Cutney-1
Vertical Exploration Well
Environment Plan: Summary
February 2010

This summary of the Chutney-1 EP has been submitted to comply with Regulation 11(7)(8) of the Petroleum (Submerged Lands) (Management of Environment) [P(SL)(MoE)] Regulations 1999.

Introduction

Apache Energy Limited (Apache) proposes to drill the Chutney-1 vertical exploration well in Commonwealth waters off the Western Australian coast in Exploration Permit WA-426-P using the *Stena Clyde* semi-submersible drill rig. Chutney-1 is located 116 km northwest of the nearest mainland, and 57 km west/southwest of the nearest Montebello Islands (**Figure 1**). Drilling is scheduled to commence in mid February 2010.

Apache's generic Environment Plan (EP) for its drilling program on the North West Shelf (NWS) in State and Commonwealth waters will be used to manage the well (EA-00-RI-164). A bridging document to this EP for Chutney-1 was approved by the DMP, in accordance with the Petroleum (Submerged Lands) (Management of Environment) (PSLMoE) Regulations 1999.

Project Description

The proposed Chutney-1 drill site is located in a water depth of 110 m at:

Lat / Long	Decimal degrees
20° 29' 39.28" S 114° 57' 21.72" E	20.494244 114.956033

(GDA 94, Zone 50).

After anchoring the drill rig, drilling of Chutney-1 will commence. A 914mm (36") hole will be drilled with seawater gel sweeps and a 762mm x 508mm (30" x 20") conductor will be set at 48m below the seabed, at 183m MDRT. A 406mm (16") hole will then be drilled into the Lower Gearle and a 340mm (13-3/8") casing run and cemented at 1,571m MDRT. At this point the Blowout preventers (BOP's) and marine riser will be installed and a connector integrity and full BOP pressure test will be conducted.

The well will be displaced to SBM, then the 340mm (13-3/8") casing shoe track will be drilled out and a leakoff test (LOT) conducted. It is planned that the 311mm (12-1/4") hole section will intersect the Lower Muderong to a total depth (TD) of approximately 100m above the Barrow at 2,965m MDRT. A 244mm (9-5/8") casing will then be run to 5m above this depth.

The 244mm casing shoe track will be drilled out with a 216mm (8-1/2") assembly and a LOT will be conducted. It is planned that the 216mm (8-1/2") section will intersect the Barrow A sandstone, the primary objective, and TD 100m below the base at 3,305m MDRT. On reaching TD the well will be evaluated using wireline logs and then abandoned appropriately or suspended to be used as a future production well depending on hydrocarbon show. The drill rig will then pull-up anchors and move off location.

All work on the well will be undertaken in accordance with the regulations and guidelines set out in the *Petroleum (Submerged Lands) Acts Schedule: Specific Requirements as to Offshore Petroleum Exploration and Production – 1995*.

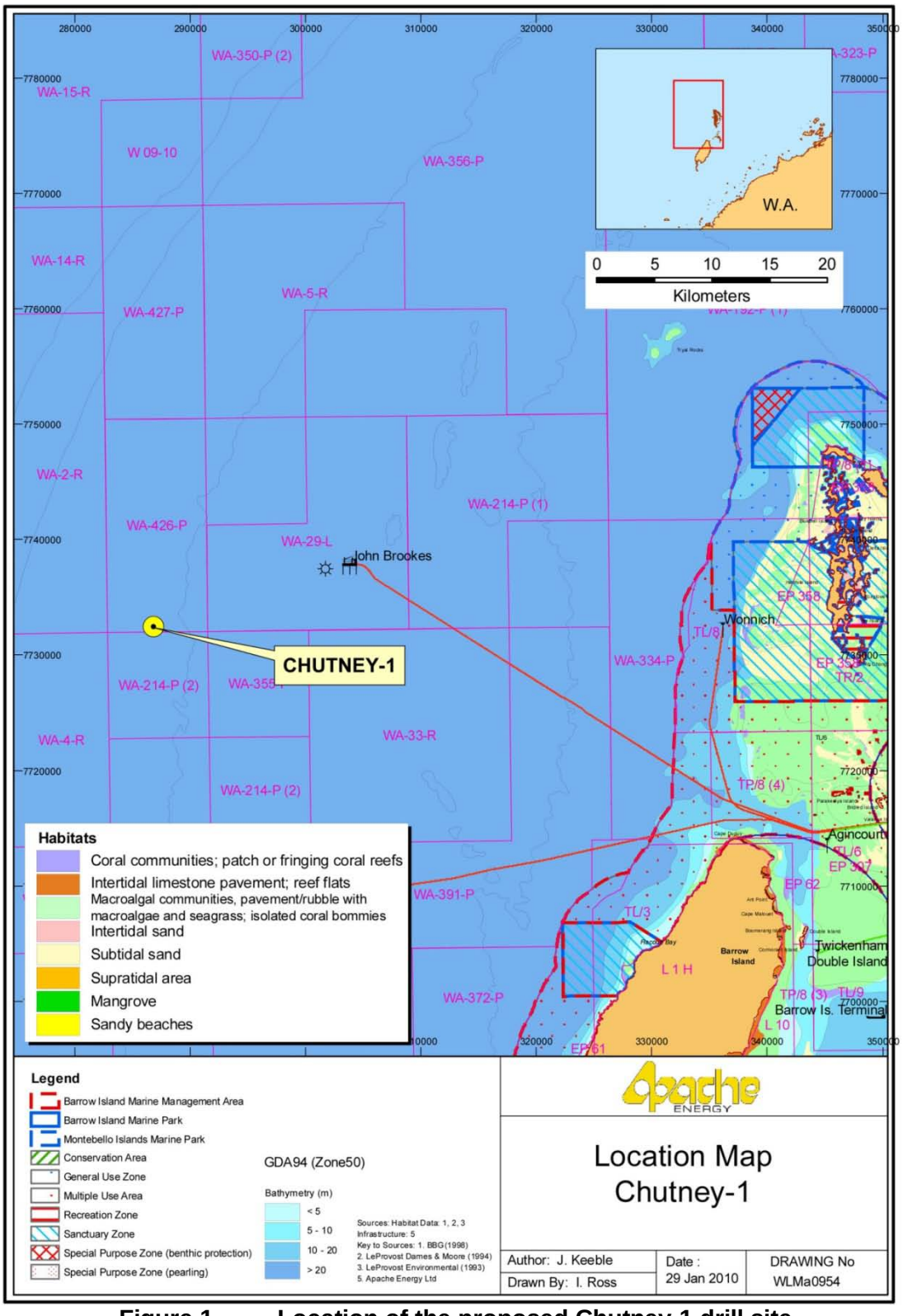


Figure 1 Location of the proposed Chutney-1 drill site

Receiving Environment

Physical Environment

The NWS lies in the arid tropics region of Australia, which experiences high summer temperatures and periodic cyclones (with associated rainfall). Rainfall is generally low, with evaporation exceeding rainfall. Mean ocean temperatures range from a minimum of 11ºC in winter to a maximum of 37ºC in summer. Shelf waters are usually thermally stratified at a depth of about 20 m.

Wind patterns are monsoonal with a marked seasonal pattern. From October to March, the prevailing non-storm winds are from the south-west, west and north-west at an average speed of less than 10 knots. From June to August, winds are generally lighter and more variable in direction than in spring and summer.

Non-storm winds prevail from north-east through to south-east at average speeds of 5-6 knots. Transitional wind periods, during which either pattern may predominate, can be experienced in April, May and September each year.

Biological Environment

The drilling programme during February coincides with the end of the sea turtle nesting period and the seabird nesting period on the Montebello and Lowendal Island groups. It also coincides with the peak dugong breeding period (see **Table 1**).

The proposed Chutney-1 drilling location is over 50 km distant from the nearest island and therefore it is not expected that dugongs (or turtles and seabirds) will be affected by the drilling program. Helicopters will be routed to avoid flying over sensitive breeding areas.

The drilling of the Chutney-1 well will not coincide with the migration of humpback whales (*Megaptera novaeangliae*) in the Exmouth to Port Hedland region. The humpback whale is a cetacean listed as 'threatened' under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*.

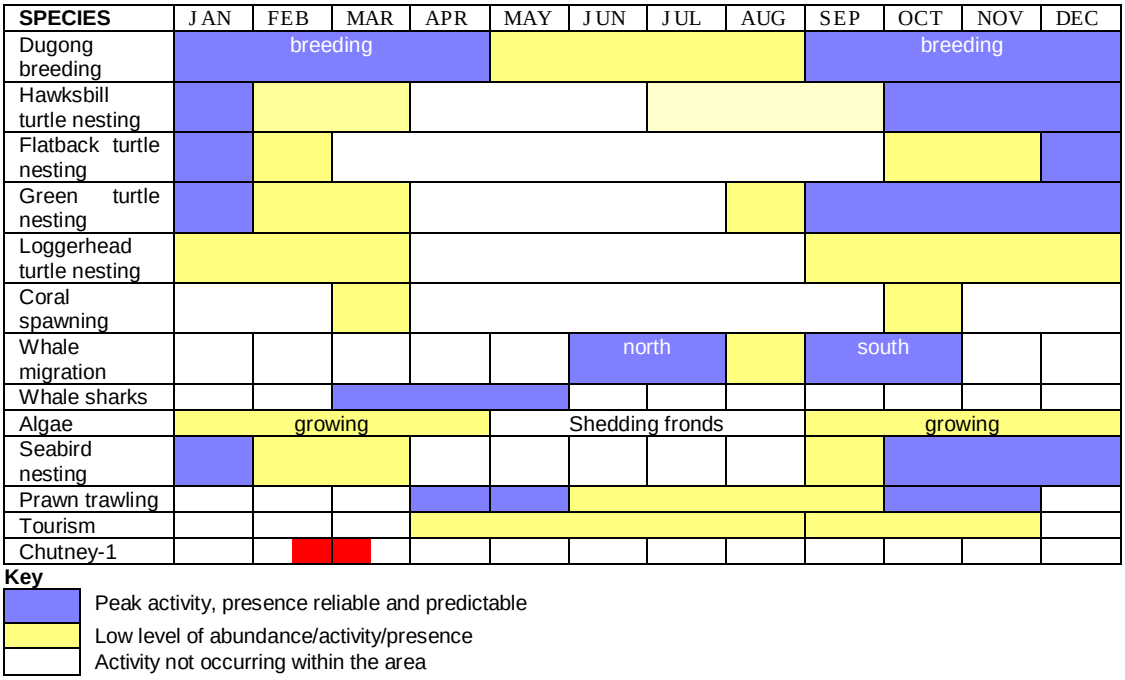
Whale sharks (*Rhincodon typus*) aggregate in and near the waters of the Ningaloo Marine Park during autumn (usually late March to June). Numerous aerial surveys and scientific research indicates that they are generally not spotted in waters deeper than 100 m. As drilling will be undertaken a significant distance north of the marine park and will occur outside of the whale shark migration period, drilling is not expected to impact on whale shark migration or aggregation activities.

Socio-Economic Environment

Dampier and Karratha are the main service and population centres for this region. Local people seeking aquatic recreation such as boating, diving and fishing use the coast and islands of the Pilbara. The open waters of the Commonwealth permit areas do not support significant recreational or tourism activity.

Commercial fisheries are active along the Pilbara coast; however fishing effort in the open Commonwealth waters is low, with operators favouring the inshore areas.

Table 1. NWS biological and human activity seasons



Major Environmental Hazards and Controls

The potential environmental impacts resulting from offshore drilling on the NWS are outlined in detail in the Generic Drilling Program EP. **Table 2** summarises the potential impacts of the Chutney-1 drilling program.

Table 2. Summary of potential environmental impacts from offshore drilling on the NWS

Potential hazard (risk)	Potential environmental effect (consequence)	Risk ranking
Drill rig and vessel anchoring	Localised disturbance to seabed, such as shallow furrows, dependent on seabed type. Effects are temporary.	Negligible – semi-submersible rig with anchoring to seabed.
Artificial lights from drill rig (must be kept on 24 hrs due to safety regulations)	Potential disorientation of fauna by lights at night, especially turtle hatchlings.	Negligible – wave direction and magnetic cues are primary influences on turtle hatchlings once they have left the beach. Chutney-1 is distant from nesting beaches.
Impacts to marine species from noise generated by the drill rig and support vessels	Potential short-term physiological effects or disruption to behaviour patterns of cetaceans, birds, turtles, fish and other marine life.	Negligible – observations have shown whales resting and swimming in close proximity to operating rigs.
Drill cuttings and	Drilling activities and disposal of drill	Acceptable – WBMs and

Potential hazard (risk)	Potential environmental effect (consequence)	Risk ranking
fluid discharges	cuttings and fluids will produce suspended sediments in the water column increasing turbidity, will bury and smother infauna and epifauna and may lead to toxicity and bioaccumulation to marine organisms.	SBMs used. Studies on NWS reveal few long-term impacts on benthic fauna from WBMs. SBM on cuttings reduced through use of cuttings dryer/centrifuge system.
Sewage, putrescible and solid domestic wastes	Potential localised reduction in water quality - nutrient enrichment. Modification of feeding habits of local fauna.	Negligible – sewage treatment available on rig.
Waste oil, chemicals and oil-contaminated drainage water	Potential localised reduction in water quality.	Negligible – decks kept clean during operations, oily-water separator collects any spilled material.
Cooling water and atmospheric emissions	Potential localised reduction in water quality. Emissions of greenhouse gases. Potential localised reduction in air quality.	Negligible – discharged above water line to allow cooling and oxygenation.
Introduction of foreign marine organisms from drill rig and support vessels	Competition with local marine life and absence of natural predators can alter ecological balance of flora and fauna communities, favouring the introduced species and resulting in loss of flora and fauna diversity and abundance.	Negligible
Impacts to humpback whales or whalesharks from vertical seismic profiling (VSP) noise	VSP is a more benign activity than conventional seismic surveys. Potential short-lived impacts include disruption to navigation and communication, with some research indicating no disruption from normal activities when seismic activity is occurring several kilometres away.	Acceptable - VSP carried out in accordance with DMP's guidelines for minimising acoustic disturbance to fauna.
Oil or diesel spills	Severe damage of marine habitats (e.g., coral reefs, mangroves, beaches) and death or injury to marine life (e.g., birds, mammals).	Acceptable – Oil spill management procedures are in place.

Environmental Management

Extensive environmental management guidelines are prepared for each Apache-drilled well. Apache management documents used to guide the implementation of well-specific environmental management procedures are listed below:

- Environmental Management Policy (April 2009).
- Contaminated Waste Management Procedure (VI-SA-ON-EN-000).
- Incident Reporting Procedure (AE-91-IF-002).
- Lighting Management Plan (EA-60-RI-153).
- OSCP Volume 1 – Operations (NWS) (AE-OO-EF-008).
- OSCP Volume 2 – Resource Atlas (NWS) (AE-OO-EF-008/2).

- Quarantine Procedure (AE-91-IQ-189).
- Refuelling Management Plan (DR-91-IG-001).
- Refuelling Operational Procedure Guide.
- Vermin Management Plan (EA-60-RI-131).
- Waste Management Plan (EA-60-RI-167).

Consultation

In preparing the Generic NWS Drilling Program EP, Apache consulted with numerous stakeholder representatives, including:

- (former) Department of Industry and Resources (DoIR) (now Department of Mines and Petroleum).
- (former) Department of Environment (DoE) (now Dept of Environment & Conservation).
- CALM (Marine branch) (now DEC).
- Fisheries WA.
- Marine and Coastal Community Network (MCCN).
- Environment Protection Agency (EPA).
- Marine Parks Reserve Authority (MPRA).
- CALM (Environmental Protection) (now DEC).
- WA Fishing Industry Council (WAFIC).

Further Details

For further information about the Chutney-1 drilling program, please contact:

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