

PETROLEUM AND MINERAL EXPLORATION AND DEVELOPMENT IN MARINE CONSERVATION RESERVES IN WESTERN AUSTRALIA¹

William M.B. Carr²

Abstract: Petroleum production is of importance to the Western Australian economy earning almost \$A 2.6 billion in 1993/94. Petroleum production is based on the principle of Crown ownership of all petroleum resources and the State provides the right of access for exploration and production of these resources. Through the 1970's and early 1980's public concern developed regarding the potential risks of petroleum exploration within and adjacent to the State's marine parks. A series of inquiries were held and policies developed between 1986 and 1994 resulting in a system that allows for both the protection of reserves and regulated petroleum access. This system is now being considered as a basis for mineral exploration access to the State's marine conservation reserves, particularly in relation to diamond exploration.

Additional Key Words: oil, gas, marine reserves, exploration, production.

Introduction

Petroleum production is a major contributor to the Western Australian Economy, earning \$A 2.6 billion in 1993/94. The State currently produces almost 30 percent of the nation's petroleum products and is set to overtake Victoria as the largest petroleum producing state.

Western Australia is the main focus for petroleum exploration in Australia, attracting about half the total expenditure in recent years. The drilling success rate since the early 1980's has been maintained at an exceptionally high level as demonstrated by the continuing development of new fields. The major focus for production and exploration is the northern Carnarvon Basin offshore from the north west coast.

A range of shipping accidents around the Western Australian coast with associated oil spills as well as the publicity associated with shipping accidents elsewhere have resulted in the public being very concerned about the environmental effects of offshore petroleum exploration and development. This is despite the exemplary record of the industry, with no oil spills being of a size that would warrant reporting to the authorities. In fact only 800 barrels of oil have been spilt throughout Australia since exploration and production commenced.

These issues have led to the development of a series of Government policies to attempt to address petroleum exploration access to marine conservation reserves.

This concern regarding offshore petroleum activities is also being transferred to new proposals for offshore mineral exploration.

Marine Conservation Reserves in Western Australia

Along the State's 12 500 km coastline there are currently six marine parks and one marine nature reserve with a combined area of 11 460 km². These are shown on Figure 1.

¹Paper presented at the 1995 National Meeting of the American Society for Surface Mining and Reclamation, Gillette, Wyoming, June 5-8, 1995.

²William M. B. Carr, Manager, Land Access Unit, Department of Minerals and Energy, 100 Plain St, Perth, Western Australia, 6001. Telephone: 09 2223261, Fax: 09 22236

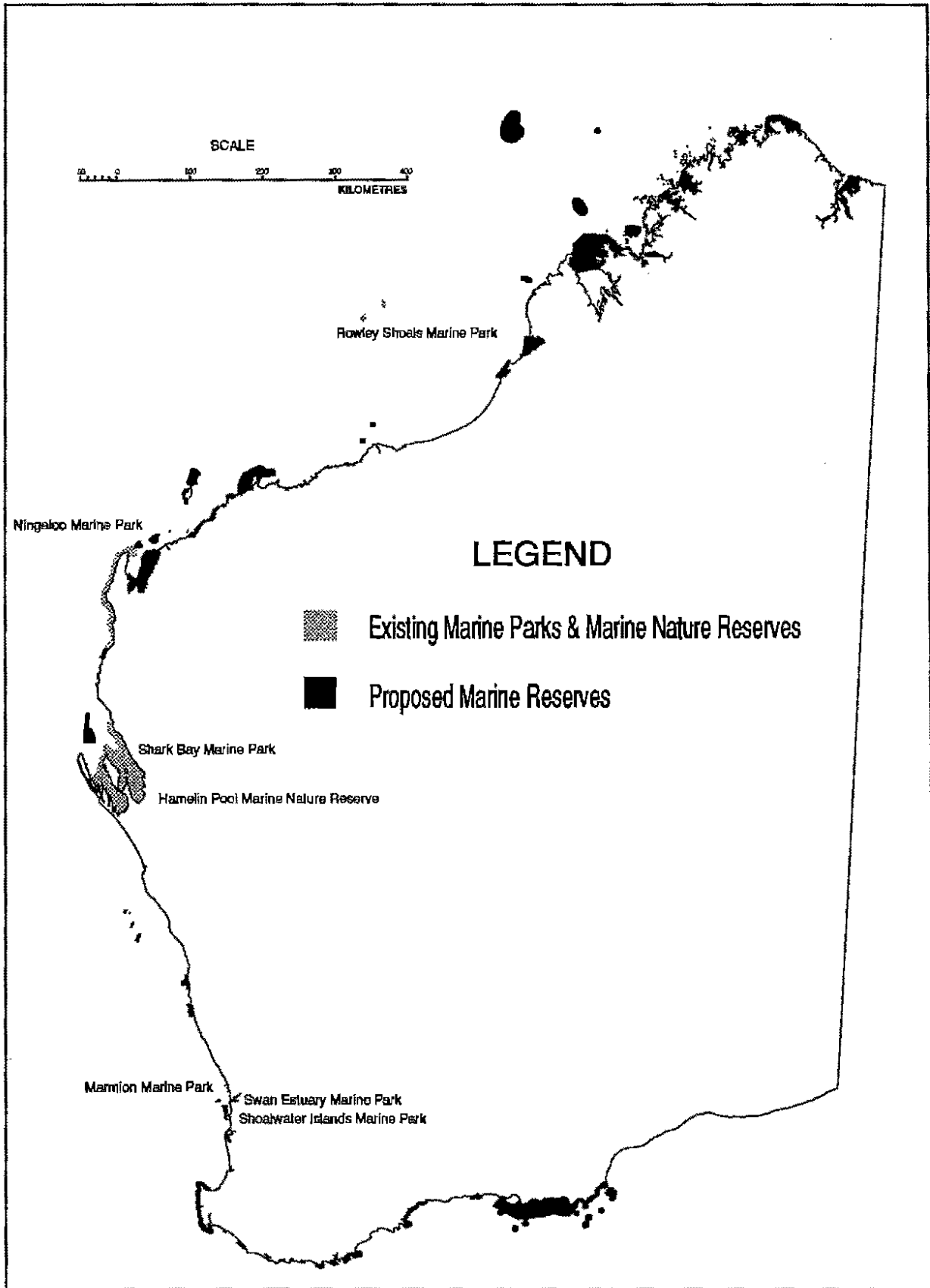


Figure 1. Existing and Proposed Marine Reserves for Western Australia

Marine nature reserves are created for conservation and scientific research. Currently there is only one marine nature reserve, at Hamelin Pool in Shark Bay which has some of the finest examples of stromatolites found on Earth.

Western Australia has six marine parks - Ningaloo, Marmion, Shoalwater Islands, Rowley Shoals, Swan Estuary and Shark Bay. In addition, the waters around Rottnest Island are reserved under the Rottnest Island Authority Act. These parks are created to protect natural features and aesthetic values while at the same time enabling public recreation. Commercial and recreational fishing are also permitted.

Marine Parks are managed according to multiple use principles via a zoning system defined within approved management plans prepared with public input. Zoning separates a Marine Park into discrete management units which separate potentially conflicting uses and activities into different areas. The different zones may change as community priorities change, through the revision of management plans.

As an example of zoning, the Ningaloo Marine Park is divided into Sanctuary, Recreation and General Use Zones. As well as these types, Special Purpose Zones are being proposed for Shark Bay Marine Park. Management of activities under each zone is governed by the State legislation of the Wildlife Conservation Act 1950, the Conservation and Land Management Act 1984 and the Fisheries Act 1905.

Legislation

All petroleum resources of Western Australia both onshore and offshore are reserved to the Crown, as is the right of access for exploration and petroleum production. Exploration and production are permitted only under the provisions of:

- The Western Australian Petroleum Act 1967 which covers all onshore areas of the state, including its islands and marine areas landward of the base line (generally the coastline);
- The Western Australian Petroleum (Submerged Lands) Act 1982 that applies to Western Australia's territorial sea, a zone three nautical miles beyond the base line;
- The Commonwealth Petroleum (Submerged Lands) Act 1967 that applies to the submerged lands of the continental shelf beyond the territorial sea and which are within the area designated as being adjacent to Western Australia. These submerged lands are managed jointly with the Commonwealth Government.

The prime title for exploration is the Exploration Permit and areas are periodically released on a work oriented, competitive bid basis. Applicants must supply details of proposed work on a yearly basis for the six or five year term of the permit, justified in terms of the available geological and geophysical information. Tenements are issued as multiples of 5 minute by 5 minute graticular blocks. The petroleum legislation is administered by the Petroleum Division of the state Department of Minerals and Energy (DME).

When petroleum is discovered, production is covered under a Production Licence having a term of 21 years with renewal provisions. In return for the right to produce, developers pay a royalty to the State.

The Petroleum Act allows for the proclamation of reserves as Crown Land for petroleum operations. All marine areas including marine conservation reserves landward of the base line (a statutory boundary that generally follows the coastline but also links headlands and can include offshore islands) are designated as Crown Land under the Act. Reserved lands further seaward are not recognised under petroleum legislation. Conditions may be recommended for flora and fauna protection on offshore islands subject to petroleum exploration.

The Conservation and Land Management Act provides for the gazettal and management of marine nature reserves and marine parks. However it does not derogate from any legislation relating to petroleum. Thus, legally, petroleum exploration tenements may be granted over Marine Parks and Marine Nature Reserves and

petroleum drilling may be conducted in Marine Parks. The Department of Conservation and Land Management (CALM) has operational management responsibilities for marine and terrestrial conservation reserves.

However the Environmental Protection Act requires that a proposal that is likely to have a significant effect on the environment shall be referred to the Environmental Protection Authority (EPA) by a decision making authority (eg the Minister for Mines). Proposals may also be referred by third parties at any time. Following referral, the proposal cannot be approved until the EPA determines that the proposal does not require assessment or after the proposal has been assessed, its recommendations are made to the Minister for the Environment and he has set conditions. The Act also forms a basis for pollution control in the State, requiring Works Approvals and Pollution Control Licences for designated projects. The Department of Environmental Protection provides technical support for the EPA and has direct pollution control responsibilities.

Protection of the Marine Environment From Oil Spills

In 1979 the Department of Conservation and the Environment (now the Department of Environmental Protection) published Bulletin 71 as a guide to the activities necessary to prevent or minimise damage to identified environmentally significant areas (ESA's) sensitive to oil spills. ESA's are generally established on ecological grounds so in the vast majority of cases Marine Parks and Marine Nature Reserves would be within ESA's. As the ESA's were defined according to their susceptibility to oil spills they were a useful basis for oil spill contingency planning and environmental assessments.

The zoning system employed was based on oil spills entering a buffer zone to an ESA from offshore. This philosophy was continued in the Department of Conservation and the Environment Bulletin 104 (1984). The latter publication referred to two forms of ESA and divided a 50 km wide buffer zone into three with different environmental impact assessment and oil spill response requirements in each. The recent EPA discussion paper, Bulletin 679 (1993) has returned to the initial approach of a single ESA with an undivided 30 km buffer zone beyond the ESA.

Companies are required to submit exploration permit - wide drilling programs if they are to involve ESA's or their buffer zone. This avoids the need for assessment of each individual well proposal.

Ningaloo Marine Park

The State's Ningaloo Marine Park was gazetted on 3 April 1987. It consists of a tropical lagoon bounded to the west by a 200 km long coral reef and to the east by rugged limestone ranges of Cape Range National Park.

A pre existing petroleum exploration permit, TP/3 Pt 3, was included within the park as the park was viewed as a multiple use reserve. This was reflected in the subsequent grant of further petroleum exploration tenements that overlay the marine park.

The Commonwealth waters portion of Ningaloo Marine Park, seaward of the State waters was gazetted under Federal legislation on 20 May 1987. Two WAPET tenements in Commonwealth waters off the west coast (WA-24-P Pt 2 and Pt 3) were excluded from the Commonwealth part of the Park as they were in existence prior to the creation of the Park (they were granted on 18/10/68). The Federal legislation does not recognise the coexistence of petroleum exploration and marine parks.

There is considerable petroleum prospectivity in Ningaloo Marine Park, particularly in its north east sector. Existing petroleum exploration permits are shown on the attached map and are listed in the Table below.

Table 1 Petroleum Tenements in Ningaloo Marine Park

Tenement	Grant Date	Operator
North East Sector		
EP 325	23/11/87	Mobil
EP 342	30/5/89	Hadson
EP 359	12/11/91	Ampolex
TP/9	30/5/89	Hadson
West Coast		
TP/3 Pt 3	18/6/86	WAPET

Inquiry Into Petroleum Exploration and Development in National Parks and Nature Reserves

Following the establishment of Ningaloo Marine Park in an area prospective for petroleum and increasing exploration activity throughout the State, the Government in August 1988 established an inquiry to review Government policies regarding petroleum exploration and development in terrestrial and marine conservation reserves. Public submissions were called for to provide broad input from interested members of the community. The findings in June 1989 were never released but they were incorporated in subsequent policy approaches. Relevant matters included acceptance of seismic surveys in marine conservation reserves but a reluctance to agree to drilling in such areas. In addition, a summary was provided of possible future marine parks, two of which were subsequently implemented at Shark Bay and Rowley Shoals.

In parallel with this inquiry, seismic surveys were examined by a Work Party chaired by DME, with wide ranging industry, Government and public membership. The recommendations of the Work Party concerning improvements in environmental management were endorsed by Government in March 1990. They lead to the appointment of an Environmental Officer for the Petroleum Division of the DME.

Resolution of Conflict Policy

The "Resolution of Conflict" (ROC) Policy which was announced in November 1990 included a general ban on petroleum drilling and production in Marine Parks reflected the findings of the 1989 report. Immediately after the release of the policy the then Premier confirmed that the ban did not apply to existing tenement holders because of the prospectivity of and holdings within Ningaloo Marine Park. The policy was further clarified in May 1992 with a more detailed policy entitled "Marine Parks Policy for Western Australia". This specifically referred to the preservation of existing tenement holder rights and included those tenements in Ningaloo Marine Park granted prior to November 1990, the date of the ROC Policy. Otherwise there was a ban on drilling in Marine Parks. It was also stated that

- There should be biological and resource assessments and public review before creating new marine parks and marine nature reserves;
- Pipelines and structures could be sited in marine reserves if environmentally acceptable;
- Directional drilling from land or outside the marine reserve was acceptable if sound on environmental grounds; and
- Tenements could be granted over marine reserves if targets could be accessed from outside the reserve or from land.

However, the EPA indicated concern about all drilling in Marine Parks although it did accept directional drilling from marine areas outside a Marine Park or from land areas within a Marine Park. The EPA's position was set out later in the year in its discussion paper Bulletin 679, stating that there would be a "presumption against the environmental acceptability of marine-based petroleum proposals in Marine Parks". This approach notified proponents that they would need to clearly demonstrate that the proposal would not present a threat to sensitive environments or associated values of the Marine Park.

New Horizons in Marine Management

The present State Government was elected in February 1993 on a platform that provided for the prospect of petroleum drilling in Marine Parks. In addition it was committed to an extensive system of marine reserves to "give recognition and protection to significant and important marine ecosystems around Western Australia".

The platform saw Marine Parks being managed as multiple use reserves consistent with the conservation needs of each area. The activities envisaged include "commercial and recreational fishing and tourism as well as passive recreational activities, scientific study and hydrocarbon development". Marine Nature Reserves are to be "managed for passive, non extractive use which is consistent with the preservation--in perpetuity-- of the area".

The Marine Parks and Reserves Selection Working Group established by Government in the late 1980's to recommend a range of ecosystems in which representative Marine Parks and Marine Nature Reserves should be established submitted its report to the Minister for the Environment early in 1994. The report superseded the 1989 summary of potential marine reserves. The 57 suggested areas are shown in Figure 1. The report was prepared at a time when only two marine reserve types were available, marine parks and marine nature reserves.

On 10 January 1994 Government decided on a policy for petroleum exploration and production access to marine conservation reserves.

It considered that petroleum drilling and production would be permitted in Marine Management Areas (a proposed new multiple reserve type). Marine management areas would be selected on the basis on their biological resources and recreational values as well as the potential for supporting commercial activities such as petroleum production and commercial fisheries. Marine management areas would normally be based on the ecologically important marine regions being defined by the Marine Parks and Reserves Selection Working Group.

In addition drilling and production would be permitted in portions of General Use and Special Purpose Zones of future Marine Parks, subject to assessment by the Environmental Protection Authority. This decision did not address existing marine conservation reserves, particularly Ningaloo Marine Park, despite its prospectivity.

In July 1994 Government decided on banning drilling for hydrocarbons in the Ningaloo Marine Park. It also announced the policy on petroleum exploration and development in future marine conservation reserves, the release of the Marine Parks and Reserves Selection Working Group Report for public comment and the establishment of a new Marine Parks and Reserves Authority to manage marine reserves. A brochure detailing these matters was eventually published in November 1994. The combination of policy statements was referred to as "New Horizons in Marine Management".

Issues

Some consequences of the Government's decisions are as follows:

- the option of a multiple use Marine Management Area is now available under Government's January decision. This will be established under the CALM Act with a clear statement that petroleum exploration is a reasonable activity in a Marine Management Area. This form of reserve will be the option available where there is petroleum prospectivity.
- There will be a need to consider directional drilling techniques to access targets below marine parks from outside.

The Government has indicated its commitment to its petroleum access policy by introducing to Parliament changes to the CALM Act that would restrict drilling in line with the policy. These changes also include the new reserve type of a Marine Management Area.

In addition the Mining Act is being amended to reflect the existence of marine conservation reserves, with marine nature reserves and marine parks being equivalent to national parks and marine management areas being included with Class C nature reserves and CALM Act 5(g) reserves.

Implications for Mineral Exploration and Development

Mineral exploration off the Western Australian coast is managed under either the State Mining Act or the Commonwealth Offshore Minerals Act. The Mining Act is now being amended to recognise marine conservation reserves.

Apart from offshore limesand mining adjacent to the Perth metropolitan area the only currently active area for offshore mineral exploration is adjacent to the Kimberley coast in the State's north. The EPA has agreed that the grant of tenement applications in such areas need not be formally assessed although environmentally significant activities would be subject to formal assessment with no guarantee of approval. It is expected that, in line with the approach for petroleum access, marine nature reserves and the sanctuary and recreation zones of marine parks would be closed to mining. However non environmentally disturbing exploration would probably be acceptable. Prospective areas important from a biological point of view can now be managed as multiple use marine management areas.

Conclusions

Petroleum production is of importance to the Western Australian economy earning almost \$A 2.6 billion in 1993/94. Petroleum production is based on the principle of Crown ownership of all petroleum resources and the State provides the right of access for exploration and production of these resources. Through the 1970's and early 1980's public concern developed regarding the potential risks of petroleum exploration within and adjacent to the State's marine parks. A series of inquiries were held and policies developed between 1986 and 1994 resulting in a system that allows for both the protection of reserves and regulated petroleum access. This system is now being considered as a basis for mineral exploration access to the State's marine conservation reserves, particularly in relation to diamond exploration. Of major importance was the establishment of a new multiple use conservation reserve type, the marine management area, that allows for a range of commercial activities including petroleum and mineral resource development while conservation values are managed.

Acknowledgements

This paper reviews the efforts of a range of staff of the Western Australian Departments of Minerals and Energy, Conservation and Land Management, Environmental Protection and Resources Development as well as the petroleum industry. Their considerable work is gratefully acknowledged.

References

- Environmental Protection Authority. 1993. Protecting the Marine Environment - A guide for the Petroleum Industry. Discussion Paper for Public Comment. EPA Bulletin 679.
- Hancock, D.A., Jones, H.E and Field, R.A.. 1979 . Oil Spills and the Western Australian Marine Environment. Western Australian Department of Conservation and the Environment. Bulletin 71.
- Independant Scientific Review Committee. 1994 . Environmental Implications of Offshore Oil and Gas Development in Australia. Australian Petroleum Exploration Association, Energy Research and Development Corporation.
- Jones, H.E. Field, R.A and Hancock, D.A.. 1984 . Procedures for the Protection of the Western Australian Marine Environment from Oil Spills. Western Australian Department of Conservation and the Environment. Bulletin 104.
- Marine Parks and Reserves Selection Working Group. 1994. A Representative Marine Reserve System for Western Australia. Western Australian Department of Conservation and Land Management.
- Report for the Minister for Mines. 1989. Inquiry Into Petroleum Exploration and Development in National Parks and Nature Reserves.
- Western Australian Government. 1990. Resolution of Conflict. A Clear Policy for National Parks.
- Western Australian Government. 1992. Marine Parks Policy for Western Australia.
- Western Australian Government. 1994. New Horizons in Marine Management.
- Work Party for the Minister for Mines. 1990. Environmental Implications of Seismic Survey.

