li> <li>• Sewage and putrescible wastes macerated where possible prior to disposal;</li> <li>• A Vessel Waste Log will be maintained to record waste management practices;</li> <li>• Bilge water will be treated and disposed in accordance with MARPOL 73/78;</li> <li>• Bilge water contaminated with hydrocarbons must be contained and disposed of onshore, except if the oil content of the effluent without dilution does not exceed 15 ppm or an IMO approved oil/water separator is used to treat the bilge water.</li> <li>• Bilge water contaminated with chemicals must be contained and disposed of onshore, except if the chemical is demonstrated to have a low toxicity (as determined by relevant Material Safety Data Sheet (MSDS)).</li> </ul>
8.	No significant environmental impact from routine storage, handling and disposal of solid and hazardous wastes	<ul style="list-style-type: none"> <li>• No discharge of plastics or plastic products of any kind from vessels in accordance with MARPOL and P (SL) a requirements;</li> <li>• No discharge of domestic wastes (i.e. cans, glass, paper or other wastes from living areas) and no maintenance wastes (i.e. paint sweepings, rags, deck sweepings, oil soaks, machinery deposits, will be disposed of overboard) from vessels.</li> <li>• All solid, liquid and hazardous wastes (other than sewage, grey water and putrescible wastes) will be incinerated (where an approved incinerator is in place) or compacted (if possible) and stored in designated areas and sent ashore for recycling, disposal or treatment;</li> <li>• Incinerators used are compliant with MARPOL and IMO requirements;</li> <li>• Incinerators will be operated in accordance with established operating procedures that align with manufacturers specifications by trained personnel;</li> <li>• Vessel Waste Management Plan in place detailing wastes generated and disposal requirements.</li> <li>• All storage facilities and handling equipment will be in good working order and designed in such a way as to prevent and contain any spillage as far as practicable;</li> <li>• A Vessel Waste Log will be created and maintained to record quantities of wastes transported to shore; and</li> <li>• Detailed records of equipment lost overboard will be maintained.</li> </ul>
9.	No accidental hydrocarbon or chemical spills to the marine environment.	<ul style="list-style-type: none"> <li>• The survey vessels will comply with MARPOL 73/78 Annex I requirements to prevent oil pollution, including: <ul style="list-style-type: none"> <li>• Vessel holds a valid IOPP Certificate.</li> <li>• Oil Record Book maintained which details how, when and where any waste oils/oily effluents are disposed of.</li> <li>• Oily slops storage tank is provided.</li> <li>• Oily effluents from bilges and machinery spaces are treated in an IMO oil/water separator to a 15 parts per million oil content specification prior to overboard discharge.</li> </ul> </li> <li>• Oil spills will be managed according to Woodside's Western Australia Carnarvon Basin Oil Spill Contingency Plan.</li> <li>• Shipboard Oil Pollution Emergency Plans (SOPEP) will be prepared and kept onboard the vessels;</li> <li>• Operational procedures will be in-place on board the survey vessels for all operations that involve handling environmentally hazardous materials, oil and oily effluents/ waste during routine/ maintenance activities;</li> <li>• All hazardous substances (as defined in <i>NOHSC:1008(2004) – Approved Criteria for Classifying hazardous substances</i>) will have an Material Safety Data Sheet (MSDS) in place that is readily available on board;</li> </ul>

No	Objective	Commitments/Criteria
		<ul style="list-style-type: none"> <li>• All storage facilities in good working order and designed in such a way as to prevent and contain any spillage as far as practicable;</li> <li>• Spill response bins/kits located in close proximity to hydrocarbon storage areas and replenished if required. Identified personnel trained in the use of the equipment;</li> <li>• Personal Protective Equipment (PPE) appropriate to the nature and volume of spilled material;</li> <li>• Hydrocarbons located above deck will be stored with some form of secondary containment to contain leaks or spills e.g. bund, containment pallet, transport packs etc;</li> <li>• Refuelling at sea if required will be subject to the following <ul style="list-style-type: none"> <li>• the location of refuelling is pre-approved by Woodside and not permitted within 12nm of the Montebello/Barrow Islands MCR;</li> <li>• refuelling of vessels will be undertaken under favourable wind and sea conditions as determined by the Master of the Vessels;</li> <li>• refuelling will take place during day light hours only;</li> <li>• JHA in place and reviewed before each fuel transfer;</li> <li>• refuelling procedure approved by Woodside.</li> <li>• All valves and flexible transfer hoses checked for integrity prior to use.</li> <li>• Dry break couplings (or similar) in place for all flexible hydrocarbon transfer hoses.</li> </ul> </li> </ul>
10.	Minimise interference with commercial fishing, shipping and oil and gas.	<ul style="list-style-type: none"> <li>• Adherence to standard maritime safety and navigation procedures (e.g. Auscoast Warnings via AMSA, radio contact, display of appropriate navigational beacons and lights).</li> <li>• Notification of activity details to relevant commercial fisheries organisations prior to commencement of each survey.</li> <li>• Use of support vessels</li> </ul>
11.	Minimise impacts to heritage and conservation values	<ul style="list-style-type: none"> <li>• Ensure all contractor personnel are aware of and comply with the approved Environment Plan.</li> </ul>
12.	Vessel HSE Management system covers applicable requirements of this EP	<ul style="list-style-type: none"> <li>• Review of Vessel HSE Management System to ensure it covers applicable requirements of this EP.</li> </ul>
13.	Environmental inspections to be carried out according to the requirements of the EP.	<ul style="list-style-type: none"> <li>• Environmental inspection of the vessel(s) carried out prior to the start of the activity.</li> <li>• Project Environmental Commitments Checklist distributed and monitored onboard the vessel(s) on a regular basis by the Onboard Woodside Representative.</li> </ul>
14.	All environmental incidents are reported in accordance with the requirements of this EP, WEL procedures and legislative requirements.	<ul style="list-style-type: none"> <li>• All relevant project personnel undertake an HSE induction that includes an overview of the incident reporting and notification procedures detailed in this EP.</li> <li>• Environmental incidents recorded and reported according to the requirements of the EP.</li> </ul>
15.	A review of the operation conducted at the end of the programme to ensure all environmental commitments within the EP were met.	<ul style="list-style-type: none"> <li>• Review of the environmental performance of the operation conducted at the end of the programme. This review will involve an assessment of compliance with the objectives, standards and commitments outlined in the EP, based on the results of the monitoring, records and audit processes described in this EP.</li> </ul>