Shell Development (Australia) Pty Ltd
(ACN 14 009 663 576)

Environment Plan
Sandman 3D Marine Seismic Survey

Summary

Document Number	HSE_GEN_000870
Document Version	Version 2
Document Status	Approved for use
Export Control	No US Content
Issue Date	17/06/2013
Security Classification	Unrestricted

TABLE OF CONTENTS

1. Shell as Operator 3
2. Activity Description and Location 3
3. Description of the Environment 5
3.1. Physical 5
3.2. Biological 6
3.3. Marine Reserves 8
3.4. Socio-Economic Environment 8
4. Management Approach 9
5. Environmental Hazards and Controls 10
6. Consultation 11
7. Contact Details 12
APPENDIX A: Hazards and Controls 13

1. Shell as Operator

Shell's Australian exploration and production business has been operating for more than 75 years and holds an interest in about 20% of the gas resources in Australian waters. Shell is involved in a number of major Australian gas projects including the Shell operated Prelude project which will be the first deployment of Shell's Floating Liquefied Natural Gas (FLNG) technology. Shell is also a non-operating partner in the North West Shelf joint venture, the Gorgon joint venture and the Wheatstone joint venture. Shell maintains an extensive exploration portfolio and has safely drilled 17 exploration wells in the Browse Basin since 2006. Shell's exploration and production business is based in Perth and employs more than 400 people.

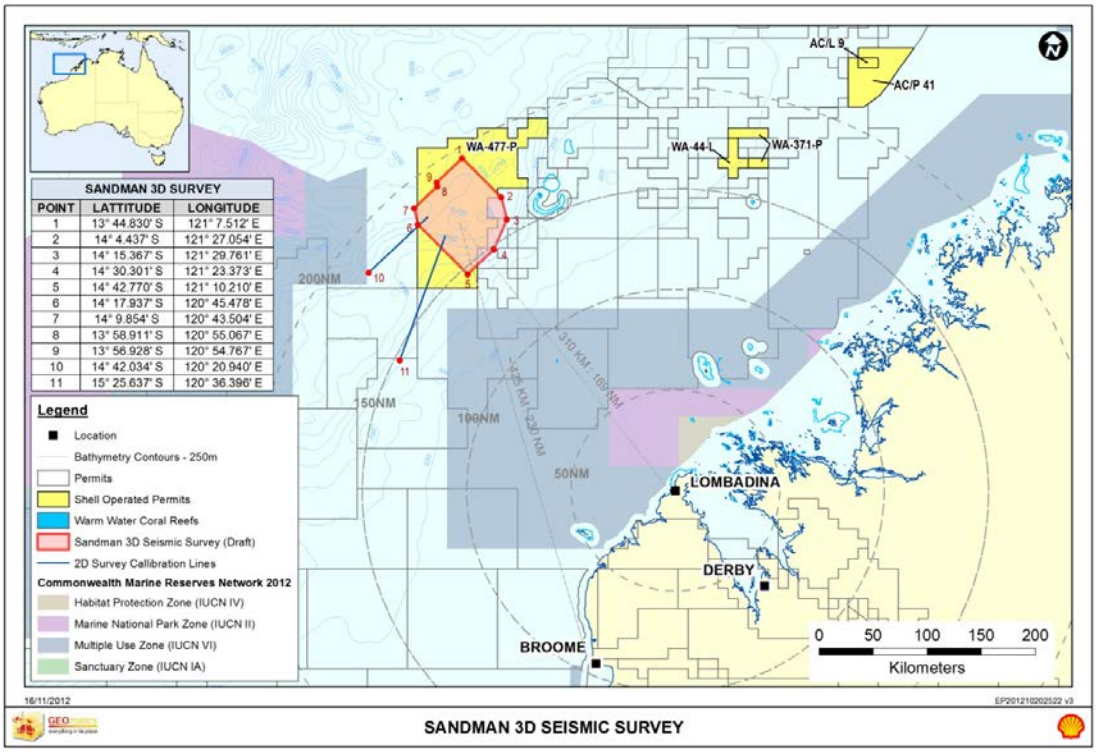
2. Activity Description and Location

The Sandman 3D Marine Seismic Survey will take place within an operational area of approximately 5,500 km^2 that is situated mostly within the permit area WA-477-P. The operational area is located entirely within Commonwealth waters, approximately 425 km north-northeast of Broome in Western Australia and approximately 310 km from the Kimberley coastline. The nearest area of shallow waters to the survey location is Scott Reef, located approximately 35 km to the east of the seismic acquistion area at the closest point, and 26 km from the survey operations area. Water depths in the operational area range from approximately 1,000 m to 2,500 m. A chart showing the Sandman 3D location is provided (refer Figure 1) and the boundary coordinates for the operational area are provided in Table 1 below.

Table 1: Boundary coordinates for the Sandman 3D Marine Seismic Survey operational area

Point	Latitude	Longitude
1	13° 44.830' S	121° 7.512' E
2	14° 4.437' S	121° 27.054' E
3	14° 15.367' S	121° 29.761' E
4	14° 30.301' S	121° 23.373' E
5	14° 42.770' S	121° 10.210' E
6	14° 17.937' S	120° 45.478' E
7	14° 9.854' S	120° 43.504' E
8	13° 58.911' S	120° 55.067' E
9	13° 56.928' S	120° 54.767' E
10*	14° 42.034' S	120° 20.940' E
11*	15° 25.637' S	120° 36.396' E

Figure 1: Location of the Sandman 3D MSS showing the survey area, operational area, petroleum exploration permit boundaries and Scott Reef



The Sandman 3D Marine Seismic Survey is proposed to commence in March 2013 and will take approximately 70 days to complete. The actual time frame will depend on vessel scheduling and the weather conditions during the survey.

The survey will be acquired using typical broadband 3D seismic techniques whereby a survey vessel tows two airgun arrays providing the seismic energy source and a number of streamers containing receivers are used for collecting the seismic reflection data. The seismic survey comprises of a number of predetermined parallel sail lines that are evenly spaced apart over the survey area. The vessel will transit each line at an approximate speed of 7 to 9 km/hr (4 to 5 knots).

The airgun source arrays are operated at a pressure of 13,800 kPa (2,000 psi) and each have a maximum volume of approximately 0.065 to 0.082 m^3 (4,000 – 5,000 in^3). The source arrays will be fired alternately at an interval of 18.75 to 25 m. The maximum sound pressure level emitted by each source array is approximately 262 dB re 1 µPa-m at typical frequencies up to approximately 200 - 250 Hz.

The vessel to be used for the Sandman 3D Marine Seismic Survey is yet to be confirmed. However, it is expected to be between approximately 90 to 120 m in length and to be manned by a crew of 45 to 55 personnel. A maximum of two support vessels will be required during the

survey. These are expected to have a maximum length of between 25 and 35 m each and to be manned by a crew of 6 to 10 personnel.

Crew change is normally conducted every five weeks. The survey duration of 70 days will require up to two crew changes that will be undertaken by helicopter. Helicopter support for crew change and medevac will be provided from Broome with refuelling at Lombadina.

3. Description of the Environment

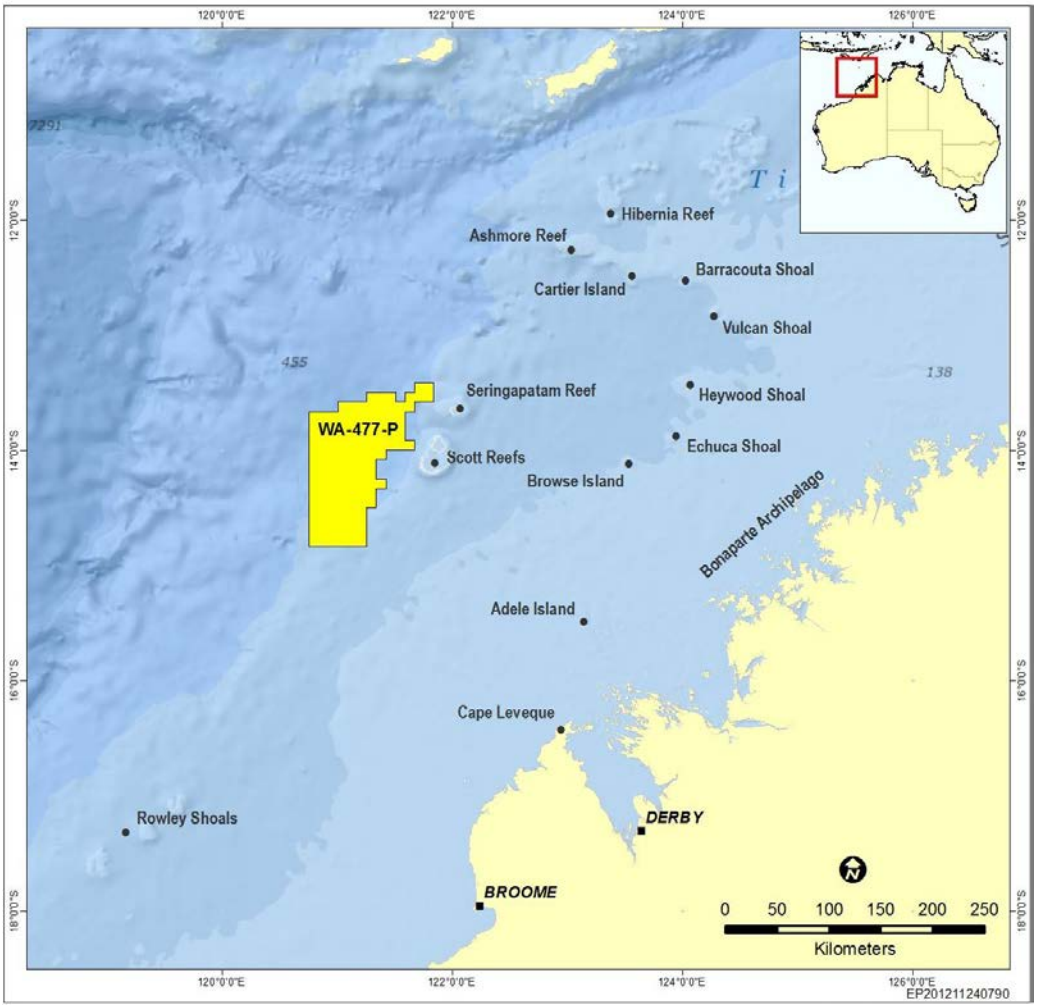
3.1. Physical

The Sandman 3D Marine Seismic Survey operations area is located in the Timor Province within the North West Marine Region. The bioregion occupies the slope between Broome and Cape Bouganville and has an area of 156,669 km^2, of which 155,899 km^2 or 99.5 per cent is in Commonwealth waters. Water depth in this bioregion ranges from 200 m near the shelf break to 5,920 m on the Argo Abyssal Plain. The survey operational area is located on the lower margins of the continental slope, mostly over the Abyssal Plain, to the west of Scott Reef in water depths ranging from approximately 1,000 m to 2,500 m. This area has a gently sloping seabed and very few seabed features. Sediments of the survey operational area are likely to be largely unconsolidated coarse to fine sands becoming progressively finer silt to mud further down the continental slope.

The most sensitive seabed features in the Timor province are the coral reefs and islands that occur in the region including Scott, Seringapatam, and Ashmore reefs and Cartier Island. Scott Reef, a large oceanic atoll, is the closest significant seabed feature to the survey area, and is located ~ 26 km east of the operations area at the closest point. It comprises two lagoonal areas (North and South Scott Reef) and rising vertically from the seafloor on the outer continental shelf slope. North Scott Reef is pear shaped and South Reef is crescent shaped. Water depths within Scott Reef vary between 0 m and 80 m with areas of the reef flat being exposed at low tide. Sandy Islet, a small sandy cay, is the sole permanently emergent land. Sandy Islet is 11,568 ha and has a turtle rookery and is a seabird breeding island. Biodiversity at Scott Reef is similar to that of other offshore emergent reefs in the region, with the biological assemblages being a sub-set of Indo-Pacific reefs. Sperm, blue and small toothed cetaceans are thought to visit the area around Scott and Seringapatam Reefs and both reefs are considered important for sea snakes and seabirds.

The permit area is situated in the tropics and experiences a monsoonal climate with two predominant seasons. The Australian Northern monsoon generally occurs between December and March. It is associated with the inflow of moist west to northwesterly winds into the monsoon trough, producing convective cloud and heavy rainfall over northern Australia. During the cooler months, the subtropical ridge that lies over continental Australia drives stable and persistent easterly quadrant winds over the region. The large-scale ocean circulation on the North West Shelf is linked with major Southeast Indian Ocean and Indo-Pacific current regimes, such as the Indonesian Pacific Through Flow, which contributes to the westward flowing South Equatorial Current (between 8°S and 15°S) and floods the North West Shelf with relatively warm, low-salinity water.

Figure 2: Locations of significant seabed features



3.2. Biological

The benthos of the deep ocean areas of the Northwest Transition is likely to support meiofauna (minute animals living between grains of sediment on the seabed), larger infauna (that burrow into sediments) and sparsely distributed epibenthic communities (that live on the surface of the seabed). Mobile benthic species, such as deepwater sea cucumbers, crabs and polychaetes are likely to be associated with the seafloor, and the bioregion may support sparse populations of bentho-pelagic fish and cephalopods. Higher order consumers in the deeper waters include migratory pelagic species such as southern bluefin tuna, billfish, dolphins and sharks.

Much of the outer mid-shelf and upper slope is covered by a relatively featureless, sandy-mud seabed with a sparse covering of sessile organisms dominated by filter-feeding heterotrophs such as gorgonians, sponges, soft corals, echinoderms and detritus-feeding crabs and echinoderms.

Pelagic fish species likely to be present include grenadiers and hatchetfish (Argyropelecus spp.) as well as transient populations of highly mobile pelagic species, such as sharks and schools of small pelagic fish. Adult and juvenile southern bluefin tuna are thought to migrate through this bioregion on their way to and from spawning grounds in the north-eastern Indian Ocean. However, the timing of these migrations and the use of regional currents to assist their migration is still unclear. Seabirds are likely to feed on small pelagic fish in this bioregion.

The slope habitat of this bioregion is associated with important populations of demersal fish species. A national bioregionalisation of slope fish communities identified the North West Slope (which occurs in this bioregion as well as the adjacent Timor Province) as supporting the second richest demersal fish assemblage nationally. Over 508 fish species have been identified on the slope in this area, and 64 of these species are endemic. Demersal slope fish species in this bioregion are distributed across a number of distinct depth ranges on the slope, specifically areas of the upper slope (225–500 m) and mid slope (750–1000 m). The high diversity and endemism of the demersal fish fauna indicates important interactions between physical processes and trophic structures in this bioregion.

The Department of Sustainability, Environment, Water, Population and Communities Protected Matters Database does not list any Threatened Ecological Communities occurring in the marine environment. The Protected Matters Database lists ten Threatened Species that potentially traverse the permit area, and nine additional migratory species. These include seven cetacean species, two bird species, seven reptile species and three shark species. The permit area does not contain any recognised feeding, breeding or aggregation areas for these species, hence large numbers of these species are not anticipated to be encountered during the survey.

A range of species in addition to those listed as threatened and migratory in the Protected Matters Database were identified, including syngathids, seasnakes, dugongs, fish and cetaceans. Whilst these species are possibly present in the area, dugongs, dolphins and sea snakes generally prefer shallow waters, and so they are not expected to be found in large numbers within close proximity to the survey area. Whales are generally considered to be present in deep oceanic waters and hence whilst they may be present in close vicinity of the survey area; they are not expected in large numbers at any one location. The Timor Sea supports a variety of bony and cartilaginous fish species that important for commercial and recreational fishing. Most demersal shark and ray species, with the exception of deepwater skates, are unlikely to occur within the project area due to the lack of suitable habitat (e.g. reef); however, some pelagic species may occasionally transit the project area during seasonal migrations. A wide variety of commercial and recreational finfish exist in the north-west marine region however, it is unlikely that any large or significant populations of these species reside within the project area as these species are strongly associated with shallow environments such as nearshore shelf systems and off-shore reefs and atolls.

Low densities of migratory shorebirds and seabirds protected under the Japanese-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA) and Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) bilateral agreements may pass through the survey area. Ashmore Reef, over 150 km away, in particular, is an important site for both migratory birds and seabirds.

3.3. Marine Reserves

The seaward boundary of the Kimberley Commonwealth Marine Reserve multiple use zone is ~ 18.5 km at the closest point to the WA-477-P permit area. It covers an inshore area of 74,469 km^2 over the approximate depth range of 15 to 800 m. The area identified for the reserve is important for foraging of dugongs, dolphins (snubfin, indo-pacific humpback, indo-pacific bottlenose), migratory seabirds, and marine turtles (green, olive ridley and flatback). The reserve area is important for migration pathways for humpback whales, and is adjacent to significant nesting sites for green turtles, and for both foraging and pupping areas for sawfish. All these animals are concentrated close to the Kimberley coast, well away from the WA-477-P permit area. The Kimberley Commonwealth Marine reserve supports or is adjacent to recreational and commercial fishing, tourism activities and areas of Native Title claims and determinations.

The Argo Rowley Terrace Commonwealth Marine Reserve multiple use zone is located approximately 45 km from WA-477-P at the closest point. It is comprises 83,379 km^2 of Multiple Use Zone - IUCN Category VI and 62,720 km^2 of Marine National Park Zone - IUCN Category II. The depth ranges between 220 m and 6,000 m. It is important for foraging areas for migratory seabirds and the endangered loggerhead turtle as well as sharks. The reserve includes canyons linking the Argo Abyssal Plain with the Scott Plateau, which is a unique seafloor feature with enhanced productivity and feeding aggregations of species.

The Ashmore, Cartier and Mermaid Commonwealth Marine Reserves are located over 150 km from the survey area at their closest points.

Scott Reef (~ 35 km from the survey area) and Browse Island (~ 200 km from the survey area) are the only existing Western Australian reserves in the offshore Browse Basin area. Both are Class `C' Nature Reserves under the Western Australian Conservation and Land Management Act 1984 and the Amendment (Marine Reserves) Act 1997.

3.4. Socio-Economic Environment

In 1974, Australia recognised access rights for traditional Indonesian fishers in shared waters to the north of Australia, granting long-term fishing rights in recognition of the long history of traditional Indonesian fishing in the area. Given the shallow water target species, these traditional Indonesian fishermen are likely to be found in deepwater areas only during transit to and from the reef locations; therefore, they are unlikely to be found within the operations area (~26 km to the east of Scott Reef) or be affected by the activity.

There are no known sites of Aboriginal cultural significance within the permit area. There are records of only one shipwreck within a distance of 100 km from the survey area, the Yarra, located approximately 44 km away from the survey area at the closest point. The seismic survey will not impact upon this wreck.

The survey area overlaps with a variety of commercial fishing management areas. Commercial fisheries include tuna and tropical finfish, particularly high-value emperors, snappers and cods. Within the northwest region there are also significant commercial fisheries for Spanish mackerel, barramundi, threadfin salmon and shark.

State managed fisheries overlapping the permit area include the Northern Demersal Scale Fishery, South West Coast Salmon, West Coast Deep Sea Crustacean, Northern Shark Fisheries, and the Mackerel Fishery. Commonwealth managed fisheries overlapping the permit area include the Southern Blue Fin Tuna Fishery, the Western Skipjack Fishery, the Western Tuna and Billfish Fishery, and the North West Slope Trawl Fishery.

Currently, there are no known recreational fishing activities in the survey area because the site is too far from shore to be accessed by recreational fishermen in small boats. Scott Reef is the closest location to the operational area (~26 km), and only a few recreational fishing charter trips to the Scott Reef area occur every year, due to the large distance from Broome. These recreational fishing charter trips primarily targeting pelagic fish (game fish) in the waters within the lagoons and demersal fish on the outer reef slopes.

Oil exploration activities in the Timor Sea commenced in the late 1960s. Since this time numerous wells have been drilled throughout the region. Searches for new sources of hydrocarbons are actively being pursued in the region by a number of operators. The area covered by the Sandman 3D Marine Seismic Survey operational area has been subject to a moderate level of petroleum exploration activities (seismic surveys and exploration drilling) over the past 30 years or so. There have been several exploration and appraisal wells drilled in the petroleum titles to the north-east, east and south of the operational area. There are currently no petroleum production facilities located within or immediately adjacent to the operational area.

Major shipping routes in Commonwealth waters are generally used to transport iron ore, coal and containers from major ports in Australia to global destinations including Asia, Middle East and Europe. There is one shipping lane passing through WA-477-P, where ships are carrying iron to South East Asia from Port Hedland, Cape Lambert and Dampier.

4. Management Approach

The Shell Commitment and Policy on Health, Safety, Security, Environment and Social Performance (HSSE and SP) applies across Shell globally and is designed to protect people and the environment.

Key features of the policy are:

- Systematic approach to HSSE and SP management designed to ensure compliance with the law and to achieve continuous performance improvement;
- Targets for improvement and measurement, appraisal and performance reporting;
- Requirement for contractors to manage HSSE and SP in line with this policy; and
- Effective engagement with neighbours and impacted communities.

All of Shell's operations comply with the Shell HSSE and SP Control Framework, a comprehensive corporate management framework, comprising a simplified set of mandatory standards applicable to every Shell company, contractor and joint venture under Shell's operational control.

The Sandman 3D Marine Seismic Survey will be managed to comply with the relevant State and Commonwealth Acts and Regulations, industry standards and applicable international agreements.

Shell's overall environmental objective for the Sandman 3D Marine Seismic Survey is to avoid or reduce environmental risks to as low as reasonably practicable. Specific objectives, standards and performance criteria for each aspect of the survey that has the potential to cause adverse environmental impact have been identified. Environmental performance will be measured and reported against these standards and criteria as part of Shell's commitment to continuous improvement of environmental, health and safety performance.

An Implementation Strategy has been incorporated into the Environment Plan per the *OPGGS (E) Regulations*. This includes:

- Measures, systems, practices to ensure environmental performance objectives and standards are met;
- Roles and responsibilities;
- Measures to ensure workers are aware of their responsibilities;
- Competency and training;
- Monitoring, auditing and incident investigations;
- Records and reporting;
- Oil Spill Contingency Plan.

5. Environmental Hazards and Controls

A risk analysis has been undertaken for all aspects of operations, in accordance with the Shell HSSE and SP Control Framework and in line with the principles outlined in the Australian Standard AS/NZS ISO 31000:2009 Risk Management and HB 203:2006 Environmental Risk Management. To demonstrate that risks are as low as reasonably practicable, all mitigation measures have been considered and where these measures are practical, they have been included.

Incidents with a consequence severity equal to or greater than level 3 (i.e. moderate to massive) are considered 'Reportable Incidents' in line with Regulation 26 of the *OPGGS (E) Regulations*. For the Sandman 3D Marine Seismic Survey, based on the risk assessment, though the probability of occurrence is low, four possible events, are considered to have a moderate or greater consequence, if they occur:

- Physiological damage to sensitive marine fauna from seismic pulses;
- Death or injury of a member of a threatened or migratory or cetacean species as a result of a collision with a vessel;
- Introduction of exotic species; and
- A diesel spill resulting from a vessel to vessel collision.

To avoid causing physiological damage to marine life, the Seismic vessel will adhere to *Environmental Protection Biodiversity Conservation Act Policy Statement 2.1: Interaction between offshore seismic exploration and whales*, specifically:

- whenever the vessel starts up and / or airguns are fired either in testing or at the start of a seismic line, a thirty minute pre-start-up visual observation around the whole of the vessel (360°) if possible, to a 3 km distance and, if possible, beyond 3 kms;
- use of thirty minute 'soft start' procedures during vessel start up and comprising the linear ramp up of the airgun array from the smallest gun to the full array;
- delay to vessel start up and / or firing if whales are spotted within 2 km of the vessel (during start up) or airguns and delay until the animals have moved out of this range or have not been spotted within thirty minutes.
- operations power-down if animals are spotted within 2 km of the vessel (during start up) or airgun array on full power; and
- operational stop work in the event of whales approaching within 500 m of the airgun array whether on full power or low power.

To avoid a potential vessel collision with marine life, during transit support vessels will adhere to the intent of the *Australian National Guidelines for Whale and Dolphin Watching 2005*, which require that: Vessel Masters shall maintain a watch for whales during transit; Vessel Masters shall not knowingly approach within 300 m of whales; If whales are observed within 300-100 m of a vessel during transit, Vessel Masters will alter course away from the whales if safe to do so; If whales are observed <100 m from a vessel, Vessel Masters will power down to 'no wake speed' and alter course away from the whales if safe to do so.

To avoid the introduction of exotic species, all vessels will comply with Commonwealth quarantine requirements including the Australian Ballast Water Requirements; and Biofouling Management Protocols.

To avoid a vessel to vessel collision, a 'Notice to Mariners' advising of the presence of the seismic vessel will be issued through Australian Maritime Safety Authority prior to the commencement of the survey. Ongoing communication with Australian Fisheries Management Authority and other commercial mariners will also occur such that that presence of vessels is widely communicated. Vessel routes to and from the survey area will be pre-determined and risk assessed. Vessels will be equipped with suitable navigation aids, navigational lighting and competent crew maintaining continual watch for other vessels. Should a spill occur, an Oil Spill Contingency Plan is in place, which outlines Shell's oil spill response preparedness for the Sandman 3D Marine Seismic Survey. Oil Spill Modelling Assessment for the relevant seasons indicates surface spilt hydrocarbons from a loss of containment has a very low probability of contacting the closest environmental sensitivity (Scott Reef) for the worst case unmitigated spill associated with a vessel to vessel collision.

The remainder of possible events, both planned and accidental are assessed as having slight or minor consequences. The risk assessment can be viewed in Appendix A.

6. Consultation

Shell has undertaken consultation with key stakeholders who have an interest in our activities in the Browse basin since acquiring Permit WA-477-P, including relevant government agencies, non government organisations, industry bodies, and oil spill response organisations. The consultation for the Sandman 3D Marine Seismic Survey has been built upon the relationships

developed during the consultation undertaken for the Prelude project and related drilling activities in the Browse basin. Shell began consultation with identified stakeholders specifically on the Sandman 3D Marine Seismic Survey in Q4 2012.

Prior to the submission of the Environment Plan, key stakeholders have been notified of our intent to submit the plan to NOPSEMA. Engagement on the Sandman activity will continue in early 2013 leading up to, during, and post the completion of the activity. Shell will ensure that all key stakeholders are kept informed of project progress and outcomes and are able to raise questions/concerns at anytime.

7. Contact Details

For further information, please contact:

Kelly Lamperd

+61 (0) 8 9338 6000

2 Victoria Avenue, Perth, Western Australia, 6000

APPENDIX A: Hazards and Controls

Hazard / Event	Safeguards – Mitigation Methods (control and recovery measures)
Planned Activities	
Physical presence of survey vessels.	A 'Notice to Mariners' advising of the presence of the survey activity will be issued through the Australian Maritime Safety Authority prior to the commencement of the survey. Liaison with AMSA, Fisheries Management Authorities and other commercial mariners. Vessels will display all required navigation lighting to reduce any navigation hazard to passing vessels and will be equipped with navigation equipment and will undertake continuous surveillance of marine traffic in the area. A support vessel will be used to manage interactions with other users as required and to and warn off any vessels attempting to transit too near the seismic vessel or streamers.
Lighting from the vessels.	Location of the operational area in open ocean ~ 26 km to nearest environmental sensitivity.
Acoustic pollution from airguns and vessel movements.	Location of seismic survey operations in open ocean, well away from coastal environments and fauna migration routes (~26 km from Scott Reef and ~200 km from major cetacean migration routes). Seismic vessel will adhere to EPBC Act Policy Statement 2.1: Interaction between offshore seismic exploration and whales (DEWHA 2008a). Specifically: • whenever the vessel starts up and/or airguns are fired either in testing or at the start of a seismic line, a thirty minute pre-start-up visual observation around the whole of the vessel (360°) if possible, to a 3 km distance and, if possible, beyond 3 kms; • use of thirty minute 'soft start' procedures during vessel start up and comprising the linear ramp up of the airgun array from the smallest gun to the full array; • delay to vessel start up and/or firing if animals are spotted within 2 km of the vessel (during start up) or airguns and delay until the animals have moved out of this range or have not been spotted within thirty minutes. • operations power-down if animals are spotted within 2 km of the vessel (during startup) or airgun array on full power; and • operational stop work in the event of whales approaching within 500 m of the airgun array whether on full power or low power. Detailed recording and reporting of all cetacean sightings.

Discharge of deck drainage, sewage, food scraps and grey water from vessels.	Potentially contaminated water drained to slops tanks and passed through the oil/ water separator prior to discharge at <15 ppm or stored for onshore disposal (*MARPOL 73/78 Annex I – Regulation for the Prevention of Pollution by Oil from Ships under the Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. Location of survey in open ocean, away from coastal environments (~26 km from Scott Reef) and major cetacean migration routes (~ 200 km). Food wastes, grey water and sewage treated in accordance with *MARPOL 73/78 Annex V – Regulation for the Prevention of Pollution by Garbage from Ships under the Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*: • MARPOL 73/78 Annex IV: Sewage; and • MARPOL 73/78 Annex V: Garbage.
Atmospheric emissions from fuel combustion on drilling rig and vessels.	Engines maintained to operate efficiently. Compliance with *MARPOL 73/78 Annex VI – Regulation for the Prevention of Air Pollution from Ships,* enforced under the *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. Location of survey in open ocean, away from coastal environments and human receptors.
Unplanned Activities	
Vessel collision with marine life.	Support vessels during transit will adhere to the requirements of the Environment Protection Biodiversity Conservation Regulations 2000 Part 8, Australian National Guidelines for Whale and Dolphin Watching; and industry experience, specifically: • Vessels shall maintain a watch for whales during transit; • Vessels shall not knowingly approach within 300 m of whales or 50 m of dolphins; • If whales are observed within 300-100 m of a vessel during transit, Vessels will maintain or reduce speed and alter course away from the whales if safe to do so; and • If whales are observed <100 m from a vessel, Vessels will power down to 'no wake speed' (< 4 knots) and alter course away from the whales if safe to do so.
Introduction of Non Native Marine Species.	All vessels will comply with Commonwealth quarantine requirements including: • Australian Ballast Water Requirements; and • Biofouling Management Protocols.

Discharge of wastes or chemicals into the ocean.	Garbage Management Plans developed to *MARPOL 73/78 Annex V – Regulation for the Prevention of Pollution by Garbage from Ships and Annex II– Regulation for the Prevention of Pollution by Noxious Liquid Substances in Bulk from Ships and Annex III– Regulation for the Prevention of Pollution by Harmful Substances Carried by Sea from Ships* under the *Commonwealth Protection of the Sea (Prevention of Pollution from Ships) Act 1983*). Shipboard Oil Pollution Emergency Plans (SOPEP)s and Sandman Oil Spill Contingency Plan (OSCP).
Diesel fuel spill during seismic vessel refuelling at sea.	At sea refuelling will occur within the areas of operations (~26 km from Scott Reef at the closest point) with strict adherence to refuelling procedures; • Refuelling JHA/ checklist will be completed; • Operation will be undertaken in daylight under normal conditions, and • Favourable wind and sea conditions as determined by the Master of the vessels; • Reinforced fuel hoses checked annually and fitted with dry break couplings and fail-safe fittings; and • Refuelling constantly observed by crew member in radio contact with Vessel Masters. Shipboard Oil Pollution Emergency Plans (SOPEP)s. Regulator accepted Oil Spill Contingency Plan (OSCP) prior to activity commencement. Oil Spill Modelling Assessment for relevant seasons indicates surface spilt hydrocarbons from a refuelling incident have no probability of reaching any emergent sensitivities.
Spill resulting from a collision with another vessel.	A 'Notice to Mariners' advising of the presence of the seismic vessel will be issued through AMSA prior to the commencement of the activity. Consultation with Fisheries authorities and other commercial mariners such that that presence of vessels is widely communicated. Vessels routes are pre-determined and risk assessed. Vessels equipped with suitable navigation aids, navigational lighting and competent crew maintaining a continual watch for other vessels. Regulator accepted Oil Spill Contingency Plan prior to activity commencement. Oil Spill Modelling Assessment for all seasons indicates that hydrocarbon, from a loss of containment on the surface, has a low probability of reaching environmental sensitivities.