Schooner-1 Drilling (WA-425-P)
Environment Plan Summary

October 2013

(W-PGA-85.01-02-02-02)

This Environment Plan summary has been prepared to comply with Regulations 11(7) and 11(8) of the Offshore Petroleum & Greenhouse Gas (Environment) Regulations 2009.

Table of Contents

Revision History

Rev.	Date	Description	By	Checked	Approved
2.0	22/10/13	Issued to NOPSEMA	G. Pinzone	R. Kingham	R. Kingham
1.0	17/10/13	Issued for internal review	G. Pinzone	R. Kingham, P. Hyatt, L. Duthie	R. Kingham

1. Introduction

Hunt Oil Australia Permit 425 Holding Company Pty Ltd (Hunt) is proposing to drill the Schooner-1 gas vertical exploration well located in the WA-425-P exploration permit of the Browse Basin off the north west coast of Western Australia.

The well will be drilled by the *Stena Clyde* semi-submersible mobile offshore drilling unit (MODU), with a scheduled commencement date of late December 2013/early January 2014, subject to rig availability.

The proposed Schooner-1 drill site is located 426 km (229 nm) north of Broome and 48 km (26 nm) west of Browse Island in a water depth of 270 m (Figure 1).

The Environment Plan (EP) for the drilling programme was accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) on the 9th of October 2013 in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009.

2. Proponent

Hunt is the designated operator of Permit Area WA-425-P (30% interest) on behalf of its Joint Venture partners SK Energy Corporation Ltd (30% interest) and Mitsui E&P Australia Pty Ltd (40% interest).

Hunt is a subsidiary of the Hunt Oil Company (HOC), which was established in 1934 in Texas, United States of America. HOC is one of the largest independent oil and gas companies in the world, with onshore and/or offshore operations in North America, South America, Europe, Australia and the Middle East. HOC has been involved in the construction and operation of major liquefied natural gas (LNG) projects in Yemen and Peru.

The Schooner-1 well will be the first offshore well drilled by Hunt in Australia. An Integrated Project Management Team has been created in association with AGR Petroleum Services (AGR) for the Schooner-1 programme. AGR has drilled numerous offshore exploration wells in Australia and brings substantial local experience to the team. They provide resources to assist with designing the well, contracting a drilling rig and third-party service providers, obtaining environmental and safety regulatory approvals, and day-to-day management during drilling of the well.

Additional information about Hunt can be obtained from its website at: www.huntoil.com.

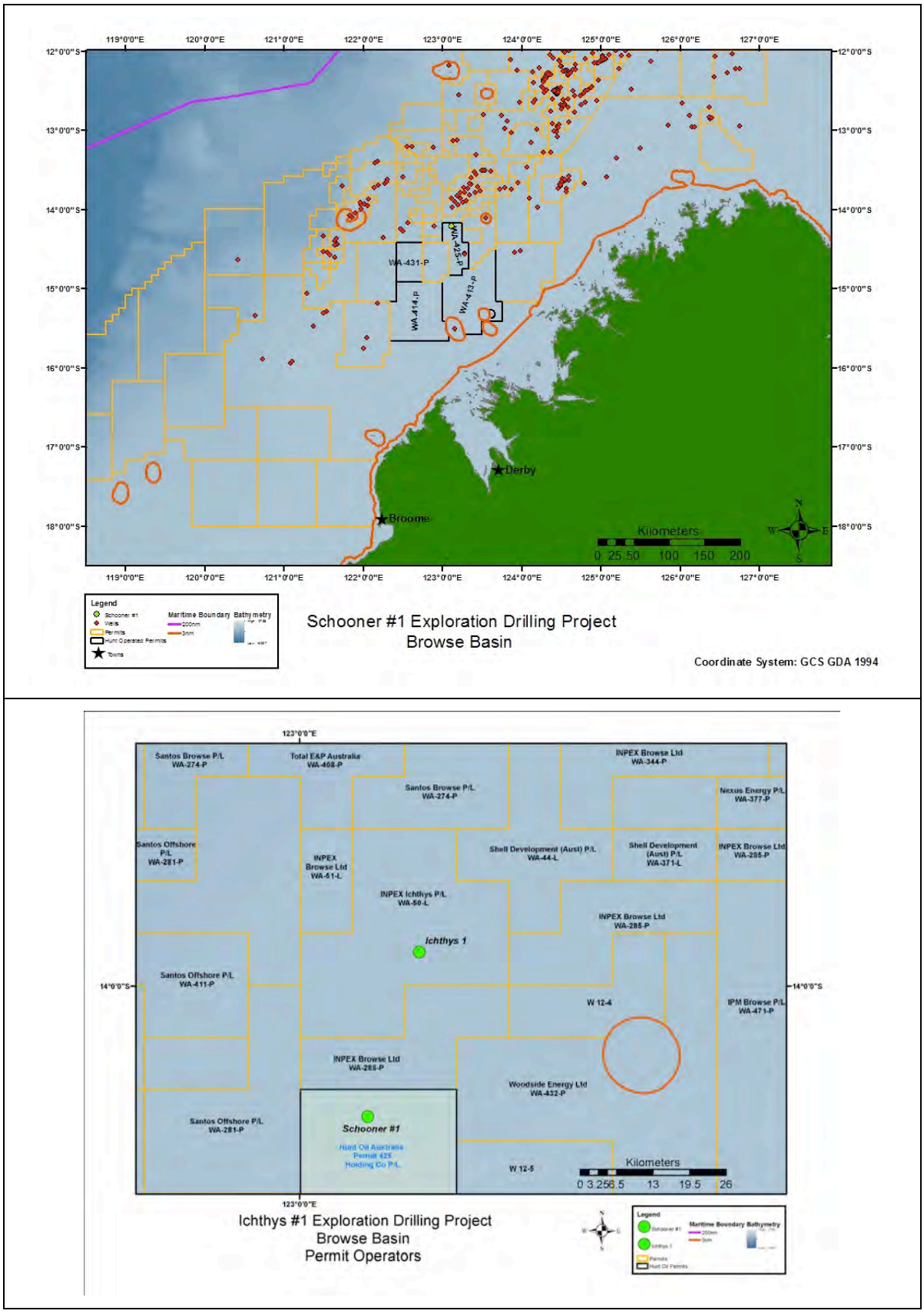

Figure 1. Location of the Schooner-1 exploration well

3. Activity Description

Schooner-1 will be drilled by the Stena Clyde semi-submersible MODU. The drilling campaign will be supported by at least two anchor handling, tug and supply (AHTS) vessels working from the Port of Broome. A third vessel may be used as logistics support.

During the drilling programme, the AHTS vessels will be traversing to and from port for provisions and equipment to support the drilling operations. These vessels use dynamic positioning systems that enable them to remain on location using bow thrusters rather than anchors.

The MODU has been operating in nearby waters for some time and will be towed from another site in the Browse Basin by pumping water out of the four buoyancy tanks ('pontoons'), allowing the MODU to float and then be towed using one or more of the AHTS vessels.

Drilling will take place 24 hours a day, and is expected to take about 45-60 days. The drilling procedure will follow the design outlined below.

The well design utilises the standard 36" (914 mm)/30" (762 mm), 26" (660 mm)/20" (508 mm)", $17^1/_2$" (444 mm)/$13^3/_8$" (340 mm), 12¼" (311 mm)/$9^5/_8$" (244 mm) hole/casing configuration, with $8^1/_2$" (216 mm) open hole to Total Depth (TD). The 30" (762 mm) casing will be set at approximately 300-350 mRT to provide stability for the top hole sections. A subsea wellhead system with a 40-50 m conductor, which is consistent with offset wells, and Temporary Guide Base (TGB)/Permanent Guide Base (PGB) is planned for use.

The 26" (660 mm) hole will be drilled riserless to approximately 615 mRT and the 20" (508 mm) casing will be set at approximately 600 mRT. The Blowout Preventers (BOPs) will then be installed. The $17^1/_2$" (444 mm) hole will then be drilled, to place the $13^3/_8$" (340 m) casing at the base of the Fenelon Formation (2,420 mRT) prior to entering the target formations. The 12¼" (311 mm) section will then be drilled to the base of the Echuca Shoals formation with the $9^5/_8$" (244 mm) casing set at approximately 3,810 mRT. The primary (Brewster Formation) and secondary (Plover Formation) targets will be drilled in $8^1/_2$" (216 mm) hole to a TD of approximately 4,200-4,700 mDRT. A contingent 7" (178 mm) and 5" (127 mm) drilling/testing liner will be available should hole conditions require it to be run.

Both the 36" (914 mm) and 26" (660 mm) hole sections will be drilled utilising seawater and pre-hydrated bentonite/guar gum sweeps to clean the hole of cuttings. Once the 20" (508 mm) casing is set, an engineered water-based mud (WBM) system will be used and the mud and cuttings returned to the MODU where the cuttings will be separated from the mud (via vibrating screen shale shakers) prior to being discharged overboard.

During the drilling of the 36" (914 mm) and 26" (660 mm) hole sections, cuttings will be directly deposited immediately adjacent to the wellhead. A subsea BOP will then be installed and a closed mud system put in place to circulate the WBM used for the lower section. Cuttings from the drilling of the $17^1/_2$" (444 mm) section will be returned to the MODU with the drilling fluid and screened by the shale shakers and hydrocyclones (desanders/desilters, as required) to minimise residual mud loading on the drill cuttings prior to discharge overboard and to maximise mud recirculation.

The 12¼" (311 mm) and 8½" (216 mm) hole sections will be drilled through reactive shale sections requiring the use of a Synthetic-based Mud (SBM) system. In addition to using the shale shakers to reduce the quantity of SBM on the cuttings, the cuttings from these sections will also pass through a cuttings dryer to further reduce the quantity of oil on the cuttings. This is the standard process for reducing the 'retained oil on cuttings' (ROC) with the objective to ensure that the ROC of drilling fluids discharged overboard to less than 10%. To confirm this, onsite testing will be performed to ensure no more than an average of 10% of SBM (dried weight) remains on the cuttings prior to discharge.

No whole SBM will be discharged overboard. Any unused or recovered SBM will be shipped back to the Port of Broome and inspected by the mud systems contractor. If the properties of the recovered SBM do not meet a minimum standard for recycling (following onshore treatment), then the SBM will be disposed of to an authorised landfill site.

Table 1 provides a summary of the drilling programme.

Table 1. Schooner-1 drilling programme summary

	Schooner-1
Permit area	WA-425-P
Basin	Browse
Surface hole location - degrees (GDA 94, Zone 51)	14° 12' 33.3" S 123° 06' 31.9" E
Type of well	Exploration, vertical
Target	Gas
Water depth (LAT)	270 m
Earliest commencement	Mid-December 2013
Campaign period	40-65 days
Drill rig	*Stena Clyde* semi-submersible MODU
Proposed total depth (MDRT)	4,200 – 4,725 mDRT
Drill Fluids	
914 mm (36") hole	Seawater and gel sweeps
660 mm (26") hole	Seawater and gel sweeps
444 mm (17½") hole	Engineered WBM
311 mm (12¼") hole	SBM
216 mm (8½") hole	SBM
Volume of fluid disposed with cuttings (estimate only)	925 m^3 (WBM) 41 m^3 (SBM)
Volume of cuttings (estimate only)	404 m^3 (WBM) 138 m^3 (SBM)
Production testing	No
Vertical seismic profiling (VSP)	Possible
Shore base	Broome
AHTS vessels	Two AHTS vessels to be confirmed, third vessel possible
Helicopter flights	Estimated 5 return trips per week

4. Stakeholder Consultation

Hunt has consulted with various stakeholders for the Schooner-1 drilling programme, with few concerns expressed about the activity. The few concerns expressed by some government agencies (regarding oil spill preparedness and response) have been addressed within the EP and Oil Spill Contingency Plan (OSCP). Various agencies involved in oil spill preparedness and response have contributed advice that has been incorporated into the Schooner-1 OSCP. More than 30 government, commercial and recreational fishing, environment and industry organisations have been consulted about the drilling programme. All correspondence with stakeholders is recorded and will be on-going prior to, during and after completion of the drilling programme.

5. Receiving Environment

5.1 Physical Environment

Climate. The region has a tropical climate with hot and humid summers and warm winters. There are two distinct seasons: the 'wet' usually from December to March and the 'dry' for the remainder of the year. The median annual rainfall is 532 mm. Over 75% of the average annual rainfall events from January to March are associated with thunderstorms and tropical lows or cyclones. From October to April maximum ambient air temperatures average over 33°C while overnight minima are typically 26°C. Winters are milder, with July average maximum and minimum temperatures being 26.9°C and 12.0°C respectively. Mean sea temperature ranges are reported to range between 22-27°C in winter and 26-30°C during summer.

Winds. The two main broad scale influences are the band of high pressure known as the sub-tropical ridge well to the south, and the monsoon that delivers moist air from the warm tropical waters to the north. During the warmer months, a heat-trough forms over the inland Kimberley. These combine to produce a general south-easterly wind regime for much of the year. Tropical cyclones capable of strong winds, high seas and heavy rain can be experienced during the months from November to April, but are most common in January and February.

Ocean currents. Ocean currents in the Timor Province bioregion are dominated by the southward-flowing warm surface Indonesian Throughflow that flows from the tropics to the waters of southwest Western Australia and dominates most of the water column. The Indonesian Flowthrough generally flows westwards and its strength varies seasonally in conjunction with the Northwest Monsoon. During the wet season (December–March), monsoon winds push some of the waters of the current eastwards, extending as far as the Gulf of Carpentaria. At the end of the Northwest monsoon (March–April), the pressure gradient is released, which releases a south-westerly flow of water across the shelf during autumn and winter, known as the Holloway Current.

Bathymetry. Waters of the Timor Province range from 200 m near the shelf break to 5,920 m on the Argo Abyssal Plain. Almost half of the reefs in the North-west Marine Region occur in the Timor Province, including Scott, Seringapatam and Ashore reefs and Cartier Island.

Seabed. There is no distinct shelf break within the Timor Province. Instead, there is a smooth transition from the outer shelf to the upper continental slope. The seabed sediments of the region comprise bio-clastic, calcareous and organogenic sediments that were deposited by relatively slow and uniform sedimentation rates. Within the Timor Province, carbonate sands dominate the sediments of the outer shelf and slope of this bioregion and mud content typically increases with water depth.

5.2 Biological Environment

Benthic Invertebrates. Most of the benthic systems of the Timor Province are detritus-based and reliant upon deposit feeding infauna and epifauna (animals that live on the seafloor or

burrow into its sediments, such as nematodes, polychaete worms, shelled molluscs and a variety of crustaceans). Surveys undertaken approximately 27 km to the south of the proposed Schooner-1 drill site recorded bare substrates with heavily rippled sand waves approximately 10 m apart, suggesting the presence of very strong currents and mobile sediments that do not support the development of diverse epibenthic communities. These seabed surveys found that benthic infauna assemblages were dominated by polychaete worms and crustaceans (70% of species diversity), with species diversity decreasing with water depth.

Fish. The Timor Province bioregion has 408 fish species, 64 (15%) of which are endemic, and 198 of which occur in water depths greater than 200 m. Most fish have tropical distributions and are well distributed throughout the Indo-West Pacific region. Key fish species targeted in the region by commercial fisheries include goldband snapper (*Pristipomoides multidens*), Spanish mackerel (*Scomberomorus commerson*), rankin cod (*Epinephelus multinotatus*), red emperor (*Lutjanus sebae*), pink snapper (*Pagrus auratus*), blacktip shark (*Carcharhinus melanopterus*) and sandbar shark (*C. plumbeus*).

Marine Mammals. Dolphins are relatively common in the region. Species known to occur in the region are the bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*) and Indo-pacific humpback dolphins (*Sousa chinensis*). A number of whale species, including the short-finned pilot whale (*Globicephala macrorhynchus*), Bryde's whale (*Balaenoptera edeni*) and humpback whale (*Megaptera novaeangliae*) also occur in the region, the most commonly sighted of these being the humpback whale. This species migrates between the Antarctic waters (feeding) and the Kimberly region of Western Australia (breeding).

The peak of their northerly migration to the Camden Sound region occurs around mid- to late July to early August, while the southerly return migration peaks from late August to early September. Humpback whales use the Kimberley coast (Camden Sound and King Sound in particular) as calving grounds between June and mid-November (200 km southwest of the proposed drill site). The highest numbers of cows/calf pairs are present from the mid-August to mid-September.

Reptiles. Six species of marine turtles are listed as threatened and migratory under the EPBC Act and may traverse the permit area. Four of these species, the green, flatback, loggerhead, and hawksbill turtles, nest on sandy shore sites south of the region around the Dampier Archipelago, Montebello Islands, Lowendal Islands, Murion Islands, Barrow Island, Airlie Island, Thevenard Island, other nearby coastal islands and the Exmouth region. All species except the green turtle have mid-shelf or deep water habitats, with the green turtle (*Chelonia mydas*) generally found in water depths less than 20 m. Green turtles are known to nest at Ashmore, Cartier and Browse islands.

The main turtle nesting and hatching period occurs from November to March with a peak in December. Hatchlings emerge 6 to 8 weeks after females have nested. There are no biologically important areas in or around the WA-425-P permit area for any of these turtle species.

Twenty-five species of sea snakes are recorded in WA waters, however little is known of the distribution of individual species, population sizes or aspects of their ecology. Sea snakes are widespread through tropical waters in offshore and near-shore habitats.

Coral. Coral reef habitat occurs to the west (Scott, Seringapatam), north (Ashmore Reef) and the northeast (various shoals) of the WA-425-P permit area, but not within it. These reef systems are regionally important for their high biodiversity, and support a high biomass of fish species, including tropical reef fish, small pelagic fish such parrotfish and groupers, and larger species such as trevally, coral trout, emperors, snappers, dolphinfish, marlin and sailfish, as well as crustaceans.

Birds. Only one species of seabird is known occur within a 10-km radius of the proposed drill site, this being the streaked shearwater (*Puffinus leucomelas*). Birds that occur year round or as

seasonal visitors in the region, such as petrels and shearwaters, are likely to be common in and around the WA-425-P permit area. A survey of pelagic seabird populations undertaken in the northeast Indian Ocean revealed that foraging seabirds were typically clumped in areas adjacent to islands. Most birds encountered offshore were foraging in flocks of 20 to more than 200 individuals, often of different species, and commonly associated with schools of pelagic fish, such as tuna. Foraging groups typically comprise sooty terns (*Sterna fuscata*), wedge-tailed shearwaters (*Puffinus pacificus*) and the occasional frigatebird (*Fregata* spp.). The most commonly encountered seabirds that were not foraging were wedge-tailed shearwaters (*Ardenna pacifica*) and Bulwer's petrels (*Bulweria bulwerii*); however, these two species were only recorded in low densities.

Common seabird species encountered in the region (concentrated around Scott Reef and waters east and south) during surveys undertaken for the Montara oil spill (September and October 2009) include the common noddy (*Anous stolidus*), brown booby (*Sula leucogaster*), bridled tern (*Onychoprion anaethetus*) and sooty tern. Pelagic migratory species encountered included wedge-tailed shearwaters, streaked shearwater and Bulwer's petrel.

5.3 Socio-economic Environment

Settlements. The proposed Schooner-1 drill site is located approximately 426 km (229 nm) north of Broome, which has a population of about 15,800 and is the main service and population centre for the Kimberley region. The shire's main industries are tourism, pearling, fishing, aquaculture, pastoralism and horticulture.

The permit area does not support recreational or tourism activity.

Conservation Values. The conservation of natural and anthropological heritage in Commonwealth marine areas is grouped into the following categories, with the nearest sites to Schooner-1 listed in Table 2.

Table 2. Conservation areas in the vicinity of the proposed Schooner-1 drill site

Heritage Place	Commonwealth Marine Reserve	World Heritage List	Commonwealth Heritage List	National Heritage List	Ramsar Wetland site
Kimberley Marine Reserve	Yes	-	-	-	-
Scott Reef	-	-	Yes	-	-
Seringapatam Reef	-	-	Yes	-	-
Ashmore Reef	Yes	-	Yes	-	Yes
Cartier Island	Yes	-	-	-	-

The Kimberley Commonwealth Marine Reserve (CMR) is the nearest to the Schooner-1 drill site (~70 km south) and comprises a Marine National Park, Habitat Protection Zone and a Multiple Use Zone. Like other established Commonwealth marine reserves, petroleum exploration is a permissible activity within the Multiple Use Zone.

Commercial Fisheries. Several WA- and Commonwealth-managed fisheries have jurisdiction to fish in the permit area. Western Australian-managed fisheries that may fish the area include the North Coast Demersal Scalefish Fishery (Area 2, Zone C) and the Kimberley Prawn fishery. Commonwealth-managed fisheries that may fish the area include the Western Tuna and Billfish fishery and Northwest Slope Trawl fisheries, though there has been no fishing around the proposed drill site between 2005 and 2011.

Traditional Fisheries. The proposed drill site lies within the 'MoU Box' (the Memorandum of Understanding between Australia and the Republic of Indonesia in 1974) to allow traditional Indonesian fishing within Australian waters. This access was granted in recognition of the long history of traditional Indonesian fishing in the area. The MoU allows fishing within the reefs of

Cartier Island, Scott Reef, Seringapatam Reef and Browse Island. The MoU defines traditional fisherman as fishers who have traditionally taken fish and sedentary organisms in Australian waters using traditional fishing methods and non-motorised sailing vessels. Target species include trochus, sea cucumber, abalone, green snail, sponges, molluscs and finfish, including sharks.

Petroleum Exploration and Production. While there is currently no petroleum production from the offshore Browse Basin, several projects are in development (Ichthys and Browse LNG). The Browse Basin is one of Australia's most hydrocarbon-rich basins.

Southwest of the proposed drill site on the North West Shelf (mainly the waters between Exmouth and Dampier) is Australia's most prolific oil and gas production region, resulting in Western Australia accounting for 77% of the country's oil and condensate production and 55% of the country's gas production (2010 figures).

Shipping. The ports of northwest Australia (Onslow, Dampier, Cape Lambert, Port Hedland and Broome) handle large tonnages of iron ore and petroleum exports, resulting in very busy shipping routes through the area. The closest port to the WA-425-P permit is Broome, which is the largest deep-water port in the Kimberley region. It supports livestock export, offshore oil and gas exploration supply vessels, pearling, cruise liners, fishing charters and general cargo. In 2006-07, 80% of the imported tonnage to the port related to the servicing the petroleum exploration and development industry. Consultation with the Maritime Operations Division of AMSA indicates that there may be local vessel traffic encountered near the drill site, with the main shipping fairway occurring west of Scott and Ashmore reefs.

Maritime Heritage. The Australian National Shipwreck Database lists 4 shipwrecks registered within the vicinity of Browse Island, but none in the WA-425-P permit area. There are no historic shipwreck protected zones in the permit area. The Western Australian Shipwrecks Database indicates there are no shipwrecks in or near the permit area, with the nearest wreck being the *Yarra* at Scott Reef.

6. Environmental Impact Assessment

The known and potential environmental impacts resulting from the proposed Schooner-1 drilling programme are outlined in detail in the EP. Table 3 provides a summary of the detailed environmental impact assessment and mitigation measures that will be put in place, which have been assessed to be As Low As Reasonably Practicable (ALARP).

Table 3. Summary environmental impact assessment for the proposed Schooner-1 drilling programme

Potential risk	Potential consequences	Key avoidance, mitigation & management measures	Residual risk ranking
PLANNED ACTIVITIES			
Physical impacts			
Seabed disturbance (MODU and AHTS vessel anchoring)	Temporary and localised seabed disturbance, shallow seabed depressions.	• No anchoring by support vessels is planned. • MODU positioning procedure in place. • MODU anchor tensioning monitored to ensure no excessive dragging. • Crane operator loading and backloading procedures in place. • No listed shipwrecks in permit area.	Negligible

Underwater noise	Temporary physiological impacts on sensitive fauna, such as cetaceans. Disruption to migration, feeding or breeding patterns.	• Drilling not undertaken in key migration path of threatened cetaceans. • MODU and vessel engines maintained in accordance with planned maintenance systems. • VSP to be undertaken only for a few hours per well using recognised industry standards. It will be undertaken in accordance with the EPBC Act Policy 2.1 (Part A).	Negligible
Artificial lighting	Attractant to fauna, temporary increase in predation rates on fauna attracted to lights.	• Few light-sensitive species in vicinity of drilling locations. • Lighting managed in accordance with maritime safety standards. • Lights directed downwards to the water will be minimised. • No flaring to be undertaken.	Negligible
Atmospheric emissions	Temporary and localised reduction in air quality.	• Marine-grade (low sulphur) diesel used. • MODU and vessel engines and machinery maintained in accordance with planned maintenance systems. • No flaring to be undertaken. • No waste incineration will take place.	Negligible
Routine liquid and solid discharges			
Discharge of muds and WBM- and SBM-coated cuttings	Temporary and localised smothering/burial and disturbance of immediate seabed area. Temporary and localised loss of water quality from suspended sediments.	• Only drilling additives ranked highly under the CHARM North Sea OCNS will be used. • Use of low-toxicity SBM base fluid for the lower sections of the wells. • No disposal of bulk SBM overboard. • SBM Management Plan in place. • Use of a containment specialist company on board to manage SBM fluids discharge and ensure than <10% oil-on-cuttings is achieved. • Benthic fauna likely to rapidly recolonise. • No sensitive seabed features at drill site. • Use of experienced mud engineers.	Negligible - minor
Cement discharges	Temporary and localised loss of water quality from suspended sediments. Smothering of benthic habitat and fauna.	• Cementing undertaken in accordance with Cement Program. • No bulk discharge of mixed cement will take place. • Only cement additives ranked highly under the CHARM North Sea OCNS will be used.	Negligible
Cooling water discharge	Localised elevation in surface water temperature.	• Cooling water system is maintained in accordance with the MODU planned maintenance system.	Negligible
Brine water	Localised elevation in surface water	• Reverse osmosis system is maintained in	Negligible

discharge	temperature and salinity levels.	accordance with the MODU planned maintenance system.	
Sewage and putrescible waste discharge	Temporary and localised reduction in water quality. Modification of fauna feeding patterns.	• MARPOL-approved sewage treatment plants used on MODU and AHTS vessels. • Sewage treatment plant is maintained in accordance with the MODU planned maintenance system. • No discharge of sewage and putrescible waste within 12 nm of land. • Putrescible waste macerated to < 25 mm in size prior to discharge. • Non-food galley wastes will be bagged and shipped to shore for disposal. • Garbage Records Book will be maintained.	Negligible
Deck and bilge water drainage	Temporary and localised reduction in water quality.	• Oil-in-water (OIW) treatment systems in place on the bilge water tank, with no discharge over 15 ppm oil-in-water. • Oil captured from the OIW treatment system will be transferred to shore for disposal. • Chemical storage and fuel transfer areas are bunded. • MODU and AHTS vessels have current International Oil Pollution Prevention Certificates. • Spills to decks cleaned immediately. • Shipboard Oil Pollution Equipment Plan (SOPEP) kits available on board for rapid clean-up response.	Negligible
Hazardous and non-hazardous solid waste discharges	Temporary and localised reduction in water quality.	• Solid wastes bagged and sent ashore for disposal. • All bins secured to deck and covered with lids. • Only small volumes of chemicals kept on board. • Waste streams will be sorted on board according to shore-based recycling capabilities. • MODU Waste Management Plan and procedures in place. • Garbage Records Books will be maintained. • Use of licensed shore-based waste contractors.	Negligible
UNPLANNED ACTIVITIES			
Introduction of invasive marine organisms from vessel hulls and/or	Establishment of foreign species to open ocean and/or seabed, competing with and displacing	• MODU and AHTS vessels are already working in Australian waters and have been cleared by AQIS. • MODU and AHTS vessels have anti-fouling paint applied to their hulls and internal	Low

ballast	native species.	niches. • MDU and AHTS vessels will comply with the Australian Ballast Water Management Requirements (AQIS, 2011).	
Interference with third-party vessels	Temporary loss of fishing grounds from drill rig safety exclusion zone, resultant loss of income. Collision risk. Snagging on anchors and anchor lines.	• Stakeholder consultation indicates very low fishing effort around the permit area. • No shipping lanes located in close proximity to the drill site. • Standard maritime safety measures will be in place (e.g., lighting, 24-hr visual, radio and radar watch).Notice to Mariners will be issued. • MODU location will be communicated to other users via the Notice to Mariners and AusCoast warnings. • A 500-m radius safety exclusion zone around the MODU will be enforced by the AHTS vessels, who will 'chase' away vessels travelling too close to the MODU.	Low
Diesel refuelling spill	Temporary marine pollution. Injury or death to marine fauna through ingestion or contact.	• AHTS vessels will only refuel in port. • MODU diesel tanks located 21 m below the water line with minimal risk of vessel impact, usually holding only 25 m^3. • MODU bunkering procedures in place, with specifications including: o Use of dry-break couplings. o Job Hazard Analysis (JHA) and Permit to Work (PTW) undertaken prior to refuelling. o Visual watch on hoses. o Fuel hoses replaced to schedule or earlier as required. • OSCP and Emergency Response Plan (ERP) in place and ready for implementation. • Regular (quarterly) SOPEP training undertaken by deck crew. • OSCP in place and will be implemented in the event of a spill. • Operational and Scientific Monitoring Plan (OSMP) in place and will be implemented in the event of a spill to monitor for environmental impacts.	Low
Loss of well control (i.e., blowout)	Marine pollution. Injury and death of marine fauna. Pollution of shoreline habitats and reefs.	• The well will be safely drilled in accordance with a number of documents, including the Well Operations Management Plan (WOMP), Vessel Safety Case (VSC) Revision, Drilling Fluid Program, Well Casing Program and BOP testing procedures. • No shallow gas risks identified.	Low

		• BOP will be inspected, installed and pressure-tested. • Well control training undertaken by relevant crew. • Well drilled by qualified and experienced drillers. • Appropriate drilling fluid weight will be used specific to known reservoir pressures. • Well Relief Plan, ERP, OSCP and OSMP in place and ready for implementation in the event of a blowout.	

7. Environmental Management

Hunt manages the environmental and safety impacts of all its activities and operations, both existing and planned, through implementation of its Environment, Health and Safety Management System (EHSMS) called 'Integrity Matters'. The EHSMS includes 12 elements.

An environmental implementation strategy for the Schooner-1 drilling programme is detailed in the EP. This strategy involves a detailed Health, Safety and Environment Management Plan for the well, a crew training and awareness program, environmental audits, routine and incident reporting, and environmental monitoring and recording.

8. Hydrocarbon Spill Preparedness and Response

The Schooner-1 Drilling OSCP (accepted with the EP) is the primary reference document to be used in the event of a large-scale hydrocarbon spill (> 10 tonnes) (e.g., spill of diesel or blowout of gas condensate).

Strategies for oil spill responses outlined in the OSCP are focused on the vulnerable habitats (i.e., islands and coral reefs) located within the trajectory of the oil spill modelling for the drilling programme (or the 'Zone of Potential Impact') rather than open oceanic waters. These strategies are specifically tailored to the nature of the oil (a light, highly evaporative gas condensate that weathers into non-toxic waxy flakes) and take into account the environmental sensitivity of the region.

Hunt, in consultation the Australian Marine Oil Spill Centre (AMOSC), has determined (through the production of a Net Environmental Benefits Analysis, NEBA) that in the event of a large-scale diesel or gas condensate spill, the order of preference for spill response is:

1. Natural recovery.
2. Monitor and evaluate.

Factors taken into consideration in determining these strategies include:

- The long distance between the proposed drill site and sensitive environments.
- The light, highly evaporative nature of gas condensate and diesel, especially in warm waters.
- The nature of the weathered oil, which rapidly becomes a non-toxic waxy substance.
- Active intervention at sensitive sites such as Scott and Seringapatam reefs and Browse Island are likely to cause greater harm than the spill itself.

- The health and safety risks of deploying containment and recovery equipment in high seas and remote locations, for hydrocarbons that are difficult to capture due to their composition (i.e., rapid spreadability).

9. Further Information

For further information about the Schooner-1 drilling programme, please contact:

Mr Richard Kingham
Environment, Health and Safety (EHS) Manager
Hunt Oil Company of Australia Pty Ltd
Phone: 08-6316 4664
Email: rkingham@huntoil.com