

Australian Marine Sciences Association

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Mr David Loveder
Policy Officer
Environment Policy Section, Resources Division
Department of Industry Tourism Resources
Level 1, 33 Allara St
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16 March 2005

Dear Mr Loveder

The Australian Marine Sciences Association (AMSA) is a national non-profit organisation dedicated to advancing marine science in Australia and has existed for over 42 years. It is the largest and most broadly representative national professional body of marine scientists in Australia, with a multi-disciplinary membership of about 1000. AMSA holds an annual National Conference, publishes a quarterly *Bulletin*, and presents highly regarded awards to professionals and students of marine science. AMSA encourages and supports research that aims to increase knowledge of the physical, biological, geological and oceanographic processes of Australia's vast marine domain - a domain that includes three of the world's four major oceans and every temperature zone, from tropical to polar.

Thank you for sending the Draft Strategic Assessment of Offshore Petroleum Exploration and Appraisal Activities. Professor Maria Byrne provided feedback to DITR on the initial scoping report in 2003 when she represented marine science as a member of the National Oceans Advisory Group. Australia's offshore petroleum industry has had an exemplary environmental track record and through NOAG liaises closely with other users of the offshore jurisdiction such as the trawl fishers. AMSA appreciates the opportunity to comment at this important stage of the assessment of Offshore Petroleum Exploration Activities. Only those parts of the Strategic Assessment within AMSA's expertise were considered. The submission in Attachment 1 reflects input from several AMSA Councillors.

Some sections of the Strategic Assessment appear comprehensive and up to date, including the section on Marine Pest Invasions. Other parts of the document need clarification or need to be augmented in light of current research. It will be important to include recent Australian research in the Assessment and to identify key gaps in knowledge to prioritise future research. For example, while seismic activity is an essential component of offshore exploration needed for the oil exploration industry to operate, it is clear that important gaps in knowledge of the impacts of this activity remain to be addressed.

In closing, if accreditation of the environmental assessment process is deemed to require additional information, AMSA strongly urges DITR to ensure that the outcomes of future research are vetted through a rigorous review process involving independent experts and published in primary (ie. accessible) sources.

If AMSA can be of further assistance please do not hesitate to contact us.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Gina Newton'.

Gina Newton
National President, AMSA

Attachment 1: Australian Marine Sciences Association Comments on - *Draft Strategic Assessment of Offshore Petroleum Exploration and Appraisal Activities*

Edited by Associate Professor Maria Byrne, Australian Marine Sciences Association

General Comments

The Strategic Assessment (SA) seeks to consolidate currently available information regarding the nature, environmental effects and environmental management of petroleum exploration. Much of the information is comprehensive, such as Part A, and is an interesting read. However, in some sections important publications, particularly in the field of ecotoxicology, were missed. Use of primary literature is preferred over reports that are not easily accessed. Several Australian laboratories at RMIT, University of Technology Sydney and Southern Cross University have been engaged in research on the toxicology of oil, dispersants and drilling fluids on marine animals and plants. Some of the research is mentioned but the SA is not complete in this regard. It is important that the best available information be included in the next version of the SA.

Many of the source documents cited in the footnotes through the SA are not primary literature. For instance the study by Swan *et al.* is cited many times through the document, but is not an independent source. Many such review/reports provided the background for this Assessment. It would be preferable to cite a number of independent studies to remove any perception of bias.

The specific comments below reflect where AMSA had the expertise to provide feedback.

Specific Comments

1. Sections involving marine vertebrates

Section 1.2.7 Marine Mammals

The most commented on species in the report is not correctly identified. There are two (at least) species of bottlenose dolphin in Australian waters; *Tursiops aduncus* (Indo-pacific bottlenose dolphin) is the one most familiar. This is the coastal species. It is different from *Tursiops truncatus* which is a larger, darker form found in NZ, Scotland, and USA - and which might be found here offshore but it is not clear at this juncture.

Risso's dolphin is definitely not the next most common type. While they are present, this species is not that numerous compared to common dolphins.

The paragraph about warmer species needing to eat less is speculative and likely to be wrong. What was the source of this information? It would be best to remove the paragraph.

The subantarctic islands that Australia manages do NOT support some of the largest breeding populations of Antarctic fur seals. Elephant seals however, is correct in this context.

In the section on dugongs, natural mortality events (predators, cyclones) are listed as Threats. This is not an appropriate interpretation of Threat. The indigenous harvest is probably the most important threat to dugongs at this point- see the recent paper by Marsh and Heinsohn.

p. 32 The data on blue whales are out of date. The localised concentration of blue whales extends well into South Australian waters south of Kangaroo Island.

p. 34 The matrix for Otways whale migrations is ONLY correct for blue whales and southern right whales. The data for the other species is so poor as to preclude any suggested peak periods. For Gippsland the data are good for humpbacks and Southern Right Whales. Data for the other species are poor. It is likely that Minkes are off Gippsland 12 months of the year.

Section 3.3.1

The section with regard to environmental impacts on marine mammals is up to date.

On p. 56 – are the mid-point for injury thresholds from Richardson *et al.*? This is indeed the most important publication on this.

Section on positive (non-avoidance) reactions: Pilot whales approaching airguns (p. 57) are more likely to be acting in an aggressive manner not in a curious or unconcerned manner. They are thus likely to be

subject to serious injury. Harpooned whales also approached whaling ships, didn't mean there was no impact. This issue needs to be addressed much more carefully.

There remain to be significant hurdles for the seismic industry in the lack of knowledge about the impacts on cetaceans (p. 138). This is due to lack of knowledge about cetaceans' behaviour and their habits. As mentioned in the SA (p. 138) targeted funded is urgently needed for research. A good example where industry and researchers have worked together is the Otways program surveying for blue whales. In this case the minimisation of impacts fit well with the seismic guidelines.

While there has been some consideration on the potential effects of seismic surveys on marine mammals, the data on other marine vertebrates is poor. We know nothing about the effects of this activity on penguins. The data on fish, sharks and other commercial stocks (squid) are *ad hoc*. This is a serious gap in our knowledge and will be of concern to the commercial fishing industry. The source documents cited in the footnote are not primary literature. The paper by Pearson *et al.* on fish startle reactions seems important but this reference is not listed. It would have been useful to access the information.

As mentioned in the SA, it will be important to invoke the precautionary principle to avoid conducting surveys in known shark feeding and pupping areas.

While seismic activity is an essential component of offshore exploration needed for the oil exploration industry to operate (p. 67), it is clear that important gaps in knowledge of the impacts of this activity remain to be filled for non-mammalian marine invertebrates.

Ch 7 - Mitigation Measures

p. 137- recommending no airgun shut-down for odontocetes IF they may be shown to avoid active arrays.. is not clear.

The issues around migrating whales are played down. If there are narrow corridors then disruption may have serious impact. As is currently the case in WA for humpbacks, it is recommended that industry consider funding research on migration routes. Dependence on use of observation from industry platforms should be avoided.

2. Sections involving potential environmental impacts (4.4)

p. 74. The amount of hydrocarbons in a drilling fluid greatly influences its toxicity and tables of composition are presented (Tables 4.1, 4.2). This statement needs to be placed in the context of potential environmental impacts. Industry based research is well known to exist and some of this is mentioned in the SA (eg. p. 74 footnotes and pers comms). Can we have some quantification (eg. r^2 values) of the toxicities mentioned?

An additional box question should be added to the SA along the lines of:

Question: What are the environmental impacts of water-based fluids, non-water based fluids on the marine species?

The next question is on deep-water disposal so the above one has a different context. The question on p. 78 could be modified to include both.

With regard to the ecotoxicity of drilling fluids the data from the ERM (1997) report would have to be vetted to determine its value. For instance there is no information provided on how the toxicity tests were conducted. For example, the simple fact of whether the test organisms were added before or after the drilling fluids could have a marked affect on the toxicity. Similarly, whether there was some attempt to keep the drilling fluid suspended in the water or not could affect the results.

The classification of the toxicity of substances (Table 4.3) from the Hinwood *et al.* (1994) study needs further assessment and perhaps should be deleted. It is not consistent with current data from NICNAS (National Industrial Chemical Notification and Assessment Scheme). There are more recent studies that should be consulted.

Similarly, Table 4.5 presents recent ecotox results for Australian marine organisms. These are not published data and are inaccessible to the broader scientific community. We need to fully understand how these tests were undertaken to determine if the most appropriate endpoints were used. What are the endpoints for the EC50 values?

On p. 88 the relative toxicities of six fresh oils are listed from a study by *Apache Energy*. The methodologies behind the tests and data should be provided, otherwise it is impossible to comment on these statements and similar ones in this section of the Strategic Assessment.

Formation waters (ancient water that has been trapped in rock strata) are a potential pollutant that has not been considered. These waters have had their toxicity assessed by consulting companies. This information has not been included in this report.

The boxed question on p. 89:

Question: Is there any additional information on impacts of oil, dispersants, and drilling fluids on other Australian marine flora and fauna?

Answer: Yes - a lot of toxicity research has been conducted on Australian animals and plants by university researchers and much of this has been published. There are a number of publications by Holdway, Gagnon, MacFarlane, Burchett and Pulkownik to name a few Australian researchers. The fact that none of this literature has been cited seems very unusual and may bring into question the impartiality of the report. For efficient feedback in this, it would be best to consult the Australian Society of Ecotoxicology (<http://www.ecotox.org.au/>) directly.

Also as indicated in the SA, there has been a considerable amount of research using Australian organisms (for ecotox studies) by consulting companies on behalf of Petroleum companies. This information should be incorporated into the report.