

**COMMISSION OF INQUIRY  
MONTARA WELL HEAD PLATFORM  
UNCONTROLLED HYDROCARBON RELEASE**

PTTEPAA

TERM OF REFERENCE NO 7

*“Assess and report on the environmental impacts following the Uncontrolled Release using available data and evidence including the outcomes from monitoring activities already underway, review any proposed environmental monitoring plans, and make recommendations on whether any further measures are warranted to protect the environment from the consequences of the Uncontrolled Release”*

**A Environmental monitoring**

***What immediate monitoring was done?***

- 1 PTTEPAA handed over control of the oil spill response to AMSA on 21 August 2009. As part of its response, AMSA conducted:
  - (a) aerial surveys and water, oil and wax sampling;
  - (b) oil trajectory modelling (undertaken by ASA Pacific); and
  - (c) satellite imagery analysis.
- 2 On 24 September 2009, DEWHA commissioned a rapid survey of the “mega fauna” (defined as cetaceans, birds and marine reptiles, being turtles and sea snakes) in the Montara oil spill region.
- 3 On 7 September 2009, WA Department of Transport on behalf of AMSA contacted Associate Professor Marthe Monique Gagnon to conduct biopsy collection on four fish specimens, all of different species, landed in Broome on 4 September 2009.

***The “Monitoring Plan for the Montara Well Release Timor Sea as agreed between PTTEP Australasia and the Department of the Environment, Water, Heritage and the Arts, 9 October 2009”***

- 4 PTTEPAA engaged John Wardrop (**Mr Wardrop**) to advise it in relation to the potential environmental impacts of the Uncontrolled Release.
- 5 Mr Wardrop prepared an initial draft of an environmental monitoring plan at PTTEPAA’s request. This plan was then provided to DEWHA for its consideration.
- 6 Key stakeholders were consulted through DEWHA and their comments taken into account in the preparation of the Monitoring Plan. These stakeholders included:

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- (a) NTDRDPIFR;
- (b) Western Australian Department of Environment;
- (c) Western Australia Department of Fisheries;
- (d) Northern Territory Department of Natural Resources, the Environment, the Arts and Sport, Northern Territory Parks and Wildlife;
- (e) DRET;
- (f) AMSA;
- (g) Australian Fisheries Management Authority;
- (h) CSIRO; and
- (i) Australian Institute of Marine Sciences.

7 On 9 October 2009 the “Monitoring Plan for the Montara Well Release Timor Sea as agreed between PTTEP Australasia and the Department of the Environment, Water, Heritage and the Arts, 9 October 2009” was finalised.

***What monitoring is required under the “Monitoring Plan for the Montara Well Release Timor Sea as agreed between PTTEP Australasia and the Department of the Environment, Water, Heritage and the Arts, 9 October 2009”?***

8 Under the “Monitoring Plan for the Montara Well Release Timor Sea as agreed between PTTEP Australasia and the Department of the Environment, Water, Heritage and the Arts, 9 October 2009” the following monitoring is to be undertaken:

- (a) **Operational Monitoring**, which was conducted during the oil containment and recovery operations and the majority of which ceased on completion of the oil containment and recovery operations. Operational Monitoring studies have provided data to enable decisions to be made as to which of the Scientific Monitoring studies are required. The Operational Monitoring comprised of the following studies:

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- (i) Monitoring of Oil Distribution and Marine and Coastal Megafauna (Study O1);
- (ii) Monitoring of Oil Character Fates and Effects (Study O2);
- (iii) Shoreline Assessment Ground Surveys (Study O3);
- (iv) Monitoring of Dispersant Efficiency and Fate of Dispersed Oil (Study O4);  
and
- (v) Wildlife Impact Monitoring (Study O5).

Operational Monitoring is managed by AMSA. It was included in the Monitoring Plan to provide information about environmental monitoring already underway during the oil recovery and containment operations and to provide background to, and information for the Scientific Monitoring programme.

- (b) **Scientific Monitoring** - whether Scientific Monitoring is required will be determined by the occurrence of triggers for each study. The likely duration of each Scientific Monitoring study will be agreed at the commencement of the study but will ultimately depend on the outcome of the monitoring. The Scientific Monitoring studies include the following, with detailed Scopes of Work to be developed for each of these following appointment of the experts to lead the studies that have been triggered:

- (i) Marine Megafauna Aerial Assessment Surveys (Study S1);
- (ii) Shoreline Ecological Assessment Aerial Surveys (Study S2);
- (iii) Assessment of Fish Catch for the Presence of Oil (Study S3);
- (iv) Assessment of Effects on Timor Sea Fish and Fisheries (short term - Study S4A long term - Study 4B);
- (v) Offshore Banks Assessment Survey (Study S5);
- (vi) Shoreline Ecological Ground Surveys (Study S6); and
- (vii) Oil Fate and Effects Assessment (Study S7).

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***How are the experts to conduct the monitoring to be selected?***

- 9 DEWHA prepared a List of Available Experts in consultation with PTTEPAA and other Government bodies which has been provided to PTTEPAA.
- 10 PTTEPAA issues requests for tenders to the relevant experts in the List of Experts, and any other experts who are suitably qualified but not included in the List of Experts, and requires proposals to be submitted in accordance with a template set out in the Monitoring Plan. The proposals are evaluated by PTTEPAA and the selected proposal is then sent to DEWHA for approval, and DEWHA will consult with other Government departments and agencies where necessary.
- 11 In certain circumstances where a particular expert is considered to be best suited for particular monitoring, the expert is selected without the need for a competitive tender process. The expert is provided with a tender package to ensure they agree with the terms. This occurred for WA Fisheries (Study S3 and S4B), Mr Norm Duke of the University of Queensland (Study S2 and part of Study S6), and Ms Marthe Monique Gagnon of Curtin University (Study S4A).

***Rationale behind the triggers for scientific monitoring***

- 12 It was not known at the time the Monitoring Plan was agreed to whether all identified monitoring was going to be necessary. Triggers were therefore identified so that there were specific and clear circumstances in which the different monitoring would need to be undertaken and to ensure the monitoring was appropriately targeted.
- 13 The table below outlines the rationale for each of the triggers selected for determining when Scientific Monitoring should be undertaken.

Study	Trigger	Explanation/Rationale
<b>S1 MARINE MEGAFUNA ASSESSMENT SURVEYS</b>	<ul style="list-style-type: none"> <li>• Observed proximity of marine megafauna to oil slick or response operations combined with suggestion of significant harm (i.e. not an isolated incident) or</li> </ul>	<ul style="list-style-type: none"> <li>• Mega fauna presence near oil or response operations was a reportable sighting under Operations Monitoring Study O1.</li> <li>• Cetaceans are not known to be sensitive to surface oil but exposure to liquid, fresh oils (as opposed to wax films or particles) was</li> </ul>

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Study	Trigger	Explanation/Rationale
	<ul style="list-style-type: none"> <li>Observed incident of harm attributable to oil or the response.</li> </ul>	<p>considered to warrant further investigation under Study O1 and if harm was suspected then longer term studies under Study S1.</p> <ul style="list-style-type: none"> <li>Triggers are based on ecological risk (exposure) and socio-political risk (need to show whether damage has occurred and to assure public that effects are being investigated).</li> </ul>
<b>S2</b>  <b>SHORELINE ECOLOGICAL ASSESSMENT AERIAL SURVEYS</b>	<ul style="list-style-type: none"> <li>Impact of oil on reef, islands or mainland shorelines observed or predicted by trajectory modelling (Study O1).</li> </ul>	<ul style="list-style-type: none"> <li>Oil may impact coastal habitats and species and cause harm.</li> <li>Effects can be complex but may be similar to naturally occurring damage (e.g. mangrove and coral die back).</li> <li>If possible, shoreline condition needs to be assessed prior to any impact, hence an overview survey is recommended if spill impact is predicted or likely.</li> <li>Triggers are based on ecological risk (of impact).</li> </ul>
<b>S3</b>  <b>ASSESSMENT OF FISH CATCH FOR THE PRESENCE OF OIL</b>	<ul style="list-style-type: none"> <li>Exposure of fishing vessels, or potential impact on commercial fish stocks, fishing equipment or catch by oil.</li> <li>Public reports of tainting.</li> </ul>	<ul style="list-style-type: none"> <li>Tainting of fish at sea by floating oil is extremely unlikely, but has been reported in shallow inshore fisheries associated with spills overseas.</li> <li>Public concern may lead to (false) reports of tainting or reduced marketability of possibly impacted fish.</li> <li>Triggers are based on ecological (exposure), and economic (taint) risk assessment.</li> <li>Rapid testing of fish catch can quell such concerns.</li> </ul>
<b>S4A</b>  <b>ASSESSMENT OF CURRENT EFFECTS ON TIMOR SEA FISH AND</b>	<ul style="list-style-type: none"> <li>Spill impacting significant proportion of a fishing area</li> <li>Claims of damage or possible damage to fish stocks.</li> </ul>	<ul style="list-style-type: none"> <li>Damage to fish stocks at sea is highly unlikely and has not been reported in the scientific literature from past spills.</li> <li>Triggers are based on public concern (socio-political risk) as well as an ecological risk (exposure).</li> </ul>

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Study	Trigger	Explanation/Rationale
<b>FISHERIES</b>	<ul style="list-style-type: none"> <li>Declarations of intent by commercial fisheries or govt agencies to seek compensation alleged or possible damage.</li> </ul>	<ul style="list-style-type: none"> <li>This study can support Study S3 by identifying whether fish stocks have been exposed to oil.</li> </ul>
<b>S4B ASSESSMENT OF LONG- TERM EFFECTS ON TIMOR SEA FISH AND FISHERIES</b>	<ul style="list-style-type: none"> <li>Study S4A indicating environmental harm has occurred.</li> <li>Study O2 indicating widespread hydrocarbon contamination of waters or sediments.</li> <li>Study S7 indicating potential longer term contamination of sediments or waters.</li> <li>Preliminary study indicating harm and potential longer term effects.</li> </ul>	<ul style="list-style-type: none"> <li>Triggers are based on an indication of an exposure of fish to oil.</li> <li>Evidence for the triggers comes from either Operational study data or other Scientific study findings.</li> <li>Triggers are based on ecological risk and exposure data.</li> <li>If this study is triggered longer term studies may be required. These would need to be indicated by either results of initial studies or more detailed risk assessment (undertaken as part of the initial study).</li> </ul>
<b>S5 OFFSHORE BANKS ASSESSMENT SURVEY</b>	<ul style="list-style-type: none"> <li>Oil slick passing over the banks and detection of oil at depths of &gt;5m (data from Study O2) incl. under dispersant treated oil.</li> <li>Oil spill trajectory modelling predictions (Study O1) indicating the above.</li> </ul>	<ul style="list-style-type: none"> <li>Triggers are based on an indication of an exposure of banks to oil.</li> <li>Evidence for the triggers comes from either Operational study data (Study O2) or other Scientific study findings (modeling of dispersed oil distribution under Study O1 or subsequently under Study S7).</li> <li>Triggers are based on ecological risk and exposure data.</li> </ul>
<b>S6 SHORELINE ECOLOGICAL GROUND SURVEYS</b>	<ul style="list-style-type: none"> <li>Impact of oil on sensitive reef, island or mainland shorelines or inshore habitats (seagrasses, corals) observed or predicted by oil spill trajectory modelling (Studies O1, O3 or O5).</li> <li>Impact of oil on shoreline</li> </ul>	<ul style="list-style-type: none"> <li>Trigger is based on documented (or predicted) impact on habitats or species and ecological risk (potential for harm from exposure).</li> </ul>

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Study	Trigger		Explanation/Rationale
	associated fauna (e.g. seabirds, sea snakes, turtles, dugongs or other species as advised by DEWHA) observed or predicted by oil spill trajectory modelling (Studies O1, O3, O5).		
<b>S7 OIL FATE AND EFFECTS ASSESSMENT</b>	Marine Surface Waters:	<ul style="list-style-type: none"> <li>Persistent oil or oil components on waters at the end of the response (Study O2).</li> </ul>	<ul style="list-style-type: none"> <li>S7 studies are designed to determine any longer term distribution of oil in waters and sediments of the impacted area.</li> <li>This information is needed in order to better explain findings of other Scientific studies of to trigger additional studies.</li> <li>Triggers are based on observed presence of oil in these environments during operational monitoring.</li> <li>Operational monitoring was expanded to provide more detailed data for these triggers.</li> </ul>
	Marine Water Column:	<ul style="list-style-type: none"> <li>Persistent oil or oil components in waters at the end of the response (Study O2).</li> </ul>	
	Marine Sediments	<ul style="list-style-type: none"> <li>Persistent oil or oil components in or on sediments at the end of the response (Studies O2, O3 or O5). This includes banks and shoals (see Study S5).</li> </ul>	
	Coastal Waters	<ul style="list-style-type: none"> <li>Actual or potential (baseline) oil impact on coastal waters.</li> </ul>	
	Coastal	<ul style="list-style-type: none"> <li>Actual or</li> </ul>	

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Study	Trigger		Explanation/Rationale
	Sediments	potential (baseline) oil impact on shorelines.	

*Which studies have been triggered to date and what is the progress on those studies?*

- 14 A more detailed summary of the monitoring conducted as at the date of this submission together with the current results of those studies is attached as Annexure A to this submission.
- 15 The following is a snap shot of the progress:
- (a) Scientific S1 – Marine Megafauna Assessment Surveys  
  
Not Triggered
  - (b) Scientific S2 – Shoreline Ecological Assessment Aerial Surveys  
  
Field work complete (mainland part).  
  
Preliminary report received. Final report expected January 2010.
  - (c) Scientific S3 – Assessment of Fish Catch for the Presence of Oil  
  
Triggered  
  
Proposal approved by DEWHA  
  
Survey expected to commence in early 2010.
  - (d) Scientific S4A – Assessment of Current Effects on Timor Sea Fish and Fisheries  
  
Study field work completed by Monique Gagnon.  
  
Analysis of fish samples underway.  
  
Final report expected January/February 2010

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- (e) Scientific S4B – Assessment of Long Term Effects on Timor Sea Fish and Fisheries

Phase approach to study determined.

Proposal received from WA Department of Fisheries.

- (f) Scientific S5 – Offshore Banks Assessment Survey

Under review.

- (g) Scientific S6 – Shoreline Ecological Ground Survey

Study is broken down into 5 components (all triggered):

- (i) Mainland - preliminary study completed by Norm Duke.
- (ii) Seabirds - tenders received by PTTEPAA, to be reviewed.
- (iii) Sea snakes - tenders received by PTTEPAA, to be reviewed.
- (iv) Turtles - tenders received by PTTEPAA, to be reviewed.
- (v) Corals - tenders received by PTTEPAA, to be reviewed.

Components (ii) - (v) are not expected to commence until early 2010.

- (h) Scientific S7 – Oil Fate and Effects Assessment

This study is broken down into 6 components. Whether these have been triggered is subject to review.

- (i) Trajectory Analysis - proposal received from ASA-Pacific. To be accepted by PTTEPAA.
- (ii) Sediment plume study - proposal received from ASA-Pacific. To be accepted by PTTEPAA.
- (iii) Dispersed Oil Modelling - proposal received from ASA-Pacific. To be accepted by PTTEPAA.

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- (iv) Sediment / water / biota sampling for mainland - under review.
- (v) Sediment / water / biota sampling for impact area – under review.
- (vi) Sediment / water / biota sampling for shorelines (i.e Ashmore / Cartier) - under review.

***What will happen to the results of the scientific monitoring?***

- 16 Reports prepared under the Scientific Monitoring Programme will be provided by PTTEPAA to DEWHA and made public on the DEWHA website.

***What, if any, other action is envisaged following receipt of outcomes from the Operational and Scientific Monitoring Programmes?***

- 17 The results of the Operational Monitoring are being used to assess whether the triggers have been met for the Scientific Monitoring.
- 18 Any action following the completion of the Operational and Scientific Monitoring Programmes can only be determined once the outcomes of those studies have been finalised.

**B What are the known environmental impacts of the Uncontrolled Release?**

- 19 Full environmental impacts of the Uncontrolled Release are not known at this stage. Some preliminary studies have been done but the results need to be considered together with further results from monitoring under the Monitoring Plan before firm conclusions can be drawn on environmental impacts. The Scientific Monitoring studies that form part of the Monitoring Plan, which are designed to provide data on the environment that may potentially be impacted by the Uncontrolled Release, remain ongoing and have not yet produced any final results.
- 20 The following information is known by PTTEPAA, as at the date of these submissions:
- wildlife monitoring of Ashmore Reef and its surrounds (which has now been demobilised) has found 29 oil affected birds, 19 deceased. Five birds have been released and five taken to Darwin for rehabilitation. Of those five taken to Darwin, 3 are recovering from a virus and 2 died (these are not part of the 19 deceased above);

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- 2 deceased oil affected birds have been found on the Jabiru Venture (a nearby oil facility operated by PTTEPAA):
- at least 2 oil affected sea snakes have died; and
- Some wax has been detected on Ashmore Reef, and traces of hydrocarbons have been found on Browse Island.

21 Consideration of these and other impacts are continuing but PTTEPAA does not want to speculate on environmental impacts until results of the monitoring under the Monitoring Plan have been obtained.

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