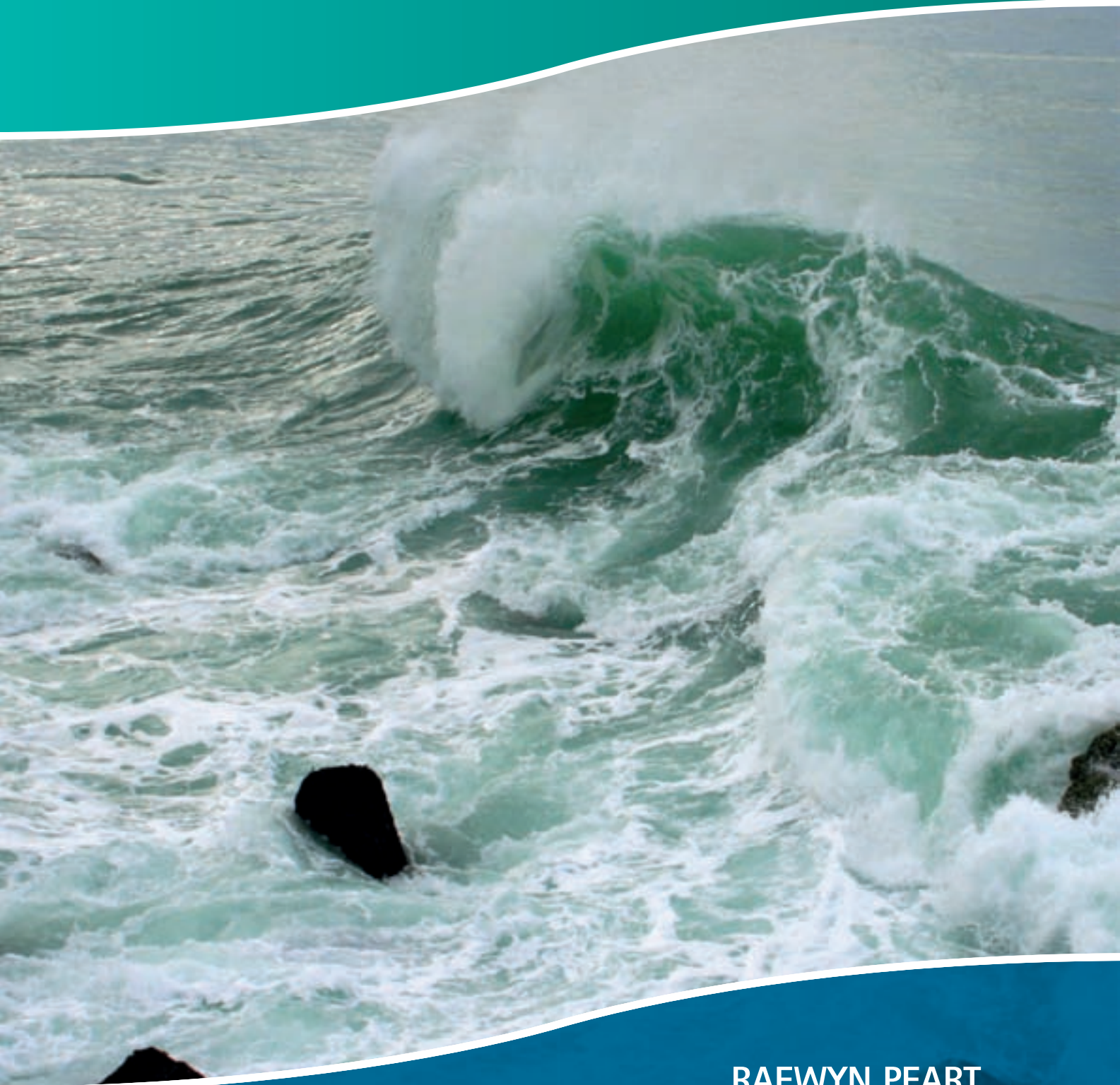


GOVERNING OUR OCEANS

ENVIRONMENTAL REFORM FOR THE EXCLUSIVE ECONOMIC ZONE



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Summary of recommendations

Recommendation 1: Increase capacity of offshore petroleum inspection service

Significant additional resources should be made available to the inspection service for offshore petroleum activities as a matter of urgency, including increasing the number of inspectors.

Recommendation 2: Provide for oceans governance reform

A *Royal Commission on Oceans Governance* should be established with terms of reference providing for a comprehensive review of the current legislative and institutional framework applying to the territorial sea, EEZ and continental shelf. The Commission should be tasked with reviewing international best practice and providing recommendations on any changes required to provide for an effective oceans governance system in New Zealand for the next 30–50 years.

Recommendation 3: Put in place environmental effects legislation for the EEZ

In the interim, immediate amendments should be made to the RMA so that it applies to relevant new activities within the EEZ and the continental shelf beyond. Alternatively, new environmental effects legislation for the EEZ should be passed into law as a matter of urgency.

Recommendation 4: Strengthen the EEZ management framework

The EEZ management framework should be strengthened through:

- The immediate creation of additional positions within the EPA to enable recruitment of a critical mass of staff with oceans-related expertise
- The identification of suitable candidates with oceans-related expertise for membership of a standing board of inquiry to determine resource consent applications within the EEZ
- The establishment of an Oceans Science Advisory Board, to provide independent advice to government, the EPA and the Royal Commission on Oceans Governance

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1 Introduction

Reform of legislation applying to New Zealand's Exclusive Economic Zone (EEZ) has been on the agenda for some years. It had its inception back in 1999, when officials were directed to investigate current arrangements for the management of New Zealand's marine environment. Shortly thereafter, the Parliamentary Commissioner for the Environment released a report titled *Setting Course for a Sustainable Future: the Management of New Zealand's Marine Environment* which identified a number of problems with the current system for managing New Zealand's oceans. It recommended the establishment of a Coastal and Oceans Task Force to develop a strategy for the future sustainable management of New Zealand's marine environment.¹

In July 2000 cabinet endorsed a proposal to prepare an oceans policy for New Zealand and in March 2001 a Ministerial Advisory Committee was appointed to manage and lead the process of 'identifying the shared vision, goals and objectives of New Zealanders for managing New Zealand's oceans.'² Between June and August 2001, the committee undertook an extensive consultation process including 47 public meetings and 24 hui attended by around 2,000 people. Over 1,000 written submissions were also received.³

A stocktake of legislation impacting on oceans was completed in December 2002 and identified a number of weaknesses in the overall oceans management system. These included absence of an overriding goal; inconsistent decision-making structures, opportunities for participation and management of like activities; ecologically arbitrary spatial management units; and a general lack of integrated management.⁴

By July 2003, a discussion document had been prepared outlining policy options and proposed solutions. Proposals included the statement of a vision and overarching decision-making principles and the development of a National Oceans Plan. The process then came to a halt as a result of the controversy over Māori ownership of the foreshore and seabed.⁵

Although the oceans policy process was put on hold, a work stream continued which focused on achieving better management of the environmental effects of activities within the EEZ. In June 2005, the Ministry for the Environment released a report titled *Offshore Options*, which canvassed alternatives. It recommended that a voluntary approach be adopted in the short term, but that overlay regulation, modelled on Australia's *Environmental Protection and Biodiversity Conservation Act 1999*, be prepared in the longer term.⁶

In August 2007, the Ministry for the Environment released a more substantive discussion paper on the issue, which took a different approach. This identified the preferred option as being to 'establish legislative mechanisms focused on filling key gaps in EEZ environmental regulation and promoting a consistent approach across statutes, including the assessment of cumulative effects.'⁷ This ultimately resulted in cabinet approval of proposals to develop an Exclusive Economic Zone Environmental Effects Act and the commencement of the Bill's drafting in 2008. This work was also put on hold when the government changed after the November 2008 general election.

The BP Deepwater Horizon disaster in the Gulf of Mexico, which began on 20 April 2010, brought to the fore the dangers of New Zealand's lax environmental regulation within the EEZ. Petroleum exploration permits, authorising drilling at depths greater than BP's exploding exploratory well, had been granted in New Zealand with little environmental scrutiny. When announcing the expansion of the newly established Environmental Protection Authority (EPA) on 31 May 2010, the Minister for the Environment indicated that the EPA could potentially undertake a consenting role under proposed EEZ legislation.⁸

At the Environmental Defence Society's *Reform in Paradise II* conference held in June 2010, the Minister for the Environment elaborated on the Government's thinking on proposed EEZ legislation:

The Government will explore ways to improve environmental management in the EEZ, which will enable us to benefit from the economic potential of New Zealand's EEZ while protecting the environment ... The work will look into whether proposals for EEZ legislation developed under the previous government continue to represent world best practice. Our ambition is to incorporate the work from this review into our EPA and EEZ legislation to be introduced to Parliament later this year.⁹

In response to the Gulf of Mexico oil spill, the Ministry of Economic Development commissioned an independent review of health, safety and environmental legislation for offshore petroleum operations. The resultant report titled *Comparative Review of Health, Safety and Environmental Legislation for Offshore Petroleum Operations* was completed in September 2010. It contained a number of recommendations for legislative reform, including establishing an environmental regulatory regime for petroleum permitting within the EEZ and allocating responsibility for environmental assessment and decision making within the EEZ to an agency.

Since the oceans policy process commenced in New Zealand back in 2000, there have been significant developments in the approach taken by other countries to oceans management. These include the passage of progressive marine legislation in the United Kingdom during November 2009 and President Obama's formal adoption of the recommendations of the USA Ocean Policy Task Force in July 2010.

The development of EEZ environmental legislation in New Zealand has been subject to considerable political and bureaucratic activity over many years but with few tangible results. It is important that real progress is made and soon.

In order to contribute to constructive debate on the form of such legislation, this EDS policy paper reviews New Zealand's international obligations; recent developments in oceans management in Canada, the USA, Australia and the United Kingdom; lessons learnt from the Gulf oil spill; and current weaknesses in New Zealand's marine management framework. The paper then develops recommendations for the preferred way forward.



2 The Management Challenge

New Zealand's ocean area is extensive. The EEZ itself covers almost 3.9 million square kilometres of ocean.¹⁰ It includes large areas of the continental shelf and, in some places, drops over the edge into oceanic areas up to 10 kilometres deep. New Zealand's continental shelf, extending beyond the EEZ, incorporates an additional 1.7 million square kilometres of seabed. These areas, combined with the territorial sea, give New Zealand a total marine area of close to 5.8 million square kilometres, over 20 times larger in size than the country's land area. This is a very extensive area for a relatively small country, with limited resources, to manage.

The EEZ has a diverse physical environment resulting from its location astride two colliding tectonic plates. It includes chains of underwater volcanoes and deep oceanic trenches. It spans 30 degrees of latitude, extending from the warm subtropical north, to the cold subantarctic south. It is a highly interconnected system, with ocean currents transporting species over large distances, and life cycles extending over wide geographic areas.

New Zealand's EEZ is located at an oceanic meeting point, where the warm surface water from the central Pacific Ocean meets the cold surface water originating from the Southern Ocean. This interface, which extends along the Chatham Rise on the east coast, is a very productive area for marine life and supports valuable offshore fisheries.

Seamounts are biologically important in deep ocean areas, as they act as oases within large plains of seabed covered with fine soft sediment, and provide a food-rich environment. Over 700 seamounts have been identified within New Zealand's EEZ. They support a diverse range of life, including large deep-water sponges and corals that are slow growing, and can live for hundreds of years. They also provide refuge for deep-water fish species, such as orange roughy, black oreo and black cardinal fish, which have been targeted by fishers.

New Zealand's EEZ contains deep hydrothermal vents, which are underwater hot springs located on the sea floor, typically near tectonic plate boundaries. New forms of life have recently been discovered around these vent systems, where creatures are not dependent on the sun as the prime source of energy for the food chain, but are supported by sulphur compounds rising up within the superheated sea water. Numerous vents are located along the Kermadec Ridge which extends north from the Bay of Plenty.

The seamounts, hydrothermal vents and methane seeps found within New Zealand's waters can be rich in minerals and other substances that potentially have high commercial value. For example, sea-floor polymetallic sulphides found on seamounts along the Kermadec Ridge are rich in copper, zinc and lead and also have a gold and silver content. Phosphorite nodules on the Chatham Rise are a potential source of phosphate fertilisers for the agricultural industry. Large methane hydrate deposits have been identified on the Hikurangi Margin off the east coast of the North Island.

Mining these resources has not been feasible to date, but this situation may change with future technological developments. If mining does occur, it is likely to involve disturbance of large areas of the seabed.

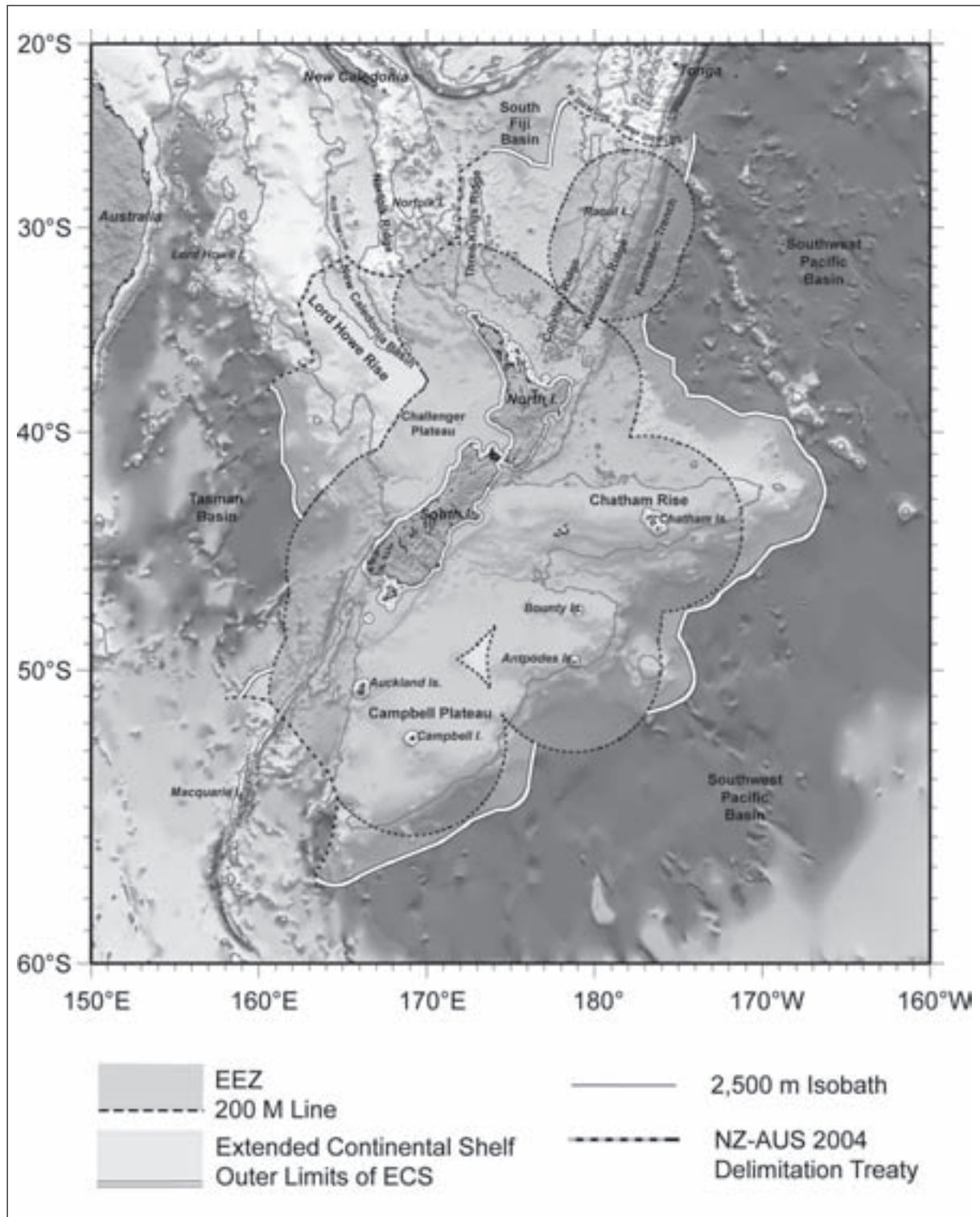


Figure 1: New Zealand's Exclusive Economic Zone

Sourced from the LINZ New Zealand Continental Shelf Project. Crown Copyright Reserved.

Petroleum and gas production has been taking place off the Taranaki coast for some years, but at relatively shallow depths. There is now growing interest in undertaking exploration and development in much deeper waters. Drilling wells in deep water environments is a risky activity, with potentially severe impacts on the marine environment if things go wrong.

Much of New Zealand's EEZ remains unexplored, yet over 17,000 species of marine life have already been identified in New Zealand's seas. Over 4,000 of those which have been collected, have yet to be described. Identified marine species comprise just over 30 per cent of all known living biodiversity within the country. New species are being discovered all the time with, for example, the number of known fish species having doubled over the past 15 years and increasing at a rate of 15 species per year.¹¹

The number of undiscovered marine species in New Zealand waters remains a matter of conjecture, but is likely to exceed the number of species currently known to science.¹² The biodiversity of New Zealand's marine area appears high, with scientists expecting numbers of species to be equivalent to that found in the European region, which is five times larger in size.¹³

As well as being very rich in undersea life, New Zealand's marine area hosts a very high diversity of seabirds and marine mammals. Almost three-quarters of the world's penguin, albatross and petrel species, and half the world's shearwater and shag species, have been found here. In addition, nearly half the world's species of whales and dolphins have been sighted in New Zealand, including nine species of baleen whales, 17 members of the dolphin family and 12 species of beaked whales.¹⁴

Because of the rapid development of the offshore fishing industry since the 1980s, and recent interest in deep water oil, gas and minerals exploration, New Zealand risks losing many marine species before they are even discovered. Effectively managing this large, biologically special and economically important marine environment is a considerable challenge. It is a challenge which will require a carefully-designed legislative and institutional framework.

- The EEZ is a very large area for a small country with limited resources to manage.
- The EEZ is physically and biologically diverse and highly interconnected.
- Little of the EEZ has been explored or scientifically sampled and many thousands of species have yet to be discovered.
- The EEZ is economically valuable. The marine environment supports important deep-water fish stocks and the seabed contains exploitable natural resources.
- Areas of high biological diversity, such as seamounts, are under pressure from deep water fisheries and may come under additional pressure from deep sea mining.
- There is a risk that species will be lost before they are discovered.
- Effectively managing the EEZ will require a carefully-designed legislative and institutional framework.

Figure 2: Summary of management challenges within New Zealand's EEZ



3 International context

In managing the EEZ and continental shelf, New Zealand is bound by international conventions to which it is a signatory. Any new domestic legislation needs to be consistent with commitments under these instruments. There is also a body of international non-binding 'soft law' which is applicable to marine management in New Zealand.

International conventions

A country's *jurisdiction* over the sea is determined by the United Nations Convention on the Law of the Sea (Law of the Sea) which New Zealand ratified in July 1996. Under this convention, New Zealand's *sovereignty* only extends out to the edge of the territorial sea, which is 12 nautical miles from low-water. Government is currently progressing the *Marine and Coastal Area (Takutai Moana) Bill* which, if passed into law, will enable Māori groups to obtain customary marine title to areas within the territorial sea.

The EEZ, which extends seawards from the outer edge of the territorial sea to 200 nautical miles from low-water, is not strictly speaking part of New Zealand's territory. But under the Law of the Sea, New Zealand has *sovereign rights* for the purpose of:

- Exploring and exploiting, conserving and managing natural resources including marine life, oil, gas and minerals
- Economic exploitation and exploration of the zone, such as for energy production from water, currents and winds

Other countries retain the freedom of navigation and over-flight within New Zealand's EEZ and can lay submarine cables and pipelines within it. The extent of Māori customary rights to resources within the EEZ (apart from fisheries) has not yet been determined and there is potential for future claims in this area.

Where the outer edge of the *continental shelf* (which includes the continental slope and rise) extends beyond the EEZ, New Zealand has even more limited rights. These only encompass the exploitation of minerals, gas and other non-living resources within the seabed and subsoil as well as sedentary species on the seabed, but exclude harvesting mobile fish. New Zealand's extended continental shelf, the boundaries of which were confirmed in 2008 by the United Nations Commission for the Limits of the Continental Shelf, encompasses around 1.7 million square kilometres of additional seabed outside of the EEZ.¹⁵

These delineations of different marine jurisdictions do not necessarily bear any relationship to the boundaries of ocean ecosystems. This is because their genesis stems from centuries-old international law founded on national security considerations rather than on ecological understanding.¹⁶

In exercising its jurisdiction within these various marine areas, New Zealand has a general obligation under the Law of the Sea to 'protect and preserve the marine environment'.¹⁷ This includes taking all measures necessary to 'prevent, reduce and control pollution of the marine environment ...' and 'to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life'.¹⁸

New Zealand also has an obligation to promote the 'optimum utilisation' of living resources within the EEZ.¹⁹ However, this obligation is subject to the requirement to 'ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by over-exploitation'.²⁰

Therefore, government must provide for fisheries within the EEZ, but has no legal obligation to provide for other activities. In addition, government can only permit fishing and other activities within the EEZ and on the continental shelf in accordance with the duty to protect and preserve the marine environment.

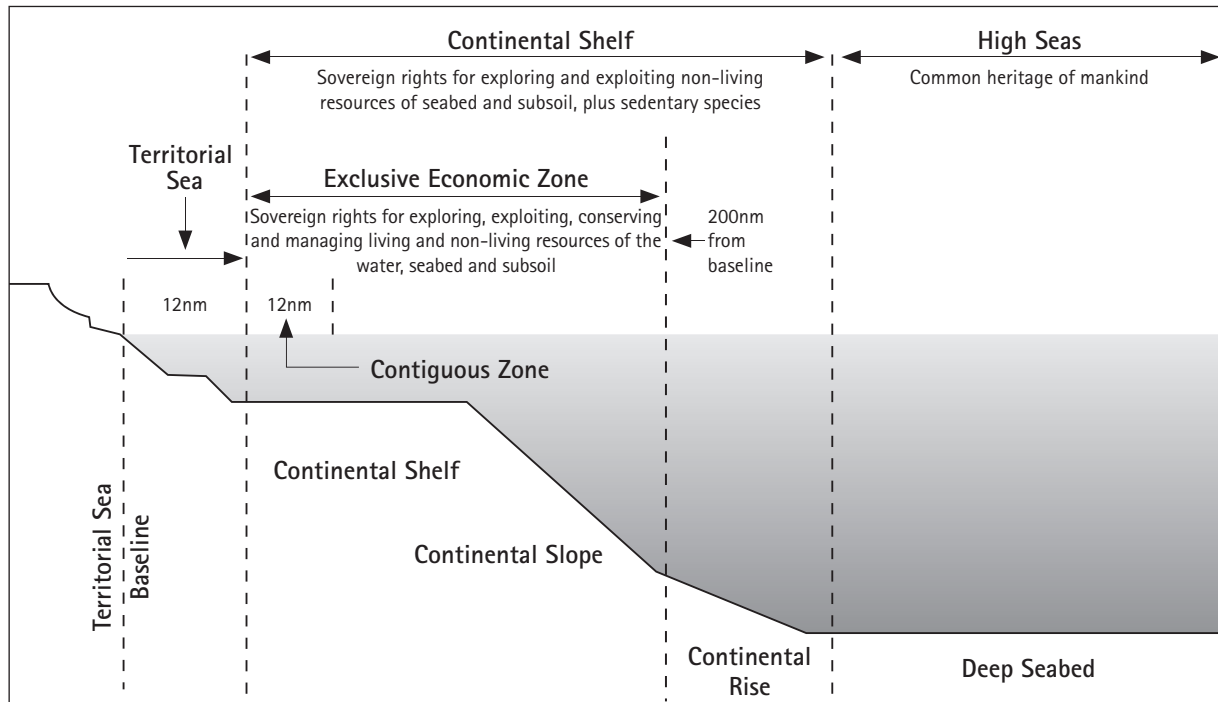


Figure 3: Maritime jurisdictions under UNCLOS

There are other international conventions which are particularly relevant to the design of new EEZ legislation in New Zealand, including:

- The *Convention on Biological Diversity* (known as the Biodiversity Convention) which New Zealand ratified in 1993. Amongst other things, this requires New Zealand to establish a system of protected areas; to regulate where necessary for the protection of threatened species and populations; to require environmental impact assessment of proposed projects that are likely to have significant adverse effects on biological diversity; and to monitor components of biodiversity.²¹ The government is also required to promote the protection of ecosystems and natural habitats and the maintenance of viable populations of species in natural surroundings.
- The *International Convention for the Prevention of Pollution from Ships* which was adopted in 1973 and modified in 1978 (known as MARPOL 73/78). It seeks to prevent pollution from ships, such as accidental oil spills from tankers, and also pollution caused by the discharge of chemicals, harmful substances, sewage and garbage. The convention includes standards which apply to the design and construction of ships, their equipment and operating procedures. It also contains a complete ban on disposal into the sea of all forms of plastic.
- The *Convention on the Prevention of Marine Pollution by Dumping of Wastes or Other Matter* (known as the London Convention) which was adopted in 1972, with a Protocol adopted in 1996. It prohibits the dumping of waste at sea except for a restricted group of materials. Even then, dumping is only permitted if there are no practical opportunities for reuse or recycling and the effects of dumping on the marine environment will be minor.

- There is a general legal obligation on government to 'protect and preserve' the EEZ's marine environment. This includes controlling pollution and protecting rare or fragile ecosystems and the habitats of depleted or endangered species (Law of the Sea).
- Provision must be made for the exploitation of fisheries resources within the EEZ, but only to the extent that stocks are not overexploited, and the marine environment is protected and preserved (Law of the Sea).
- Government is obligated to protect threatened marine species and populations, to require environmental impact assessments of activities which are likely to have significant adverse effects on marine biodiversity, and to establish a system of marine protected areas (Biodiversity Convention).
- The dumping of most waste at sea must be prohibited and strict standards applied to the construction and operational practices of shipping, in order to prevent marine pollution (MARPOL and the London Convention).

Figure 4: Summary of requirements of international conventions

International principles

A set of broad principles, which are applicable to marine management, have been encapsulated in international non-binding agreements known as 'soft law'. *Agenda 21* was endorsed by governments, including New Zealand, at the conclusion of the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. Amongst other things, it identified the precautionary approach, integrated management and intergenerational equity as key principles.

Countries were urged to commit themselves to the integrated management and sustainable development of the marine environment under their jurisdiction. Mechanisms identified to achieve this included the implementation of marine management plans and programmes, regular assessments of the state of the environment, and the maintenance of databases and profiles.

The *Plan of Implementation of the World Summit on Sustainable Development*, which was adopted by participating governments including New Zealand in 2002, was designed to speed up progress in reaching the goals set out in Agenda 21. The Plan includes a series of target dates for oceans management, including encouraging the application of an ecosystem-based approach by 2010 and the establishment of representative networks of marine protected areas by 2012.

In 2008, the conference of the parties to the Biodiversity Convention adopted a set of scientific criteria for identifying ecologically or biologically significant marine areas in need of protection in open-ocean waters and deep-sea habitats. These are reproduced in *Appendix 1*.

Two key overarching principles encapsulated in these international documents, and underpinning much current thinking about marine management, are ecosystem-based management and integrated management. The principles are overlapping and mutually supportive.

Ecosystem-based management focuses on managing human activities in order to maintain the structure, balance, functioning and resilience of marine ecosystems and important species. It applies a 'systems approach' to environmental management, acknowledging that individual species are integral parts of interconnecting physical and biological networks. It recognises that many of the benefits humans derive from the natural environment are dependent on healthy ecosystems and seeks to protect key elements and characteristics of ecosystems as an environmental 'bottom-line'.

- It recognises the interconnectedness within and between systems and the important interactions between species and habitats
- It emphasises the protection of ecosystem structure, function, key processes and key species
- It recognises that healthy ecosystems are essential to providing many of the benefits that humans derive from the natural environment
- It seeks to manage human activities in order to protect elements critical to the healthy functioning of the natural environment
- It is place-based in that it focuses on specific ecosystems and the range of human activities affecting them

Adapted from Ehler C and F Douvere, 2009, 24

Figure 5: Elements of ecosystem-based management

The implementation of ecosystem-based management requires integration of the environmental management effort. *Integrated management* recognises that the marine environment is comprised of interconnected systems and that activities in one part of the marine environment will have implications for other areas. Such approaches also acknowledge that individual activities may have relatively small impacts but, cumulatively, these may be much larger.

A key element of integrated management is achieving co-ordination between different marine management bodies. This is to ensure that managers are working towards common overriding objectives and that the impacts of a specific management decision on other management spheres are considered and addressed.²² Integrated management also incorporates concepts of integrating across different disciplines (such as environmental science, social science and economics), across different stakeholders and across different levels of government.

Effectively integrating management necessitates oceans managers taking a strategic approach and proactively planning ahead, rather than reacting to issues on an *ad hoc* basis. This enables the wider impacts of decisions to be considered and addressed. Integrated management also requires a robust (and preferably shared) information base, which alerts marine managers to key management

issues in a timely manner, and provides an understanding of the inter-linkages between different management spheres. Lack of information can result in poor or inconsistent decision making or inaction.²³

The application of a *precautionary approach* to management decisions is also crucially important within the EEZ, where there is high biodiversity, where many species have yet to be discovered, and where the likely overall effects of human activities (in addition to climate change) are poorly understood.

The precautionary approach applies when there is scientific uncertainty and a lack of robust information on which to base environmental management decisions. In these circumstances, decisions should not be made which have irreversible consequences, which could seriously threaten the resource base over the long term or which could foreclose options for future generations. In addition, when there is a threat of serious or irreversible damage occurring, action to prevent environmental degradation should not be delayed on the grounds of scientific uncertainty.²⁴

Two useful approaches which are increasingly being adopted as practical ways to apply an integrated and ecosystem-based approach to marine management are:

- The application of *marine spatial planning* which enables a strategic approach to be applied to marine management through the spatial identification of areas with high environmental, social, economic and cultural values and areas suitable or not suitable for specific human activities.
- The establishment of a *network of marine protected areas* which covers the full range of marine habitats, ecosystems and the life cycle of important species. Marine protected areas are increasingly being recognised as an important mechanism for improving the health and productivity of the broader marine system, and for enhancing fisheries productivity, as well as serving to protect habitats and species within their own boundaries.²⁵



4 Experience in other jurisdictions

Improving the environmental governance of oceans has been a recent concern of many governments around the world. The New Zealand exercise can benefit from this overseas experience. The approaches taken in Canada, the USA, Australia and the United Kingdom are relevant and are briefly reviewed in the following sections.

When assessing the experience of these countries, it is important to recognise that they have more complex constitutional arrangements than New Zealand's unitary system. Canada, the USA and Australia all have a federal governance structure incorporating state-based governments. The United Kingdom is now operating under a system of devolved government in Scotland, Wales and Northern Ireland.

Canada

Canada's EEZ covers 2.9 million square kilometres of ocean and incorporates portions of the Pacific, Atlantic and Arctic oceans.²⁶ Management of the marine area is shared between federal and provincial governments with shipping, commercial fisheries, and oil and gas exploitation in offshore areas managed at a federal level.

Canada was the first country in the world to adopt comprehensive legislation for oceans management. The *Oceans Act 1997* declared Canada's EEZ and put in place a framework for more strategic and integrated management of the country's oceans.

Under the legislation, the Minister of Fisheries and Oceans was given the task of leading and facilitating the development and implementation of a *national oceans management strategy*. The strategy was to be based on the principles of sustainable development, integrated management and the precautionary approach. The Act emphasises the importance of ecosystem-based management, stating in the preamble that 'conservation, based on an ecosystem approach, is of fundamental importance to maintaining biological diversity and productivity in the marine environment'.

The legislation also provided for the development of integrated management plans, a national system of marine protected areas, and the establishment of marine environmental quality guidelines, objectives and criteria. Under the legislation, marine protected areas can be established by the Governor in Council on the recommendation of the Environment Minister.

A high-level *strategy* was released in 2002,²⁷ followed in 2005 by an *oceans action plan*. This identified 18 specific initiatives to be undertaken across six federal departments.²⁸ A key focus of the action plan was the application of integrated management planning to *large ocean management areas*. The areas extend from high water mark to the outer edge of the EEZ and incorporate hundreds of square kilometres of ocean. Planning for these areas is being undertaken on a collaborative basis between the various management agencies, indigenous peoples and stakeholders.

Implementation of the oceans action plan is being overseen by a *Deputy Minister's Interdepartmental Committee on Oceans* which consists of representatives of 19 federal departments and agencies involved in oceans management.

In 2002 the *National Marine Conservation Areas Act* was also passed into law. This provides for the establishment of marine conservation areas for the purpose of 'protecting and conserving representative marine areas for the benefit, education and enjoyment of the people of Canada and the world'. These areas are to be divided into zones which include at least one zone which 'fosters and encourages ecologically sustainable use' and one zone that 'fully protects special features or sensitive elements of ecosystems'.²⁹ They are established by the Governor General, through an order amending the schedule to the Act to incorporate the new conservation area. Before a new area can be established, the proposal must be laid before Parliament and referred to a standing committee for consideration.

In terms of institutional arrangements, the Oceans Act strengthened the Department of Fisheries and Oceans through a merger with the Canadian Coast Guard. The Canadian Coast Guard carried out many of the shipping and marine pollution functions undertaken by Maritime New Zealand. This brought together fisheries and shipping functions, but left a range of other marine activities, such as oil, gas and minerals exploitation and marine energy generation, with other agencies.

The Oceans Act was intended to centre principal responsibility for oceans management in the Department of Fisheries and Oceans. However, in practice, the role has been one of a coordinator rather than supervisor of other Canadian agencies, and oceans management has remained fragmented.³⁰

A recent review identified inadequate governance arrangements as being one of the main impediments to the successful implementation of Canada's Oceans Act. Specific problems identified included:³¹

- Absence of requirements for the Minister to actually do anything
- No timelines for the completion of integrated management plans or marine protected areas
- No accountability framework against which to measure outcomes
- No specific provision to give integrated management plans legal force
- No requirement for other federal departments to comply with or implement the Oceans Act
- Inadequate funding
- The Department of Fisheries and Oceans dual mandate for the management of both fisheries and oceans

United States of America

The USA has the largest EEZ in the world, covering 11.7 million square kilometres and encompassing parts of the Pacific, Atlantic and Arctic oceans.³² In most areas, state governments have jurisdiction over the adjacent marine area out to three nautical miles, with the federal government having jurisdiction over the balance of the marine area.³³

The USA was one of the first countries to identify the need for integrated oceans management. This was in a report issued by the Commission on Marine Science, Engineering and Resources in 1969.³⁴ The Commission recommended that ocean areas be managed in terms of 'systems' in which the interaction and interdependencies between different parts were recognised. It also recommended the creation of a new independent agency to provide a central and integrated focus for ocean-related programmes.³⁵

The recommendations resulted in the creation of the National Oceanic and Atmospheric Agency (NOAA) in 1970. But, contrary to the Commission's recommendations, NOAA was not given independent legal status, but was located within the Department of Commerce. The new organisation consolidated marine research and fisheries management, but left other oceans activities to be managed on a sectoral basis by various agencies.

Around the same time, the *National Environmental Policy Act 1969* came into force. This legislation applies to the marine area and provides that all USA laws and policies must, as far as possible, comply with the environmental principles set out in the Act. Significant federal decisions affecting the environment require an environmental impact assessment.

A short time later, the *National Marine Sanctuaries Act 1972* was promulgated and this provides for the protection of marine areas with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational or aesthetic qualities. The sanctuaries can be created within the EEZ by the Secretary of Commerce and are managed by NOAA. Marine protected areas can also be created under a myriad of other legislation and in 2000 a national system of marine protected areas was established by Executive Order.

It took almost 30 years for new oceans legislation to be passed in the form of the *Oceans Act 2000*. This legislation provided for the establishment of a commission to make recommendations for a 'coordinated and comprehensive national ocean policy'. The United States Commission on Ocean Policy was established in 2001, comprising 16 individuals with governmental, military, academic and private sector experience. A Science Advisory Panel was also established.

The Commission released its final report in 2004.³⁶ This concluded that ocean management systems should be overhauled so that a system of integrated management could be put in place. Recommendations included strengthening NOAA, establishing a President's Council of Advisors on Oceans Policy, establishing a National Oceans Council and enabling regional oceans councils to be created. However, little progress was subsequently achieved in implementing these proposals.

In June 2009, President Obama established a new body, an inter-agency Ocean Policy Task Force, to investigate oceans management and make further recommendations for improvements. The Task Force was composed of 24 senior-level officials from federal departments and agencies. In December 2009 the Task Force issued an *Interim Framework for Effective Coastal and Marine Spatial Planning*.³⁷ This described how coastal and marine spatial planning was to be applied to USA marine areas.

The Task Force issued its final report in July 2010. The recommendations have been formally adopted by President Obama through Executive Order, with a directive that federal agencies implement them.³⁸ This will result in the creation of a National Oceans Council, consisting of representatives of 24 federal agencies, designed to help better coordinate oceans management efforts. Two key elements of the Task Force's recommendations are the adoption of ecosystem-based management and the application of marine spatial planning.

The National Oceans Council will oversee the implementation of this spatial planning. Nine regional planning bodies will be established to develop coastal and marine spatial plans based on large marine ecosystems. The planning areas will extend from high water mark to the outer edge of the EEZ and continental shelf. The spatial plans will identify 'areas most suitable for various types or classes of activities in order to reduce conflicts among uses, reduce environmental impacts, facilitate compatible uses, and preserve critical ecosystem services to meet economic, environmental, security and social objectives'.³⁹

The Task Force's recommendations also include the establishment of a national information system linked to web-based portals. Spatial decision-support tools will be developed nationally to provide a consistent framework for regional assessments. The National Oceans Council will also be tasked with the identification of priority research, data acquisition and information synthesis gaps.⁴⁰

Australia

Australia has a large EEZ covering 8.1 million square kilometres⁴¹ and spanning the Pacific and Indian oceans. States generally have jurisdiction out to three nautical miles, with the Commonwealth government controlling the balance which includes the EEZ and continental shelf. For some years, Australia was an international leader in the implementation of national oceans policy and regional marine spatial planning, but progress slowed down during the mid-2000s.

Australia commenced a process to develop a national oceans policy in 1996 and the final document was released in late 1998.⁴² It identified regional marine planning as the key mechanism for implementing an integrated and ecosystem-based approach to oceans management. The regional marine plans were initially non-statutory. The first plan was completed in 2004 and applied to the very large south-east region which encompassed around two million square kilometres of ocean.⁴³

During this time the *Environmental Protection and Biodiversity Conservation Act* 1999 was passed into law. This provides an overarching framework for integrated, ecosystem-based planning and management of the environment and overlays other existing legislation. The Act is triggered by any activity which may have a 'significant' effect on a matter of national environmental significance. Biodiversity conservation is the central objective of the legislation, which potentially applies to a range of oceans activities such as fisheries, petroleum and ocean dumping.

In 2005, regional marine planning was brought under the Environmental Protection and Biodiversity Conservation Act, and the plans renamed marine bioregional plans. These plans are now focused on setting out key conservation issues and priorities for each marine region, including identifying prospective marine protected areas. They are approved by the Commonwealth Minister for Environment and Heritage. The bioregional plans do not have the status of regulations, but the Minister must have regard to them when granting environmental approvals.⁴⁴

The Act also provides for Commonwealth reserves to be created on land or at sea, including within the EEZ.⁴⁵ It therefore provides a link between the marine bioregional plans which are developed under one part of the legislation, and which identify prospective marine protected areas, and the creation of marine protected areas under another part. Commonwealth reserves are created through proclamation issued by the Governor-General on the advice of the Minister for the Environment and Water Resources. The reserves are managed in accordance with the Australian IUCN (International Union for Conservation of Nature) reserve management principles set out in the *Environment Protection and Biodiversity Conservation Regulations 2000*. Seven different reserve categories are identified, ranging from 1 (strict nature reserve) to 7 (managed resource protected area).

These categories have been broadly applied to the south-east Commonwealth marine reserves network which was created subsequent to the completion of the south-east regional marine plan. Within the network, 42 per cent of the total area is designated 'sanctuary zone', and is managed for scientific research and passive uses. Thirty-six per cent of the network is designated 'special purpose zone' and is closed to commercial fishing. Twenty one per cent of the network is 'multiple use', where low impact fishing methods and other activities are permitted. The remaining one per cent comprises a 'benthic sanctuary zone' and a 'recreational use zone' where some fishing is permitted in accordance with regulations.

The *National Oceans Office* is the lead agency for the preparation of the bioregional plans. It was originally an independent agency but it has since been incorporated into the Marine Division of the Department of the Environment, Water, Heritage and the Arts. A *National Oceans Advisory Group*, established in 1999, oversees the marine planning programme. It consists of sectoral representatives from industry, science and conservation who have expertise in marine issues. An *Oceans Policy Science Advisory Group* provides scientific advice and support and coordinates information between government marine science agencies.

An *Oceans Board of Management* was established in 2003 comprising representatives from nine departments and agencies relevant to Australia's marine jurisdiction. The Board is chaired by the Secretary of the Department of the Environment, Water, Heritage and the Arts. The purpose of the Board is to oversee oceans policy activities, to coordinate between the departments, to maintain a 'whole of government' focus and to approve funding for oceans-related activities.

In 2009, an independent review of the Environment Protection and Biodiversity Conservation Act was released. This contained numerous recommendations on how the Act could be modernised, simplified and streamlined, and included proposals to expand the role of bioregional plans.⁴⁶

In its election manifesto for the August 2010 federal election, the Australian Labor Party committed to establishing a representative network of marine parks by 2012 and finalising the remaining marine bioregional plans by December 2011.⁴⁷ In addition, in the wake of the Gulf oil spill, the Party promised to expand the powers of the National Offshore Petroleum Safety Authority and to look at creating a single offshore oil and gas regulator.⁴⁸ The Labor government has also recently announced the intention to undertake a thorough review of Australia's national response plan to combat pollution of the sea.⁴⁹

United Kingdom

The United Kingdom government recently promulgated a leading-edge piece of marine legislation, in the form of the *Marine and Coastal Access Act 2009*. The legislation creates a new comprehensive system for marine planning, marine licensing and the establishment of marine conservation zones. It also establishes a new integrated management agency called the Marine Management Organisation.

The country does not currently have a declared EEZ, although the ability to declare such an area is contained in the new legislation.

New *marine plans* are to be prepared within eight marine planning regions covering the United Kingdom's entire marine area. These include four inshore areas which extend from mean high water springs to the edge of the territorial sea and four offshore areas covering the balance of the United Kingdom's marine area. The plans will include policy and spatial guidance for management of the area and must be in conformity with the marine policy statement.

The *marine policy statement* will set out both short and longer-term objectives for sustainable use of the marine environment. A draft marine policy statement was released for comment in July 2010.⁵⁰ It sets out 18 high-level marine objectives which address economic, social and environmental considerations as well as the promotion of good governance. The document also identifies issues for consideration in relation to specific environmental issues and activities.

Marine plans and policy statements apply to all activities in the marine area and public authorities making consenting or enforcement decisions must do so in accordance with these documents 'unless relevant considerations indicate otherwise'. An exception to this requirement applies to decisions taken under the *Planning Act 2008* where the consent authority must only *have regard* to the marine policy documents. This includes nationally significant infrastructure projects such as offshore energy generation.

Under the new legislation, government is required to designate *marine conservation zones*. These areas, in combination with marine sites established under the European Union Habitats and Birds Directives, are to form a *network* of marine protected areas which achieve objectives set out in the legislation. Within two months of the passage of the legislation, the Minister is required to prepare a statement setting out how the Ministry intends to achieve this obligation, and he or she must periodically report on progress in achieving it (in 2012 and then every two years).⁵¹

Regional stakeholder groups will have the responsibility for developing recommendations on the location of proposed marine conservation zones, assisted by national network design guidance. Recommendations are to be accompanied by an impact assessment identifying the costs and benefits of the proposed network of sites. An independent Science Advisory Panel, comprised of expert marine scientists, has been established to provide objective scientific assessment of site proposals and independent advice to Ministers.⁵²

The regional recommendations are submitted to Natural England and the Joint Nature Conservation Committee. These governmental conservation agencies are then tasked with combining the regional recommendations into one national document, providing advice on whether the recommendations are sufficient to constitute an ecologically-coherent network, and identifying any changes they

deem necessary. This material, as well as the advice of the Science Advisory Panel, is then forwarded to the Department of Environment, Food and Rural Affairs for consideration by the Minister for the Environment.⁵³ The Minister approves the final marine conservation zones after proposals have undergone a public submission process.

The legislation introduces an integrated licensing system for marine activities. This includes, for the first time, a transparent appeal mechanism to an independent body, marine licences which cover the entire life of the project to enable redundant structures to be removed, and a wider range of proportionate enforcement tools.⁵⁴

The legislation also establishes a new *Marine Management Organisation* (MMO). This is an executive non-departmental public body, whose role is to bring together key marine decision-making powers and delivery mechanisms in a centre of marine management expertise. It is governed by a non-executive board comprised of nine members who each take responsibility for a particular area of the country. The board members are appointed by the Minister but, as with New Zealand's expanded EPA, the organisation operates at arms' length from government. It has around 150 staff.

The Marine Management Organisation has incorporated the work of the Marine and Fisheries Agency and acquired several important new roles from the Department of Energy and Climate Change and the Department for Transport. It has a wide range of responsibilities, including:

- Implementing the new marine planning system
- Implementing the new marine licensing regime (which applies to vessel licensing including for fishing boats, licences to take animals, and licensing of energy generation installations)
- Managing fishing fleet capacity and fisheries quotas
- Working with Natural England and the Joint Nature Conservation Committee to create and manage a network of marine protected areas
- Responding to marine emergencies alongside other agencies
- Developing an internationally-recognised centre of excellence for marine information that supports decision making processes.

The Marine Management Organisation is intended to provide a consistent, coordinated delivery of marine functions, promote cooperation between those involved with the marine area, reduce bureaucracy and improve coordination of enforcement and monitoring activities.

Government is seeking to ensure that the MMO will operate on the basis of the best available scientific evidence. This is to be achieved through several mechanisms: the MMO will employ in-house scientists; it will develop strong working relationships with scientific institutions; and it will also be empowered to establish specific scientific advisory groups and to include external scientific advisors and committees.⁵⁵

Synthesis of international experience

This brief description of the approaches taken by Canada, the USA, Australia and the United Kingdom to managing their EEZs provides some interesting models for New Zealand to draw on.

Both the USA and Australia have created overlay environmental protection legislation, which applies to any activity within the EEZ which triggers their provisions and is based on the significance of any effects. Activities are subject to sectoral legislation, but in addition operate within a common higher-level environmental management framework. This approach fits well with the federal constitutional structure of these countries, as it enables federal environmental legislation to overlay state-based legislation.

Canada was the first country to legislate for an integrated policy and planning framework applying to the ocean. But the application of this framework by the Department of Fisheries and Oceans has been weak and oceans management has become more fragmented since the legislation was enacted.⁵⁶ This highlights the importance of carefully designing the organisational elements of any reform. Good legislation needs to be backed up by an appropriately-configured management agency.

Passing ambitious oceans legislation in the USA is particularly difficult due to the country's complex political and legislative arrangements. Progress in the area of oceans management has therefore relied on Presidential Executive Orders. Notwithstanding this, President Obama, through the recommendations of the Ocean Policy Taskforce, is seeking to implement an extensive national system of coastal and marine spatial planning.

The recent United Kingdom legislation is the most ambitious to date and establishes a new benchmark for integrated marine legislation for the twenty-first century. It has addressed the development of marine policy, the implementation of marine planning, the creation of marine conservation zones and the establishment of a new marine licensing system in an integrated manner. The government has also established a new independent organisation to implement the regime. It is early days yet to determine how effective this approach will be in practice, but it looks promising.

All the countries examined had lead agencies for oceans management, although these fall far short of encompassing all oceans activities. Canada, the USA and Australia have also established high-level inter-departmental governmental bodies to coordinate and oversee the implementation of oceans management.

The countries have all adopted marine spatial planning as a key tool for implementing integrated management and are seeking to apply it to large offshore marine areas, as well as inshore coastal ones.

All the countries also have legislation enabling the establishment of marine protected areas within the EEZ. The United Kingdom legislation has gone the furthest in this area, with its new legislation *requiring* the government to designate marine conservation zones. The responsibility for designating marine protected areas is, in many cases, given to the Environment Minister (United Kingdom, Canada and Australia).

Science provides a strong underpinning to many of the ocean management efforts. In the USA, the National Oceans Council will oversee the establishment of a national information system to support oceans management in general and, more particularly, regional marine spatial planning. In the United Kingdom, an independent Science Advisory Panel has been established to provide advice on the selection of sites to form a national representative network of marine protected areas. In Australia, an Oceans Policy Science Advisory Group provides scientific advice to government agencies.

All these countries effectively have devolved responsibilities, with the United Kingdom now operating under a system of devolved government in Scotland, Wales and Northern Ireland. This complicates the challenge of passing ambitious legislation and integrating management efforts. The task in New Zealand, with its unicameral Parliamentary system, should prove easier.

	New Zealand	Canada	USA	Australia	UK
Size of EEZ (km ²)	3.9 million	2.9 million	11.7 million	8.1 million	UK does not currently have a declared EEZ
Legislative framework	Sectoral legislation applies to fisheries, shipping and offshore installations. No environmental legislation for other activities in EEZ. No integrative legislation	Oceans Act 1997 overlays a policy and planning framework across sectoral legislation	National Environmental Policy Act 1969 overlays sectoral legislation and requires environmental impact assessments for significant decisions Oceans Act 2000 established a Commission on Ocean Policy to make recommendations on ocean policy	Environmental Protection and Biodiversity Act 1999 overlays sectoral legislation and requires an EIA approval process for activities which may have a significant effect on a matter of national environmental significance Provision for bioregional plans to influence decisions	Marine and Coastal Access Act 2009 governs most activities in the marine area and provides for marine spatial planning the, establishment of marine conservation zones and the licensing of activities in the marine area.
Management bodies	No specific management body for the EEZ	Department of Fisheries and Oceans integrates some functions and coordinates the work of other departments	National Oceanic and Atmospheric Agency integrates some marine research and management functions Environmental Protection Agency administers the overarching National Environmental Policy Act	Department of the Environment, Water, Heritage and Arts administers the overarching Environmental Protection and Biodiversity Act and bioregional planning	Marine Management Organisation integrates spatial planning, licensing and marine protected area functions
Integrative governmental bodies	Nil	Deputy Minister's Interdepartmental Committee on Oceans oversees the implementation of the oceans action plan	National Oceans Council will coordinate oceans management and oversee coastal and marine spatial planning	Oceans Board of Management oversees ocean policy activities	
Marine spatial planning?	No	Large ocean management area plans being developed	Coastal and marine spatial plans to be developed for large marine ecosystems	Marine bioregional plans being prepared to identify regional conservation priorities and where marine reserves should be created	Marine (spatial) plans to be developed within the framework of a marine policy statement
Marine protected areas?	No specific MPA legislation applicable in EEZ. Some protection can be provided under sectoral legislation	Oceans Act 1997 provides for marine protected areas to be created within EEZ and integrated with ocean management area plans National Marine Conservation Areas Act 2002 provides for establishment of marine conservation areas within EEZ	National Marine Sanctuaries Act 1972 provides for the establishment of marine sanctuaries including within the EEZ National System of Marine Protected Areas was established by Executive Order in 2000	Environmental Protection and Biodiversity Act 1999 provides for Commonwealth reserves, which can be created over land or sea, including within the EEZ	Marine and Coastal Access Act 2009 requires the designation of marine conservation zones which can extend outside the territorial sea

Figure 6: Summary of international approaches to managing the EEZ



5 The BP Oil Spill in the Gulf of Mexico

Background

The BP Deepwater Horizon oil spill, which started on 20 April 2010 in the Gulf of Mexico, was the largest accidental marine oil spill in the history of the petroleum industry. Deepwater Horizon was a mobile offshore drilling rig under lease to BP. Immediately prior to the spill, it was temporarily abandoning an exploratory well (known as the Macondo well) at a water depth of approximately 1,500 metres. The well is located about 66 kilometres off the Louisiana coast inside the EEZ of the United States.⁵⁷

BP was the operator and principal developer of the Macondo prospect and held a 65 per cent share in the enterprise. Anadarko Petroleum Corporation owned 25 per cent. In this country, Anadarko New Zealand Company is the operator of two petroleum exploration permits for the Canterbury Basin and Anadarko NZ Taranaki Company operates a petroleum exploration permit for Taranaki. These two companies are wholly-owned subsidiaries of Anadarko Petroleum Corporation.⁵⁸

The spill was caused by a blowout of the exploratory well while it was in the process of being sealed. Gas escaping from the failure of the well's blowout preventer triggered an explosion on the rig. Eleven platform workers were killed and 17 others injured. Approximately 4.9 million barrels of crude oil were released into the ocean before the leak was stopped on 15 July 2010. The spill caused extensive damage to marine and wildlife habitats as well as the Gulf's fishing and tourism industries.⁵⁹

Prior to the spill, Deepwater Horizon was heralded by the federal Minerals Management Service as an industry model for safety, and this may have led to less rigorous scrutiny by the regulator. This was despite the Coast Guard having issued 18 citations for pollution and investigating 16 fires and other incidents on the rig. Such an incident history was not considered unusual for Gulf platforms which have been described as 'big, floating cities'.⁶⁰

New Zealand has the opportunity to be informed by the findings of the investigations conducted in response to the BP oil spill, particularly to the extent that these investigations address the management, regulatory, institutional and legislative context in which the spill occurred.

Regulatory Framework

Under the *Outer Continental Shelf Lands Act 1953*, the federal government has authority over offshore minerals beyond state jurisdiction.⁶¹ At the time of the spill, the Minerals Management Service located within the Department of Interior had authority over all activities on the outer continental shelf related to the exploitation of oil and gas.

The Minerals Management Service utilised a multi-step process for oil and gas leasing, exploration and development decisions on the outer continental shelf. This included the following steps:⁶²

- It prepared a nationwide five-year oil and gas leasing program that outlined a schedule of proposed lease sales describing their size, timing and location.
- Individual leases listed in the five-year programme were then sold and issued after a series of site-specific scoping and planning actions.

- Once a lease was issued, exploratory drilling could not begin until the agency had considered and approved an operator's exploration plan (detailing the timing, location and other aspects of planned exploration activities) and application for permit to drill.
- If the operator discovered oil and/or natural gas, a development plan needed to be submitted for agency approval, describing the number, location and structure of wells that would be used, and other relevant information.

At each stage of the process, the *National Environmental Protection Act 1969* required the authority to consider the environmental impact of its proposed actions. There are three different levels of analysis required, depending on whether an action could significantly affect the environment:

- *Categorical exclusion determination* – an action may be categorically excluded from a detailed environmental analysis if it meets certain criteria which a federal agency has previously determined as having no significant environmental impact.
- *Preparation of an environmental assessment* – this is to determine whether or not a federal undertaking would significantly affect the environment. If the answer is no, the agency issues a finding of 'no significant impact'.
- *Preparation of an environmental impact statement* – this is required where the environmental assessment determines that the consequences of the activity may be significant. This is a more detailed evaluation of the proposed action and alternatives. The public, other federal agencies and outside parties may provide input into the preparation of the statement and then comment on a draft before its completion.

As the decision making proceeds from the development of high-level programmes to considering specific drilling proposals, the assessment of environmental impacts becomes more specific.

Regulatory framework as applied to BP

The following specific decisions were made leading up to the drilling of the Macondo well:⁶³

- BP obtained a lease for the Mississippi Canyon Block 252 from the Minerals Management Service on 19 March 2008.
- After receiving its lease, BP submitted its exploration plan for approval. The Minerals Management Service relied on existing categorical exclusions for its decision to approve BP's exploration plan and its subsequent applications for permits to drill. These categorical exclusions were established in 1981 and 1986, before deepwater drilling had become widespread.
- Although sections of the exploration plan included oil spill information associated with drilling the Macondo well, the National Environmental Protection Act reviewers did not prepare a site-specific analysis to determine impacts from a potential site-specific spill. Instead, they relied on the reviews of potential oil spill impacts contained in the programmatic environmental impact statement (part of the nationwide five-year oil and gas leasing program of April 2007).
- The Minerals Management Service approved BP's exploration plan on 6 April 2009 and a revised plan on 16 April 2009. An application for a permit to drill the Macondo well was approved on 22 May 2009.

Institutional and regulatory weaknesses

Several investigations have been undertaken into the oil spill. The Outer Continental Shelf Safety Oversight Board report, the Council on Environmental Quality's report on the application of the National Environmental Protection Act and the report of the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling have been released. Other reports are still pending.

The Outer Continental Shelf Safety Oversight Board's report, released on 1 September 2010, identifies a number of issues with the functioning of the Minerals Management Service:⁶⁴

- *Insufficient staff for processing the volume and complexity of permits* – district offices were challenged by the volume and complexity of permit applications and faced significant succession issues.
- *Ineffectiveness of the inspection programme* – the legislation requires annual scheduled inspections and periodic unannounced inspections of outer continental shelf oil and gas operations. However, the number of staff involved in inspections had not kept pace with the growth in drilling activities. In some cases, industry exerted pressure on inspectors to minimise the reporting of violations, and inspectors were often not supported by managers in these instances. Inspectors also did not always have sufficient training and adequate equipment (such as laptops) to effectively address non-compliance.

- *Ineffective financial penalties in cases of non-compliance with regulations* – the level of penalty fines did not make them an effective deterrent to violations. The maximum penalty was \$35,000 per violation per day, and this could only be imposed after instigating lengthy legal proceedings, which could take up to a year.
- *Conflicting roles of the Minerals Management Service* – an emphasis on lease sales and permitting created an imbalance in how the agency fulfilled its dual mandate to responsibly develop outer continental shelf resources while protecting the environment and cultural resources. Incidents occurred where scientists' environmental impact findings were changed or minimised to expedite approvals.
- *Ineffective post-accident investigations* – the accident investigation programme lacked adequate protocols for basic investigation techniques, sufficient full-time accident investigation personnel, a well-defined management chain staffed with experienced leadership at the highest levels and an effective system for ensuring that safety and other recommendations resulting from accident investigations were implemented.
- *The promulgation of regulations lagging behind the development of new and emerging offshore technologies* – this was due to the length of time taken for regulations to be promulgated, lack of adequate staff expertise to review and vet standards, limited research undertaken on the effects of deep water on equipment and operations and lack of connection between the research and the development of new regulations.
- *Lack of verification of critical data provided by applicants in oil spill response plans* – reviews of oil spill response plans did not ensure that critical data was correct or that other relevant agencies were involved in the review process. Oil spill response plans also did not adequately address worst-case discharge scenarios.

The Council on Environmental Quality produced a report dated 16 August 2010 which examined the application of the National Environmental Policy Act to the BP consenting process.⁶⁵ A major weakness in the process, identified by the Council, was that the Minerals Management Service failed to undertake any analysis to determine impacts from a potential site-specific spill. It had relied on existing categorical exclusions for its decision to approve BP's exploration plan, and subsequent scrutiny of applications for permits to drill were based on a high-level programmatic environmental impact statement. In short, there had been insufficient analysis of the specifics of the proposal before it was approved.

The decision to rely on a categorical exclusion was not a one-off event, but reflected the Marine Management Service's policy in the Gulf of Mexico where it categorically excludes from National Environmental Policy Act review the approval of offshore lease exploration, development and production plans.

Among the reasons suggested for the policy is the political and economic importance of the region (it is the most productive region in the federal outer continental shelf), the fact that the categorical exclusions were developed before drilling occurred at extreme depths and the 30 day statutory time frame for the regulator to approve or deny an exploration plan.⁶⁶

In her testimony to the US Senate Committee on Energy and Natural Resources, which was considering legislative reform in response to the spill, Marilyn Heiman from the Pew Environment Group identified the following key problems with the USA statutory regime applying to offshore drilling:⁶⁷

- *Single-sector approach and lack of integration* – decisions about oil and gas activities on the outer continental shelf were not integrated with other ocean management decisions. Other resource agencies with expertise and management responsibility over marine and coastal resources had only a limited role in oil and gas decisions.
- *Lack of substantive standards* – the legislation did not include substantive, enforceable protection standards to which decision makers could be held accountable. The Minerals Management Service was legally required to balance oil and gas development with protection of human, marine and coastal environments. In practice, the agency prioritised resource extraction at the expense of other concerns.
- *Inadequate environmental analyses* – the Minerals Management Service was not legally required to prepare a full and comprehensive environmental analysis at either the programmatic or site-specific project stage.
- *Unrealistic time frames* – the legislation required exploration plans to be approved within thirty days and this tight time frame resulted in rushed environmental analyses or their avoidance through the use of categorical exclusions.
- *Inadequate response capability* – response plans were not legally required to be effective, and response capacity and technical standards for safety and efficacy of response methods did not need to be adequately proven.

The Minerals Management Service has now been renamed the Bureau of Ocean Energy Management, Regulation and Enforcement. In the wake of the spill, it has been restructured so that its functions now fall into three separate divisions:

- *Bureau of Ocean Energy Management* – responsible for leasing areas of the outer continental shelf for conventional and renewable energy resources
- *Bureau of Safety and Environmental Enforcement* – responsible for ensuring comprehensive oversight, safety and environmental protection in all offshore energy activities
- *Office of Natural Resources Revenue* – responsible for royalty and revenue management, including collection and distribution of revenue, auditing and compliance, and asset management

The Obama administration imposed a moratorium on deepwater drilling after the BP oil spill. The moratorium was originally set to expire on 30 November 2010, but it was lifted in October 2010 after new regulations were put into place to reduce the risks associated with deepwater drilling.⁶⁸

President Obama established the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling on May 21, 2010. The Commission was tasked with examining the relevant facts and circumstances concerning the root causes of the Deepwater Horizon oil disaster; developing options for guarding against, and mitigating the impact of oil spills; and submitting a final public report to the President. On 11 January 2011 the Commission released its report which makes a number of key recommendations including:⁶⁹

- Creating a distinct environmental science office within the Department of Interior headed by a chief scientist with well-specified responsibilities regarding environmental review and protection.
- Amending the Outer Continental Shelf Lands Act to provide NOAA with a more formal consultation role relating to environmental protection in leasing decisions as well as revising and strengthening National Environment Policy Act practices and procedures.
- Better use of new tools, such as coastal and marine spatial planning, to improve environmental protection, management of outer continental shelf activities activities, and ecosystem restoration efforts in marine environments. The report states 'Coastal and marine spatial planning has the potential to improve overall efficiency and reduce conflicts among ocean users' and 'Ocean management should also include more strategically sited marine protected areas, including but not limited to National Marine Sanctuaries, which can be used as 'mitigation banks' to help offset harm to the marine environment.'⁷⁰
- Creating an independent safety agency within the Department of the Interior to oversee all aspects of offshore drilling safety as well as ensuring that the offshore energy industry pays the costs of its regulatory oversight.
- Toughening the baseline of prescriptive safety regulations applicable to offshore drilling and supplementing these with a risk-based performance approach, similar to the 'safety case' approach used in the North Sea, that requires all offshore drilling companies to demonstrate that they have thoroughly evaluated all of the risks associated with drilling a particular well or other operation, and are prepared to address all risks pertaining to that well or operation.
- The adoption of a culture of safety by the oil and gas industry as a collective responsibility and the establishment of an industry 'Safety Institute'.
- Significantly increased funding for the key regulatory agencies that oversee oil spill response and planning as well as an interagency review process for oil spill response plans which should be publicly available.
- Significantly increasing the Oil Pollution Act's liability cap and financial responsibility requirements for offshore facilities.

New regulations for deepwater drilling are also being proposed for European Union member states. Under the proposals, companies would have to show that they had enough funds to pay for any environmental damage a disaster might cause. They would be responsible for all damage caused within 200 miles of a coastline, instead of the current 12-mile limit.⁷¹

In seeking to improve the environmental governance of New Zealand's EEZ, particularly in relation to petroleum activities, New Zealand has the opportunity to be informed by the findings of the investigations conducted in response to the BP Oil Spill. A number of lessons can be drawn from the above analysis, and are distilled in Figure 7.

- Consenting for petroleum activities needs to be integrated with other marine management decision making
- Environmental assessment and consenting need to be undertaken separately from the issuing of rights to explore or exploit resources
- Regulatory agencies need to be well-resourced, with adequate numbers of experienced staff and effective internal management processes
- Decision making processes need to be transparent and subject to effective oversight
- Substantive and enforceable environmental standards need to be in place
- Regulations need to be regularly updated to keep pace with technological developments
- There needs to be a strong link between science and the development of regulations
- Project-specific environmental impact assessments need to be carried out prior to permits being granted in high risk areas such as deep water
- Environmental impact assessments need to include a robust analysis of risk
- Spill response plans need to be supported by robust evidence which demonstrates their likely effectiveness

Figure 7: Lessons from the Gulf of Mexico experience



6 Current management of New Zealand's EEZ

There are four main regimes of relevance to environmental management which are currently operating within New Zealand's EEZ – allocation of minerals rights, management of marine pollution, fisheries management and marine protection. These are described below and summarised in Figure 12.

Minerals allocation

The areas covered by current petroleum prospecting, exploration and mining permits are extensive, as shown in Figure 8.

The only *petroleum* production in the EEZ to date has been off the coast of Taranaki at the Maui and Kupe gas fields and the Tui oil field. The Maui field extends 35 to 50 kilometres offshore at a water depth of around 110 metres. Kupe is a gas and light oil field about 30 kilometres offshore at a water depth of around 35 metres. The Tui field is located about 50 kilometres offshore at a water depth of around 120 metres.

Exploration permits have been granted at greater depths for the Raukumara, Great South, Canterbury and Taranaki Basins. In the Raukumara Basin, located off the East Cape, the work programme includes drilling an exploratory well at a depth of up to 3,000 metres.⁷² The Great South Basin is larger than New Zealand's entire land area, descends to depths of up to 1,300 metres and is subject to rough seas and icebergs, which make drilling particularly hazardous.⁷³

Government is also promoting deep-water petroleum blocks in the Northland and Reinga Basins. The Northland Basin has water depths ranging from coastal in the east to 1,800 metres in the west while the Reinga Basin has water depths typically in the range of 1,750 to 2,000 metres.⁷⁴ These depths are greater than that drilled for the BP Macondo well, which was 1,500 metres.

Petroleum activity can potentially have a number of adverse effects on the marine environment including:

- Seismic operations can have physical impacts on marine life, especially marine mammals, and can lead to their temporary displacement and impact on their communication and other behaviours.⁷⁵
- Both temporary and fixed permanent platforms can involve physical disturbance of the seabed, the introduction of exotic invasive marine species, acoustic disturbance and displacement of marine life. On the positive side, structures can act as artificial reefs and provide new marine habitats.⁷⁶
- Effects associated with the physical impact of drilling include underwater noise, displacement of marine life and local physical damage.
- The discharge of drilling cuttings can result in the accumulation of contaminated material, smothering of benthos and turbidity. The discharge of drilling fluids can cause water toxicity and turbidity.⁷⁷

However, the biggest potential environmental impact is the risk of an oil spill which can be catastrophic for wildlife. For example, in the Exxon Valdez 1989 spill in Alaska, hundreds of thousands of birds, fish and animals died, including between 250,000 and 500,000 seabirds, thousands of sea otters, hundreds of harbour seals and bald eagles, 24 killer whales and more than 12 river otters. The long-term effects of the Exxon Valdez spill are still being felt in the Alaskan coastal ecosystem with the persistence of toxic sub-surface oil and chronic exposures continuing to affect wildlife.⁷⁸



Figure 8: Location of petroleum permits

Map supplied by Crown Minerals, www.crownminerals.govt.nz

More recently, the BP oil rig disaster in the Gulf of Mexico has resulted in the death of thousands of sea creatures. The death toll is likely to be much higher than the 6,833 dead animals which had been collected by 25 January 2011 including 6,124 birds, 608 sea turtles, 100 dolphins and other mammals, and one reptile.⁷⁹

Oil spills also have implications for tourism and the fishing industry. For example, in response to the BP Gulf of Mexico spill, NOAA closed commercial and recreational fishing in affected federal waters covering 225,290 square kilometres. On 24 May 2010, the federal government declared a fisheries disaster for the states of Alabama, Mississippi and Louisiana. Initial cost estimates to the fishing industry were USA\$2.5 billion.⁸⁰

Environmental damage from offshore oil discharges is not unheard of in New Zealand. In October 2007, an accident occurred at the Tui field where fluid contaminated with subterranean well fluids, sulphate-reducing bacteria and crude oil (known as black water) discharged into the sea for three minutes before being discovered. In sentencing, Judge Thorburn found the discharge to have been at least 30 cubic metres and fined each defendant \$52,500. His Honour stated:⁸¹

Thirteen kilometres is a substantial length of coastline to be contaminated and signifies the immense risk of dreadful environmental damage that even a few minutes of discharge can create, and although there are no cases for comparison, it seems appropriate to the Court to classify the scale of this incident on its facts as serious.

Petroleum activities are managed in the first instance under the *Crown Minerals Act 1991*, the *Crown Minerals (Petroleum) Regulations 2007* and the *Minerals Programme for Petroleum 2005* promulgated under the Act. The Act requires a person to hold a permit before they prospect for, explore for, or mine petroleum. Three classes of permit may be awarded: a prospecting permit, an exploration permit or a mining permit. There are no explicit environmental provisions in the Crown Minerals Act and environmental impacts are not usually addressed at the permitting stage.

The Crown Minerals Act does envisage that additional regulation of petroleum activities will be provided through other legislation. Section 9 of the Act states that 'compliance with this Act does not remove the need to comply with all other applicable Acts, regulations, bylaws, and rules of law'. Although this provision enables the RMA to provide an additional layer of environmental protection within the territorial sea, there is no similar legislation operating within the EEZ.

Under the *Continental Shelf Act 1964*, a licence must be obtained in order to prospect or mine for non-petroleum minerals within the EEZ and on the extended continental shelf. The grant of a licence is at the discretion of the Minister of Energy and Resources. The Minister is able to impose conditions on the licence, but there is no mandatory consideration of environmental impacts. In some recent cases, a requirement has been attached to offshore minerals prospecting licences, to the effect that the licensee must comply with the environmental guidelines published by the International Marine Minerals Society which are titled *the Code for Environmental Management of Marine Mining*.

Upon discovery of a mineral, the holder of an exploration permit has a 'right' to apply for surrender of the exploration permit and the granting of a permit to mine.⁸² A subsequent grant can only be withheld by the Minister in circumstances where it would be inconsistent with the relevant minerals programme, if the Minister is not satisfied that the applicant will comply with the permit, if the required bond has not been deposited⁸³ or if the Minister has not approved the work programme for the permit (which can only be done if the Minister considers it is contrary to recognised good exploration or mining practice or inconsistent with the minerals programme). Therefore, there is a presumption in the Act that a mining permit will follow an exploration permit, if the applicant so desires.

The Minister of Energy and Resources grants and monitors the implementation of permits. The management of the permitting process, and provision of advice to the Minister, is undertaken by the Crown Minerals Group which is located within the Ministry of Economic Development. The Group is also tasked with promoting investment in the Crown's mineral estate.⁸⁴ Government has recently announced plans to substantially increase the number of staff in the Crown Minerals Group and to establish an advisory board to oversee its activities. The expanded Group is to have a 'more commercial and strategic approach to meet the needs of both industry and government.'⁸⁵

No deep-sea *non-petroleum mineral* mining operations are currently occurring within New Zealand waters. However, prospecting licences are currently held for polymetallic sulphide deposits, phosphorite, iron sands and other minerals. The government has also recently announced its intention to explore ways to commercialise methane hydrates.⁸⁶

Seabed minerals mining has a range of potential environmental effects, which primarily arise from the direct impacts of excavating rock or sediment from the seabed and de-watering the ore and the indirect impacts of suspending material in the water column and mixing oceanic waters. These include:⁸⁷

- Significant physical changes to the direct area that is being mined. The removal of material from the seabed will not only destroy organisms located on the sea floor, but will result in the permanent modification of the profile of the seabed. Recovery of the benthic communities could take many decades, particularly in stable deep-sea environments.
- Suspension of particles in the water column as rock is extracted, and possibly crushed on the seabed, before being transported to the surface. If this happens, the heavier particles will sink rapidly to the sea floor and are likely to smother benthic organisms. Lighter particles may become suspended in a plume, which could travel some distance with ocean currents before settling out. Such sediment can be a considerable problem for suspension-feeding organisms, such as sponges and corals, as the fine particles can clog their filtering apparatus. It may also impact on important vent communities and deep-sea fish living within the water column.

- Release of toxic materials, especially in relation to the mining of polymetallic sulphides.
- Change in the nutrient values of seawater, by raising water containing concentrated nutrients from the deep-sea area to the relatively nutrient-poor areas near the surface. This could result in increased planktonic growth in the surface water. If water is pumped back down to the deep ocean area, it will be warmer than the surrounding deep-sea water and could have localised impacts.

There may be other ecological impacts resulting from increased light and noise in the deep ocean environment. These are currently poorly understood, but could impact on marine mammals that are dependent on sound for locating prey, navigating and communicating.⁸⁸ There is also the risk of accidents leading to spillages and loss of equipment within the marine environment.

Marine pollution

New Zealand receives around 5,800 port visits from international ships each year. Potential environmental impacts from vessels include oil and chemical spills, sewage discharges, garbage thrown overboard, antifouling paints, biosecurity risks, dumping waste at sea and ship strike of marine mammals. Pollution risks, as well as discharges from offshore installations described in the section above, are managed under the *Maritime Transport Act 1994*.

The Maritime Transport Act has no explicit purpose or environmental principles. In section 5, the Act does set out the objectives of the Minister of Transport, which are to undertake the Minister's functions in a way that 'contributes to an integrated, safe, responsive, and sustainable transport system' and 'to ensure that New Zealand's obligations under the conventions are implemented'.

Under the Act, the Minister of Transport can make marine protection rules. Currently, these include:

- Requirements for the design and construction of oil tankers entering New Zealand waters
- Controls on the discharge of garbage from ships within the EEZ
- Mandatory ship routing to avoid the area surrounding the Poor Knights Islands and the Three Kings Islands

Part 200 of the marine protection rules is aimed at preventing pollution of the marine environment from discharges of harmful substances associated with the operation of *offshore installations* used in mineral exploration and exploitation. The term 'offshore installations' is defined in the Rule 200.2 as including:

Any artificial structure (including a floating structure that is not a ship) used or intended to be used in or on, or anchored or attached to, the seabed for the purpose of the exploration for, or the exploitation or associated processing of, any mineral, oil or gas

This definition is broad enough to include petroleum and gas drilling rigs and also equipment which might be used to mine minerals from the seabed and to transport them to the surface.

All offshore installations operating in New Zealand waters require an approved *discharge management plan* prior to undertaking exploration and exploitation of any mineral, oil or gas. The purpose of this plan is to establish procedures and practices that will minimise environmental impacts from operational or accidental discharges of any harmful substances, including oil.

Discharge management plans must contain a number of components including environmental impact assessments, environmental monitoring and emergency spill response procedures. The emergency spill response procedures must also provide details of the training to be provided to personnel involved in spill response procedures. There is a requirement that sufficient suitably-trained staff are available to respond to a spill at all times. Maritime New Zealand is also able to undertake audits and inspections of installations.

Maritime New Zealand and the Ministry for the Environment, in consultation with industry, have developed voluntary guidelines which apply to petroleum mining activities undertaken within New Zealand's EEZ and Continental Shelf.⁸⁹ However, these guidelines are not legally enforceable. One of the principles of the guidelines is minimising and, where practicable, avoiding adverse effects on the marine environment – including marine habitats and communities, the distribution, abundance and productivity of a species, and air and water quality. An environmental assessment is required to address significant potential impacts and develop strategies to manage and/or mitigate the specific impacts.

The Department of Conservation has also produced voluntary guidelines to minimise the disturbance to marine mammals of mineral seismic surveys. These surveys use high-intensity sound sources to determine the structure and composition of rock layers beneath the sea floor. The technique is used to investigate the presence of oil and gas beneath the sea floor.

The dumping of waste, such as from dredging, is also controlled under the Maritime Transport Act. No waste may be dumped within the EEZ, or the continental shelf beyond, without a permit issued by the Director of Maritime New Zealand. Before issuing a permit, the Director must undertake consultation and also publicly notify the application.

Maritime New Zealand develops marine protection rules on behalf of the Minister. It also monitors and enforces compliance with the Act and rules. Maritime New Zealand is a crown agent and has an independent board appointed by the Governor General on the recommendation of the Minister of Transport. It acts at arms' length from government, although it must give effect to government policy when directed by the Minister.

The activities of Maritime New Zealand are largely focused on the management of shipping and this is reflected in its legislated function which is 'to undertake its safety, security, marine protection and other functions in a way that contributes to the aim of achieving an integrated, safe, responsive and sustainable transport system.'⁹⁰ It has around 140 staff primarily located in Wellington.⁹¹

The Department of Labour also has a role in managing the risk of oil spills from offshore activities, through its role in enforcing health and safety regulations on fixed and moored offshore installations, under provisions of the *Health and Safety in Employment Act 1992* and the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999*. Under these regulations, one of the requirements is for operators to prepare a safety case for their installation, which includes the identification of any significant hazards, a quantitative risk assessment and measures to ensure that hazards are minimized. (Schedule 4).

Fisheries management

Commercial fisheries within the EEZ target a range of species including squid, hoki, orange roughy, ling, hake, oreo and jack mackerel, as well as migratory species such as tuna and swordfish. Trawling is the most common fishing method used and bottom trawling has been undertaken over large areas of the EEZ (See Figure 9).

The potential impacts of fishing activity within the EEZ include:

- A reduction in the population size of the targeted fish species. This is an explicit objective of fisheries management, which aims to significantly reduce the biomass of targeted fish stocks, so that they approach a level which supports the 'maximum sustainable yield'. Fishing can preferentially remove older and larger fish, changing the size and age structure of exploited populations and reducing their genetic diversity.
- The capture of non-target and protected species, such as marine mammals, seabirds and turtles, which become entangled in fishing equipment and drown or asphyxiate.
- The destruction of benthic habitats through bottom trawling. Trawl drawers, chains or rollers dragged along the seafloor crush benthic organisms including sponges, bryozoans, seaweeds and soft corals. They also flatten outcrops which provide refuge for juvenile fish and suspend sediment in the water column which disrupts filter feeders.⁹²
- The disruption of marine ecosystems more generally, which can result from the removal of top predators from food chains, loss of habitats and loss of preferred food species for birds and marine mammals.

The Fisheries Act 1996 and associated regulations control the harvest of all fish stocks found within the EEZ. Key decisions under the legislation include determining the total quantity of target fish species which can be caught (total allowable catch) and the application of other sustainability measures which can include restricting fishing methods or locations. These decisions are made by the Minister of Fisheries.



Figure 9: Cumulative area trawled 1990 to 2008

Source: Ministry of Fisheries

The Fisheries Act is administered by the Ministry of Fisheries which serves as the government's principal advisor on fisheries management and aquaculture. The Ministry is tasked with achieving the government's goal for fisheries which is 'New Zealanders maximising benefits from the use of fisheries within environmental limits'.⁹³ The Ministry employs around 460 staff.⁹⁴

The legislation provides for the Minister of Fisheries to approve fisheries plans, which can include fisheries management objectives, strategies to achieve the objectives and/or performance criteria to measure the achievement of objectives.⁹⁵ Before making a decision on any sustainability measure under the Fisheries Act, the Minister must take into account any relevant fisheries plan.⁹⁶ A national fisheries plan for deepwater and middle-depth fisheries has been recently approved by the Minister.⁹⁷

The Act contains environmental and information principles (see Figure 10) to guide decision making and these seek to encapsulate elements of an ecosystem-based and precautionary approach to fisheries management. However, progress in implementing these principles has been slow.

A strategy for managing the environmental effects of fishing was completed in 2005 and identified the setting of environmental standards as the key mechanism for its implementation.⁹⁸ To date, a harvest strategy standard is the only environmental standard

to have been completed. It focuses on 'single species biological considerations and related uncertainties, and includes only limited consideration of economic, social, cultural or ecosystem issues.'⁹⁹

Environmental principles (section 8)

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following environmental principles:

- (a) associated or dependent species should be maintained above a level that ensures their long-term viability;
- (b) biological diversity of the aquatic environment should be maintained;
- (c) habitat of particular significance for fisheries management should be protected.

Information principles (section 9)

All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:

- (a) decisions should be based on the best available information;
- (b) decision makers should consider any uncertainty in the information available in any case;
- (c) decision makers should be cautious when information is uncertain, unreliable, or inadequate;
- (d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

(Section 10, Fisheries Act 1996)

Figure 10: Principles in Fisheries Act 1996

Marine protection

All marine mammals are protected under the Marine Mammals Protection Act 1978. However, it is legal to inadvertently catch a marine mammal, during activity such as fishing, so long as the incident is officially reported. The legislation provides for the preparation of population management plans, which can determine the maximum allowable level of fishing-related mortality for a species.¹⁰⁰ No such plans have been completed and the Department of Conservation is currently reviewing these provisions with the intention of making them more workable in practice. Under the legislation, marine mammal sanctuaries may be established within the EEZ, but none has yet been created within this area.

The Wildlife Act 1954 protects most seabirds within the EEZ. It also protects a few identified marine species including black and red coral, the great white shark and marine reptiles such as turtles and sea snakes. Similar to the regime under the Marine Mammals Protection Act, the Wildlife Act makes provision for the preparation of population management plans to address fishing-related mortality, but no such plans have been finalised.¹⁰¹

There is no legislation specifically providing for the establishment of marine protected areas within the EEZ, with the Marine Reserves Act 1971 only applying to the territorial sea.

As a result of concerns about the impacts of bottom trawling within the EEZ, 19 seamounts were closed to trawling and dredging in 2000 through regulations promulgated under the Fisheries Act. This was followed in 2007, on the initiation of the fishing industry, with the creation of 17 benthic protection areas.

These closures protect 31 per cent of the EEZ from dredging and trawling, including 52 per cent of seamounts and 88 per cent of active hydrothermal vents (see Figure 11).¹⁰² However, the areas provide poor protection for fish. An analysis undertaken by NIWA concluded that the benthic protection areas were 'a poor option for the long-term protection of demersal [bottom-dwelling] fish diversity in New Zealand's EEZ' because they 'coincide strongly with areas of low biodiversity value.'¹⁰³

Further, these closure areas within the EEZ are not fully protected. Mid-water trawling and other fishing activity can be undertaken within them. They are also potentially open to mining activity. Prospecting licences for polymetallic sulphide deposits have been granted over extensive areas of the Kermadec Ridge benthic protection area.¹⁰⁴ A phosphorite prospecting licence has also been granted within the benthic protection area on the Chatham Rise. There are currently no fully protected areas within the EEZ.

In 2006, the government released the *Marine Protected Areas Policy and Implementation Plan*, a non-statutory document, which applies to the EEZ as well as the territorial sea. The purpose of the policy is to 'protect marine biodiversity by establishing a network of MPAs [marine protected areas] that is comprehensive and representative of New Zealand's marine habitats and ecosystems'. The marine protected area network 'will protect representative examples of the full range of marine habitats and ecosystems, and also outstanding, rare, distinctive or internationally or nationally important marine habitats and ecosystems'.¹⁰⁵ The Ministry of Fisheries and the Department of Conservation are jointly responsible for implementing the policy.

The *Marine Protected Areas Classification, Protection Standard and Implementation Guidelines* were released in 2008 and provide more detail on the application of the 2006 policy. The Guidelines indicate that the government will not be implementing the marine protected areas policy within the EEZ until 2013, at which time the classification system and protection standard will be reviewed to incorporate improved knowledge and research.¹⁰⁶

The Department of Conservation is the lead agency for marine protection and is responsible for implementing the Marine Mammals Protection Act and the Wildlife Act. The Department has a small Marine Conservation Section of nine staff, located within its Aquatic and Threats Unit, which is in turn located within the second-tier Research and Development Unit. The Department also has a Marine Conservation Services Section located within the Aquatic and Threats Unit. This consists of three technical people, and one administrator, who focus on monitoring and managing the impacts of commercial fishing on protected species.¹⁰⁷



Figure 11: Benthic protection areas
Source: Ministry of Fisheries

Assessment

At the broader level, a major deficiency in the current legislative and institutional framework is the lack of an effective mechanism to integrate decision making across the different regimes within the EEZ. These regimes all operate under separate legislation, with different overall purposes, and are administered by different management bodies.

At the activity-specific level, the biggest gap which urgently needs to be filled is the lack of environmental effects regulation applying to offshore petroleum and minerals mining. These activities potentially involve the drilling of deep-water wells or the excavation of extensive areas of the seabed. Licences have already been granted for a range of prospecting activities. There is a similar gap for any new activities which may locate within the EEZ in the future, such as offshore aquaculture or energy generation.

The management regime under the Maritime Transport Act focuses on the management of discharges from offshore structures. Recent changes to the marine protection rules have introduced a more rigorous regime designed to better control spills from offshore drilling rigs. However, this still falls far short of a comprehensive regime which requires the assessment of all potential environmental impacts and risks of mining activity before consent is granted. The Act itself lacks a strong environmental purpose or any environmental principles.

There also appear to be significant deficiencies in the monitoring and enforcement of the current regime. At present, there is only one person who is responsible for inspecting all offshore petroleum installations, which now number seven, as well as all onshore petroleum and geothermal extraction activities.¹⁰⁸ Thirty-one onshore petroleum wells were drilled in 2009 alone.¹⁰⁹ This can be compared to Australia where there is one inspector for every three installations, the United Kingdom where there is one inspector for every two installations and Norway where the ratio is one to one.¹¹⁰

For New Zealand, the consequences of a spill could be catastrophic and a prudent approach to risk management would prioritise the creation of an effective policy regime to minimise those risks.

The Fisheries Act incorporates a set of environmental principles, which imply the need to use an ecosystem-based approach to fisheries management, but the Ministry of Fisheries has been slow in applying them. Although measures have been introduced to address some environmental impacts, fisheries management still largely focuses on single stock management.

The protection of marine mammals and seabirds from the impacts of fishing activity through the preparation of population management plans has not been effective. This has left the issues to be managed directly under the sustainability provisions of the Fisheries Act (which is focused on utilisation) rather than under wildlife legislation (which is focused on protection).

There is no legislative framework for the creation of a network of marine protected areas within the EEZ. There are some limited provisions for spatial protection in the various pieces of existing legislation. These include restricting fishing activity in specific areas under the Fisheries Act, restricting shipping movements under the Maritime Transport Act and establishing marine mammal sanctuaries under the Marine Mammals Protection Act. But this falls far short of providing for the establishment of a network of representative marine protected areas based on contemporary design principles.

As one commentator has noted, the current approach to marine protected area creation within the EEZ consists of '... the retrofitting of the Fisheries Act and other legislative tools to biodiversity protection rather than the creation of dedicated legislation that accommodates multiple-uses.'¹¹¹

For almost a decade, there have been proposals to extend the scope of the Marine Reserves Act to include the EEZ, but this has not yet been achieved. A Marine Reserves Bill which would see this accomplished has been before Parliament since 2002.

None of the current regimes has provision for independent oversight and review of decision making. Most decisions are currently made by Ministers and these can only be independently scrutinised through judicial review in the High Court. Such scrutiny is not able to review the merits of the decision, but only whether it has been lawfully made. As a result, such proceedings do not necessarily result in good environmental outcomes, because decisions can be (and are) overturned on legal technicalities.

Overall, it is clear that New Zealand is in breach of its current international obligations for management of the EEZ. As described in Section 3, these include the requirement to protect and preserve the marine environment, to protect threatened marine species and populations, to require environmental impact assessment of activities which are likely to have significant adverse effects on marine biodiversity, and to establish a representative system of marine protected areas.

In addition, when compared with the countries reviewed in Section 4, it is evident that New Zealand has fallen far behind international best practice. Unlike those countries, New Zealand lacks an integrative framework or management body for the EEZ, a legal framework for marine spatial planning and a legal framework for the creation of marine protected areas within the EEZ.

Given the context of renewed interest in utilising the resources of the EEZ, it is these failings which new EEZ legislation needs to address.

	Minerals	Marine pollution	Fisheries management	Marine protection
Legislation	Crown Minerals Act 1991 Continental Shelf Act 1964	Maritime Transport Act 1994	Fisheries Act 1996	Conservation Act 1987 Marine Mammals Protection Act 1978 Wildlife Act 1954
Activities	Petroleum exploration and production (under Crown Minerals Act) Non-petroleum minerals exploration and production (under Continental Shelf Act)	Shipping, offshore installations, oil spills, dumping of waste	Fishing	All activities impacting on protected species
Management Bodies	Minister of Energy and Resources Crown Minerals Group	Minister of Transport Maritime New Zealand	Minister of Fisheries and Aquaculture Ministry of Fisheries	Minister of Conservation Department of Conservation
Plans	<i>Minerals programmes</i> specify policies, procedures and provisions to be applied to the management and allocation of rights	Nil	Fisheries plans establish management objectives and strategies	<i>Conservation management strategies</i> establish objectives for the integrated management of natural and historic resources <i>Population management plans</i> can manage the fishing-related mortality of protected species (no plan yet approved)
Spatial protection	Nil	Areas to be avoided by shipping (Poor Knights Islands and Three Kings Islands)	19 closed seamounts and 17 benthic protection areas established within the EEZ (trawling and dredging prohibited)	Marine mammal sanctuaries (none yet created within EEZ)
Management tools	Competitive tender allocation process for exclusive permits Granting of permits for prospecting, exploration and mining	Permitting regime for marine dumping Marine protection rules control discharges from shipping and offshore installations <i>Discharge management plans</i> for offshore installations (including drilling rigs) require approval	Allocating individual transferable quota Setting total allowable catch and total allowable commercial catch for fish stocks Establishing other 'sustainability' measures which can include restrictions on the location and method of fishing	Limited permitting regime for activities (such as tourism) directly impacting on protected species
Oversight and independent review	Only High Court on judicial review	Only High Court on judicial review	Only High Court on judicial review	Only High Court on judicial review

Figure 12: Current legislative regime within EEZ

- No mechanism to provide cohesive policy and to integrate decision making within the EEZ
- No legislation requiring full scrutiny of the potential environmental impacts of deep-sea oil, gas and minerals exploration and mining
- No legislation to scrutinise the environmental impacts of new activities such as offshore aquaculture and energy generation
- Weak implementation of the environmental provisions of the Fisheries Act
- Legal provisions relating to population management plans not working in practice
- No legislative framework for the creation of a network of marine protected areas within the EEZ
- No legal framework for marine spatial planning
- No independent oversight or review of decisions
- In breach of international obligations

Figure 13: Weaknesses in New Zealand's current EEZ legislative framework



7 Key design issues

When designing new EEZ legislation for New Zealand, there are some key design issues which need to be carefully considered, including the role of marine spatial planning, how adequate marine protection can be achieved, what the most appropriate management body might be, and how any new legislation will integrate with other regimes. These issues are discussed below.

Marine spatial planning

Marine spatial planning is now at the cutting edge of oceans governance. As described in Section 4, it has been adopted by Canada, Australia, the USA and the United Kingdom as underpinning their oceans management efforts. It is also being utilised extensively by countries in Europe. Belgium has been progressively implementing a Master Plan for its part of the North Sea since 2003, the Netherlands developed an overarching spatial planning framework for the Dutch area of the North Sea in 2005, and in 2008 Germany finalised a spatial plan for its EEZ.¹¹²

Marine spatial planning takes a strategic and forward-looking approach to the management and use of marine space, taking account of environmental as well as social, economic and cultural objectives. It is a practical approach which facilitates the application of an ecosystem-based approach to marine management, assists with managing cumulative effects, and also provides more certainty for users. It provides a tangible link between marine science and management responses. It focuses on managing conflicts between human activities and the marine environment (such as between minerals mining and benthic habitats) as well as between competing marine uses (such as fishing and minerals mining).

Both knowledge and experience on how to effectively undertake marine spatial planning are developing rapidly internationally. Experience in Australia has highlighted the need for such plans to have a legislative framework so that there is a clear linkage between the plans and their implementation through day-to-day decision making. New Zealand can benefit from such experience and design an appropriate model for our local conditions.

As interest in exploiting the natural resources of New Zealand's EEZ grows, conflicts are likely to increase between fishing activity, the prospecting and mining of petroleum, oil and minerals, and the imperative to protect deep sea biodiversity, marine mammals and seabirds.

Spatial marine plans could assist the management of New Zealand's EEZ through identifying:

- Ecologically and biologically important marine areas and the connections between them
- The habitats of key species, including marine mammals and seabirds
- Marine habitats and areas of importance to fisheries
- Marine resources of economic significance (such as petroleum and minerals)
- Important shipping lanes

Such plans can be further developed to provide more specific management guidance. This could include identifying areas where specific activities may be appropriate subject to site-specific environmental assessment, sensitive areas where a higher environmental standard may be applied to activities wishing to locate there, areas where some activities will be excluded (such as benthic protection areas) and areas where all activities will be excluded (ocean reserves).

Marine protection

As described in Section 3, it is generally accepted internationally that an ecosystem-based approach to planning and governance needs to underpin effective oceans management. New Zealand has adopted the *Plan of Implementation of the World Summit on Sustainable Development* which encourages participating countries to apply an ecosystem approach by 2010. New Zealand has also committed to establishing a representative network of marine protected areas by 2012.

A key element of an ecosystem approach, as identified in Figure 5, is protecting elements of the marine environment critical to its healthy functioning. These elements can be thought of as providing the 'environmental backbone' of the oceans. Any credible ecosystem-management approach therefore needs to provide for the protection of important marine habitats and species, as well as for connections between them. Case-by-case environmental assessment of individual development proposals, on its own, is very unlikely to result in adequate protection of key ocean ecosystems. This is because such assessment cannot adequately address cumulative effects or the significance of effects within the broader marine system.

International thinking around marine protection has advanced a very long way since New Zealand passed the Marine Reserves Act in 1971. Instead of marine reserves being seen as individual oases serving to protect habitats and species within their borders, they are now seen as an integral part of broader marine management efforts, contributing to the overall health of the marine environment and fisheries productivity, as well as serving as biodiversity reservoirs.¹¹³ It is for this reason that marine protection mechanisms are now commonly incorporated into broader environmental management legislation, as described in Section 4 for Australia, Canada and the United Kingdom.

Any new oceans legislation for New Zealand should provide an integrated framework for the establishment of marine protected areas (which could be called ocean conservation zones) within the territorial sea, EEZ and continental shelf. These could include areas with different levels of protection, including benthic protection zones and fully protected marine areas. They could be identified through an integrated marine spatial planning process as described above.

The current approval process for marine reserves, provided for in the Marine Reserves Act 1971, is cumbersome and has resulted in high levels of conflict. The process involves the Minister of Conservation approving a proposed marine reserve in the first instance, with concurrence then required from the Ministers of Transport and Fisheries. There is no provision for an independent review of the merits of the decision.¹¹⁴ A better process needs to be designed in this area.

Marine management body

Effective management of the EEZ will take specialist skills. A key design issue is whether all oceans management functions should be combined into one agency (a new oceans agency) or whether a lead agency should be identified. In any event, a decision will need to be made as to who will manage any new environmental impacts assessment procedures applied to EEZ prospecting and mining activities.

Current managers within the EEZ include the Ministry of Fisheries and Aquaculture, Maritime New Zealand, the Crown Minerals Group and the Department of Conservation. Other possible candidate agencies for an expanded role in the EEZ are the Ministry for the Environment and the EPA.

Some of these agencies can be quickly ruled out of contention for an enlarged role in oceans management. As described in Section 6, the Crown Minerals Group is tasked with promoting investment in minerals exploitation. The experience of the BP oil spill in the Gulf of Mexico has dramatically illustrated the importance of separating minerals allocation from environmental management considerations.

A similar consideration applies to the Ministry of Fisheries. The Ministry has dual and conflicting roles, which include maximising the value the fisheries industry can derive from fish stocks, whilst also managing the industry's environmental effects. Progress in addressing environmental issues has been slow and indicative of the difficulties inherent in this joint function.

Conflicts have been even more acute between the Ministry of Fisheries' roles under the Fisheries Act and in implementing the government's marine protected areas policy:¹¹⁵

A factor that contributed to the slow progress in New Zealand [in marine reserve establishment] has been the view that marine reserve implementation prevents the Ministry of Fisheries from taking action to provide for sustainable utilisation, as required by the Fisheries Act 1996. Rather than seeing marine reserves as part of ocean sustainability they have been viewed as impeding the potential for utilisation of resources. Thus, the situation exists that the government agency charged with the responsibility to maximize utilisation of marine resources is also asked to protect biodiversity in marine protected areas or, in the case of marine reserves in New Zealand, must provide concurrence to their establishment.

The possible pitfalls of giving broader oceans functions to a fisheries agency is illustrated by the Canadian experience. There the Department of Fisheries and Oceans was identified as the lead agency for implementing the new Oceans Act 1997. However, the Department made little progress over ensuing years, remaining fisheries-orientated and failing to allocate significant resources to its new ocean functions.¹¹⁶ The Commissioner of the Environment and Sustainable Development concluded in 2005 that 'after eight years the promise of the *Oceans Act* is unfulfilled. Fisheries and Oceans Canada has fallen far short of meeting its commitments and targets: it has finalised no integrated management plans and has designated only two marine protected areas.'¹¹⁷

The New Zealand government has recently indicated an intention to merge the Ministry of Fisheries with the Ministry of Agriculture and Forestry and to potentially form a new Ministry of Primary Industries.¹¹⁸ Such a new enlarged Ministry is likely to focus on the development of New Zealand's primary industries which does not seem a good fit with an oceans environmental management function.

The Department of Conservation is also not a strong candidate for the role of oceans manager. The Department is largely terrestrially focused and lacks a strong marine capacity, although this is an operational decision rather than one driven by legislation. In 2008, the Department disestablished its Marine Conservation Unit and removed three marine science posts, thereby significantly downgrading its marine capacity and focus.¹¹⁹ In addition, its strong conservation focus may not fit well with a broader oceans management role which will need to address economic, social and cultural factors as well as environmental ones.

The Ministry for the Environment is also effectively out of contention for a broader role in oceans management. The Minister has indicated that he wants the Ministry to become a smaller, more tightly focused policy adviser, and not a hands-on manager. The Ministry currently lacks marine scientific and operational capacity, as environmental management functions in the coastal marine area have been largely undertaken by regional councils and the Department of Conservation.

This leaves Maritime New Zealand and the EPA as the two most promising prospective candidates. By 1 July 2011 these should both be crown entities operating at arms' length from government. Maritime New Zealand is focused primarily on shipping, but does have good experience with dealing with marine pollution issues and with managing offshore petroleum exploration and mining installations.

The EPA is a very new organisation, only established as a unit within the Ministry for the Environment in 2009. In 2010, government released proposals indicating that the expanded organisation would be science-based and play a strong role in developing national environmental standards under the RMA. It was also to facilitate technical advisory input from government agencies and the science sector into a range of processes.¹²⁰

The *Environmental Protection Authority Bill*, introduced into Parliament in late 2010, gives effect to these proposals through expanding the functions of the EPA and establishing it as a crown entity. Under clause 11 of the Bill, the objective of the EPA will be to undertake its functions in a way that:

- (a) *contributes to the efficient, effective, and transparent management of New Zealand's environment and natural and physical resources; and*
- (b) *enables New Zealand to meet its international obligations*

The current functions of the EPA focus on managing the call-in process for matters of national significance under the RMA. This process is likely to be similar to any new environmental consenting process applied to the EEZ. Under the Bill, the EPA will continue this function. It will also take on all the functions of the Environmental Risk Management Authority and provide technical advice to the Minister for the Environment on the development of RMA national environmental standards.

The Bill enables the EPA to take on any additional functions consistent with its objective, where directed by the Minister for the Environment, and also to carry out any functions conferred on it by other legislation. This provides the legislative scope for the EPA to take on additional functions within the EEZ.

After weighing up all these factors, the EPA does appear to be the most appropriate agency to administer new EEZ environmental legislation. It has expertise in environmental management. It is familiar with environmental impact assessment procedures and consenting. It is independent from government and from other activities promoting ocean industries. The Minister for the Environment appears to concur with the conclusion, as he has indicated that the EPA could eventually have a wider role in managing consenting within the EEZ.¹²¹

Effective environmental management requires strong linkages to be created between the development of policy and rules, consenting, enforcement and monitoring so that each function informs and reinforces the others. The scope of the EPA's role within the EEZ should therefore include all these functions, where possible.

Integration

Any new legislation for the EEZ will need to interface sensibly with that already applying to the coastal environment and marine area. Integration and coordination across physical, legislative and administrative boundaries will need to be addressed.

It will be important to achieve integration between management of the territorial sea and the EEZ. This is because the legal boundary between these two areas, in environmental management terms, is arbitrary and does not relate to any physical features or characteristics. The two areas are integrally linked through the flow of water and marine life.

Integration will also need to be achieved between the management of the environmental impacts of different activities, including fishing, shipping, exploration, mining and aquaculture, because these impacts can be cumulative on the marine environment.

In addition, integration is important between marine protection activities and environmental effects management, so that they can jointly contribute to maintaining healthy oceans ecosystems.



8 Options for new legislation in the EEZ

There are a number of significant weaknesses in New Zealand's environmental legal framework applying to the EEZ, as described in Chapter 6 and summarised in Figure 13. These include areas where there is:

- No adequate environmental legislation – including for oil, gas and minerals prospecting and mining; for other prospective new activities such as offshore aquaculture and energy generation; and for marine protected areas
- Poor implementation of environmental provisions in existing legislation – including for fisheries and marine mammals and wildlife protection
- Lack of mechanisms to achieve integrated, ecosystem-based and strategic management across the entire oceans system – including no legal framework for marine spatial planning

Some of these deficiencies can be addressed in the short term by filling the gaps, but achieving international best practice in integrated oceans management will require more fundamental reform of both the legislative framework and management arrangements. For this reason, both shorter term options to fill the gaps and longer term options are identified and evaluated in the sections below.

When assessing the pros and cons of different approaches it is important to keep in mind the following imperatives:

- *Urgency* – there is an urgent need to put in place an effective environmental management framework for deep-sea exploration and mining, particularly given the recent increase in activity in this area and the high potential environmental risks involved. Any solution needs to be able to provide such a framework, at least in the short term.
- *Scarce resources* – there are unlikely to be significant additional government resources available for the management of the EEZ in the short term. Therefore any solution needs to be cost-effective and avoid unnecessary additional bureaucracy or duplication of roles.
- *Not a clean slate* – any reform needs to be undertaken within the context of the current policy and political environment within New Zealand and be implementable in practice. This means that the design is likely to differ from what might be the case in an ideal world.
- *A lot at stake* – New Zealand's EEZ is an extraordinarily valuable resource for the country. It needs to be wisely managed if this value is to be maximised for current and future generations and we are to avoid disasters, such as have occurred elsewhere for lack of effective environmental governance.

Filling the gap in EEZ environmental legislation

Three options for filling the current gap in environmental legislation applying to the EEZ are described and evaluated below. These are extending the spatial application of the RMA, developing new environmental effects legislation and extending the scope of the Maritime Transport Act. The results of the analysis are summarized in Figure 14.

Extend the spatial application of the RMA

Description

Under this option, the RMA would be expanded to apply to the EEZ, with the result that an environmental effects-based consenting process would be applied to new activities within that area.

Under the RMA, applicants are required to prepare an assessment of environmental effects to accompany resource consent applications. Decision making is focused on assessing the significance of potential effects as well as on conformity with relevant plans, policies and part 2 of the Act. This effects-based approach is equally relevant to consenting within the EEZ.

The RMA provides for a single hearing process for matters of national significance through the board of inquiry process, as well as through direct referral to the Environment Court. To streamline the consenting process, notified resource consent applications within the EEZ could be treated in a similar manner to matters of national significance. Under this process, applications would have only one substantive hearing. The consenting process would be managed by the EPA, with the final decision being made either by the board of inquiry or the Environment Court. Appeal rights of applicants and submitters against this decision would be restricted to judicial review in the High Court.

Specialists in oceans management could be appointed to boards of inquiry established to determine EEZ consents. To retain continuity, a 'standing' board of inquiry or pool of oceans specialists could be established.

National environmental standards could identify activities which are likely to have only minor effects within the EEZ, and spatial areas which are low-risk for specific activities, with applications meeting these standards being non-notified. Provision could be made for non-notified resource consents within the EEZ to be determined by the EPA.

Currently, for matters of national significance, the relevant regional council becomes responsible for associated monitoring and enforcement activities once the consent has been granted. Councils have limited logistical capacity beyond a mile or two from the coast. An amendment to the RMA would need to allocate responsibility for such activities within the EEZ. This could appropriately be given to the EPA. If necessary the EPA, being a Crown entity, could call in the services of other Crown agencies, such as the Defence Force, the Ministry of Fisheries or Maritime New Zealand, to assist with enforcement.

Under the RMA, the relevant plan determines the status of each activity within a particular area, depending on the likely significance of environmental impacts. Potential categories are permitted, controlled, restricted discretionary, discretionary, non-complying and prohibited. The category a proposal falls into determines the legal test that applies, and therefore indicates how difficult it will be to get approval.

Where Part 3 of the RMA (which sets out duties and restrictions) requires a resource consent to be obtained for an activity, and there is no relevant rule in a plan, the activity is treated as discretionary.¹²² This enables a full environmental assessment of effects to be undertaken and consent to be declined if these are unacceptable.

Part 3 of the RMA could be amended to provide that consent is required before any relevant activities are undertaken within the EEZ. This would immediately apply a discretionary consenting regime to the area. This amendment would need to be drafted to make sure it met requirements under the Law of the Sea, including freedom of navigation, over-flight and the ability to lay cables and pipelines within the EEZ by other nationals. This would enable an RMA regime to be put into operation quickly to provide environmental scrutiny of new proposals.

A national policy statement and standards could subsequently be developed for the EEZ to provide more fine-tuned management guidance. In Part 5, the RMA provides for the development of national policy statements. A national policy statement for the EEZ could be developed under these provisions and would provide an effective mechanism for setting out government priorities for the area. It could include a spatial element. Consenting and other decisions would be required to have regard to these priorities under existing RMA provisions. The legislation currently provides some flexibility for the process to be undertaken when preparing such a policy statement. It may or may not include a board of inquiry, at the discretion of the Minister. National policy statements are not subject to rights of appeal.

The RMA provides for the establishment of national environmental standards. The scope of such standards is very wide and includes determining the activity status of specific activities, as well as setting methodological, quantitative and qualitative standards. A national environmental standard could be developed for the EEZ to provide a rules-based framework for consenting and could have a spatial element. Such standards take the form of regulations under the RMA.

The RMA also makes provision for marine spatial planning through the development of regional coastal plans. These provisions could be extended to the EEZ, to enable oceans plans to be developed.

Evaluation

Extending the ambit of the RMA to include activities within the EEZ would be a relatively simple and cost-effective solution to addressing current legislative gaps, particularly the lack of an environmental framework for exploration and mining activity.

The RMA already provides a comprehensive framework for integrated environmental management and this could be relatively easily extended over the EEZ. The Act has a clear purpose of 'sustainable management' which provides for environmental protection, while at the same time enabling economic activities. This 'overall broad judgement' approach to decision making, which is currently applied to land and the territorial sea, is equally appropriate for the EEZ.

The purpose of the RMA includes ecosystem-based management through the requirement, in section 5(2)(a), of 'safeguarding the life-supporting capacity of air, water, soil and ecosystems.'

In Part 2, the RMA has a comprehensive set of management principles to guide decision making, although these have not been specifically designed with the management of the EEZ in mind, and are not particularly applicable to that area. However, this gap could be remedied through the development of a national policy statement for oceans.

The RMA already applies to marine areas within the territorial sea, and in this area coexists with the existing fisheries, minerals allocation, marine pollution and marine protection regimes described in Section 6. There should therefore be few difficulties, arising from the interface with other existing legislation, in extending the RMA out to the EEZ.

Extending the RMA to the EEZ would help integrate management of the territorial sea and the EEZ. However, it would not solve the current problem of lack of integration between the RMA, fisheries, marine pollution and marine protection legislation, which requires more fundamental reform.

In summary, the RMA has been in place for almost 20 years. Its provisions have been well tested through the courts and their application is well understood in practice. They would therefore provide legal certainty. Recent amendments have streamlined processes, and the establishment of the EPA in 2009 has provided a centralised agency with the skills to process complex consents under the RMA.

Develop new environmental effects legislation

Description

This is the option that was adopted by the previous government and resulted in proposals for an Exclusive Economic Zone Environmental Effects Act. The proposed design for the new legislation was set out in a cabinet paper titled *Proposal for Exclusive Economic Zone Environmental Effects legislation*.¹²³

The proposed EEZ legislation aimed to only fill gaps in the regulation of the environmental effects of activities within the EEZ. Existing laws for fisheries and maritime transport, for example, were to continue largely as at present and activities fully regulated under those statutes were not to be covered by the new legislation. Activities that were to be covered included seabed mining, petroleum activities, energy generation, carbon capture and storage, and marine farming.

The proposed legislation was designed as enabling law, with rules and standards to be provided in EEZ environmental regulations. The Minister for the Environment was to be responsible for the development of the regulations.

The purpose of the proposed legislation was to provide for uses of EEZ resources and to regulate the effects of those uses in order to protect the environment and ensure that uses (or the effects of those uses, in the case of non-renewable resources) are environmentally sustainable.

The proposed legislation was to include a set of environmental objectives including:

- Ensuring the integrity of marine ecosystems (including ecosystem complexity, structure, function, productivity, dynamism, natural viability and boundaries)
- Maintaining biological diversity, including the physical features and biogenic structures that support biological diversity
- Protecting vulnerable areas or ecosystems from adverse environmental effects
- Avoiding, remedying or mitigating the adverse effects of activities
- Managing the cumulative effects of all activities on the receiving environment

The proposed legislation provided for the development of a policy statement which would identify high level environmental outcomes and environmental bottom lines and seek to achieve better alignment across marine management regimes. The policy statement could

also identify important or vulnerable areas and areas of importance to specific uses. It could address conflict between different uses and any cumulative impacts. No right of appeal to the Environment Court was to be provided in relation to the policy statement.

Activities were to be regulated through a rules and consenting framework. Rules would define effect thresholds for different categories of activity: permitted, discretionary and prohibited. An 'EEZ consent' would be required for any discretionary activities. Low-impact activities would be permitted activities and not require an EEZ consent if they complied with standards set in the rules. Larger-scale proposals, such as petroleum platforms, would require a comprehensive assessment of their effects and an EEZ consent.

All activities would still need to comply with any requirements in other legislation. This means that a permit for petroleum mining under the Crown Minerals Act would be required in addition to an EEZ consent.

An EEZ application would need to be accompanied by an 'impact assessment statement', identifying the environmental effects of the proposal, and also the effects on other interests including:

- Any lawful existing activity in the territorial sea or EEZ that may be affected
- Resource consents issued under the Resource Management Act 1991
- Historical and contemporary Treaty of Waitangi settlements
- Foreshore and Seabed Act 2004 instruments
- Māori cultural interests in the oceans

The Minister for the Environment was to decide EEZ consent applications and impose consent conditions. Consent was not to be granted if there would be significant adverse effects from the proposed activity on any of the defined interests above. Cumulative effects were also to be considered. Decision makers were to have the discretion to consider 'other matters' such as the economic, social and cultural wellbeing of New Zealand, but these were to be secondary to managing environmental effects. Monitoring was to be conducted to ensure compliance with consent conditions.

A precautionary approach was to be required by decision makers. Adaptive management tools were to be used to mitigate any lack of information about the marine environment and the environmental effects of individual activities. New types of activity, if approved, could have a staged work programme, with stringent monitoring requirements and the ability to revoke permission if the environmental effects exceeded set levels. It appears the proposed legislation would enable a permit to be refused in circumstances where there was uncertainty as to whether the mining activity could be carried out without significant adverse environmental effects.

Consent applications were to be publicly notified, with agencies, relevant iwi and persons with potential interest in the application to be directly notified. Submissions on a notified consent application could be made by any person.

The Ministry for the Environment was to be the administering agency for the legislation, responsible for providing policy advice on the legislation and for developing regulations and a policy statement for approval by the Minister for the Environment.

A new statutory office of EEZ Commissioner, within the Ministry for the Environment, was to be created by the legislation. When a complete application was submitted, the EEZ Commissioner was required to notify the consent application. The Commissioner was then to receive and analyse any submissions made in relation to the application and make recommendations to the Minister for the Environment. The Environment Court was to be given jurisdiction to hear appeals against decisions on EEZ consents. The Minister for the Environment has indicated that the EPA could play a role in managing the EEZ and could potentially assume the role of EEZ Commissioner.

Evaluation

The proposed legislation has many similarities to the RMA and appears closely based on it. This includes the provision for a policy statement and the regulation of activities through a rules and consent framework, with rules defining the effect thresholds for different categories of activity. The proposed 'impact assessment statement' closely resembles an assessment of environmental effects under the RMA. The proposed appeal to the Environment Court is similar to that under the RMA.

Key differences include the purpose, which appears to be designed to have a more 'use orientation' than the 'sustainable management' purpose of the RMA, although it is not clear that there would be much actual difference to the application of these two slightly differently worded purposes in practice. The new legislation would have a more comprehensive and up-to-date set of environment principles, but such principles could be included in a national policy statement for the EEZ prepared under the RMA.

The new legislation provides more explicit protection for existing uses, although recent case law under the RMA has provided considerable protection for existing uses in areas such as water allocation, and such principles are likely to be equally applicable to

existing uses in the EEZ. The new legislation proposes a more explicit adaptive management regime, but a similar approach is already being applied under the RMA to activities within the marine area, such as aquaculture.

The proposed legislation also proposes the use of regulations (which are not appealable) rather than regional coastal plans (which under the RMA can be appealed to the Environment Court) to provide the rules framework. Now, under the RMA, a similar approach can be achieved through the use of national environmental standards.

The similarities between this proposed legislation and the RMA are so strong, and the differences so small, that extending the RMA to the EEZ would appear to be a simpler mechanism to achieve essentially the same end. It would result in greater certainty than promulgating new legislation, as the provisions of the RMA are well-tested in the courts and well-understood. It would also provide an integrated approach for the management of the territorial sea and the EEZ. This is preferable to further proliferation and fragmentation of marine legislation. It would also avoid applying a different environmental management framework to the same activity, such as mining, depending on whether it lies within or outside an arbitrary 12 nautical mile line.

The draft EEZ legislation was prepared before the 2009 changes to the RMA, that simplified and streamlined it, and the establishment of the EPA. These recent developments arguably make the RMA a much better fit for environmental management within the EEZ. In EDS's view, it brings into question whether completely new EEZ legislation, as originally proposed, is now justified.

If the government does decide to proceed with this legislation, it has the potential to provide for a robust system of environmental consenting within the EEZ. However, a number of changes to the framework described above should be considered. These are set out in Appendix 2.

Expand the scope of the Maritime Transport Act

Description

The Maritime Transport Act currently addresses marine pollution, primarily resulting from discharges from ships and offshore drilling platforms. Its scope could potentially be expanded to include an effects-based consenting process applying to offshore exploration and mining activities, as well as to other new activities within the EEZ. Maritime New Zealand would administer the new provisions.

Such a regime could possibly be achieved through an amendment to Part XXVII of the Act to enable marine protection rules to be developed for environmental effects consenting. The process to develop marine protection rules includes public written submissions, but no public hearing of submissions and no right of appeal. The final rules are approved by the Minister of Transport.

In addition, a new section could be inserted into the Act requiring a permit to be obtained from the Director of Maritime New Zealand before an activity is undertaken within the EEZ, similar to the current requirements for dumping of waste within the EEZ, under section 261. The process to apply for a permit is set out in Part 180 of the marine protection rules and requires applications to be publicly notified if they would have more than a minor adverse effect on the marine environment or are clearly in breach of the London Convention.

When an application is publicly notified, interested parties can make written submissions and the Director must have regard to these when making a decision on the application. There is no requirement for a public hearing and no appeal rights against decisions not to notify or to grant applications.

Evaluation

The Maritime Transport Act does provide a framework which could incorporate environmental effects consenting. However, the Act is largely focused on the maritime transport system and does not have a clear environmental purpose or set of environmental principles to guide management. In addition, it does not incorporate ecosystem-based management approaches or provide for the development of strategic policies or spatial plans to guide decision making.

The consenting process under the legislation is not as transparent as that under the RMA, with members of the public only having the opportunity to make written submissions. Although this may mean a speedier initial process for applicants, it is likely to result in poorer quality decisions for the environment. This is because the scientific evidence on which the applicant relies to support its proposal is unlikely to be rigorously tested. It may also result in more costs and longer delays as, without a public hearing, disgruntled parties are more likely to resort to judicial review proceedings in the High Court.

Extending the scope of the Maritime Transport Act would increase the integration between environmental effects consenting and the management of marine pollution. However it would increase fragmentation between the management of environmental effects in the territorial sea and the EEZ. As with the other gap-filling options, it would also fail to improve integration with fisheries and marine protection.

	Extend the spatial application of the RMA	Develop new environmental effects legislation	Expand the scope of the Maritime Transport Act
Effectiveness	Applies a comprehensive and well-understood environmental consenting framework to new activities within the EEZ	Can be tailored to specifically meet EEZ management needs	Framework of legislation not a particularly good fit Lack of checks and balances to ensure quality decision making
Efficiency	Relatively simple and quick to implement Streamlined environmental consenting process available Legislation well tested in the courts Has existing interface with other legislation in the marine area	Creates uncertainty as new provisions are applied and tested in the courts Could include streamlined environmental consenting process	Would require new marine protection rules to be drafted Could include streamlined environmental consenting process
Transparency	Public submission and hearing process Applications heard by board of inquiry or Environment Court	Public submission and hearings process proposed Appeal rights to the Environment Court proposed	Public submission process No public hearings or rights to appeal on the merits
Integrated management	Integrates management of land, territorial sea and EEZ Fails to improve integration with fisheries, marine pollution and marine protection	Fragments management within and beyond territorial sea Further fragments marine management by adding another piece of legislation Fails to improve integration with fisheries, marine pollution and marine protection	Integrates marine pollution and environmental effects consenting within EEZ Fragments management within and beyond territorial sea Fails to improve integration with fisheries and marine protection
Ecosystem-based management	Yes, contained in RMA's purpose	Yes, contained in environmental objectives	No
Marine spatial planning	Yes, EEZ national policy statement and environmental standards could include spatial plan	Yes, policy statement could potentially include marine spatial plan	No

Figure 14: Evaluation of options to fill gap in EEZ environmental effects consenting

Filling the gap in marine protection legislation

The second significant gap in environmental legislation applying to the EEZ is the lack of provision for the establishment of marine protected areas. The following section describes and evaluates the possibility of filling this gap through passing the Marine Reserves Bill, which is currently before Parliament.

Description

The Marine Reserves Bill has been sitting before Parliament since 2002. Its provisions update the Marine Reserves Act 1971 and would enable marine reserves to be established within the EEZ.

The Bill has as its purpose the conservation of 'indigenous marine biodiversity in New Zealand's foreshore, internal waters, territorial sea and exclusive economic zone for current and future generations ...' (Clause 7).

The Bill only provides for fully-protected marine reserves where no fishing is allowed (clause 13) and not for a broader range of marine protected areas where some areas may be subject to lesser restrictions.

The Bill enables the Director-General of Conservation and any other person to prepare a proposal for a marine reserve (Clause 47). Proposals are required to go through a public submission process. The final decision is made by the Minister of Conservation, who then recommends the making of an Order in Council to create the reserve (Clause 67).

Evaluation

The Marine Reserves Act itself is dated and due for revision. As already indicated, the Marine Reserves Bill provides for marine reserves to be created within the EEZ. However, there are some potential problems with the Bill as it is currently drafted. These primarily reflect the age of the Bill (it is now almost nine years old) and the rapid development of international thinking in the field of marine protection over the past decade.

As described in section 4, the other countries examined all have broader legislation which provides for a range of marine protected areas, extending from those which are fully protected to those which allow a range of activities. For example, Canada's marine conservation areas are required to be divided into zones which include areas which are fully protected and those which allow sustainable use. Australia's Commonwealth marine reserves are categorised based on the IUCN reserve management principles which provide for strict protection as well as areas managed for resource use.

Newer regimes also emphasize the importance of establishing a *network* of representative marine protected areas, rather than isolated areas. For example, recent legislation in the United Kingdom places an obligation on the Minister for the Environment to create such a network which must satisfy a series of conditions set out in the Act (section 123).

Linkages are also being created between marine spatial planning and marine protected areas. In Australia, one of the prime roles of marine bioregional plans is to identify prospective marine protected areas. In the United Kingdom, marine conservation zones will be included in the new marine plans.

One of the fraught issues in marine protection is deciding who has the final say over whether a marine protected area is to be created. Currently, under the Marine Reserves Act, it is the Minister of Conservation with concurrence from the Ministers of Fisheries and Transport. Under the proposed Bill, the decision would become that of the Minister of Conservation alone. Anecdotally, this was one of the sticking points which delayed the Bill's passage into law.

If the Marine Reserves Bill is to be passed into law, consideration should be given to its redrafting to reflect current international thinking and practice, including:

- Expanding the scope of the legislation to provide for a range of marine protected areas, not just fully protected marine reserves
- Emphasizing the importance of establishing a *network* of representative marine protected areas
- Placing an obligation on government to establish such a network within a specified time frame in order to meet its international obligations
- Providing for an explicit linkage between marine protected areas and marine spatial planning, through regional coastal plans and a potential oceans plan for the EEZ
- Providing for an effective process to address conflict associated with the creation of marine reserves. This might include providing for an inquiry to be undertaken into marine reserve proposals by an independent body such as the Environment Court (similar to the process for water conservation orders) or a board of inquiry serviced by the EPA, before a final Ministerial decision is made
- Providing for the final decision to be made by one Minister, which could be a Minister who is given overall responsibility for oceans management.

Longer-term solutions

Possible longer-term solutions to the inadequacies of current oceans legislation include developing overlay legislation or undertaking more fundamental oceans reform. These two approaches are described and evaluated below.

Overlay legislation

Description

This approach comprises the development of broad environmental legislation which would overlay and not replace existing legislation and provide a consistent and integrated set of provisions which apply to the entire marine area.

This is the approach taken, to some extent, in the USA and Australia where broad environmental legislation overlays all activities. In these cases, the legislation applies equally to land and the marine area extending out to the EEZ. The Australian model is more extensive than that applied in the USA, with the Environmental Protection and Biodiversity Act 1999 providing an integrated management

framework for environmental management at a Commonwealth level. The legislation includes provisions for environmental assessments and approvals, marine bioregional planning, the protection of critical marine habitat and species, and the establishment of marine reserves.

In New Zealand, a new Oceans Act could overlay a common set of management principles, detailed policies (expressed in a marine policy statement), spatial plans (which could be incorporated as part of the marine policy statement) and oceans conservation zones across all activities undertaken within the EEZ and also potentially the territorial sea. Decision makers under other legislation, such as the RMA, Fisheries Act, Maritime Transport Act and Reserves Act, could be required to make decisions which are consistent with this principles, policy and planning framework.

Evaluation

Such an overlay approach enables an integrated approach to be taken to the management of the EEZ, while many activities are still also regulated under sectoral legislation. It avoids the need to significantly amend existing legislation. However, it would need to be well designed to avoid creating uncertainty and a more cumbersome regulatory system.

In the New Zealand situation, an overlay approach focused on providing common objectives and policies, and a common spatial planning framework, could help achieve a more integrated system without requiring additional environmental consents. An overlay approach has already been applied on a regional basis in the case of the Hauraki Gulf Marine Park Act 2000. Under the Act, a common set of matters of national significance and management objectives applies to fisheries, RMA and conservation management within the Hauraki Gulf Marine Park (although not to management under the Maritime Transport Act). A potential problem with this approach is that the overall objectives can end up being too broad and therefore having little practical effect.

Such an overlay approach could help achieve better integration in marine management and would provide a much stronger policy and planning framework to guide decision making. It would avoid the need for major legislative change. However, because it would not significantly change existing legislation and management arrangements, it would result in a more complex system and would not address many of the weaknesses in the underlying management regimes.

New integrated oceans legislation

Description

This option would involve more fundamental reform and the potential replacement of the myriad of existing legislation applying to the marine area with a new integrated Oceans Act. Such a process could be similar to the environmental law reform process undertaken in the late 1980s, which resulted in the passage of the RMA and the repeal of 78 statutes and regulations. It would streamline and simplify the current policy complexities and duplications.

The design of new legislation would need to be based on international best practice and could be expected to include the following elements:

- Environmental principles which incorporate ecosystem-based management, integrated management and the application of a precautionary approach
- Provision for marine spatial plans (which could be called 'oceans plans') to provide a proactive and strategic approach to marine management and to enable conflicts to be addressed. These could identify low risk "go" areas, as well as high risk "no-go" areas to give more certainty for investors in offshore activities
- A one-stop shop environmental consenting regime, within the framework of the oceans plans, which would provide a non-notified consenting process for simple low risk activities, and a full environmental assessment of effects for more risky activities
- Provision for the identification and creation of a network of representative marine protected areas (which could be called 'ocean conservation zones') in conjunction with a marine spatial planning process
- Effective and transparent processes which provide for collaboration and conflict resolution as well as checks and balances on decision making
- A separation of the functions of environmental regulation and the allocation of access to resources (such as petroleum, oil, minerals, fisheries and marine space)
- One agency, such as the EPA, given the prime responsibility for managing the oceans environment
- One Minister of the Crown given the prime responsibility for oceans

- Regional councils retaining the prime responsibility for managing a more narrowly-defined coastal environment (encompassing primarily the marine area affected by activities on land)
- Provision for effective oceans enforcement capacity
- An active role provided for Māori in oceans governance
- A strong link between science and management, which may include the establishment of an independent Oceans Science Advisory Group, and an oceans web-based information system

Evaluation

Much legislation in the marine area remains outdated and is becoming increasingly unworkable. Management remains very fragmented. The need for reform has been officially recognised since at least the late 1990s.¹²⁴ Making progress in this area has been delayed by controversy over Māori ownership of the foreshore and seabed, which erupted in June 2003.¹²⁵ This issue is in the process of resolution, with the likely passage of the Marine and Coastal Area (Takutai Moana) Bill through Parliament shortly. Reform of marine legislation remains significant unfinished business. The prospective resolution of foreshore and seabed ownership issues creates the opportunity for long-needed comprehensive reform in the marine area.

Such a reform process would enable oceans governance arrangements to be designed specifically for New Zealand, reflecting current scientific knowledge about ocean ecosystems and international best practice in oceans management. It would enable the issues of marine use and marine conservation to be addressed in an integrated manner across all activities. It could provide an active role for Māori in oceans governance. It could proactively address conflicts between different marine users, as well as between users and conservation imperatives. It could promote collaboration. It could design more effective conflict resolution procedures, to ensure that all stakeholders have an adequate opportunity to be heard, and that decisions are robust.

There are two main models for undertaking such a reform process. The first is to task an inter-departmental group of officials to develop proposals. This was the model adopted for the oceans policy process which commenced in July 2000. The process ran for almost three years until it stalled in June 2003. By that stage a discussion document had been prepared ready for cabinet approval prior to public consultation. There was still some way to go before legislation would have been prepared. The process relied primarily on stakeholder input with little incorporation of science or international comparative research.¹²⁶

Another example of where an officials-led initiative failed to result in timely policy change is the Sustainable Water Programme of Action. This was established in 2003, but by 2008 when it was disestablished, there were few tangible outcomes.

An alternative model is to task an independent body with developing a set of recommendations for Ministers to consider. This was the approach taken with the reorganisation of local government in Auckland. A Royal Commission on Auckland Governance was established to investigate and report on desirable changes for local government in the region. The terms of reference for the Royal Commission were confirmed on 30 October 2007. The Commission reported back 17 months later in March 2009.

The Royal Commission undertook an extensive formal public consultation process, commissioned research on various topics, held meetings, hui and workshops with interested groups, and went on an international study tour to investigate governance arrangements in other large cities.¹²⁷ It provided a set of robust and clear recommendations, on a very complex governance issue, which enabled the government to move quickly and implement the reforms in time for the November 2010 local government elections.

A Royal Commission was also established to look into and report on the issues surrounding genetic modification in New Zealand. The Commission was established on 8 May 2000 and reported back on 27 July 2001. Many of its recommendations were adopted by government and led to legislative changes.

A similar approach could potentially be applied to oceans reform. A *Royal Commission on Oceans Governance* could be appointed to develop recommendations for new legislation and institutional arrangements. Similar to the Royal Commission on Auckland Governance, it could be tasked with undertaking a comprehensive review of the current oceans legislative and management framework, reviewing international best practice, canvassing Māori, stakeholder and public opinion, and developing recommendations for a way forward. The work of the Royal Commission could be informed by an Oceans Science Advisory Panel comprised of New Zealand's top oceans scientists.



9 Recommendations

Based on the analysis undertaken in the previous sections of this paper, EDS makes the following recommendations to government:

Recommendation 1: Increase capacity of offshore petroleum inspection service

Significant additional resources should be made available to the inspection service for offshore petroleum activities as a matter of urgency, including increasing the number of inspectors.

Recommendation 2: Provide for oceans governance reform

A *Royal Commission on Oceans Governance* should be established with terms of reference providing for a comprehensive review of the current legislative and institutional framework applying to the territorial sea, EEZ and continental shelf. The Commission should be tasked with reviewing international best practice and providing recommendations on any changes required to provide for an effective oceans governance system in New Zealand for the next 30-50 years.

Recommendation 3: Put in place environmental effects legislation for the EEZ

In the interim, immediate amendments should be made to the RMA to achieve the following:

- Extend its application to the EEZ and continental shelf beyond
- Provide that no prospecting or mining activities, aquaculture, energy generation and other relevant activities may take place within the EEZ and continental shelf without a resource consent
- Provide for a streamlined process to determine resource consent applications for activities within the EEZ and continental shelf, similar to that applied to matters of national significance
- Provide that the EPA has the overall responsibility for monitoring and enforcement of EEZ consents, with the ability to seek assistance from other government agencies

Alternatively, new environmental effects legislation for the EEZ should be passed into law as a matter of urgency.

Recommendation 4: Strengthen the EEZ management framework

The EEZ management framework should be strengthened through:

- The immediate creation of additional positions within the EPA to enable recruitment of a critical mass of staff with oceans-related expertise
- The identification of suitable candidates with oceans-related expertise for membership of a standing board of inquiry to determine resource consent applications within the EEZ
- The establishment of an Oceans Science Advisory Board, to provide independent advice to government, the EPA and the Royal Commission on Oceans Governance





10 Conclusions

New Zealand is fortunate to have a very large and diverse marine area. It supports a wide array of marine life with high biodiversity in seabirds, marine mammals and invertebrates. It contains significant petroleum, gas and mineral resources. It also supports a substantial fishing industry.

How the EEZ is managed is of critical national and international importance. There is much at stake.

The current legislative framework for managing this area is inadequate. It is fragmented, much of it is dated, and there are significant gaps. New Zealand has fallen far behind international best practice in oceans management and is failing to meeting its international obligations.

There is wide acknowledgement that the status quo is inadequate and that legislative reform is needed. Such reform is urgent. Deep-sea prospecting activity is increasing. The framework for oceans management needs to be strengthened before a potentially serious incident occurs.

Oceans policy remains unfinished business. If addressed with wisdom and foresight, new oceans legislation will provide a sound platform for New Zealand's oceans management well into the twenty-first century.



Appendix 1: Scientific criteria for identifying ecologically or biologically significant marine areas in need of protection in open-ocean waters and deep-sea habitats

Criteria	Definition	Rationale	Examples	Consideration in application
Uniqueness or rarity	Area contains either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features	Irreplaceable Loss would mean the probable permanent disappearance of diversity or a feature, or reduction of the diversity at any level.	Open ocean waters Sargasso Sea, Taylor column, persistent polynyas. Deepsea habitats endemic communities around submerged atolls; hydrothermal vents; sea mounts; pseudo-abyssal depression	Risk of biased-view of the perceived uniqueness depending on the information availability Scale dependency of features such that unique features at one scale may be typical at another, thus a global and regional perspective must be taken
Special importance for life history stages of species	Areas that are required for a population to survive and thrive.	Various biotic and abiotic conditions coupled with species-specific physiological constraints and preferences tend to make some parts of marine regions more suitable to particular life-stages and functions than other parts.	Area containing: (i) breeding grounds, spawning areas, nursery areas, juvenile habitat or other areas important for life history stages of species; or (ii) habitats of migratory species (feeding, wintering or resting areas, breeding, moulting, migratory routes).	Connectivity between life-history stages and linkages between areas: trophic interactions, physical transport, physical oceanography, life history of species Sources for information include: e.g. remote sensing, satellite tracking, historical catch and by-catch data, vessel monitoring system (VMS) data. Spatial and temporal distribution and/or aggregation of the species.
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.	To ensure the restoration and recovery of such species and habitats.	Areas critical for threatened, endangered or declining species and/or habitats, containing (i) breeding grounds, spawning areas, nursery areas, juvenile habitat or other areas important for life history stages of species; or (ii) habitats of migratory species (feeding, wintering or resting areas, breeding, moulting, migratory routes).	Includes species with very large geographic ranges. In many cases recovery will require reestablishment of the species in areas of its historic range. Sources for information include: e.g. remote sensing, satellite tracking, historical catch and by-catch data, vessel monitoring system (VMS) data.

<p>Vulnerability, fragility, sensitivity, or slow recovery</p>	<p>Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.</p>	<p>The criteria indicate the degree of risk that will be incurred if human activities or natural events in the area or component cannot be managed effectively, or are pursued at an unsustainable rate.</p>	<p>Vulnerability of species Inferred from the history of how species or populations in other similar areas responded to perturbations.</p> <p>Species of low fecundity, slow growth, long time to sexual maturity, longevity (e.g. sharks, etc).</p> <p>Species with structures providing biogenic habitats, such as deepwater corals, sponges and bryozoans; deep-water species.</p> <p>Vulnerability of habitats Ice-covered areas susceptible to ship-based pollution.</p> <p>Ocean acidification can make deepsea habitats more vulnerable to others, and increase susceptibility to human induced changes.</p>	<p>Interactions between vulnerability to human impacts and natural events</p> <p>Existing definition emphasizes site specific ideas and requires consideration for highly mobile species</p> <p>Criteria can be used both in its own right and in conjunction with other criteria.</p>
<p>Biological productivity</p>	<p>Area containing species, populations or communities with comparatively higher natural biological productivity.</p>	<p>Important role in fuelling ecosystems and increasing the growth rates of organisms and their capacity for reproduction</p>	<p>Frontal areas Upwellings Hydrothermal vents Seamounts polynyas</p>	<p>Can be measured as the rate of growth of marine organisms and their populations, either through the fixation of inorganic carbon by photosynthesis, chemosynthesis, or through the ingestion of prey, dissolved organic matter or particulate organic matter</p> <p>Can be inferred from remote-sensed products, e.g., ocean colour or process-based models</p> <p>Time-series fisheries data can be used, but caution is required</p>
<p>Biological diversity</p>	<p>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</p>	<p>Important for evolution and maintaining the resilience of marine species and ecosystems</p>	<p>Sea-mounts Fronts and convergence zones Cold coral communities Deep-water sponge communities</p>	<p>Diversity needs to be seen in relation to the surrounding environment</p> <p>Diversity indices are indifferent to species substitutions</p> <p>Diversity indices are indifferent to which species may be contributing to the value of the index, and hence would not pick up areas important to species of special concern, such as endangered species</p> <p>Can be inferred from habitat heterogeneity or diversity as a surrogate for species diversity in areas where biodiversity has not been sampled intensively.</p>
<p>Naturalness</p>	<p>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</p>	<p>To protect areas with near natural structure, processes and functions</p> <p>To maintain these areas as reference sites</p> <p>To safeguard and enhance ecosystem resilience</p>	<p>Most ecosystems and habitats have examples with varying levels of naturalness, and the intent is that the more natural examples should be selected.</p>	<p>Priority should be given to areas having a low level of disturbance relative to their surroundings</p> <p>In areas where no natural areas remain, areas that have successfully recovered, including reestablishment of species, should be considered.</p> <p>Criteria can be used both in their own right and in conjunction with other criteria.</p>

Appendix 2: Suggested changes to proposed EEZ Environmental Effects legislation

1. The set of *environmental objectives* should be amended as follows, especially to bring them in line with the internationally accepted criteria for identifying marine areas in need of protection as set out in Appendix 1, and to recognize contemporary scientific thinking (changes in bold):¹²⁸
 - (a) Ensuring the integrity of marine ecosystems (including ecosystem complexity, structure, function, productivity, dynamism, natural viability and boundaries)
 - (b) Maintaining biological diversity, including the physical features and biogenic structures that support biological diversity
 - (c) Maintaining diverse and heterogenous marine habitats and connectivity between different habitats and populations**
 - (d) Protecting unique or rare populations, communities, habitats, ecosystems and geomorphological features from adverse environmental effects**
 - (e) Protecting **threatened species, keystone species and** vulnerable areas and ecosystems from adverse environmental effects
 - (f) Avoiding **where possible**, otherwise remedying or mitigating, the adverse effects of activities
 - (g) Managing the cumulative effects of all activities on the receiving environment
2. Great care needs to be taken in drafting any *information principles* to ensure that they are legally clear, not easily subject to legal challenge and are effective in applying a precautionary approach to decision making for the benefit of the environment. Several decisions made by the Minister of Fisheries under the Fisheries Act have been successfully judicially reviewed on the basis that the information principles in the Act were not properly applied. It is important that this legal minefield is not replicated in new legislation.
3. It should be made clear that an *adaptive management approach* is not appropriate where there is a risk of causing irreversible environmental damage, including the loss of biodiversity.
4. References to the '*EEZ Commissioner*' need to be changed to refer to the EPA. The role of the EPA statutory Māori advisory committee should include EEZ matters.
5. The scope of the *policy statement* needs to be expanded to include marine spatial planning and the identification of areas requiring protection from adverse effects (in order to give effect to the environmental principles).
6. All rules and EEZ consents should be required to 'give effect' to the policy statement, rather than 'have regard to' it. The latter is a weak requirement and would allow national policy to be outweighed by other considerations on a case-by-case basis. This would undermine the coherence of national policy and the ability to manage cumulative effects.
7. A *board of inquiry process* needs to be provided for the consideration of draft EEZ policy statements and regulations, so that these proposals are subject to robust independent review. The board could hear public submissions and make recommendations to the Minister for the Environment.
8. It is important that decisions on EEZ consents are subject to independent scrutiny. This could be achieved through an appeal to the Environment Court of the decision of the Minister for the Environment.

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