



**ORIGIN BASS BASIN DRILLING PROGRAM
(T/18P)**

**ENVIRONMENT PLAN
EXECUTIVE SUMMARY**

1	1	Origin comments incorporated	QHSE Team Leader	Drilling Manager	Drilling Superintendent	21-07-09
1	0	Issued	QHSE Coordinator	Drilling Manager	Drilling Superintendent	20-07-09
Issue	Rev	Description	Prepared By:	Reviewed By:	Approved By:	Date

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1 EXECUTIVE SUMMARY

1.1 The Proponent

Origin Energy Resources Limited (Origin Energy) is the proponent for the Origin Bass Basin Drilling Program. Australian Drilling Associates (ADA) is an international well engineering and project management company, conducting the drilling operations on behalf of Origin.

1.2 The Proposal

Origin Energy propose to undertake exploration drilling of two wells, Rockhopper-1 and Trefoil-2, in Commonwealth waters of the Bass Basin, off the north coast of Tasmania, in petroleum exploration permit T/18P. Water depths in the project area range from approximately 70 m to 80 m.

The Kan Tan IV semi-submersible rig will be used to drill the two wells at the locations shown in **Figure 1**. Coordinates of the wells are listed in **Table 1** below. Drilling will occur 24 hours per day.

The Trefoil-2 well will be drilled vertically to an approximate depth of 3195mTVDSS. The Rockhopper-1 location will be drilled to an approximate depth of 3142.5m TVDSS. Both wells will be drilled using low toxicity water-based drilling muds (WBM). Cuttings will be separated from the WBM using industry standard equipment. Whole WBM will be predominantly discharged overboard at the completion of the well. The quantity of cuttings discharged from each site will be approximately 301 m³ and 338 m³ respectively.

The drilling program is scheduled to commence in late July 2009 and will continue for approximately 70 days.

Two support vessels will service the rig; there will be approximately 15 support vessel trips per month during the drilling program. Both vessels will return to port for refuelling. There will also be helicopter support to the drill rig.

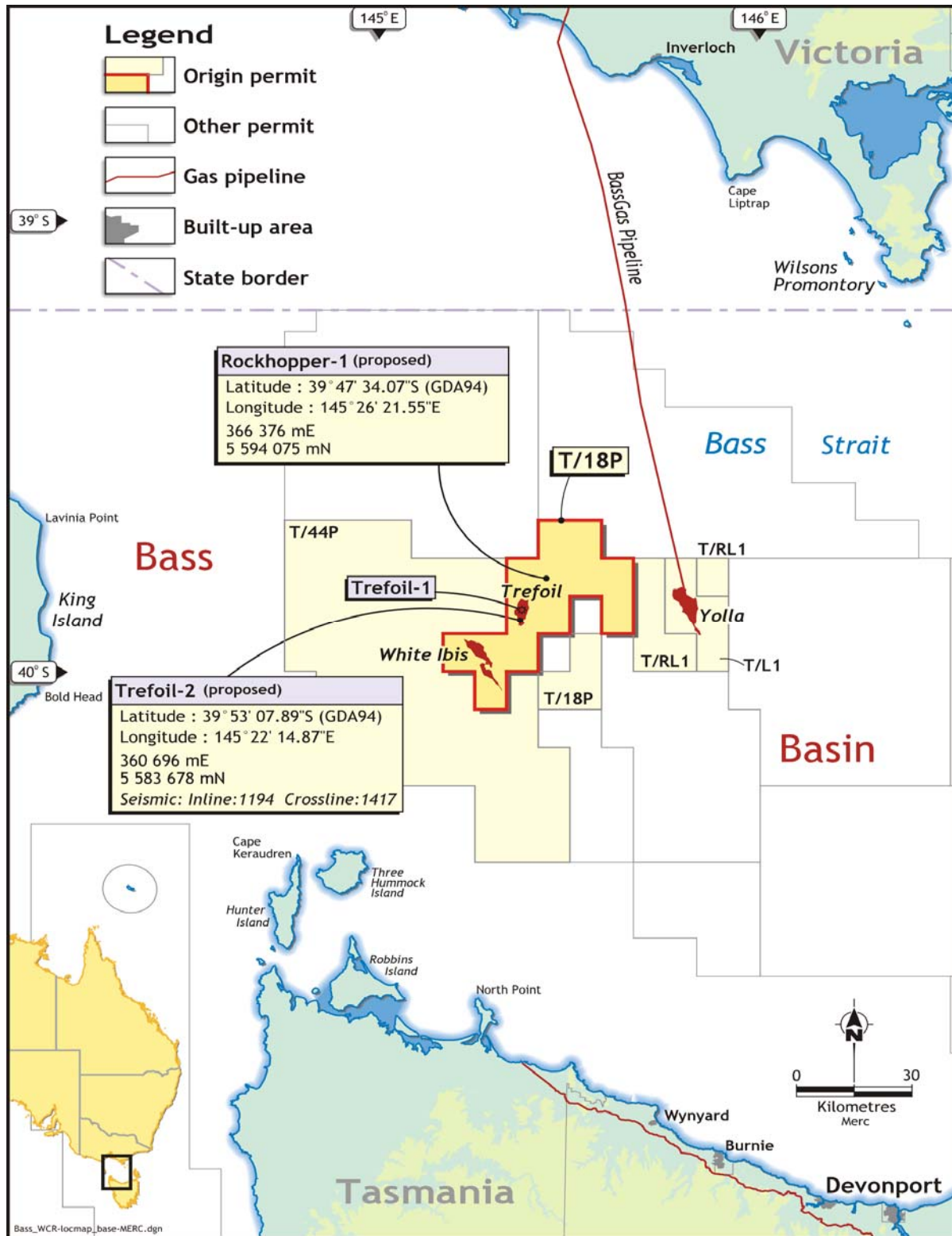
This EP was approved by the Department of Infrastructure, Energy and Resources on 13 July 2009. The Commonwealth Department of Environment, Water, Heritage and Arts (DEWHA) assessed a referral under the Environment Protection and Biodiversity Conservation Act as 'not a controlled action' on 31 March 2009.

Table 1 Well location and permit area

Location Name	Permit Area	Latitude	Longitude
Rockhopper-1	T/18P	39° 47' 34.068" S	145° 26' 21.551" E
Trefoil-2	T/18P	39° 53' 07.89" S	145° 22' 14.87" E

Projection: GDA94

Figure 1 Origin Bass Basin Drilling Program Location



1.3 Description of the Environment

Physical Environment

The climate within the vicinity of the drilling program varies between 8 °C and 17 °C. Tidal ranges in the survey area are estimated to be approximately 3 metres (Australian Bureau of Meteorology). Tidal velocities in the survey area would be expected to be less than 0.05 m/s (IMCRA, 1998).

The T/18P well sites are in water depths ranging from approximately 70 m to 80 m on the continental shelf approximately 163 km northwest of Devonport, off the coast of Tasmania

Biological Environment

Bass Strait continental shelf benthic fauna shows high species diversity (Poore et al., 1985; Parry et al. 1990). The region also contains a number of species of high commercial and conservation value.

It is estimated that there are over 500 species of fish found in the waters of Bass Strait, including a number of species of importance to commercial and recreational fisheries (LCC, 1993).

There are no islands or seabird colonies in the immediate vicinity of the project area. However, there is the propensity for coastal migratory species to fly over the area since many of the birds undertake large annual migrations across the South Pacific. Such species are considered highly unlikely to be impacted by the drilling program due to the low impact nature of the program-related activities, relatively small spatial and temporal footprint of the activity and lack of roosting sites.

The Department of Environment, Water, Heritage and the Arts (DEWHA) EPBC Online Database (DEWHA, 2008) lists eight cetacean species under the migratory provisions of the EPBC Act that are likely to occur in the project area. Two of these species are endangered and two vulnerable. These include the blue whale, southern right whale and humpback whale. The scheduled period for the drilling program is during the migratory period of the Blue Whale and Humpback Whale for the project area. There is a possibility that whales will be sighted in the project area.

The project area does not reside in a know world heritage, national heritage place or near a wetland of international importance.

Socio-economic Environment

The main activities in the project area include recreational fishing and tourism, petroleum exploration and production, commercial shipping and commercial fishing. Petroleum exploration has been undertaken within Bass Strait since the early 1960s. The Bass Gas project is currently producing gas from the Yolla gas field located to the east in T/L1. Exploration continues in a number of Tasmanian permit areas.

1.4 Stakeholder Consultation

In the course of planning the proposed drilling program, Origin and ADA has to date, undertaken consultation with relevant stakeholders in the region to identify regulatory processes, potential environmental issues and management requirements. Ongoing consultation with these groups will continue up to and during the drilling program.

Stakeholders associated with the program that have been consulted are listed in **Table 2**.

Table 2 Stakeholder consultation

Stakeholder	Contact	Date	Matters Discussed	Actions
DIER	Chris Boron	06/09/08 and ongoing	EP requirements timing	- No actions advised
	Carol Bacon	15/06/09	EP contacts and submission	- No actions advised
	Ashley McQueen	06/07/09	EP requirements	- Ensure fishery consultation is undertaken, AMSA, AMFA notifications are made and border protection command and the department of defence notified.
DPI	Cynthia Crow	03/07/09	EP requirements.	<ul style="list-style-type: none"> - Ensure fishery consultation is undertaken, AMSA, AMFA notifications are made and border protection command and the department of defence notified. - Clarify aspects to the environment plan as per email dated 02/07/09.
Border Protection Command	Mark Bailey, Liaison Officer	06/07/09	Security advice.	- No further actions advised at this stage.
Defence	Mark Bolger	06/07/09	Security advice.	- No further actions advised at this stage.
AFMA	John Matthews	29/09/08 - 03/06/09 - ongoing	Advice on locations and fisher groups contact.	Advise the following fisheries of the upcoming campaign: <ul style="list-style-type: none"> - Commonwealth Fisheries Association - Tasmanian Fishing Industry Council - Seafood Industry Victoria - Lakes Entrance Fishermen's Co-operative Ltd - South East Fishery Association - South East Trawl Fishing Industry Association -
AMSA	Mark Eldon-Roberts	29/09/08 - ongoing	Port Phillip to Davenport route, TT Line and other shipping routes.	- Notify shipping routes Toll Shipping, Port Devonport, of upcoming drilling campaign.
Commonwealth	Chris	29/09/08 -	Advice on locations.	- No further actions advised at this

Fisheries Assn	Melham	03/07/09 - ongoing		stage.
Tasmanian Fishing Industry Council	Neil Stump	29/09/08 - 03/07/09	Advice on state fishing activities within the project vicinity.	<ul style="list-style-type: none"> - Notify the following regarding the drilling program: - Chris Melham from the Commonwealth Fisheries Association and Charles Farquhar from the South east Fishermen's Association.
Tasmanian Association of Recreational Fishing	Mark Nikolai	29/09/08 - ongoing	Advice on recreational fishing activities within the project vicinity.	<ul style="list-style-type: none"> - No further actions advised at this stage.
TasPorts	Mick Wall	03/07/09	Advice on shipping routes within the project vicinity.	<ul style="list-style-type: none"> - No further actions advised at this stage. ADA Materials and Logistics Coordinator will be liaising with the Burnie Harbour Master regarding any rig movements.
Toll Shipping Line	Peter Stokes	03/07/09	Advice on shipping routes within the project vicinity.	<ul style="list-style-type: none"> - No further actions advised at this stage. ADA Materials and Logistics Coordinator will be liaising with the Burnie Harbour Master regarding any rig movements.
Seafood Industry Victoria	Ross McGowan	03/07/09	Advice on state fishing activities within the project vicinity.	<ul style="list-style-type: none"> - No actions advised to date
South East Fishery Association (SEFA)	Charles Farquhar	03/07/09	Advice on state fishing activities within the project vicinity.	<ul style="list-style-type: none"> - No actions advised to date
LEFCOL	Dale Sumner	03/07/09	Advice on state fishing activities within the project vicinity.	<ul style="list-style-type: none"> - No actions advised to date
Bass Strait Central Zone Scallop Fishery	Shane Gaddes	03/07/09	Advice on state fishing activities within the project vicinity.	<ul style="list-style-type: none"> - No actions advised to date
Scallop Fishermans Association	Steve Melassakis	06/07/09	Advice on state fishing activities within the project vicinity.	<ul style="list-style-type: none"> - No actions advised to date

1.5 Environmental Impact Assessment, Management and Mitigation

The main environmental hazards associated with the drilling program include:

- Presence of drill rig and support vessels;
- Well equipment remaining on seabed after drilling (rig to be removed from location at end of drilling);
- Drilling operations (i.e., lost equipment);
- Discharge of sewage and putrescible wastes, deck drainage oily wastes;
- Management of solid and hazardous materials and waste;
- Ballast water discharge and hull cleaning;
- Deck drainage discharge from drill rig and vessels; and
- Accidental spills.

The Environment Plan provides a detailed assessment of potential impacts. The key points of the assessment, and management and mitigation measures are summarised in **Table 3** below. The summary risk ranking is also shown in **Table 3**; there are a total of 19 potential environmental risks, 18 of which are rated low risk and one of which is rated a medium risk.

Table 3 Summary of environmental impact assessment results

Impact Assessment	Management and Mitigation	Risk Ranking
<p>Presence of drilling rig and support vessels: Rig positioning and anchoring Disturbance to seabed habitat.</p>	<ul style="list-style-type: none"> • Pre-mobilisation survey of drill locations. • Adherence to anchoring procedures to minimise chain and anchor drag. 	Low
<p>Presence of drilling rig and support vessels: Interference with other activities Interference with commercial fishing.</p>	<ul style="list-style-type: none"> • Liaison and communication with commercial fishing operators regarding schedules and work plans during the drilling program. • All support vessel operations will be conducted in compliance with the AMSA OSV Code (e.g., radar monitoring, vessel communications). • 500 m safety zone to protect rig infrastructure. • Navigation light present on KanTan IV. • Continuous support vessel surveillance. 	Low
<p>Presence of drilling rig and support vessels: Interference with other activities Risk of collision with other vessels (including shipping routes for Searoad Shipping and TT line).</p>	<ul style="list-style-type: none"> • Commercial shipping lanes managed by liaison with AMSA. • A log maintained of all errant vessels / fishery interaction on board the KTIV. 	Low
<p>Presence of drilling rig</p>	<ul style="list-style-type: none"> • All vessels will adhere to the National Guidelines for Whale 	Low

<p>and support vessels: Interference with other activities Possible collision with marine mammals causing injury or death.</p>	<p>& Dolphin Watching.</p>	
<p>Presence of drilling rig and support vessels: Artificial lighting Attraction of seabirds and other marine life and the safety need to other vessels visibility at night.</p>	<ul style="list-style-type: none"> • Standard maritime safety procedures will be adopted (AMSA). Lighting selected to meet safety requirements. • Minimise unnecessary lights directed downwards toward water. • Crew to record observations of whales and other megafauna. 	Low
<p>Presence of drilling infrastructure and support vessels: impact to visual amenity. Visual impact in nearshore areas.</p>	<ul style="list-style-type: none"> • Distance from shoreline 160 kms from shore. 	Low
<p>Presence of drilling rig and support vessels: noise from drill rig, drilling vessels and support vessels, helicopters. Behavioural changes to marine mammals.</p>	<ul style="list-style-type: none"> • Application of DEWHA guidelines for cetacean observation and recording on rig and support vessels. • Program will be undertaken during migratory periods for whale species that are likely to occur in the area but not at locations where there is breeding or calving. • Noise produced from the drilling rig (low-level, low-frequency tones), and accompanying support vessels in the order of magnitude of noise produced by commercial shipping. 	Low
<p>Presence of drilling rig and support vessels: noise from drill rig, drilling vessels and support vessels, helicopters. Mobile vessel encroachment on cetaceans.</p>	<ul style="list-style-type: none"> • Adoption of encroachment distances from whales by service vessels (300 m) and helicopters (500 m) (Australian National Guidelines for Whale and Dolphin Watching 2005). 	Low
<p>Well equipment remaining on seabed. Snagging of fishing gear.</p>	<ul style="list-style-type: none"> • Pre-discussion with affected fishing group. • Safety zone declaration and inclusion on official maps of well equipment locations. 	Low
<p>Drilling discharges: discharge of water based drilling cuttings and muds to sea. Smothering of benthic communities in immediate area of discharge (within 100 m).</p>	<ul style="list-style-type: none"> • Drill cuttings are treated on the shale shaker and by centrifuges prior to disposal to maximise recovery and reuse of drill muds. • WBM is low toxicity and rapidly disperses. • Drilling mud spills will be prevented by containment on the main deck and mud handling area. 	Low
<p>Drilling operations: Protruding objects on seabed.</p>	<ul style="list-style-type: none"> • Well plugged and abandoned below seabed with no well head protruding above the seabed. 	Low

Disruption to commercial fishing operations.		
<p>Discharge of sewage and putrescible wastes, deck drainage, oily wastes: Waste discharge to sea. Disturbance to marine environment.</p>	<ul style="list-style-type: none"> • Solid waste discharges to sea will be limited to food scraps and sewage. • Sewage will be treated through an on-board effluent treatment plant prior to being discharged to sea in accordance with MARPOL regulations (Annex IV). • The contents of the sewage holding tank will be processed through an Omnipure 12MX-MP Marine Sewage Treatment Plan prior to discharge. • Macerated to less than 25 mm diameter prior to disposal. 	Low
<p>Discharge of solid and hazardous materials and waste: Waste discharge to sea. Disturbance to marine environment.</p>	<ul style="list-style-type: none"> • All vessels will comply with State and Commonwealth legislation for the control of pollution and dumping at sea. • Solids will be returned to shore for disposal (including excess cement and mud). • All hazardous materials will be stored in appropriately banded areas. • All excess chemicals will be stored appropriately and returned to shore / back to supplier. • Minimisation of chemical usage through drilling management planning – minimisation of waste generation and avoid excess chemical discharge to sea unless approved by the regulator. • Wastes will be segregated as required and stored in storage areas and transferred to onshore licensed materials handlers for disposal to a licensed depot. • Waste register will be maintained to record waste management practices and audited to verify compliance. • Records kept of unplanned emissions and discharges. • Induction training will be provided for waste management. • A maintenance program shall be in place for waste management equipment. 	Low
<p>Ballast water discharge and hull cleaning: Introduction of marine pests. Marine species will compete for food.</p>	<ul style="list-style-type: none"> • Ballast water will be exchanged as per vessel procedures, if required. • Vessel to comply with the Australian Ballast Water Management Requirements (AQIS). • Vessel masters will be made aware of the AQIS' Maritime Awareness Kit'. 	Low
<p>Deck drainage discharge from drill rig and vessels: waste discharge to sea. Disturbance to marine environment.</p>	<ul style="list-style-type: none"> • In the event of a chemical or oil spill (>80L), absorbent materials will be used to remove spill material prior to any washing activities. • The absorbent material will be containerised and sent to shore as hazardous waste to ensure that no contaminated waste streams are routinely discharged from the deck drainage system. • MSDS forms available for all hazardous chemicals • Use of oil detection monitoring equipment for treated oily water. • Deck treatment systems (separators) for oily wastes and discharge of separated water. 	Low
Exhaust and well	• No testing is planned. Any unplanned gaseous release >	Low

<p>testing emissions: Emission to atmosphere. Pollution of atmosphere.</p>	<p>500 m³ will be reported.</p> <ul style="list-style-type: none"> Emissions will be minimised by ensuring that all engines and generators are serviced to manufacturer's specifications. Fuel consumption routinely monitored. 	
<p>Accidental spill: fuel spill, condensate spill. Disturbance to marine environment.</p>	<ul style="list-style-type: none"> Ensure that the vessel has an approved Oil Spill Contingency Plan (OSCP) in place and staff (including subcontractors, service vessels, etc.) appropriately trained in its execution. Ensure that all necessary fuel spill equipment is functional and accessible on the vessel. A maintenance program will be in place for oil spill equipment. The KanTan IV spill kits are located in numerous locations around the rig. Spill kit material includes boom socks, soak pads, gloves and goggles. Ensure that fuel will not be transferred during inappropriate weather conditions. Ensure that equipment and procedures used for transferring fuel from vessel to rig (e.g., 'Dry-Break' hose couplings), conform to the AMSA Code for the safe working of support vessels. Supply vessels will cease operating and seek safe harbour (or deep water) where conditions make it unsafe, in the view of the Vessel Master. In the unlikely event of a spill during fuel transfer, ensure that the volume spilled is minimised by the automatic operation of shutdown pumps or safety valves and apply vessel Emergency Response and OSCP's. Ensure that all vessel operations are conducted in compliance with the AMSA OSV Code (e.g., radar monitoring, vessel communications). Communications shall be maintained with other vessels operating in the area to advise of the project area and avoid collision. Spill modelling undertaken to enable oil spill contingency planning. Ensure that all personnel are aware of the existence and location of the above-listed documents. 	Medium
<p>Accidental spill: Chemical spill. Impacts to water quality and marine life. Impacts to water quality and marine life.</p>	<ul style="list-style-type: none"> Minimisation of chemical usage and generation of waste. Education in waste handling procedures during transfer and operational usage for relevant personnel. 	Low
<p>Accidental spills: Blow out, uncontrolled release of reservoir fluids. Impacts to marine fauna.</p>	<ul style="list-style-type: none"> Prior site survey analysis and understanding of likelihood of intersecting over-pressured strata. Maintenance of all well control equipment including routine maintenance of flowline, hose and other fittings to the BOP and other equipment. Installation of blow-out preventers. Routine monitoring of pressure of drilling fluid system. Oils spill and emergency response plan. 	Low

Management and mitigation measures that will be followed during the project are provided in the Environment Plan. The implementation strategy for the Environment Plan specifically details the measures needed to ensure that the environmental performance objectives and standards are met, and identifies:

- Systems, practices and procedures;
- Specific roles and responsibilities;
- Employee training;
- Monitoring, auditing and recording requirements;
- Emergency response planning; and
- Consultation with government and stakeholders.

1.6 Contact Details

Please direct all queries, comments or request for a copy of the approved Origin Bass Basin Drilling Program Environment Plan to:

Mr Texas Richards

Drilling Superintendent

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