

**Proposed exploration drilling programme within
Permit Area TP3 Part 1 offshore Onslow**

West Australian Petroleum Pty Ltd

**Report and recommendations of the
Environmental Protection Authority**

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Submission. **Waste disposal:**

WAPET propose to dispose of drill cuttings and excess drill fluids back down the well, within 0.5km of sensitive habitats. This Department believes that the majority of the Permit Area is sensitive. Consequently, although it is accepted that drilling fluids (if water based) have a minimal toxic effect and drill cuttings a localised smothering effect, this Department believes that if disposal into the well is a practical option as suggested by WAPET, then that option should be utilised.

Of significant concern to CALM is the treatment of domestic and sewage wastes. In a high technology operation such as that proposed, with as many as twelve exploratory wells suggested, it is unacceptable to simply comminute the wastes and discharge them into the environment.

Response :

When operating within a 500m radius of sensitive resources (ie coral reefs and seagrass beds) WAPET will dispose of drilling mud and cuttings into the well if a lost circulation zone is available. Experience has shown that dilution and dispersion of drilling mud lines occur within about 100-150m of the platform, hence allowance of a 500m buffer zone between a drilling rig bottom outfall and sensitive resources is considered adequate. The majority of the seafloor within Permit Area TP/3 (Part 1) is primarily composed of sand which is inhabited by sparse sessile fauna which include sponges, hydroids, sea anemones, sea whips, sea stars, sand dollars, crinoids and various burrowing infauna. Because these organisms live in relatively deep and often turbid water it is highly unlikely that they would be sensitive to diluted drilling fluids. We believe the management of drilling fluid disposal as described in the TP/3 CER is therefore practical and effective for drilling operations within the different environmental zones of the Permit Area.

However, provided the rig being used has the necessary equipment, and cuttings can be pumped down the well, WAPET has no objection to following this practice in all drilling locations in the Permit Area.

Foodscraps will be collected and transported to the mainland for disposal in accordance with the PSLA Clause 222. Sewerage will be comminuted and disinfected by chlorination prior to disposal to comply with MARPOL requirements.

Submission. **Corrections:**

Table 6, P.68:

It is believed that the contact for whales might be Mike Osmond, rather than Mike Osborne. Similarly, James Andrews, rather than James Masters.

P.27:

'Murion' should read 'Muiron'.

Appendix 7:

'Turbridji' should read 'Tubridgi'.

Response . WAPET acknowledges the corrections.

Submission 3. **5.3.2 Operation procedures:**

On P.54:

The CER states that contaminated seabirds and turtles would be cleaned by staff of the appropriate authorities. Clarification is required as to who those authorities are and who will fund the clean up.

Response . (i) CALM is generally acknowledged as the authority that takes charge of incidents involving marine animals (Sanko Harvest spill, Kirki spill,

Whale strandings). WAPET understands that CALM would also be involved in directing the cleanup of birds or turtles that could be contaminated by oil in the event of an oil spill within TP/3 Part 1.

Commitment No. 7 of the section on Safety and Oil Spill Contingency states that WAPET will be fully responsible for the cost of cleaning up any areas polluted by petroleum and promptly pay any entities damages to which they are lawfully entitled from WAPET.

- (ii) WAPET has compiled detailed emergency procedure manuals to be followed in the event of a cyclone such that the safety of people, facilities and the environment are not compromised. These manuals list predetermined conditions under which development and production operations are shut down.

Response

WAPET has recently increased its oil spill handling ability and effectiveness with the purchase of additional booms, a skimmer, shore clean-up equipment and flotation tanks. All of this equipment is light-weight and capable of being readily transported throughout the area by light plane, helicopter or small vessel.

Submission

Recently, oil companies operating in commercial fishing areas in Western Australia have been required to obtain an insurance agreement which covers third party loss of profits or business interruption in the event of an oil spill. Such an agreement must be in place to the satisfaction of the Fisheries Department before permission to drill the first well of the programme is given.

Response

Refer to response to WAFIC submission on liability.

Submission

The Authority suggest that if oil is discovered then the project be assessed at a level requiring formal public review.

Response

If oil is discovered WAPET will assess the project at a level set by the EPA.

petroleum discharged or spilled while drilling any well in Permit Area TP/3 Part 1 and for clearing up any areas polluted by such petroleum. In addition, WAPET will also undertake to promptly pay to any person, company or government agency, any damages to which any of those entities is lawfully entitled from WAPET; and

2. Provide details of insurance carried by its principals. Note that the above undertakings and details are provided routinely by WAPET to the WA Department of Mines prior to commencement of any offshore well. A recent example could be provided to the EPA by the Mines Department subject to their approval.

Submission

Proposed exploratory wells could be situated within productive trawling areas of the Onslow prawn fishery. If the drilling period coincides with the fishing season (April to November) interference with normal trawling practice could occur to the detriment of the annual catch of tiger prawns. It is therefore essential that the company discuss the drilling schedule with the local prawning industry and the W.A. Fishing Industry Council so that a mutually satisfactory operational agreement can be reached.

Response

WAPET has established a good working relationship with the Onslow prawn fishery. This liaison will continue. Drilling schedules will be discussed with the relevant parties.

Submission

It is thus imperative that the oil spill contingency plan be fully operational for rapid deployment at all times during the drilling phase and include a capacity for transferring recovered oil to suitable containers.

Response

As noted in the introduction to the "Summary of the Oil Spill Contingency Plan" (Appendix 7 CER) the appendix summarizes the most important aspects of the detailed TP/3 Part 1 Oil Spill Contingency Plan.

In that detailed plan, additional directions are given for combating an oil spill that has impacted the shoreline, whether it be a sandy beach, rocky shore or mangroves.

Submission

1. That the proponent accept full responsibility for any adverse environmental effects which may occur as a consequence of the proposal.
2. That the proponent accept full responsibility and liability to pay as damages to the fishing industry for bodily injury (fatal or non-fatal) and/or loss of, damage to or loss of use of property and/or loss of profits or business interruption caused directly or indirectly as a consequence of the proposal.
3. That the proponent shall be required to take out appropriate insurance provisions that demonstrate that the proponent can meet the conditions proposed in (1) and (2) to the satisfaction of the Minister for Environment on advise from the Minister for Fisheries.

Response

WAPET, on behalf of its joint venture principals, i.e. Chevron, Texaco, Ampolex, Shell and WMC, will do the following:

1. Give an undertaking to the State of Western Australia and the Commonwealth to be fully responsible for the cost of operations conducted by it or by any Government agency aimed at containing, dispersing or recovering

Submission

Council considers that it should be recognised as an Authority responsible for management both directly and indirectly in the project since all of the land in the permit area is part of the Shire of Ashburton and that any impact upon the coast will be subject to the provisions of the Local Government Act;

That the council of the Shire of Ashburton be added to the plan chart of notification procedures to be notified in the event of an oil spill anywhere in the permit area;

And that Council is notified prior to the drilling of any well in the permit area.

Response

WAPET accepts the Shire of Ashburton as an Authority. They will be consulted during the course of the drilling programme if any impacts are likely on the land that forms part of their Shire.

The level of notification of an oil spill will depend on the size of the spill. The Manager of Legal and Government Affairs will notify the Local Council in the event of a significant spill.

WAPET will also, as a matter of courtesy, notify the Council of any drilling to be undertaken in the permit area.

Submission

However, it must be recognised that should a major spill or blow out occur then almost certain impacting of the beach areas will occur and lack of time will prevent deployment of containment equipment resulting in only beach clean-up operations being performed. This threat must be fully recognised.

Response

As noted in the introduction to the "Summary of the Oil Spill Contingency Plan" (Appendix 7 CER) the appendix summarizes the most important aspects of the detailed TP/3 Part 1 Oil Spill Contingency Plan.

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Appendix 2

Submissions and proponent's responses

stored and released at a controlled rate during tide and wind conditions that will move the plume away from the closest sensitive resources.

- (9) Deck drainage and other oily wastes will be collected and transported to Port Hedland for recycling.
- (10) Sanitary wastes from the kitchen, showers and laundry will be passed through a sewage treatment plant for comminution and disinfection before being discharged overboard. Solid food waste will be macerated before disposal overboard. Biodegradable detergents will be used for cleaning functions. Combustible materials will be burnt on the rig. All non-combustible material will be returned to the shore base for disposal at an approved land site.

OPERATION OF VESSELS AND AIRCRAFT

- (1) Helicopter pilots will be instructed not to overfly islands.
- (2) Regular crew transfers between the drilling rig, Thevenard Island and Perth will use existing routes involving helicopter/light aircraft transfers to Barrow Island, and chartered commercial flight direct to Perth.
- (3) All refuelling operations for the supply vessels will be conducted in accordance with strict Port Authority requirements, including continuous visual monitoring and the use of reinforced hoses and fail-safe valves and fittings.
- (4) It will be a contractual requirement for the supply vessels and rig to comply with all State and Commonwealth legislation for the control of pollution and dumping at sea.
- (5) Masters of supply vessels will be instructed not to allow crew to disturb islands or wreck sites, nor to anchor close to coral reefs.

- (7) With regard to any oil spill or discharge resulting from the drilling of any wells in the Permit Area WAPET makes the following commitments:
- (a) to be fully responsible for the cost of operations conducted by it or any Governmental agency aimed at containing or dispersing or recovering any such petroleum or cleaning up any areas polluted by such petroleum;
 - (b) to promptly pay to any person, company or Government (Federal, State or Local) any damages to which any of those entities is lawfully entitled from WAPET.

DRILLING RIG OPERATIONS

- (1) Prior to spudding in, the rig operator will conduct surveys and tests in accordance with Department of Mines regulations to ensure stability of the rig and to minimise the risk of abnormal penetration of the seabed during storm conditions.
- (2) The blowout preventer (BOP) stack will be tested in accordance with Department of Mines regulations after the surface casing has been installed.
- (3) All casing strings installed below the BOP stack will be pressure tested in accordance with Department of Mines regulations before drilling is resumed.
- (4) Drilling fluids used will be those approved for offshore use by the Department of Mines.
- (5) Chrome lignosulphates will not be used in drilling any well.
- (6) At prospects within 500 m of sensitive marine resources drillers will only drill 17.5" and 36" holes during times when the tidal currents will transport the cuttings away from sensitive resources. Drill cuttings and excess fluids produced after the 36" hole will be disposed of between the down hole casings and into the lost circulation zone. If this zone is not available, drilling of the hole will only continue during favourable tidal conditions.
- (7) At prospects within 500 m and 2 km of sensitive marine resources, cuttings will be separated on board the rig and continuously discharged overboard through a conductor pipe to the seabed. Drilling fluid will be stored and discharged down the conductor pipe on tides that will carry the fluids away from sensitive marine resources.
- (8) At prospects more than 2 km from sensitive marine resources, cuttings will be separated and disposed overboard continuously. Drilling fluids will be

LIST OF COMMITMENTS

West Australian Petroleum Pty Limited (WAPET) undertakes to abide by all of the commitments made in the Consultative Environmental Review (CER) for the Permit Area TP/3 Part 1 Five Year Exploration Drilling Programme, and in all cases will fulfil those commitments to the satisfaction of the appropriate statutory authority(s).

The major commitments given within the CER are listed in the following sections.

ENVIRONMENTAL EDUCATION

- (1) Before commencement of their duties, each worker or contractor (including workboat and supply vessel crews) will be given an induction course including advice on the sensitive nature of the environment in which the drilling rig is located.

SAFETY AND OIL SPILL CONTINGENCY

- (1) To improve operational safety, commercial and recreational vessels will not be permitted closer than 500 m to the drilling rig during the construction phase.
- (2) The drilling rig to be contracted will be capable of withstanding cyclonic wind and wave conditions. Detailed procedures which set out the various levels of responses to cyclones will be contained in the operator's Emergency Procedures Manual.
- (3) WAPET will abide by all procedures detailed in the Permit Area TP/3 Part 1 Oil Spill Contingency Plan (OSCP).
- (4) An oil spill containment boom will be present at the site during drilling. A vessel will be in the vicinity of the drilling rig at all times to deploy the boom and skimmer in the event of an oil spill.
- (5) During any spill event, WAPET would make available oil spill equipment, vessels, aircraft and personnel, to help with containment and clean-up measures.
- (6) Existing WAPET and rig operator procedures for cyclone response will be followed to safeguard the wells, rig, offshore structures, vessels and personnel.

Appendix 1

Proponent's commitments

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request for the exercise of that power of the Minister should be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

The Authority notes that during the detailed implementation of proposals, it is often necessary or desirable to make minor and non-substantial changes to the design and specification which have been examined as part of the Authority's assessment. The Authority believes that subsequent statutory approvals for this proposal could make provision for such changes, where it can be shown that the changes are not likely to have a significant effect on the environment.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

Recommendation 7

The Environmental Protection Authority recommends that, prior to the start of the first well, the proponent successfully trial runs a simulated Oilspill Contingency Plan up to the point of deployment of resources, to ensure that the plan is workable to the satisfaction of the Authority. The Environmental Protection Authority also recommends that, while drilling is occurring, further simulated Oilspill Contingency drills be run at least once a year, or for each change of drilling rig, whichever is sooner, to maintain a high level of preparedness among all involved personnel.

Recommendation 8

The Environmental Protection Authority recommends that the proponent be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

6. Discussion and conclusion

This drilling proposal has raised public concerns for the environment based on widely held perceptions about the damage that can arise from oil spills. Brisk winds common to the area would be responsible with the tides for the rapid movement of a slick and for difficulties in the containment and collection of the oil. Therefore it is vitally important for stringent spill preventative measures to be in place to reduce the chances of an accident occurring. These can be achieved satisfactorily in this case by WAPET's adherence to their environmental management and oil spill contingency plans. Public concerns should also be addressed by consultation and liaison with interested and affected groups and the proponent has made a commitment to this effect in its response to submissions.

The Environmental Protection Authority considers that the proposal, subject to the commitments given by the proponent and the Authority's recommendations in this report, could be implemented in an environmentally acceptable manner.

Recommendation 1

The Environmental Protection Authority concludes that the proposal to conduct an offshore exploration drilling programme in permit area TP/3 Part 1, as described in the Consultative Environmental Review, is environmentally acceptable. In reaching this conclusion, the Environmental Protection Authority identified the main factors requiring detailed consideration as the effects of routine and accidental discharges arising from the drilling operations upon the environment, and the sectors of the community which are dependant on it.

The Environmental Protection Authority considers that these and other issues have been addressed by either environmental management commitments given by the proponent or by the Environmental Protection Authority's recommendations in this report.

Accordingly the Environmental Protection Authority recommends that the proposal could proceed, subject to:

- the proponent's commitments; and**
- the Environmental Protection Authority's recommendations in this report.**

No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent should take place until the Minister has advised the proponent that approval has been given for the nomination of a replacement proponent. Any

Accidental oil spills can occur from the rig refuelling operation, from a production test, or as a result of a blowout of crude oil from the well. Examination of the test flow figures from wells previously drilled in the permit area indicate that the maximum flow rate could be around 5000 barrels per day. The company has discussed these scenarios in its CER, together with commitments listed in Appendix 1 of this assessment, to ensure that the risk of these events is minimised and that spills will be managed in the most effective way if they occur.

The most common type of oil spill is a minor spill of between 1m³ and 20m³ arising from refuelling or from a short term failure of the blowout preventers. Refuelling of the rig usually occurs once every 10 days on average. The proponent has committed to containing and collecting spills of this order with a Jackson Net boom and a Komara 12K Skimmer Mark 2. Because of the proximity of WAPET's base on Thevenard Island the skimmer will be maintained in readiness there for quick retrieval if the need arises. The Authority notes and endorses WAPET's commitments.

Recommendation 5

The Environmental Protection Authority is aware that the proponent includes in the Oilspill Contingency Plan, the capability for containment of small oil spillages on or adjacent to the rig and that a suitable boom, together with operators skilled in its deployment, would be installed on or adjacent to the rig prior to the commencement of drilling and remain there permanently until demobilisation of the rig. The Environmental Protection Authority recommends that this approach should be adopted, to the satisfaction of the Environmental Protection Authority.

However, for a reasonable chance of a successful recovery of oil spilt, weather conditions need to be near optimal (current speed <0.7 knot, wind speed <15 knots and wave height <1m). As waves and currents become progressively larger, increasing amounts of oil would be lost beneath the boom so that the attendant oil recovery unit would collect progressively less of the spill. A mitigating factor is that, under more severe weather conditions the oil evaporates far more quickly. The doubling of wind velocity up to the onset of whitecapping causes the rate of evaporation to increase by a factor of 1.7, and with the onset of extensive whitecapping the rate increases by a factor of 5 to 10. Recognising that the boom and skimmer have only limited application the EPA makes the following recommendation for refuelling in environmentally sensitive locations:

Recommendation 6

In order to maximise recovery of spilled oil where an environmentally sensitive location is close enough to the rig to be within its zone of influence from an oil spill, the Environmental Protection Authority recommends that refuelling of the rig should only take place during optimal weather conditions, to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

Refuelling in conditions where current speeds are less than 0.7 knot, wind speed is below 15 knots and in wave heights of 1m or less would be regarded as satisfactory.

Partially controlled or uncontrolled blowouts are less common but can result in much greater loss of oil. Little of this flow can be recovered in most cases and thus, in confined areas the impacts of such an accident are likely to be extensive, although not necessarily long-term. Whilst there has never been such a spill documented in Australia it is clearly vital that the best policy is minimisation of the risks and avoidance of the events leading to an oil spill, together with a well rehearsed Oilspill Contingency Plan to deal with accidents.

Recommendation 4

The Environmental Protection Authority endorses the proponent's commitments to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal proceeding, and recommends that the arrangements for meeting this condition should be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.

To address potential conflicts with fishing operations arising from the location of the rig and the timing of its operations WAPET proposes to liaise with representatives of the fishing industry.

So as not to disturb seabird colonies and to avoid disturbance to guests at the Mackerel Island resort helicopters would be instructed to avoid overflying islands on routine business. In addition all crew members would be educated to the sensitive nature of the area, and of their individual responsibilities for its protection.

5.1 Routine discharges

These can be grouped into domestic and drilling-associated wastes. Treated sewage, 'grey water' and galley wastes are pulverised and disinfected prior to discharge into the sea. No significant environmental impacts are expected due to the biodegradability of the product, small quantity, short period of drilling activities and large dilution factor.

Drilling generates rock cuttings with residual amounts of drilling muds adhering to the chips. Depending on the local environment and the type of mud these wastes can have a significant impact and may need to be managed appropriately. The proponent has recognised these requirements and made acceptable proposals to ensure that environmentally sensitive locations would not be significantly impacted. Briefly these include:

- routinely using low toxicity, water-based drilling muds;
- routinely washing the drill cuttings with sea water to recover drilling mud prior to their discharge on the seabed;
- conducting a pre-drilling site assessment in consultation with the EPA to identify sea floor communities and prevailing winds and currents.

On the basis of this assessment the company would manage the disposal of solids in a site-appropriate manner including:

- for areas within 500m of sensitive marine resources large diameter holes would only be drilled at times when tidal currents would transport the cuttings away from sensitive resources. Cuttings produced from later sections of the well would be disposed of into the "lost circulation" or cavernous zone of the well;
- between 500m and 2km from sensitive areas cuttings would be separated on board the rig and discharged via a pipe to the seabed. Drilling fluid would be stored and discharged down the same pipe when tides would carry the fluids away from the sensitive areas;
- for drill sites elsewhere solids and excess muds would be discharged via the pipeline return to the seafloor (to minimise associated turbidity), when tidal and wind currents would carry the fluids away from sensitive areas.

The EPA commends these commitments.

5.2 Accidental discharges

WAPET has modelled the effects of oilspills upon environmentally sensitive areas from the Paroo, Lightfoot, Weld, Australind, Curlew, Thringa and Bessieres prospects, all of which could be sites for well proposals under this programme (CER Appendix 3). The results show that almost all the environmentally sensitive locations (ie around islands, seagrass banks, prawn fishery and some of the mainland estuaries) may be at risk from an oilspill. The degree of risk varies depending on the tide phase and the wind vector.

Environmental Protection Authority in its 'Red Book' recommendations (EPA, 1975), subsequently endorsed by Government, which proposed that a number of the larger islands including Serrurier and portion of Thevenard be proclaimed "A" class reserves for the conservation of flora and fauna and that the remainder be proclaimed "B" class reserves for the purpose of recreation and conservation of flora. Presently Locker Island is an "A" class reserve while Serrurier Island and part of Thevenard Island are "C" class reserves.

The main human activities in the region concentrate on its marine resources. Recreational and commercial fisheries and tourism-based activities are centred at Onslow and the Mackerel Island Resort on Thevenard Island. The prawn fishery season begins in late March and continues through until November. The petroleum industry uses Onslow to support offshore bases and drilling activities.

4. Public submissions

A total of six submissions were received, five from government agencies and the other from the fishing industry council.

The main concerns raised were:

- the need for good liaison between the proponent and the Shire with respect to all activities and oilspills;
- proper waste disposal management and the effects on the environment of oil spills;
- the results of environmental impacts on the commercial and recreational industries and the need for adequate compensation for these sectors in the event of impacts;
- the timing of proposed drilling to avoid potential conflicts with fishing activities;
- the need to refer any development proposal arising from this programme to the EPA.

WAPET's responses to issues raised are included as Appendix 2.

5. Management of environmental impacts

Impacts on the marine environment from drilling activities can arise either from routine or from accidental discharges. Depending on how environmentally sensitive the rig location is and how response activities are managed, there could be a range of effects varying from insignificant to potentially serious, at least in the short term.

The north west shelf area typically contains reserves of light grade crude petroleum which evaporates and biodegrades quickly in the warm waters and high ambient temperatures common to the region. Roller crude oil in contrast is highly biodegraded and does not evaporate readily. WAPET plans to drill several prospects, as shown in Figure 2, and may find considerable variation in the composition of any petroleum discovered. This needs to be recognised in the oilspill contingency planning so that, if an oilspill cannot be recovered with booms and skimmer, timely decisions on whether or not to apply dispersant can be made. As dispersants are themselves environmentally damaging chemicals it is important that only third generation 'Corexit 9527' (currently the least environmentally damaging) dispersant is kept by the proponent. WAPET, in its Oilspill Contingency Plan, has indicated that this is the only dispersant stocked at its facilities at Thevenard and Barrow Islands.

There are a number of marine-based industries which are potentially at risk from oilspills, namely prawn trawling, recreational fishing and tourism. The concerns raised by representatives of these sectors have been addressed in the proponent's commitment to be held fully responsible for any containment or cleanup costs or damages to which parties may be lawfully entitled as a result of an oil spill.

Recommendation 2

The Environmental Protection Authority recommends that the proponent be required to refer details of future exploration drilling (other than those comprising this programme) or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority.

2. Project description

A minimum of four and a maximum of twelve wells are proposed over the five year programme, but none of the locations is known yet. When specific coordinates are decided the proponent would be required to submit environmental information on the site to the Authority detailing water depth, nature of the sea floor, distance to environmentally sensitive locations and ensuring that the contingency plan would be able to deal with credible spill events.

Recommendation 3

The Environmental Protection Authority recommends that, at least three weeks before the start of drilling of any well, the exploration well proposal be forwarded to the Environmental Protection Authority with additional details of the exact location and its environment, and any proposed site-specific modifications to environmental management provisions, to the satisfaction of the Environmental Protection Authority.

WAPET anticipates using a jack-up drill rig for the programme. Two supply boats would be used to service the rig and the 80 personnel based on board. They would operate from Dampier or Port Hedland. A helicopter operating from Onslow would be used for crew changes and supplementary provisioning of the rig.

3. Existing environment

The permit area lies in shallow waters which are influenced by twice-daily tides and in which the winds play an important part in modifying the movement of surface waters. (Oil spills, being often restricted to the top few centimetres of the water column, are subject to the same influences).

The prevailing winds are westerly to south westerly at most times of the year barring the winter months, when winds off the mainland are most common. In summer differential heating effects between the sea and the adjacent mainland can raise onshore wind speed in the afternoon to over 30 km/h and reverse it during the night and early morning. Winter winds from the mainland can also be strong and gales from the east may reach over 70 km/h. The company's analysis of the occurrence of cyclones shows that an average of 1.5 cyclones per year (with wind speeds >100km/h) affect the Onslow region. These may be accompanied by strong tidal surges and winds from any direction.

Due to the smaller tidal variation of 1.8m, currents tend to be slower in the Onslow region than further east in the Pilbara, but there are nevertheless localised strong currents in tidal channels.

The permit area encompasses a diverse range of environments, from the mainland coast to waters nearly 100m deep. Most of it falls in the zone referred to as Special Protection Locality where exploration is proposed for the shallow water southern portion of the permit. Within this region are a number of environmentally sensitive localities including intertidal and coral reefs, seagrass banks, sensitive beaches and mangrove-lined estuaries on the mainland coast. The area is used by prawns, fish and dugongs for breeding and nursery locations and is on the migratory route of humpback whales.

Thevenard Island is the largest and most significant island in the area but others also have fringing reefs, algal pavements and turtle and seabird nesting sites on their beaches. The conservation importance of these islands is recognised in the recommendations of the

1. Introduction

In January 1991 West Australian Petroleum Pty Ltd. (WAPET) submitted a proposal for drilling within petroleum exploration permit area TP/3 Part 1, located immediately to the west and offshore from the town of Onslow (see Fig 1). WAPET is the manager of a joint venture involving:

Chevron Asiatic Ltd	25.7%
Texaco Oil Development Co	25.7%
Shell Development (Australia) P/L	25.7%
Ampol Exploration Ltd	12.8%
The Western Mining Corporation Ltd	10%

The company has previously drilled eighteen wells within the permit area. This proposal seeks to drill test prospects defined by seismic data within the permit (as shown in Fig 2). The most likely areas to be drilled are considered by WAPET to be Roller, Paroo, Lightfoot, Weld and Australind.

The coastal waters near Onslow lie within an area defined in Department of Conservation and Environment (now EPA) Bulletin 104 as a Special Protection Locality, and most of Permit TP/3 Part 1 comes within this category. Together with the zone called Environmentally Sensitive Locality (also defined in Bulletin 104) these zones contain several environments where marine life is concentrated and highly susceptible to the effects of oil. These are discussed more fully in Section 3-Existing Environment.

The Authority has previously assessed a number of petroleum exploration proposals in the Onslow region. As a consequence, the Authority's general position on these sorts of proposals may be summarised as follows:

- land-based petroleum exploration proposals can usually be made to be environmentally acceptable;
- in environmentally sensitive areas, petroleum exploration proposals need to clearly demonstrate the capacity to cope with environmental impacts, especially possible oil spills in terms of credible events, their likely frequency and contingency planning; and
- outside environmentally sensitive areas exploration proposals normally could proceed, subject to standard environmental protection conditions.

The EPA determined that a formal assessment at the level of Consultative Environmental Review would be required. At this stage WAPET is unable to specify the locations of the proposed wells. However, the seismic data have indicated a number of areas which could be drill targets, and approval in principle is being sought for the programme.

In order to improve the efficiency of the formal assessment process and reduce repetition it has been agreed that, rather than submitting proposals for one well at a time, it would be acceptable to submit a proposal for a programme to address the entire permit area, provided that the CER adequately addressed all the relevant issues and that the site-specific data would be submitted to the Environmental Protection Authority at a later stage, prior to drilling.

The proponent was asked to define the environmental sensitivity of the areas likely to be within the zone of influence of the proposed drilling; to assess the likelihood and potential impacts of an oil spill; and to demonstrate that routine and credible accidental discharges from the offshore drilling platform could be properly managed at the proposed sites so as to ensure no significant impacts in environmentally sensitive areas.

While this proposal concentrates on exploration, it could lead to a production proposal if payable petroleum reserves are discovered. In this context WAPET anticipates that any future discoveries in the permit area would be developed using the existing facilities on Thevenard Island, rather than setting up additional centres. The Environmental Protection Authority is in favour of this.

the plan is workable to the satisfaction of the Environmental Protection Authority. The Environmental Protection Authority also recommends that, while drilling is occurring, further simulated Oilspill Contingency drills be run at least once a year, or for each change of drilling rig, whichever is sooner, to maintain a high level of preparedness among all involved personnel.

Recommendation 8

The Environmental Protection Authority recommends that the proponent be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

The Environmental Protection Authority is aware that this proposal is a programme to access several wells and that none has been accurately located and specified at this stage. Details of the wells will need to be forwarded to the Authority with information on exact location, seabed conditions and any proposed environmental management changes arising from proposed timing and discharges of routine domestic and drilling wastes.

Recommendation 3

The Environmental Protection Authority recommends that, at least three weeks before the start of drilling of any well, the exploration well proposal be forwarded to the Environmental Protection Authority with additional details of the exact location and its environment, and any proposed site-specific modifications to environmental management provisions, to the satisfaction of the Environmental Protection Authority.

The proponent has made a commitment to accept responsibility for possible environmental impacts of a potential oil spill and the EPA endorses this.

Recommendation 4

The Environmental Protection Authority endorses the proponent's commitments to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal proceeding, and recommends that the arrangements for meeting this condition should be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.

The proponent has made a commitment to provide equipment onsite with the capability to contain a 20m³ spill which the Authority regards as satisfactory.

Recommendation 5

The Environmental Protection Authority is aware that the proponent includes in the Oilspill Contingency Plan, the capability for containment of small oil spillages on or adjacent to the rig and that a suitable boom, together with operators skilled in its deployment, would be installed on or adjacent to the rig prior to the commencement of drilling and remain there permanently until demobilisation of the rig. The Environmental Protection Authority recommends that this approach should be adopted, to the satisfaction of the Environmental Protection Authority.

Recommendation 6

In order to maximise recovery of spilled oil where an environmentally sensitive location is close enough to the rig to be within its zone of influence from an oil spill, the Environmental Protection Authority recommends that refuelling of the rig should only take place during optimal weather conditions, to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

Refuelling in conditions where current speeds are less than 0.7 knot, wind speed is below 15 knots and in wave heights of 1m or less would be regarded as satisfactory.

Recommendation 7

The Environmental Protection Authority recommends that, prior to the start of the first well, the proponent successfully trial runs a simulated Oilspill Contingency Plan up to the point of deployment of resources, to ensure that

- assurances that WAPET would pay compensation for any loss in income resulting from an oilspill;
- planning of drilling activities within areas of active trawling should recognise the prawn fishing season so that a mutually satisfactory operational agreement could be reached; and
- the necessity for a speedy response to a cyclone warning was emphasised.

WAPET has documented the environmental sensitivities of the permit area and discussed the likely spread of oilspills from the prospect locations shown on Figure 2. A number of sensitive locations around islands and on the mainland could be at risk, depending on the prevailing tidal and wind conditions.

Statistics of oil spills indicate that small spills (such as from the rig refuelling operation) are not uncommon. Generally, however, in the warm waters of this region they are unlikely to have a significant impact on the marine environment unless spilt immediately adjacent to an environmentally sensitive location, because they evaporate rapidly. This is the case for the light crude oils which are often found in this shelf area, although crude oil from the Roller field within the permit area is more accurately described as a medium grade crude oil. Larger spills are a more serious problem but are rare, and none is known to have occurred in the history of drilling offshore from Australia.

The potential impacts to marine life can be reduced if the appropriate containment and retrieval equipment is able to be rapidly deployed. However, it is generally acknowledged that booms are relatively ineffective in all but calm conditions. Therefore it is vitally important that effort must first and foremost be put into the prevention of a spill.

Routine discharges from the rig consist of domestic waste water, drill cuttings and drill muds. WAPET has committed to dealing with these wastes in an appropriate manner.

Recommendation 1

The Environmental Protection Authority concludes that the proposal to conduct an offshore exploration drilling programme in permit area TP/3 Part 1, as described in the Consultative Environmental Review, is environmentally acceptable. In reaching this conclusion, the Environmental Protection Authority identified the main factors requiring detailed consideration as the effects of routine and accidental discharges arising from the drilling operations upon the environment, and the sectors of the community which are dependant on it.

The Environmental Protection Authority considers that these and other issues have been addressed by either environmental management commitments given by the proponent or by the Environmental Protection Authority's recommendations in this report.

Accordingly the Environmental Protection Authority recommends that the proposal could proceed, subject to:

- **the proponent's commitments; and**
- **the Environmental Protection Authority's recommendations in this report.**

Recommendation 2

The Environmental Protection Authority recommends that the proponent be required to refer details of future exploration drilling (other than those comprising this programme) or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority.

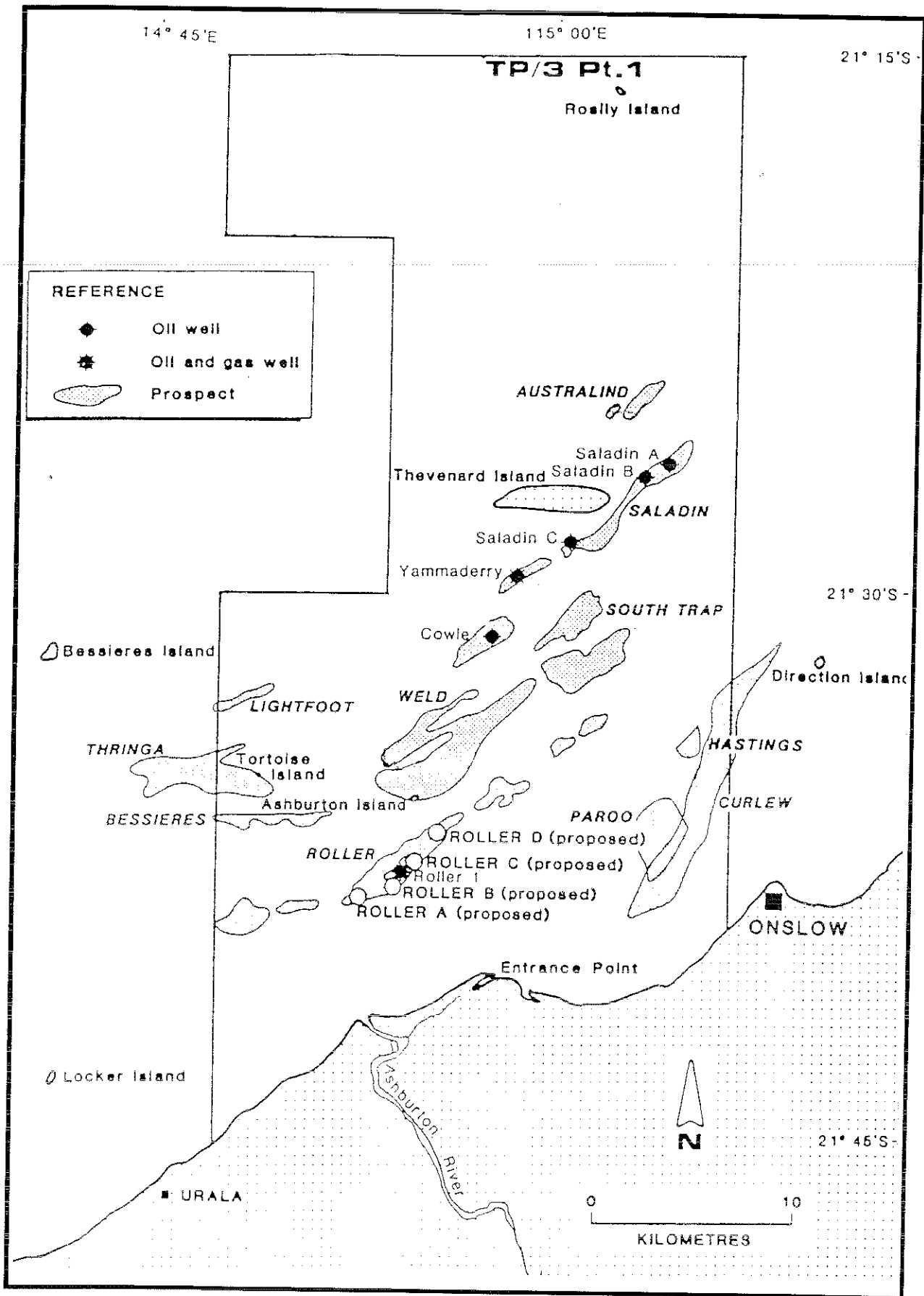


Figure 2. Oilfield and prospect outlines in TP/3 Pt.1

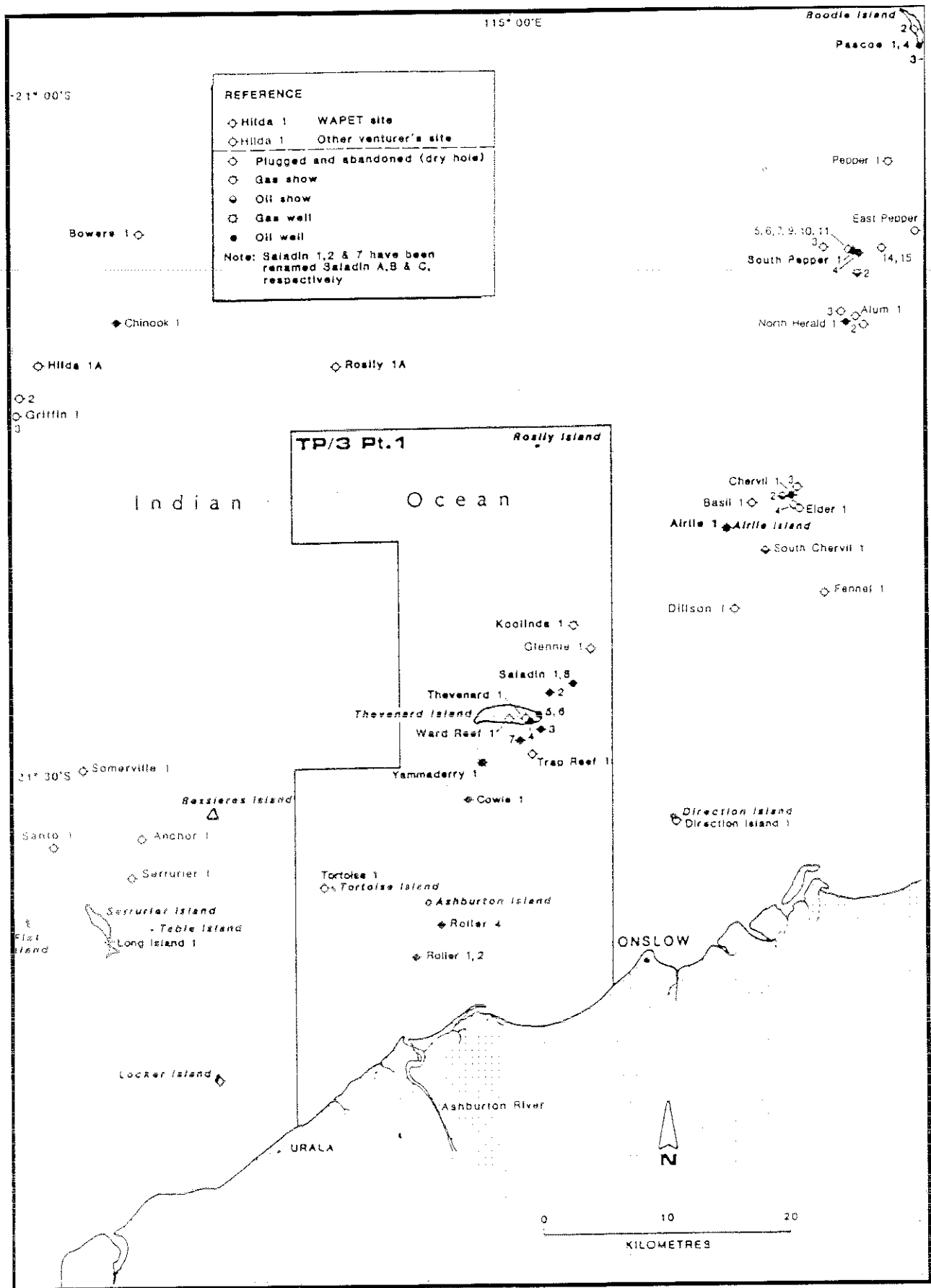


Figure 1. Location of permit area and previous offshore wells

Summary and recommendations

West Australian Petroleum Pty Ltd (WAPET) has proposed an offshore exploration drilling programme for petroleum within its permit area TP/3 Part 1, immediately to the west and offshore from the Pilbara port of Onslow. This proposal seeks environmental approval for the drilling of between four and twelve wells over a five year period beginning later in 1991. The Authority has previously assessed a number of petroleum exploration proposals in this area associated with the Cowle, Yammaderry and Roller oilfields (see Figure 1).

Permit TP/3 Part 1 lies mainly within a Special Protection Locality (SPL), as defined in the Department of Conservation and Environment (now EPA) Bulletin 104. Together with the Environmentally Sensitive Locality (ESL), also defined in Bulletin 104, these zones are regarded as being environmentally sensitive to oilspills (see Section 3). Proposals for drilling within these zones are referred to the Environmental Protection Authority for assessment. The Authority's general position on these sorts of proposal may be summarised as follows:

- in marine parks land based exploration proposals will be assessed for environmental acceptability on their merits, while marine based proposals are environmentally unacceptable;
- in environmentally sensitive areas (such as SPLs and ESLs), petroleum exploration proposals need to clearly demonstrate the capacity to cope with environmental impacts, especially possible oil spills in terms of credible events, their likely frequency and contingency planning; and
- outside environmentally sensitive areas exploration proposals normally could proceed, subject to standard environmental protection conditions.

Many areas within the permit are regarded as being environmentally sensitive, with several locations (such as fringing reefs and mangrove-lined creek mouths) having high conservation values. Accordingly the proponent was required to prepare a Consultative Environmental Review (CER) for public review and formal assessment, and undertook to prepare sufficient documentation to enable the assessment of a permit-wide drilling programme.

A programme-wide assessment is designed to provide for a formal assessment procedure to be initiated for the entire programme instead of for each separate well, and leads to savings in time and resources for proponents (who are better able to plan their programme), involved agencies, the public and the EPA. In the case of this proposal WAPET has not yet identified specific drill targets for investigation but has indicated that there are a number of potential prospects (shown in Fig 2) where drilling would be most likely to occur. The proponent's management plan for activities associated with the drilling was thus required to address the actual and potential impacts of drilling with a jack-up rig over a wide area of the permit. Once drill sites had been accurately selected the Authority would require that environmental management provisions were applied in a site-specific manner. The Authority has recommended that an appropriate mechanism for activating this be put in place.

In the context of possible future proposals to develop petroleum reserves outlined by exploration drilling the Environmental Protection Authority wishes to emphasise the environmental significance of the area and the Authority's preference to concentrate development at existing facilities wherever possible. It should not be assumed that production facilities on islands other than Thevenard would be environmentally acceptable.

The region is subject to strong winds and currents and lies within the cyclone-affected belt of Australia. The shallow waters and intertidal zones support a diverse range of marine life which give the area its considerable conservation, commercial fishing and potential tourist values.

Points raised in public submissions included:

- a call for close liaison with the Shire of Ashburton with regard to proposed activities;
- the fate of drill cuttings, domestic wastes and oil spills, and the impacts of each of these on the environment;

petroleum discharged or spilled while drilling any well in Permit Area TP/3 Part 1 and for clearing up any areas polluted by such petroleum. In addition, WAPET will also undertake to promptly pay to any person, company or government agency, any damages to which any of those entities is lawfully entitled from WAPET; and

2. Provide details of insurance carried by its principals. Note that the above undertakings and details are provided routinely by WAPET to the WA Department of Mines prior to commencement of any offshore well. A recent example could be provided to the EPA by the Mines Department subject to their approval.

Submission

Proposed exploratory wells could be situated within productive trawling areas of the Onslow prawn fishery. If the drilling period coincides with the fishing season (April to November) interference with normal trawling practice could occur to the detriment of the annual catch of tiger prawns. It is therefore essential that the company discuss the drilling schedule with the local prawning industry and the W.A. Fishing Industry Council so that a mutually satisfactory operational agreement can be reached.

Response

WAPET has established a good working relationship with the Onslow prawn fishery. This liaison will continue. Drilling schedules will be discussed with the relevant parties.

Submission

It is thus imperative that the oil spill contingency plan be fully operational for rapid deployment at all times during the drilling phase and include a capacity for transferring recovered oil to suitable containers.

Response

As noted in the introduction to the "Summary of the Oil Spill Contingency Plan" (Appendix 7 CER) the appendix summarizes the most important aspects of the detailed TP/3 Part 1 Oil Spill Contingency Plan.

In that detailed plan, additional directions are given for combating an oil spill that has impacted the shoreline, whether it be a sandy beach, rocky shore or mangroves.

Submission

1. That the proponent accept full responsibility for any adverse environmental effects which may occur as a consequence of the proposal.
2. That the proponent accept full responsibility and liability to pay as damages to the fishing industry for bodily injury (fatal or non-fatal) and/or loss of, damage to or loss of use of property and/or loss of profits or business interruption caused directly or indirectly as a consequence of the proposal.
3. That the proponent shall be required to take out appropriate insurance provisions that demonstrate that the proponent can meet the conditions proposed in (1) and (2) to the satisfaction of the Minister for Environment on advise from the Minister for Fisheries.

Response

WAPET, on behalf of its joint venture principals, i.e. Chevron, Texaco, Ampolex, Shell and WMC, will do the following:

1. Give an undertaking to the State of Western Australia and the Commonwealth to be fully responsible for the cost of operations conducted by it or by any Government agency aimed at containing, dispersing or recovering

Submission

Council considers that it should be recognised as an Authority responsible for management both directly and indirectly in the project since all of the land in the permit area is part of the Shire of Ashburton and that any impact upon the coast will be subject to the provisions of the Local Government Act;

That the council of the Shire of Ashburton be added to the plan chart of notification procedures to be notified in the event of an oil spill anywhere in the permit area;

And that Council is notified prior to the drilling of any well in the permit area.

Response

WAPET accepts the Shire of Ashburton as an Authority. They will be consulted during the course of the drilling programme if any impacts are likely on the land that forms part of their Shire.

The level of notification of an oil spill will depend on the size of the spill. The Manager of Legal and Government Affairs will notify the Local Council in the event of a significant spill.

WAPET will also, as a matter of courtesy, notify the Council of any drilling to be undertaken in the permit area.

Submission

However, it must be recognised that should a major spill or blow out occur then almost certain impacting of the beach areas will occur and lack of time will prevent deployment of containment equipment resulting in only beach clean-up operations being performed. This threat must be fully recognised.

Appendix 2

Submissions and proponent's responses

3

stored and released at a controlled rate during tide and wind conditions that will move the plume away from the closest sensitive resources.

- (9) Deck drainage and other oily wastes will be collected and transported to Port Hedland for recycling.
- (10) Sanitary wastes from the kitchen, showers and laundry will be passed through a sewage treatment plant for comminution and disinfection before being discharged overboard. Solid food waste will be macerated before disposal overboard. Biodegradable detergents will be used for cleaning functions. Combustible materials will be burnt on the rig. All non-combustible material will be returned to the shore base for disposal at an approved land site.

OPERATION OF VESSELS AND AIRCRAFT

- (1) Helicopter pilots will be instructed not to overfly islands.
- (2) Regular crew transfers between the drilling rig, Thevenard Island and Perth will use existing routes involving helicopter/light aircraft transfers to Barrow Island, and chartered commercial flight direct to Perth.
- (3) All refuelling operations for the supply vessels will be conducted in accordance with strict Port Authority requirements, including continuous visual monitoring and the use of reinforced hoses and fail-safe valves and fittings.
- (4) It will be a contractual requirement for the supply vessels and rig to comply with all State and Commonwealth legislation for the control of pollution and dumping at sea.
- (5) Masters of supply vessels will be instructed not to allow crew to disturb islands or wreck sites, nor to anchor close to coral reefs.

- (7) With regard to any oil spill or discharge resulting from the drilling of any wells in the Permit Area WAPET makes the following commitments:
- (a) to be fully responsible for the cost of operations conducted by it or any Governmental agency aimed at containing or dispersing or recovering any such petroleum or cleaning up any areas polluted by such petroleum;
 - (b) to promptly pay to any person, company or Government (Federal, State or Local) any damages to which any of those entities is lawfully entitled from WAPET.

DRILLING RIG OPERATIONS

- (1) Prior to spudding in, the rig operator will conduct surveys and tests in accordance with Department of Mines regulations to ensure stability of the rig and to minimise the risk of abnormal penetration of the seabed during storm conditions.
- (2) The blowout preventer (BOP) stack will be tested in accordance with Department of Mines regulations after the surface casing has been installed.
- (3) All casing strings installed below the BOP stack will be pressure tested in accordance with Department of Mines regulations before drilling is resumed.
- (4) Drilling fluids used will be those approved for offshore use by the Department of Mines.
- (5) Chrome lignosulphates will not be used in drilling any well.
- (6) At prospects within 500 m of sensitive marine resources drillers will only drill 17.5" and 36" holes during times when the tidal currents will transport the cuttings away from sensitive resources. Drill cuttings and excess fluids produced after the 36" hole will be disposed of between the down hole casings and into the lost circulation zone. If this zone is not available, drilling of the hole will only continue during favourable tidal conditions.
- (7) At prospects within 500 m and 2 km of sensitive marine resources, cuttings will be separated on board the rig and continuously discharged overboard through a conductor pipe to the seabed. Drilling fluid will be stored and discharged down the conductor pipe on tides that will carry the fluids away from sensitive marine resources.
- (8) At prospects more than 2 km from sensitive marine resources, cuttings will be separated and disposed overboard continuously. Drilling fluids will be

LIST OF COMMITMENTS

West Australian Petroleum Pty Limited (WAPET) undertakes to abide by all of the commitments made in the Consultative Environmental Review (CER) for the Permit Area TP/3 Part 1 Five Year Exploration Drilling Programme, and in all cases will fulfil those commitments to the satisfaction of the appropriate statutory authority(s).

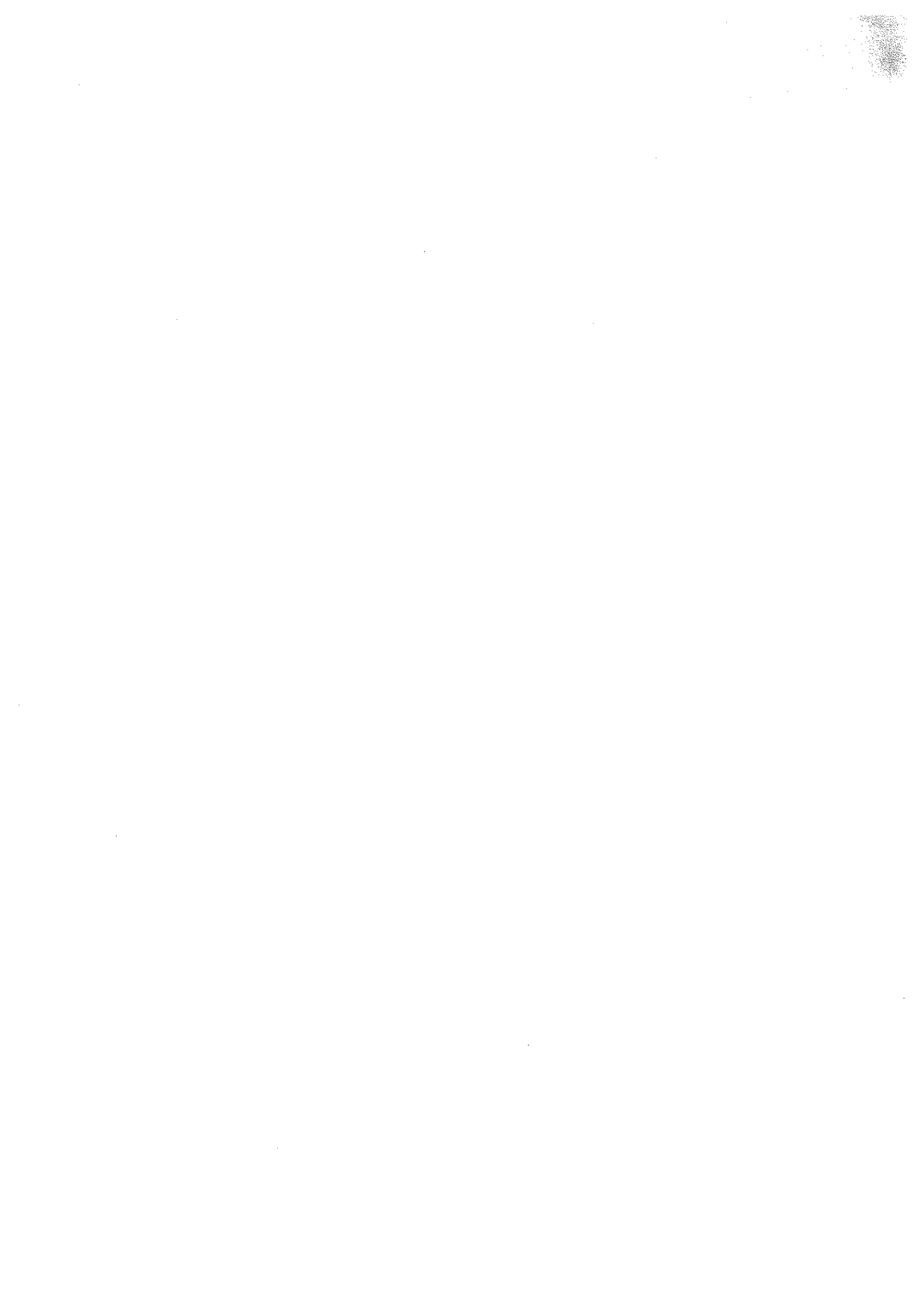
The major commitments given within the CER are listed in the following sections.

ENVIRONMENTAL EDUCATION

- (1) Before commencement of their duties, each worker or contractor (including workboat and supply vessel crews) will be given an induction course including advice on the sensitive nature of the environment in which the drilling rig is located.

SAFETY AND OIL SPILL CONTINGENCY

- (1) To improve operational safety, commercial and recreational vessels will not be permitted closer than 500 m to the drilling rig during the construction phase.
- (2) The drilling rig to be contracted will be capable of withstanding cyclonic wind and wave conditions. Detailed procedures which set out the various levels of responses to cyclones will be contained in the operator's Emergency Procedures Manual.
- (3) WAPET will abide by all procedures detailed in the Permit Area TP/3 Part 1 Oil Spill Contingency Plan (OSCP).
- (4) An oil spill containment boom will be present at the site during drilling. A vessel will be in the vicinity of the drilling rig at all times to deploy the boom and skimmer in the event of an oil spill.
- (5) During any spill event, WAPET would make available oil spill equipment, vessels, aircraft and personnel, to help with containment and clean-up measures.
- (6) Existing WAPET and rig operator procedures for cyclone response will be followed to safeguard the wells, rig, offshore structures, vessels and personnel.



Appendix 1

Proponent's commitments

request for the exercise of that power of the Minister should be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

The Authority notes that during the detailed implementation of proposals, it is often necessary or desirable to make minor and non-substantial changes to the design and specification which have been examined as part of the Authority's assessment. The Authority believes that subsequent statutory approvals for this proposal could make provision for such changes, where it can be shown that the changes are not likely to have a significant effect on the environment.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

Recommendation 7

The Environmental Protection Authority recommends that, prior to the start of the first well, the proponent successfully trial runs a simulated Oilspill Contingency Plan up to the point of deployment of resources, to ensure that the plan is workable to the satisfaction of the Authority. The Environmental Protection Authority also recommends that, while drilling is occurring, further simulated Oilspill Contingency drills be run at least once a year, or for each change of drilling rig, whichever is sooner, to maintain a high level of preparedness among all involved personnel.

Recommendation 8

The Environmental Protection Authority recommends that the proponent be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

6. Discussion and conclusion

This drilling proposal has raised public concerns for the environment based on widely held perceptions about the damage that can arise from oil spills. Brisk winds common to the area would be responsible with the tides for the rapid movement of a slick and for difficulties in the containment and collection of the oil. Therefore it is vitally important for stringent spill preventative measures to be in place to reduce the chances of an accident occurring. These can be achieved satisfactorily in this case by WAPET's adherence to their environmental management and oil spill contingency plans. Public concerns should also be addressed by consultation and liaison with interested and affected groups and the proponent has made a commitment to this effect in its response to submissions.

The Environmental Protection Authority considers that the proposal, subject to the commitments given by the proponent and the Authority's recommendations in this report, could be implemented in an environmentally acceptable manner.

Recommendation 1

The Environmental Protection Authority concludes that the proposal to conduct an offshore exploration drilling programme in permit area TP/3 Part 1, as described in the Consultative Environmental Review, is environmentally acceptable. In reaching this conclusion, the Environmental Protection Authority identified the main factors requiring detailed consideration as the effects of routine and accidental discharges arising from the drilling operations upon the environment, and the sectors of the community which are dependant on it.

The Environmental Protection Authority considers that these and other issues have been addressed by either environmental management commitments given by the proponent or by the Environmental Protection Authority's recommendations in this report.

Accordingly the Environmental Protection Authority recommends that the proposal could proceed, subject to:

- the proponent's commitments; and
- the Environmental Protection Authority's recommendations in this report.

No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent should take place until the Minister has advised the proponent that approval has been given for the nomination of a replacement proponent. Any

Accidental oil spills can occur from the rig refuelling operation, from a production test, or as a result of a blowout of crude oil from the well. Examination of the test flow figures from wells previously drilled in the permit area indicate that the maximum flow rate could be around 5000 barrels per day. The company has discussed these scenarios in its CER, together with commitments listed in Appendix 1 of this assessment, to ensure that the risk of these events is minimised and that spills will be managed in the most effective way if they occur.

The most common type of oil spill is a minor spill of between 1m³ and 20m³ arising from refuelling or from a short term failure of the blowout preventers. Refuelling of the rig usually occurs once every 10 days on average. The proponent has committed to containing and collecting spills of this order with a Jackson Net boom and a Komara 12K Skimmer Mark 2. Because of the proximity of WAPET's base on Thevenard Island the skimmer will be maintained in readiness there for quick retrieval if the need arises. The Authority notes and endorses WAPET's commitments.

Recommendation 5

The Environmental Protection Authority is aware that the proponent includes in the Oilspill Contingency Plan, the capability for containment of small oil spillages on or adjacent to the rig and that a suitable boom, together with operators skilled in its deployment, would be installed on or adjacent to the rig prior to the commencement of drilling and remain there permanently until demobilisation of the rig. The Environmental Protection Authority recommends that this approach should be adopted, to the satisfaction of the Environmental Protection Authority.

However, for a reasonable chance of a successful recovery of oil spilt, weather conditions need to be near optimal (current speed <0.7 knot, wind speed <15 knots and wave height <1m). As waves and currents become progressively larger, increasing amounts of oil would be lost beneath the boom so that the attendant oil recovery unit would collect progressively less of the spill. A mitigating factor is that, under more severe weather conditions the oil evaporates far more quickly. The doubling of wind velocity up to the onset of whitecapping causes the rate of evaporation to increase by a factor of 1.7, and with the onset of extensive whitecapping the rate increases by a factor of 5 to 10. Recognising that the boom and skimmer have only limited application the EPA makes the following recommendation for refuelling in environmentally sensitive locations:

Recommendation 6

In order to maximise recovery of spilled oil where an environmentally sensitive location is close enough to the rig to be within its zone of influence from an oil spill, the Environmental Protection Authority recommends that refuelling of the rig should only take place during optimal weather conditions, to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

Refuelling in conditions where current speeds are less than 0.7 knot, wind speed is below 15 knots and in wave heights of 1m or less would be regarded as satisfactory.

Partially controlled or uncontrolled blowouts are less common but can result in much greater loss of oil. Little of this flow can be recovered in most cases and thus, in confined areas the impacts of such an accident are likely to be extensive, although not necessarily long-term. Whilst there has never been such a spill documented in Australia it is clearly vital that the best policy is minimisation of the risks and avoidance of the events leading to an oil spill, together with a well rehearsed Oilspill Contingency Plan to deal with accidents.

Recommendation 4

The Environmental Protection Authority endorses the proponent's commitments to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal proceeding, and recommends that the arrangements for meeting this condition should be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.

To address potential conflicts with fishing operations arising from the location of the rig and the timing of its operations WAPET proposes to liaise with representatives of the fishing industry.

So as not to disturb seabird colonies and to avoid disturbance to guests at the Mackerel Island resort helicopters would be instructed to avoid overflying islands on routine business. In addition all crew members would be educated to the sensitive nature of the area, and of their individual responsibilities for its protection.

5.1 Routine discharges

These can be grouped into domestic and drilling-associated wastes. Treated sewage, 'grey water' and galley wastes are pulverised and disinfected prior to discharge into the sea. No significant environmental impacts are expected due to the biodegradability of the product, small quantity, short period of drilling activities and large dilution factor.

Drilling generates rock cuttings with residual amounts of drilling muds adhering to the chips. Depending on the local environment and the type of mud these wastes can have a significant impact and may need to be managed appropriately. The proponent has recognised these requirements and made acceptable proposals to ensure that environmentally sensitive locations would not be significantly impacted. Briefly these include:

- routinely using low toxicity, water-based drilling muds;
- routinely washing the drill cuttings with sea water to recover drilling mud prior to their discharge on the seabed;
- conducting a pre-drilling site assessment in consultation with the EPA to identify sea floor communities and prevailing winds and currents.

On the basis of this assessment the company would manage the disposal of solids in a site-appropriate manner including:

- for areas within 500m of sensitive marine resources large diameter holes would only be drilled at times when tidal currents would transport the cuttings away from sensitive resources. Cuttings produced from later sections of the well would be disposed of into the "lost circulation" or cavernous zone of the well;
- between 500m and 2km from sensitive areas cuttings would be separated on board the rig and discharged via a pipe to the seabed. Drilling fluid would be stored and discharged down the same pipe when tides would carry the fluids away from the sensitive areas;
- for drill sites elsewhere solids and excess muds would be discharged via the pipeline return to the seafloor (to minimise associated turbidity), when tidal and wind currents would carry the fluids away from sensitive areas.

The EPA commends these commitments.

5.2 Accidental discharges

WAPET has modelled the effects of oilspills upon environmentally sensitive areas from the Paroo, Lightfoot, Weld, Australind, Curlew, Thringa and Bessieres prospects, all of which could be sites for well proposals under this programme (CER Appendix 3). The results show that almost all the environmentally sensitive locations (ie around islands, seagrass banks, prawn fishery and some of the mainland estuaries) may be at risk from an oilspill. The degree of risk varies depending on the tide phase and the wind vector.

Environmental Protection Authority in its 'Red Book' recommendations (EPA, 1975), subsequently endorsed by Government, which proposed that a number of the larger islands including Serrurier and portion of Thevenard be proclaimed "A" class reserves for the conservation of flora and fauna and that the remainder be proclaimed "B" class reserves for the purpose of recreation and conservation of flora. Presently Locker Island is an "A" class reserve while Serrurier Island and part of Thevenard Island are "C" class reserves.

The main human activities in the region concentrate on its marine resources. Recreational and commercial fisheries and tourism-based activities are centred at Onslow and the Mackerel Island Resort on Thevenard Island. The prawn fishery season begins in late March and continues through until November. The petroleum industry uses Onslow to support offshore bases and drilling activities.

4. Public submissions

A total of six submissions were received, five from government agencies and the other from the fishing industry council.

The main concerns raised were:

- the need for good liaison between the proponent and the Shire with respect to all activities and oilspills;
- proper waste disposal management and the effects on the environment of oil spills;
- the results of environmental impacts on the commercial and recreational industries and the need for adequate compensation for these sectors in the event of impacts;
- the timing of proposed drilling to avoid potential conflicts with fishing activities;
- the need to refer any development proposal arising from this programme to the EPA.

WAPET's responses to issues raised are included as Appendix 2.

5. Management of environmental impacts

Impacts on the marine environment from drilling activities can arise either from routine or from accidental discharges. Depending on how environmentally sensitive the rig location is and how response activities are managed, there could be a range of effects varying from insignificant to potentially serious, at least in the short term.

The north west shelf area typically contains reserves of light grade crude petroleum which evaporates and biodegrades quickly in the warm waters and high ambient temperatures common to the region. Roller crude oil in contrast is highly biodegraded and does not evaporate readily. WAPET plans to drill several prospects, as shown in Figure 2, and may find considerable variation in the composition of any petroleum discovered. This needs to be recognised in the oilspill contingency planning so that, if an oilspill cannot be recovered with booms and skimmer, timely decisions on whether or not to apply dispersant can be made. As dispersants are themselves environmentally damaging chemicals it is important that only third generation 'Corexit 9527' (currently the least environmentally damaging) dispersant is kept by the proponent. WAPET, in its Oilspill Contingency Plan, has indicated that this is the only dispersant stocked at its facilities at Thevenard and Barrow Islands.

There are a number of marine-based industries which are potentially at risk from oilspills, namely prawn trawling, recreational fishing and tourism. The concerns raised by representatives of these sectors have been addressed in the proponent's commitment to be held fully responsible for any containment or cleanup costs or damages to which parties may be lawfully entitled as a result of an oil spill.

Recommendation 2

The Environmental Protection Authority recommends that the proponent be required to refer details of future exploration drilling (other than those comprising this programme) or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority.

2. Project description

A minimum of four and a maximum of twelve wells are proposed over the five year programme, but none of the locations is known yet. When specific coordinates are decided the proponent would be required to submit environmental information on the site to the Authority detailing water depth, nature of the sea floor, distance to environmentally sensitive locations and ensuring that the contingency plan would be able to deal with credible spill events.

Recommendation 3

The Environmental Protection Authority recommends that, at least three weeks before the start of drilling of any well, the exploration well proposal be forwarded to the Environmental Protection Authority with additional details of the exact location and its environment, and any proposed site-specific modifications to environmental management provisions, to the satisfaction of the Environmental Protection Authority.

WAPET anticipates using a jack-up drill rig for the programme. Two supply boats would be used to service the rig and the 80 personnel based on board. They would operate from Dampier or Port Hedland. A helicopter operating from Onslow would be used for crew changes and supplementary provisioning of the rig.

3. Existing environment

The permit area lies in shallow waters which are influenced by twice-daily tides and in which the winds play an important part in modifying the movement of surface waters. (Oil spills, being often restricted to the top few centimetres of the water column, are subject to the same influences).

The prevailing winds are westerly to south westerly at most times of the year barring the winter months, when winds off the mainland are most common. In summer differential heating effects between the sea and the adjacent mainland can raise onshore wind speed in the afternoon to over 30 km/h and reverse it during the night and early morning. Winter winds from the mainland can also be strong and gales from the east may reach over 70 km/h. The company's analysis of the occurrence of cyclones shows that an average of 1.5 cyclones per year (with wind speeds >100km/h) affect the Onslow region. These may be accompanied by strong tidal surges and winds from any direction.

Due to the smaller tidal variation of 1.8m, currents tend to be slower in the Onslow region than further east in the Pilbara, but there are nevertheless localised strong currents in tidal channels.

The permit area encompasses a diverse range of environments, from the mainland coast to waters nearly 100m deep. Most of it falls in the zone referred to as Special Protection Locality where exploration is proposed for the shallow water southern portion of the permit. Within this region are a number of environmentally sensitive localities including intertidal and coral reefs, seagrass banks, sensitive beaches and mangrove-lined estuaries on the mainland coast. The area is used by prawns, fish and dugongs for breeding and nursery locations and is on the migratory route of humpback whales.

Thevenard Island is the largest and most significant island in the area but others also have fringing reefs, algal pavements and turtle and seabird nesting sites on their beaches. The conservation importance of these islands is recognised in the recommendations of the

1. Introduction

In January 1991 West Australian Petroleum Pty Ltd. (WAPET) submitted a proposal for drilling within petroleum exploration permit area TP/3 Part 1, located immediately to the west and offshore from the town of Onslow (see Fig 1). WAPET is the manager of a joint venture involving:

Chevron Asiatic Ltd	25.7%
Texaco Oil Development Co	25.7%
Shell Development (Australia) P/L	25.7%
Ampol Exploration Ltd	12.8%
The Western Mining Corporation Ltd	10%

The company has previously drilled eighteen wells within the permit area. This proposal seeks to drill test prospects defined by seismic data within the permit (as shown in Fig 2). The most likely areas to be drilled are considered by WAPET to be Roller, Paroo, Lightfoot, Weld and Australind.

The coastal waters near Onslow lie within an area defined in Department of Conservation and Environment (now EPA) Bulletin 104 as a Special Protection Locality, and most of Permit TP/3 Part 1 comes within this category. Together with the zone called Environmentally Sensitive Locality (also defined in Bulletin 104) these zones contain several environments where marine life is concentrated and highly susceptible to the effects of oil. These are discussed more fully in Section 3-Existing Environment.

The Authority has previously assessed a number of petroleum exploration proposals in the Onslow region. As a consequence, the Authority's general position on these sorts of proposals may be summarised as follows:

- land-based petroleum exploration proposals can usually be made to be environmentally acceptable;
- in environmentally sensitive areas, petroleum exploration proposals need to clearly demonstrate the capacity to cope with environmental impacts, especially possible oil spills in terms of credible events, their likely frequency and contingency planning; and
- outside environmentally sensitive areas exploration proposals normally could proceed, subject to standard environmental protection conditions.

The EPA determined that a formal assessment at the level of Consultative Environmental Review would be required. At this stage WAPET is unable to specify the locations of the proposed wells. However, the seismic data have indicated a number of areas which could be drill targets, and approval in principle is being sought for the programme.

In order to improve the efficiency of the formal assessment process and reduce repetition it has been agreed that, rather than submitting proposals for one well at a time, it would be acceptable to submit a proposal for a programme to address the entire permit area, provided that the CER adequately addressed all the relevant issues and that the site-specific data would be submitted to the Environmental Protection Authority at a later stage, prior to drilling.

The proponent was asked to define the environmental sensitivity of the areas likely to be within the zone of influence of the proposed drilling; to assess the likelihood and potential impacts of an oil spill; and to demonstrate that routine and credible accidental discharges from the offshore drilling platform could be properly managed at the proposed sites so as to ensure no significant impacts in environmentally sensitive areas.

While this proposal concentrates on exploration, it could lead to a production proposal if payable petroleum reserves are discovered. In this context WAPET anticipates that any future discoveries in the permit area would be developed using the existing facilities on Thevenard Island, rather than setting up additional centres. The Environmental Protection Authority is in favour of this.

the plan is workable to the satisfaction of the Environmental Protection Authority. The Environmental Protection Authority also recommends that, while drilling is occurring, further simulated Oilspill Contingency drills be run at least once a year, or for each change of drilling rig, whichever is sooner, to maintain a high level of preparedness among all involved personnel.

Recommendation 8

The Environmental Protection Authority recommends that the proponent be responsible for decommissioning the rig and the well, and rehabilitating the site and its environs to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

The Environmental Protection Authority is aware that this proposal is a programme to access several wells and that none has been accurately located and specified at this stage. Details of the wells will need to be forwarded to the Authority with information on exact location, seabed conditions and any proposed environmental management changes arising from proposed timing and discharges of routine domestic and drilling wastes.

Recommendation 3

The Environmental Protection Authority recommends that, at least three weeks before the start of drilling of any well, the exploration well proposal be forwarded to the Environmental Protection Authority with additional details of the exact location and its environment, and any proposed site-specific modifications to environmental management provisions, to the satisfaction of the Environmental Protection Authority.

The proponent has made a commitment to accept responsibility for possible environmental impacts of a potential oil spill and the EPA endorses this.

Recommendation 4

The Environmental Protection Authority endorses the proponent's commitments to accept responsibility for any adverse environmental impacts which may occur as a consequence of the proposal proceeding, and recommends that the arrangements for meeting this condition should be to the satisfaction of the Minister for Environment after consultation with the Minister for Mines and the Minister for Fisheries.

The proponent has made a commitment to provide equipment onsite with the capability to contain a 20m³ spill which the Authority regards as satisfactory.

Recommendation 5

The Environmental Protection Authority is aware that the proponent includes in the Oilspill Contingency Plan, the capability for containment of small oil spillages on or adjacent to the rig and that a suitable boom, together with operators skilled in its deployment, would be installed on or adjacent to the rig prior to the commencement of drilling and remain there permanently until demobilisation of the rig. The Environmental Protection Authority recommends that this approach should be adopted, to the satisfaction of the Environmental Protection Authority.

Recommendation 6

In order to maximise recovery of spilled oil where an environmentally sensitive location is close enough to the rig to be within its zone of influence from an oil spill, the Environmental Protection Authority recommends that refuelling of the rig should only take place during optimal weather conditions, to the satisfaction of the Environmental Protection Authority, on advice from the Department of Mines.

Refuelling in conditions where current speeds are less than 0.7 knot, wind speed is below 15 knots and in wave heights of 1m or less would be regarded as satisfactory.

Recommendation 7

The Environmental Protection Authority recommends that, prior to the start of the first well, the proponent successfully trial runs a simulated Oilspill Contingency Plan up to the point of deployment of resources, to ensure that

- assurances that WAPET would pay compensation for any loss in income resulting from an oilspill;
- planning of drilling activities within areas of active trawling should recognise the prawn fishing season so that a mutually satisfactory operational agreement could be reached; and
- the necessity for a speedy response to a cyclone warning was emphasised.

WAPET has documented the environmental sensitivities of the permit area and discussed the likely spread of oilspills from the prospect locations shown on Figure 2. A number of sensitive locations around islands and on the mainland could be at risk, depending on the prevailing tidal and wind conditions.

Statistics of oil spills indicate that small spills (such as from the rig refuelling operation) are not uncommon. Generally, however, in the warm waters of this region they are unlikely to have a significant impact on the marine environment unless spilt immediately adjacent to an environmentally sensitive location, because they evaporate rapidly. This is the case for the light crude oils which are often found in this shelf area, although crude oil from the Roller field within the permit area is more accurately described as a medium grade crude oil. Larger spills are a more serious problem but are rare, and none is known to have occurred in the history of drilling offshore from Australia.

The potential impacts to marine life can be reduced if the appropriate containment and retrieval equipment is able to be rapidly deployed. However, it is generally acknowledged that booms are relatively ineffective in all but calm conditions. Therefore it is vitally important that effort must first and foremost be put into the prevention of a spill.

Routine discharges from the rig consist of domestic waste water, drill cuttings and drill muds. WAPET has committed to dealing with these wastes in an appropriate manner.

Recommendation 1

The Environmental Protection Authority concludes that the proposal to conduct an offshore exploration drilling programme in permit area TP/3 Part 1, as described in the Consultative Environmental Review, is environmentally acceptable. In reaching this conclusion, the Environmental Protection Authority identified the main factors requiring detailed consideration as the effects of routine and accidental discharges arising from the drilling operations upon the environment, and the sectors of the community which are dependant on it.

The Environmental Protection Authority considers that these and other issues have been addressed by either environmental management commitments given by the proponent or by the Environmental Protection Authority's recommendations in this report.

Accordingly the Environmental Protection Authority recommends that the proposal could proceed, subject to:

- the proponent's commitments; and
- the Environmental Protection Authority's recommendations in this report.

Recommendation 2

The Environmental Protection Authority recommends that the proponent be required to refer details of future exploration drilling (other than those comprising this programme) or development plans resulting from this exploration drilling proposal to the Environmental Protection Authority.

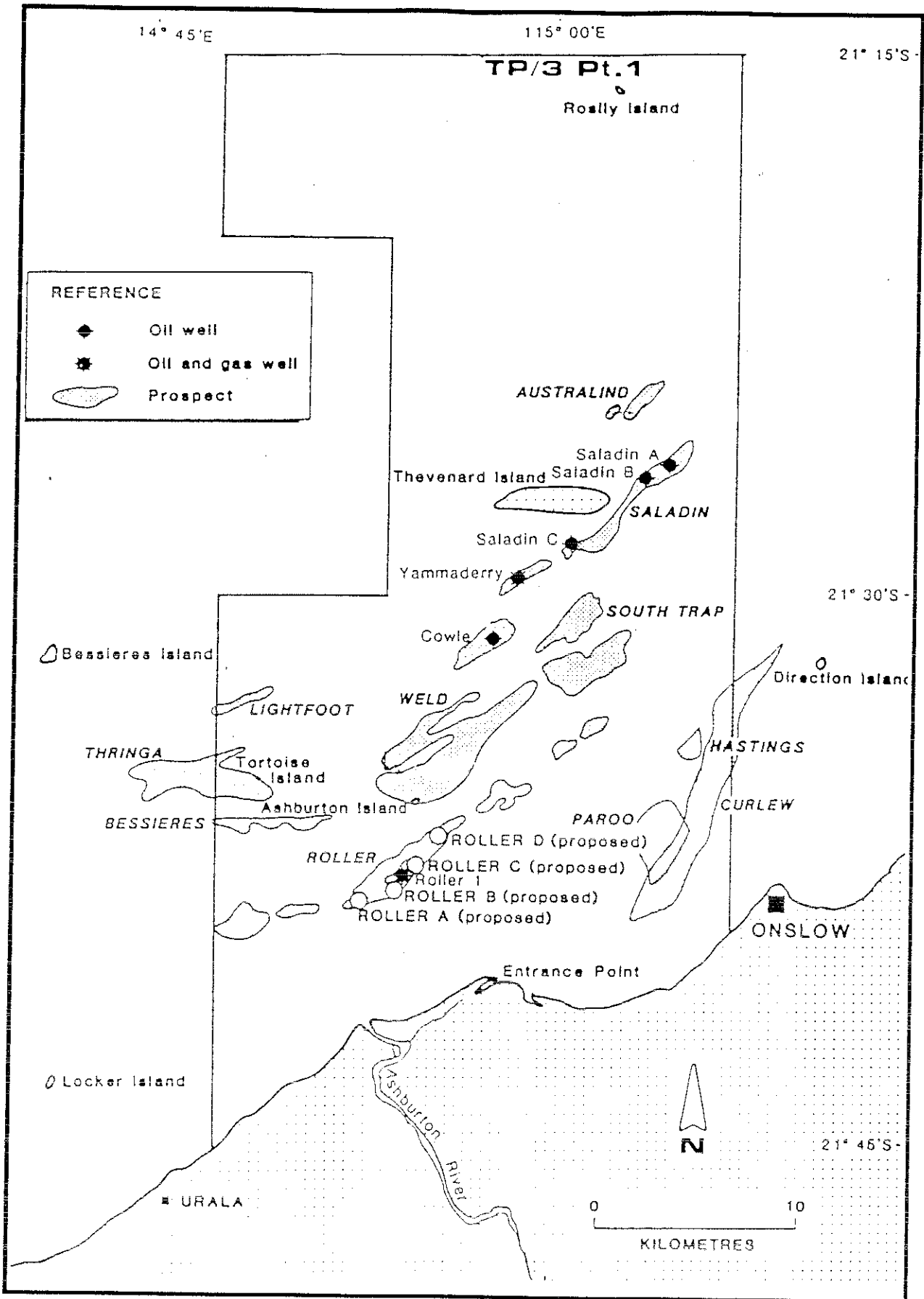


Figure 2. Oilfield and prospect outlines in TP/3 Pt.1

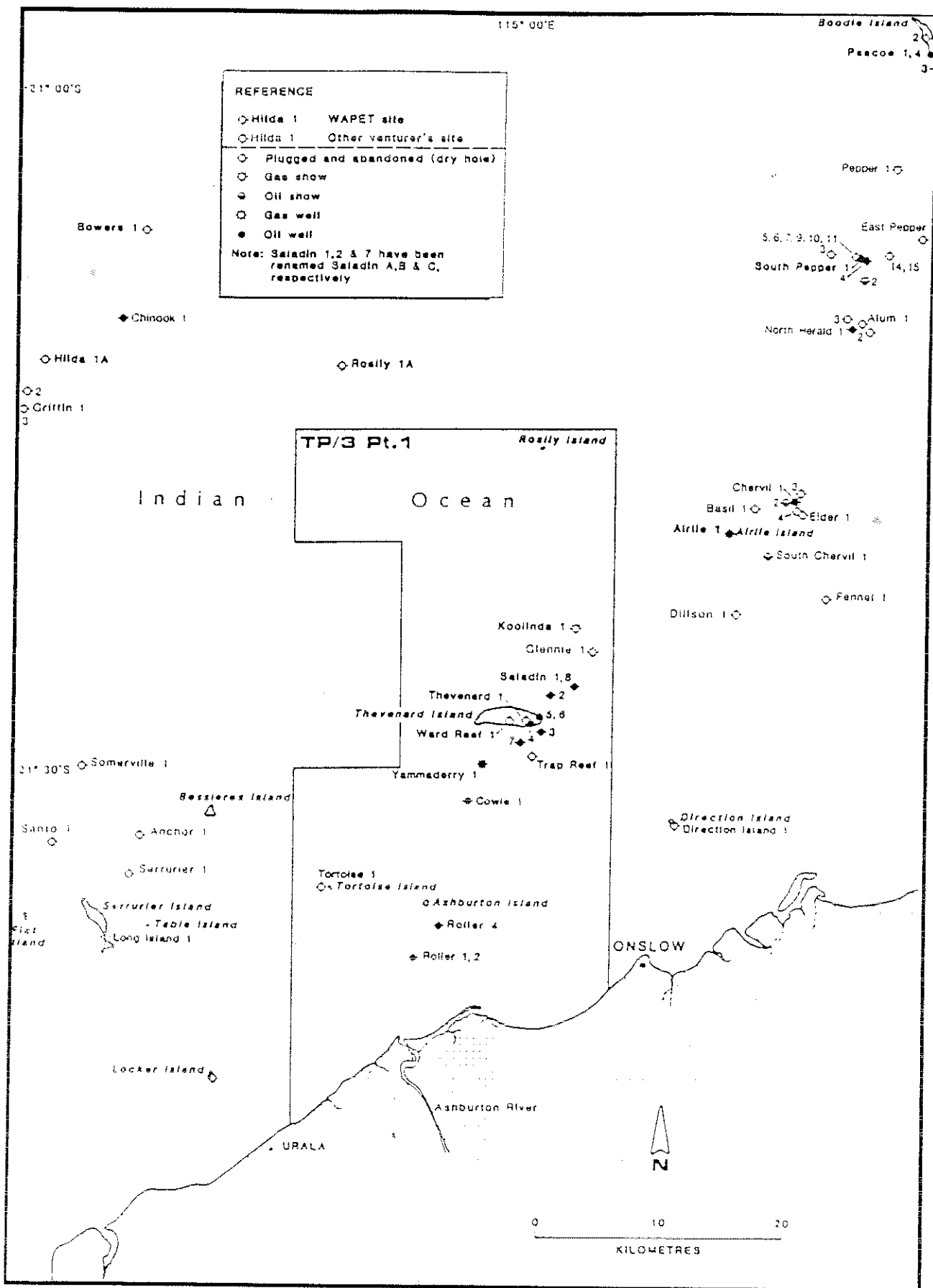


Figure 1. Location of permit area and previous offshore wells

Summary and recommendations

West Australian Petroleum Pty Ltd (WAPET) has proposed an offshore exploration drilling programme for petroleum within its permit area TP/3 Part 1, immediately to the west and offshore from the Pilbara port of Onslow. This proposal seeks environmental approval for the drilling of between four and twelve wells over a five year period beginning later in 1991. The Authority has previously assessed a number of petroleum exploration proposals in this area associated with the Cowle, Yammaderry and Roller oilfields (see Figure 1).

Permit TP/3 Part 1 lies mainly within a Special Protection Locality (SPL), as defined in the Department of Conservation and Environment (now EPA) Bulletin 104. Together with the Environmentally Sensitive Locality (ESL), also defined in Bulletin 104, these zones are regarded as being environmentally sensitive to oilspills (see Section 3). Proposals for drilling within these zones are referred to the Environmental Protection Authority for assessment. The Authority's general position on these sorts of proposal may be summarised as follows:

- in marine parks land based exploration proposals will be assessed for environmental acceptability on their merits, while marine based proposals are environmentally unacceptable;
- in environmentally sensitive areas (such as SPLs and ESLs), petroleum exploration proposals need to clearly demonstrate the capacity to cope with environmental impacts, especially possible oil spills in terms of credible events, their likely frequency and contingency planning; and
- outside environmentally sensitive areas exploration proposals normally could proceed, subject to standard environmental protection conditions.

Many areas within the permit are regarded as being environmentally sensitive, with several locations (such as fringing reefs and mangrove-lined creek mouths) having high conservation values. Accordingly the proponent was required to prepare a Consultative Environmental Review (CER) for public review and formal assessment, and undertook to prepare sufficient documentation to enable the assessment of a permit-wide drilling programme.

A programme-wide assessment is designed to provide for a formal assessment procedure to be initiated for the entire programme instead of for each separate well, and leads to savings in time and resources for proponents (who are better able to plan their programme), involved agencies, the public and the EPA. In the case of this proposal WAPET has not yet identified specific drill targets for investigation but has indicated that there are a number of potential prospects (shown in Fig 2) where drilling would be most likely to occur. The proponent's management plan for activities associated with the drilling was thus required to address the actual and potential impacts of drilling with a jack-up rig over a wide area of the permit. Once drill sites had been accurately selected the Authority would require that environmental management provisions were applied in a site-specific manner. The Authority has recommended that an appropriate mechanism for activating this be put in place.

In the context of possible future proposals to develop petroleum reserves outlined by exploration drilling the Environmental Protection Authority wishes to emphasise the environmental significance of the area and the Authority's preference to concentrate development at existing facilities wherever possible. It should not be assumed that production facilities on islands other than Thevenard would be environmentally acceptable.

The region is subject to strong winds and currents and lies within the cyclone-affected belt of Australia. The shallow waters and intertidal zones support a diverse range of marine life which give the area its considerable conservation, commercial fishing and potential tourist values.

Points raised in public submissions included:

- a call for close liaison with the Shire of Ashburton with regard to proposed activities;
- the fate of drill cuttings, domestic wastes and oil spills, and the impacts of each of these on the environment;

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Permit Area TP3 Part 1 offshore Onslow**

West Australian Petroleum Pty Ltd

**Report and recommendations of the
Environmental Protection Authority**

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Environmental Protection Authority**

**Environmental Protection Authority,
Perth, Western Australia
Bulletin No 581
Assessment No 575
September 1991**

drill cuttings a localised smothering effect, this Department believes that if disposal into the well is a practical option as suggested by WAPET, then that option should be utilised.

Of significant concern to CALM is the treatment of domestic and sewage wastes. In a high technology operation such as that proposed, with as many as twelve exploratory wells suggested, it is unacceptable to simply comminute the wastes and discharge them into the environment.

Response :
When operating within a 500m radius of sensitive resources (ie coral reefs and seagrass beds) WAPET will dispose of drilling mud and cuttings into the well if a lost circulation zone is available. Experience has shown that dilution and dispersion of drilling mud lines occur within about 100-150m of the platform, hence allowance of a 500m buffer zone between a drilling rig bottom outfall and sensitive resources is considered adequate. The majority of the seafloor within Permit Area TP/3 (Part 1) is primarily composed of sand which is inhabited by sparse sessile fauna which include sponges, hydroids, sea anemones, sea whips, sea stars, sand dollars, crinoids and various burrowing infauna. Because these organisms live in relatively deep and often turbid water it is highly unlikely that they would be sensitive to diluted drilling fluids. We believe the management of drilling fluid disposal as described in the TP/3 CER is therefore practical and effective for drilling operations within the different environmental zones of the Permit Area.

However, provided the rig being used has the necessary equipment, and cuttings can be pumped down the well, WAPET has no objection to following this practice in all drilling locations in the Permit Area.

Foodscreaps will be collected and transported to the mainland for disposal in accordance with the PSLA Clause 222. Sewerage will be comminuted and disinfected by chlorination prior to disposal to comply with MARPOL requirements.

Submission.

Corrections:

Table 6, P.68:

It is believed that the contact for whales might be Mike Osmond, rather than Mike Osborne. Similarly, James Andrews, rather than James Masters. P.27:

'Muirion' should read 'Muiron'.

Appendix 7:

'Turbridgi' should read 'Tubridgi'.

WAPET acknowledges the corrections.

Response .
Submission 3.

5.3.2 Operation procedures:

On P.54:

The CER states that contaminated seabirds and turtles would be cleaned by

petroleum discharged or spilled while drilling any well in Permit Area TP/3 Part 1 and for clearing up any areas polluted by such petroleum. In addition, WAPET will also undertake to promptly pay to any person, company or government agency, any damages to which any of those entities is lawfully entitled from WAPET; and

2. Provide details of insurance carried by its principals. Note that the above undertakings and details are provided routinely by WAPET to the WA Department of Mines prior to commencement of any offshore well. A recent example could be provided to the EPA by the Mines Department subject to their approval.

Submission

Proposed exploratory wells could be situated within productive trawling areas of the Onslow prawn fishery. If the drilling period coincides with the fishing season (April to November) interference with normal trawling practice could occur to the detriment of the annual catch of tiger prawns. It is therefore essential that the company discuss the drilling schedule with the local prawning industry and the W.A. Fishing Industry Council so that a mutually satisfactory operational agreement can be reached.

Response

WAPET has established a good working relationship with the Onslow prawn fishery. This liaison will continue. Drilling schedules will be discussed with the relevant parties.

Submission

It is thus imperative that the oil spill contingency plan be fully operational for rapid deployment at all times during the drilling phase and include a capacity for transferring recovered oil to suitable containers.