Australia's Report to the Convention on Biological Diversity on the Implementation of the Program of Work on Marine and Coastal Biodiversity

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Introduction

Australia is responsible for the world's third-largest marine jurisdiction, covering an area of around 14 million square kilometres. The area of ocean over which Australia has sovereign rights is larger than our continental land mass. Our Exclusive Economic Zone (EEZ) extends from the tropics (9°S), through temperate waters (to 47°S), and includes Antarctic waters (to almost 70°S), encompassing a vast array of highly diverse marine habitats and ocean features. The coastline of Australia's mainland and island territories extends to around 60,000 kilometres.

Australian waters are recognised globally for their significant biodiversity and endemism, with an estimated 60% of marine species in temperate waters unique to the area.

The marine areas under Australian jurisdiction are utilised by a large number of users for economic, recreational, cultural and subsistence purposes. These include commercial and recreational fishing, offshore petroleum exploration and development, Indigenous uses including sourcing food, shipping, tourism, surfing, swimming and diving.

Accordingly conservation and sustainable use policies, programs and measures need to take into account the unique natural characteristics of the Australian marine environment as well as the diverse uses and stakeholders.

The Australian, state and territory governments together have in place a suite of policies, programs and initiatives to protect Australia's unique marine and coastal environments, and which implement the Program of Work on Marine and Coastal Biodiversity.

Programme element 1: Implementation of integrated marine and coastal area management (IMCAM)

1.1: To apply appropriate policy instruments and strategies, including building of capacity, for the effective implementation of IMCAM

Australia is implementing a number of policy instruments and strategies that promote effective Integrated Marine and Coastal Area Management (IMCAM). The most prominent and comprehensive examples are the Marine Bioregional Planning program, the development of a National Representative System of Marine Protected Areas (NRSMPA) and the Framework for a National Cooperative Approach to Integrated Coastal Zone Management The Marine Bioregional Planning program is implemented under the *Environment Protection and Biodiversity Conservation Act 1999* (EBPC Act) to provide a clear focus on conservation and sustainable management of the marine environment and offer enhanced certainty for industry regarding marine-related activities. The NRSMPA is an initiative of the Australian, state and territory governments to establish a comprehensive network of marine reserves throughout Australia's marine jurisdiction, based on the Integrated Marine and Coastal Regionalisation of Australia[1]. The Framework for a National Cooperative Approach to Integrated Coastal Zone Management is a national agreement between Australian, state and territory governments to deal with coastal issues in an integrated way.

Under the Marine Bioregional program, Bioregional Profiles are being developed to provide a detailed picture of each of Australia's marine regions including key habitats, species, natural processes, heritage values, and human uses. This information is used to develop Marine Bioregional Plans that will act as key documents to guide Commonwealth, state and territory governments, as

[1] All reports associated with IMCRA v4.0 and previous marine regionalisations are available at: www.environment.gov.au/coasts/mbp/imcra/index.html.

well as sectoral managers and industry, about the key conservation issues, threats to long-term ecological sustainability and conservation priorities in each marine region. Within the context of the assessment and approval provisions of the EPBC Act, the Marine Bioregional Plans will assist in understanding the impacts of potential actions on the Commonwealth marine environment and determining the circumstances under which actions can take place, thereby ensuring sectoral and cross-sectoral integration of biodiversity conservation measures.

The Marine Bioregional Plans will inform the development of the NRSMPA in Commonwealth waters. Australia's marine protected areas are designed primarily to ensure protection of Australia's marine biodiversity, and are managed through zones targeting strict wilderness conservation through to 'multiple-use' consistent with the conservation objectives. Australia has adopted the set of protected area management categories defined by the International Union for the Conservation of Nature (IUCN), which provide consistency in comparing protected areas across Australia.

Extensive stakeholder engagement including Commonwealth, state and territory and government agencies, industry representatives, indigenous communities, researchers and environmental organisations is central to the effectiveness of the system. The structured planning process, use of decision-making guidelines in designing the NSRMPA, and the engagement of the community in this program assist in providing greater certainty for future coastal management and resource use.

Australia is a supporter of the United Nations' non-legally binding Global Program of Action for the Protection of the Marine Environment from Land-based Activities (GPA). Australia's National Program of Action under the GPA, published in 2006, sets out the specific activities to address land-based sources of pollution and emphasises the connections between catchments, river systems, coastal estuaries, the marine environment and the importance of these ecosystems to Australian society.

One of the strategies comprising Australia's National Program of Action under the GPA is the Framework for a National Cooperative Approach to Integrated Coastal Zone Management. An implementation plan for the framework was agreed in May 2006. This aims to protect the coastal environment and to safeguard coastal industries and communities by focusing on five coastal issues requiring national collaboration: land- and marine-based sources of pollution; managing climate change; introduced pest plants and animals, planning for population change; and capacity building for coastal managers and communities. Implementation of this framework is a collaborative exercise between Commonwealth, state and territory, and local governments.

Australia is party to a number of regional initiatives to encourage integrated protection and management of coastal marine environments. For example Australia is actively engaged in the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security, which is a collaborative approach to coral reef management for Indonesia, Malaysia, the Philippines, the Solomon Islands, Timor Leste and Papua New Guinea. The Australian Government is supporting the initiative through the provision of scientific and governance expertise.

A number of joint government arrangements have been developed to address marine conservation that require collaboration between a range of stakeholders. The International Plan of Action for the Conservation and Management of Sharks was developed in 1999 by member countries of the Food and Agriculture Organisation of the United Nations (FAO). In response, Australia developed a National Plan of Action for the Conservation and Management of Sharks (Shark-plan) in 2004. The Shark-plan coordinates national actions for the long-term management and conservation of Australia's shark resources, responding to conservation and management issues and promoting ecologically sustainable development of shark stocks. A review of Shark–plan has recently

commenced in consultation with stakeholders to determine the extent to which it has achieved its objectives. The outcomes of the review will inform the development of a revised plan.

In 2003, an inter-governmental working group was established to develop a National Seal Strategy Group (NSSG), aimed at ensuring a coordinated national approach to managing human-seal interactions. The NSSG developed the National Strategy to Address Interactions between Humans and Seals: Fisheries, Aquaculture and Tourism. The Strategy aims to assist the commercial fishing, aquaculture and tourism sectors to understand legislation protecting seals in Australian waters, and guide industry efforts to reduce any adverse impacts on seals while maintaining the economic and ecological sustainability of those industries. It includes specific objectives and actions to be undertaken between 2007–2011 to address adverse human-seal interactions, identifies the agencies and organisations responsible for implementing each action and gives timelines and performance indicators to assist in assessing progress and evaluating outcomes. The strategy is being implemented jointly by the Australian and relevant state governments.

Since 2004 the Australian Government has allocated $603.8 million towards a range of measures to respond to threats associated with an increase in illegal foreign fishing activity in Australia's northern waters. Significant progress has been made in reducing the number of incursions into northern waters, with apprehensions falling from 367 in 2005-06 to 216 in 2006-07 and 156 in 2007-08.

In addition to maintaining enhanced surveillance and enforcement measures, Australia is actively working with our northern neighbours in several forums on a range of initiatives to address illegal, unreported and unregulated fishing, and on improving fisheries management in neighbouring areas. In 2007, Australia and Indonesia initiated a *Regional Plan of Action to Promote Responsible Fishing Practices and Combat Illegal, Unreported and Unregulated Fishing in the Region* (RPOA) along with nine other South-East Asian countries. The RPOA aims to increase and strengthen the overall level of fisheries management in the region in order to optimise the benefits gained from adopting responsible fishing practices including combating IUU fishing. Australia and Indonesia also cooperate on marine affairs and fisheries management and conservation issues under the Australia-Indonesia Ministerial Forum and Working Group on Marine Affairs and Fisheries.

1.2: To undertake direct action to protect the marine environment from negative impacts

Activities that may have a negative impact on marine environment are controlled under a number of pieces of legislation. At the national level, the EBPC Act is the primary mechanism for ensuring environmental considerations are included in planning and decision-making processes across all sectors. In addition, the *Environment Protection (Sea Dumping) Act 1981* regulates the disposal of wastes and other matter in Australian waters and from Australian vessels or aircraft in any other part of the sea. The Petroleum (Submerged Lands) (Management of Environment) Regulations 1999 - made under the *Petroleum (Submerged Lands) Act 1967* govern offshore petroleum operations[2].

The EPBC Act and the *Fisheries Management Act, 1991* both provide for the sustainable use of fisheries resources and the conduct of any related activities in a manner consistent with the principles of ecologically sustainable development and the exercise of a precautionary approach. In particular, this framework focused on the impact of fishing activities on non-target species and the long term sustainability of the marine environment. A number of the priority programs and direct

[2] Weblink to the environmental regulations that govern offshore petroleum operations: http://www.austlii.edu.au/au/legis/cth/consol_reg/ploer1999616/

activities being implemented under the EPBC Act for the protection of the marine environment are detailed below.

Marine bioregional planning

As described in section 1.1, Bioregional Profiles, which includes extensive information on ecological and environmental values, human uses and heritage values are being developed for four[3] defined marine regions. These Bioregional Profiles are being used to develop Marine Bioregional Plans, which detail the various statutory obligations under the EPBC Act that apply in each region, existing conservation and management measures, threats to long-term sustainability and future management priorities and actions for areas within each region. All four plans are expected to be completed in 2010, and will act as key documents to guide decisions and actions by the Australian Government, sectoral managers and industries in relation to the marine environment. In particular, the plans will guide decisions on activities proposed in the Commonwealth Marine Area referred for assessment and approval under the EPBC Act.

A national representative system of marine protected areas

The NRSMPA is designed to contribute to the long-term ecological viability of marine and estuarine systems, maintain ecological processes and systems, and protect Australia's marine biological diversity at all levels.

Major advances have been made in the development of the NRSMPA in the past five years. Since 2003 approximately 240,000 square kilometres of ocean has been included in the NRSMPA, and the total estate covers more than 900,000 square kilometres.

Some of the major achievements since 2003 include:

- Establishment of the Australian Government's south-east network of 13 MPAs encompassing 226,155 square kilometres of waters.
- New zoning for the Great Barrier Reef Marine Park. The proportion of the multiple-use Marine Park protected by 'no-take' zones increased to more than 33%, protecting representative examples of each of the 70 mapped broad habitat types or bioregions.
- Declaration of the Great Barrier Reef Coast Marine Park, a MPA protecting coastal waters between the Great Barrier Reef Marine Park under National jurisdiction and the coast of the State of Queensland. This MPA was specifically designed with complementary zoning arrangements to those in the adjacent Great Barrier Reef Marine Park.
- Declaration of the Port Stephens – Great Lakes Marine Park and the Bateman's Marine Park in the state of New South Wales, so that one-third of that state's marine jurisdiction is now protected by MPAs.

The revision of the zoning network in the Great Barrier Reef (GBR) Marine Park has delivered significant outcomes, including:

- coral trout numbers increasing by 31-75% on a majority of reefs that were closed to fishing after as little as 1.5- 2 years;
- a marked reduction in outbreaks of Crown of Thorns starfish (COTS) in the no-take areas closed to fishing (the relative frequency of COTS outbreaks on reefs open to fishing was 3.75 times higher than on no-take reefs).[4]

Ecosystem-based management of fisheries

[3] Marine Bioregional Plans are being developed for the South-west, North, North-west marine regions, and East marine regions. A plan already exists for the South-east, having been developed under an earlier regional marine planning framework. Once the other plans are complete, the South-east plan will be reviewed to ensure consistency with the other plans.

[4] *Current Biology*, Vol 18, 2008

The implementation of ecosystem-based management regimes which consider the impact of fishing on all aspects of the marine ecosystem, as well as the economic and social management outcomes, is being pursued in all Australian jurisdictions. Management of Commonwealth fisheries occurs under the *Fisheries Management Act 1991* and the *Fisheries Administration Act 1991*, which consider the environmental effects of fishing and pursue ecologically sustainable development. In addition, Commonwealth fisheries and state and territory fisheries with an export component are assessed under EPBC Act in accordance with the Guidelines for the Ecologically Sustainable Management of Fisheries, 2nd Edition.

Legislated species protection, species recovery, habitat protection and threat abatement activities
Legislation is in place in all Australian jurisdictions making it an offence to harm protected species and providing for species recovery activities. Under the EPBC Act, listed "matters of national environmental significance" (NES) relevant to the coastal and marine environments include threatened and migratory species, world heritage areas, wetlands of international importance and the Commonwealth marine environment. It is illegal to undertake any action that will have, or is likely to have, a significant impact on these matters without assessment and approval under the EPBC Act. The Assessment and Approval Process is described further in section 4.1.

The EPBC Act provides for the development and implementation of Recovery Plans to stop the decline, and support the recovery, of priority listed threatened species or listed threatened ecological communities in Australian waters. The Australian Government Minister for the Environment, Heritage and the Arts may also decide to have a threat abatement plan for a listed key threatening processes[5] established under the Act. Threat abatement plans provide for research, management, and other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities. Implementing the plan should assist the long term survival of affected native species or ecological communities in the wild. A threat abatement plan is already in place for the incidental catch of seabirds during longline fishing, with another under development for the impacts of marine debris on vertebrate marine life.

Industry guidelines for seismic surveys (EPBC Act Policy Statement 2.1)
Whales and dolphins may be sensitive to certain human-made sound levels, potentially resulting in physical and/or behavioural impacts. As the effects of seismic surveying on whales are not fully understood, precautionary mitigation measures aimed at preventing injury and minimising the risk of biologically significant behavioural changes are being applied to ensure their protection.

Guidelines have been developed with the goal of minimising the likelihood of injury or hearing impairment of whales. All seismic surveys referred under the EPBC Act are assessed on a case-by-case basis, taking into account the local environmental sensitivities and the precautionary approach contained within the seismic guidelines to determine whether they may proceed.

National system for the prevention and management of marine pest incursions
In 2005 Australian governments formalised an agreement to protect the marine environment and industries from the impacts of introduced marine species through a National System for the Prevention and Management of Marine Pest Incursions. The three primary elements of the National System are: marine pest prevention; emergency response to pest incursions; and ongoing management and control of established pests. Further information on the work being implemented under this system is provided in sections 5.1 to 5.3.

Prevention of pollution from ships and boats

[5] A threatening process is defined as a key threatening process if it threatens or may threaten the survival, abundance or evolutionary development of a native species or ecological community

Prevention of pollution from vessels in Australian waters is based on active application and enforcement of the *International Convention for the Prevention of Pollution from Ships, 1973*, as subsequently modified and other relevant International Maritime Organisation (IMO) conventions to which Australia is Party. Commonwealth legislation, and in some cases complementary state and Northern Territory legislation implements the MARPOL annexes covering pollution from oil, noxious liquid substances, harmful substances in packaged forms, sewage, garbage, and airborne pollutants.

Australia also implements a National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances. The National Plan is an integrated government and industry organisational framework that enables effective responses to marine pollution incidents and designates competent national and local authorities. The Plan includes: national Marine Oil and Chemical Spill Contingency Plans; detailed state, local and industry contingency plans; an adequate level of strategically positioned response equipment; and a comprehensive national training program, including conducting regular exercises.

Offshore petroleum operations

The *Petroleum (Submerged Lands) Management of the Environment 1999 Regulations* require offshore petroleum operators to submit detailed environment plans for assessment and approval before any significant activity (drilling of a well, seismic survey) can be conducted by a petroleum company in their permit. The regulations are intended to ensure that any petroleum activity is carried out in a way that is consistent with the principles of ecologically sustainable development. Environment plans involve environmental performance objectives and standards, as well as measurement criteria for determining whether the objectives and standards are met.

Land based impacts on the marine environment

Australia has a number of major initiatives aimed at limiting the impacts of land-based activities on the marine environment.

In 2007-08 the Australian Government established Community Coastcare as part of the $2.25 billion *Caring for our Country* package of activities, to improve and better protect coastal environments and critical aquatic habitats. Community Coastcare projects will contribute to Caring for our Country national priorities by protecting and rehabilitating Coastal environments and critical aquatic habitats and enhancing community skills, knowledge and engagement with Indigenous Australians, volunteers and coastal communities.

Also part of the *Caring for our Country* package is the Reef Rescue initiative, a comprehensive $200 million, five-year plan, commencing in 2008-09, to tackle climate change and the impacts of declining water quality on the Great Barrier Reef. The initiative will:

- provide grants to accelerate and expand efforts to improve agricultural land management practices;
- build partnerships with land managers to assist them to make changes;
- invest in research and development to improve understanding of the link between land management practices and their environmental impacts, and to trial new technologies and practices;
- provide funding towards a water quality monitoring and reporting program; and
- foster partnerships between Traditional Owners and Great Barrier Reef managers and develop Traditional Use of Marine Resource Agreements.

Reef Rescue will be integrated with the Reef Water Quality Protection Plan (Reef Plan). The Reef Plan is a mechanism for catalysing, bringing together and coordinating actions to address water

quality impacts on the Great Barrier Reef. The goal of the Reef Plan is to halt and reverse the decline in the quality of water entering the Great Barrier Reef over a period of ten years.

The National Water Quality Management Strategy (NWQMS) has been developed jointly by the Australian Government and state and territory governments. Implementation of NWQMS is mostly carried out through the state governments. The Australian Government supports the development and implementation of Water Quality Improvement Plans for coastal water quality hotspots, which are prepared consistently with the Australian Government's Framework for Marine and Estuarine Water Quality Protection (based on the NWQMS).

The above activities are being delivered consistently with Australia's National Program of Action under the GPA.

Assessing and addressing the barriers to implementation

The Australian Government has commissioned an independent review of the EPBC Act, which is to be completed by 31 October 2009. This review will assess the operation of the Act and the extent to which its objectives have been achieved, so as to ensure its continued effectiveness. In particular, the review will examine the:

- Operation of the EPBC Act generally;
- Extent to which the objectives of the EPBC Act have been achieved;
- Appropriateness of current matters of National Environmental Significance; and
- Effectiveness of the biodiversity and wildlife conservation arrangements.

1.3: To develop guidelines for ecosystem evaluation and assessment, paying attention to the need to identify and select indicators, including social and abiotic indicators that distinguish between natural and human-induced effects.

As part of the Australian Government's four-year Marine Bioregional Planning program, "key ecological features" of the Commonwealth marine environment will be identified. These key ecological features will be the focus of ongoing monitoring and assessment through a program currently being developed. This work involves the establishment of a broader framework to monitor and assess marine ecosystem health of the Commonwealth marine environment, including the identification of a national set of indicators of marine ecosystem health.

The Australian Government has also established arrangements to monitor and assess the performance of specific management programs to conserve marine biodiversity and protect the marine environment. These programs are focused on management of Commonwealth Marine Reserves, sustainability of commercial fisheries and recovery of threatened species. Once completed, the Marine Bioregional Plans will consolidate information on how the Australian Government measures the effectiveness of its marine protection and conservation programs at a bioregional scale.

Performance assessment of existing Commonwealth marine reserves is being undertaken on a regular basis. These assessments investigate a number of parameters that are measurable and can be affected by management, for example assessing species targeted by illegal fishing, or species specifically protected through threat abatement plans prepared under the EPBC Act. Research and monitoring as part of MPA management plans is mandated under the EPBC Act and considers the status of the ecosystem in each Reserve. This is also undertaken to improve understanding of ecosystem evaluation. The performance of MPAs is reported annually by the Australian Government Director of National Parks.

The statutory basis for protection, use and management of the state of Victoria's marine reserves is established under the *National Parks Act 1975*. An annual report on the working of the *National Parks Act 1975* is required to be provided to the Minister and tabled in the Victorian Parliament. The performance assessment framework for the system of Victorian marine national parks and sanctuaries is outlined in the *Management Strategy for Victoria's System of Marine National Parks and Sanctuaries 2003-2010*. It covers ecological and environmental conditions, management effectiveness, and social indicators such as awareness, attitudes and visitation.

The Tasmanian Government released a background report as part of the development of the 2001 *Tasmanian Marine Protected Areas Strategy* that included an evaluation of the performance of its marine reserve system. Long-term monitoring programs and short-term research studies supplement this evaluation.

A performance assessment system is being developed for all South Australian waters, as part of the Marine Planning Framework for South Australia. Performance assessment of individual marine reserves will be integrated into this system.

The Queensland Government undertakes routine reviews on marine protected areas legislation, zoning plans and management plans. The condition and trends of Queensland's fish stocks and habitats are regularly monitored and reviewed by Department of Primary Industries and Fisheries. This provides an overview of the combined effectiveness of fisheries management strategies in Queensland, of which Fish Habitat Areas are a key component.

The NSW, Western Australian and Northern Territory Governments have not evaluated the overall effectiveness of marine reserves, although various research programs in consider the effectiveness of marine reserves in biodiversity conservation.

The Australian Bureau of Rural Sciences releases annual Fishery Status Reports which review the status of domestic and international fish stocks managed by the Australian Government to ensure sustainable management now and into the future. The reports provide scientific and policy information to government, industry and the broader community on the status of some target fish stocks in Australian waters.

Recent changes to the *Great Barrier Reef Marine Park Act* introduced a requirement for a Great Barrier Reef Outlook Report to be produced on a five-yearly basis, with the first report due in July 2009. It is to be produced by the Great Barrier Reef Marine Park Authority, peer reviewed, tabled in Australian Parliament and published. The Outlook Report will include an analysis of:

- the ongoing commercial and non-commercial use of the Marine Park
- trends over time against baseline and benchmark data, including commercial and recreational use, biodiversity, ecosystem health and resilience and social and economic systems
- the condition of the ecosystem, including health, resilience and biodiversity
- the effect of management measures, including zoning plans and plans of management
- risks and pressures on the ecosystem, including those external to the Marine Park
- biophysical, social and economic regional factors
- the outlook for the Marine Park based on quantitative and qualitative data

Possible impediments to the development of an effective ecosystem evaluation and assessment approach include the ability to identify appropriate indicators that are easy to measure, and accurately reflect changes in the marine environment. Similarly, consistent with most monitoring and evaluation of ecosystems resource constraints present challenges to allow for the effective monitoring of environmental status and change. It is anticipated that the Marine Bioregional

Planning program will provide an opportunity to review and refine scientific, policy and management information to allow for an improved and consistent approach to monitoring status and change in Australian marine environments.

Programme element 2: Marine and coastal living resources

2.1: To promote ecosystem approaches to the conservation and sustainable use of marine and coastal living resources, including the identification of key variables or interactions, for the purpose of assessing and monitoring, first, components of biological diversity; second, the sustainable use of such components; and, third, ecosystem effects.

The pursuit of ecologically sustainable development is an objective of the EPBC Act, as well as the fisheries legislation of the Commonwealth and many of the states. Ecologically sustainable development is also promoted through Australia's Marine Bioregional Planning process. This program also establishes spatial management measures and progresses the NRSMPA to improve the resilience of marine ecosystems.

Marine Bioregional Plans will contain extensive information on biodiversity and ecosystem functioning, provide guidance for industry and decision-makers regarding activities in each marine region, and detail the processes for monitoring and reviewing each Plan. Marine protected areas identified through the Marine Bioregional Planning process, once established, will have management plans that include the conservation objectives and monitoring and assessment arrangements for individual MPAs as well as the broader MPA network.

The Marine Bioregional Planning process is scheduled for completion in 2010. To date, extensive information on marine biodiversity has been consolidated in the South-east, South-west, North, and North-west marine regions, with the East marine region almost completed. Work is now focused on developing draft Marine Bioregional Plans for each of the regions. Once the plans are completed, the Minister for the Environment will be required to take them into consideration when making any decision on approval of relevant activities under the EPBC Act, including new development proposals, the sustainability of fisheries and conservation and recovery planning for threatened species and threatened ecological communities.

Information gathering for the marine bioregional planning process has been hampered by the limited and fragmented data available in relation to the vast marine environment under Australian jurisdiction, only a small portion of which has been systematically studied for biodiversity assessment purposes. What national scale information on biodiversity there is has been summarised in the Integrated Marine and Coastal Regionalisation of Australia (IMCRA v4.0). The Regionalisation uses information on the patterns of distribution of bottom-dwelling fish to classify Australia's marine environment into areas that are biogeographically distinct. Additional information on geomorphology and sediment characteristics are used to infer finer-scale patterns of biodiversity distribution. Since the completion of IMCRA v4.0 in 2006, national scale patterns in distribution of invertebrate groups have been investigated, with completion of a study on brittlestars in 2008.

Australia's Harvest Strategy Policy (HSP) supports the principles of economic and environmental sustainability. It was introduced in Commonwealth fisheries from January 2008 to maximise the net economic return to the Australian community from the harvest of Commonwealth managed fish stocks, while maintaining stocks at safe and productive levels. The HSP guides management actions to attain defined biological and economic objectives in a given fishery by controlling the intensity of fishing of an assessed stock. The HSP is reflective of domestic and international legislative and policy obligations for Commonwealth fisheries management of key commercial species, including the EPBC Act.

A major research program funded by the Commonwealth Environment Research Facilities is underway to add to the information in IMCRA v4.0 as well as improving the ability to detect and predict patterns in biodiversity distribution using biological and physical surrogates.

The Marine and Coastal Committee of the Natural Resource Management Ministerial Council has established a program of work to move all Australian fisheries to ecosystem-based management.

2.2: To make available to the Parties information on marine genetic resources in marine areas beyond national jurisdiction and, as appropriate, on coastal and marine genetic resources under national jurisdiction from publicly available information sources.

Several monitoring studies are underway to trial new and emerging technologies for this area, including: biological surveys, genetic analysis and classification of remote deepwater habitats; remote sensing for habitat typing and benthic mapping; and data logging technology to monitor water temperature and indicate climate change effects in reserves. The results of these studies are typically made publicly available on the internet for access by other organisations. The results of research conducted in Australia's Antarctic marine areas are also available.

Under Australian Government regulations, researchers investigating genetic resources in Commonwealth marine areas are required to submit lists of samples collected. It is planned that this and other relevant biological information will be made available through the web-based 'Atlas of Living Australia', which is currently under development.

2.3: To gather and assimilate information on, build capacity to mitigate the effects of, and to promote policy development, implementation strategies and actions to address: (i) the biological and socio-economic consequences of physical degradation and destruction of key marine and coastal habitats including mangrove ecosystems, tropical and cold-water coral-reef ecosystems, seamount ecosystems and seagrass ecosystems including identification and promotion of management practices, methodologies and policies to reduce and mitigate impacts upon marine and coastal biological diversity and to restore mangrove forests and rehabilitate damaged coral reef; and in particular (ii) the impacts of mangrove forest destruction, coral bleaching and related mortality on coral-reef ecosystems and the human communities which depend upon coral-reef services, including through financial and technical assistance.

The Marine Bioregional Planning process and the development of a NRSMPA will provide a structured framework to facilitate the gathering and assimilation of information on the marine environment including the ecosystem types specifically mentioned in this operational objective. Marine Bioregional Plans, which include conservation objectives and management priorities, will build capacity to mitigate the effects of degradation to the marine environment and to biological diversity, and promote policy development, implementation strategies and actions to address such degradation in line with the plans' objectives. Elements of the Marine Bioregional Planning program are detailed in other parts of this report.

The marine bioregional planning process also includes the identification of a number of key ecological features that are of conservation value because of the role that they play in the marine environment of a marine region. Key ecological features are those features of the marine environment that are not specifically protected under the EPBC Act, but which are considered to be important or unique characteristics of the region that are potentially deserving of conservation,

monitoring or management. For the purpose of marine bioregional planning, key ecological features of the marine environment meet one or more of the following criteria:

- a species, group of species or a community with a regionally important ecological role (e.g. a predator, or a prey species that affects a large biomass or number of other marine species);
- a species, group of species or a community that is nationally or regionally important for biodiversity;
- an area or habitat that is nationally or regionally important for:
  a) enhanced or high biological productivity (such as predictable upwellings),
  b) aggregations of marine life (such as feeding, resting, breeding or nursery areas),
  c) biodiversity and endemism; or a unique seafloor feature with known or presumed ecological properties of regional significance.

The Australian Government has drawn on the best available information to select and describe key ecological features, including advice from scientists and technical experts, and published and unpublished literature and reports. A number of the key ecological features identified within Australia's marine region include key marine habitats such as tropical and cold-water coral-reef ecosystems, seamount ecosystems and seagrass ecosystems.

In 2007 the Australian Government established the South-east Commonwealth Marine Reserve Network to contribute to the NRSMPA. The South-east network is the first temperate deep sea network of marine reserves in the world. It covers 226,458 square kilometres and includes representative examples of the diverse seafloor features and associated habitats found in the South-east Marine Region. The reserves include striking features such as underwater canyons and sea mounts, and the diverse marine life associated with them, some of which is new to science and found nowhere else in the world.

In 2007 the Australian Government moved to incorporate the Tasman Seamounts Marine Reserve into the Huon Commonwealth Marine Reserve which is part of the greater South-east marine region. The Huon Commonwealth Marine Reserve covers about 9,991 square kilometres of Commonwealth ocean territory to the south of Tasmania and includes a broad depth range from the inner continental shelf in about 70 metres to over 3,000 metres. The majority of the area is in deep water.

Huon Commonwealth Marine Reserve contains a remarkable cluster of seamounts, which are habitat for a diverse number plants and animals. On the seabed there are a large number of endemic species and large erect corals and sponges. In certain locations seamounts are believed to provide stepping stones in trans-oceanic dispersal of the microscopic organism larvae of sea bottom dwelling species. The seamounts of the Huon Marine Reserve provide an important connection between seamounts of the Indian Ocean and the Tasman Sea.

Two research voyages jointly funded by the Australian Government and the Commonwealth Scientific and Industrial Research Organisation were recently undertaken in deep water areas off South-eastern Australia. The voyages identified an additional 80 seamounts south of Tasmania, bringing the total to 144. In addition they identified 274 deep water species new to science, 86 new records for Australia and 242 previously studied species. The voyages also re-surveyed areas in the Tasmanian Seamounts Reserve to investigate recovery of cold-water coral reefs 8 years after cessation of bottom trawling. The research findings will be used to identify indicators for monitoring and performance assessment of deep water Marine Protected Areas.

As outlined in section 1.3, the Great Barrier Reef Outlook Report will assimilate information on biological and socio-economic trends over time. This will specifically include an analysis of:

- the condition of the ecosystem, including health, resilience and biodiversity;

- trends over time against baseline and benchmark data, including commercial and recreational use, biodiversity, ecosystem health and resilience and social and economic systems;
- risks and pressures on the ecosystem, including those external to the Marine Park;
- biophysical, social and economic regional factors; and
- the outlook for the Marine Park based on quantitative and qualitative data.

Additionally, a comprehensive vulnerability assessment[6] for the GBR produced in 2007 provides contextual information for the management of climate change and its implications for the reef. Successful community engagement on climate change occurs through programs such as Bleachwatch and Reef Guardian Schools, with tourism industry input via eco-certification programs. Efforts are also underway, working with Traditional Owners, to gather available traditional knowledge and ensure it is applied to the issue of climate change.

Protection of key coastal habitats such as mangrove ecosystems is carried out through coastal planning and environmental impact assessment processes in Australia's State and Northern Territory jurisdictions. Addressing the impacts of degradation of critical aquatic habitats including mangrove ecosystems is one of the objectives of the Community Coastcare component of the *Caring for our Country* package of activities. A number of the 2008-09 Community Coastcare projects are addressing decline of mangroves at coastal project sites.

2.4: To enhance the conservation and sustainable use of biological diversity of marine living resources in areas beyond the limits of national jurisdiction (BNJ).

It is widely acknowledged that international cooperation and coordination is critical in order to effectively conserve and manage marine living resources in areas beyond the limits of national jurisdiction.

Australia is a member of, and participates in, all relevant international and regional organisations, conventions and arrangements that deal with the conservation and sustainable use of marine living resources in areas BNJ. These include: the United Nations Convention on the Law of the Sea and supplementary agreements on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA) and Deep Seabed Mining; the Food and Agriculture Organisation of the United Nations; the United Nations General Assembly (UNGA); the Convention on International Trade in Endangered Species (CITES); the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR); the International Whaling Commission; the International Convention for the Regulation of Whaling, and Ad hoc Open-Ended Informal Working Group on the Conservation and Sustainable Use of Marine Biodiversity BNJ.

Australia is also a Party to the Convention on Migratory Species (CMS), which has a number of relevant daughter instruments including: the Agreement on the Conservation of Albatrosses and Petrels (ACAP); the Memorandum of Understanding for the Conservation of Cetaceans and their Habitats in the Pacific Islands Region; the Memorandum of Understanding on the Conservation and Management of Dugongs (*Dugong dugon*) and their Habitats throughout their Range; and the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA).

[6] Weblink for GBR vulnerability assessment: http://www.gbrmpa.gov.au/corp_site/info_services/publications/misc_pub/climate_change_vulnerability_assessment/climate_change_vulnerability_assessment

Australia recognises that overfishing is a serious problem that requires direct action. Australia is working to tackle overfishing in several ways, both in domestic waters and internationally through bilateral, regional and global fisheries management forums. Work on overfishing is mainly being directed at reducing excess fishing capacity and combating IUU fishing.

Australia's actions against IUU fishing include strong representation at multilateral fisheries management forums, including the UN General Assembly, the UN Food and Agriculture Organisation's Committee on Fisheries (FAO-COFI) and the High Seas Task Force (HSTF). Australia also implements many measures to combat IUU fishing through RFMOs.

Australia fully supports initiatives of the FAO and cooperates with other countries to implement international plans of action; monitoring, control and surveillance initiatives; and the UNGA resolution 61/105 on sustainable fisheries. Australia has contributed to the development of a comprehensive global register of fishing vessels, which has the potential to become a powerful tool to detect, impede and eliminate vessels that engage in IUU fishing.

Australia is working actively to develop legally-binding port State measures under a FAO initiative. Port State measures constitute an important link in the chain of any efforts to combat IUU fishing, as the ability of flag States to exercise control over their fishing vessels have often proved ineffective.

Australia contributed financially to the HSTF, which at its last meeting in March 2006 produced a report titled "Closing the Net: Stopping Illegal Fishing on the High Seas", which contained nine proposals to combat IUU fishing.

Australia also contributes financially to the Monitoring, Control and Surveillance (MCS) Network which now has in excess of 50 member countries. The MCS Network assists in combating IUU fishing through activities such as the collection and dissemination of fisheries information, analysis of IUU fishing and provision of training and technical support capabilities, particularly for developing countries.

Australia's approach to IUU fishing also includes collaboration with NGOs. We provided input into the World Wildlife Fund report "The Changing Nature of High Seas Fishing", which outlines how flags of convenience provide cover for pirate fishing operations.

Australia also has a strong focus on IUU controls in the region, including through the Pacific Islands Forum Fisheries Agency (FFA), bilateral and multilateral IUU fishing control initiatives with Papua New Guinea, Indonesia and other south-east Asian countries, and in the Southern Ocean region of Australia's Territories.

The Regional Fisheries Management Organisations and Arrangements (RFMO/As) that Australia participates in are: the Western and Central Pacific Fisheries Commission; the Indian Ocean Tuna Commission; the Commission for the Conservation of Southern Bluefin Tuna; and the Southern Indian Ocean Fisheries Agreement (SIOFA). Australia is also leading negotiations to establish an RFMO in the South Pacific. In these fora, Australia actively promotes the implementation of precautionary and ecosystem based management approaches. Australia has pursued the protection of threatened and/or migratory species under international agreements, pursued measures to ensure the conservation and sustainable management of fish stocks and the conservation of non-target species and habitats impacted by fishing activities, and is a strong advocate against unsustainable and destructive fishing practices.

Australia continues to work with other States to ensure the implementation of the UNGA 61/105 resolution in relation to the regulation of bottom fisheries in areas BNJ, including preventing impacts from deep-sea bottom fisheries on vulnerable marine ecosystems, and the adoption and implementation of measures by RFMO/As. This has included the adoption of measures by CCAMLR, and interim measures adopted by participants in negotiations to establish a South Pacific RFMO. Australia has also proposed draft interim measures relating to bottom fisheries for the SIOFA to facilitate discussion.

To meet Australia's obligations under UNGA 61/105 and RFMO/A measures, Australia has implemented measures for all Australian vessels operating in deep-sea bottom fisheries in areas beyond national jurisdiction.

To ensure the conservation of migratory waterbirds, the Australian Government has fostered international cooperation through a range of initiatives, including through the establishment of the East Asian - Australasian Flyway Partnership (the Partnership). The flyway extends from the Arctic (Alaska and the Russian far east), through East and South-east Asia, to Australia and New Zealand. Stretching across 22 countries, it is one of 8 major waterbird flyways recognised around the globe. The Partnership contributes to Australia meeting it's obligations under the CMS.

Programme element 3: Marine and coastal protected areas

3.1: To establish and strengthen national and regional systems of marine and coastal protected areas integrated into a global network and as a contribution to globally agreed goals.

Australia has adopted the IUCN categories as part of the process for identifying and managing MPAs. Australian governments are working towards the NRSMPA whereby representative examples of the full range of marine ecosystems and habitats in both state and Commonwealth waters will be included in MPAs. This system is being developed with the aim of contributing to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels. Australian governments have established more than 200 MPAs since 2003, which represent nearly 88 million hectares in the MPA estate. In total, more than 10% of Australian waters are protected in MPAs, excluding Antarctic waters.

All Australian governments (state, territory and Commonwealth) coordinate their efforts on national and cross-jurisdictional issues relevant to MPAs and, in many cases, have cooperative management arrangements.

Australia is also working with its Asia Pacific neighbours to promote uptake of MPAs through the Coral Triangle Initiative (CTI) and also through a proposed APEC funded project looking into transboundary marine conservation. A workshop was help in November 2008 that brought together the Coral triangle countries, research institutes and development partners to discuss opportunities and challenges associated with CT Plans of Action, including MPAs. The workshop outcomes include areas for further cooperation on MPAs.

3.2: To enhance the conservation and sustainable use of biological diversity in marine areas beyond the limits of national jurisdiction

Australia supports increased global use of area-based management tools, including representative networks of MPAs, threat-based MPAs, fisheries closures and specially managed areas, to improve conservation and sustainable use outcomes. Australia actively supports the implementation of a variety of area-based management tools already applied in areas BNJ, including through CCAMLR, various RFMOs, the International Maritime Organisation and the International Seabed Authority. In relation to the establishment of MPAs in areas BNJ, based on appropriate criteria, Australia's expertise and experience in the development and implementation of MPA programs positions us to be able to contribute constructively to efforts in this area. Elements of our domestic MPA/planning/establishment processes may serve as a useful model for high seas MPAs.

In Australia's view, more use of area-based management tools needs to be made in areas beyond national jurisdiction. Australia actively participated in the 2006 and 2008 meetings of United Nations General Assembly *Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction* which it co-chairing with Mexico, and supports continuation of this process.

At the second meeting of the working group, Australia called for accelerated international efforts to meet the World Summit on Sustainable Development goal of a global network of representative MPAs by 2012. Further work is required internationally into possible mechanisms to allow the establishment of MPAs in areas beyond national jurisdiction, including on the application of the

CBD COP9 scientific criteria and guidelines. Australia welcomes the ongoing scientific and technical work being undertaken by the CBD in this regard.

3.3: To achieve effective management of existing marine and coastal protected areas

Australia continues to progress the rollout and ongoing management of the NRSMPA, including the identification of new MPAs through the Commonwealth Marine Bioregional Planning Process.

Management plans or interim management arrangements are in place for all 26 existing Commonwealth MPAs, and are supported by a strong legislative framework in the EPBC Act. As required by the EPBC Act, the management plans provide for the protection and conservation of the MPAs and state how they will be managed. This includes providing for a comprehensive day to day management regime that protects the values of the Reserves by:

- Managing their use (through permits, rules and restrictions);
- Developing and implementing appropriate research and monitoring, natural and cultural heritage management and community education programs and frameworks;
- Establishing effective compliance and enforcement arrangements; and
- Developing performance assessment and adaptive management systems.

The states and territories are contributing to the NRSMPA by declaring and managing MPAs in waters inshore of three nautical miles. These arrangements are also underpinned by state and territory legislation. In New South Wales marine parks are managed in accordance with zoning plans and operational plans. National parks and nature reserves are managed according to plans of management and principles outlined in the *National Parks and Wildlife Act 1974*. Aquatic reserves are managed by general regulation or under a specific management plan.

Generally the Northern Territory Government establishes Advisory Committees to enable stakeholders to have their say in the zoning and management of each MPA. Joint management of Garig Gunak Barlu (Cobourg Marine Park) is achieved through the Marine Park Board. Increased involvement of the local community and joint management arrangements for future marine protected areas are likely trends for the Northern Territory.

The Queensland Government establishes and manages marine parks using a multiple-use approach through the development of a zoning plan. A zoning plan provides a tiered level of conservation and protection with provision to manage and regulate activities and uses based on the objectives of the zone. Central to a zoning plan is the establishment of highly protected areas while acknowledging ecologically sustainable use. Zoning plans are subordinate legislation and under the *Statutory Instruments Act 1992* may expire after 10 years. All subordinate legislation must therefore be reviewed and remade within 10 years.

In South Australia MPAs are managed in accordance with management plans under a range of legislation including the *Adelaide Dolphin Sanctuary Act 2005, Fisheries Act 1982, Harbors and Navigation Act 1993, Historic Shipwrecks Act 1981, National Parks and Wildlife Act 1972* and *Wilderness Protection Act 1992*.

The Victorian *National Parks Act 1975* requires that a management plan must be prepared for each marine national park and marine sanctuary. The Victorian Government requires management plans be completed within three years of the establishment of the parks and sanctuaries.

The Western Australian *Conservation and Land Management Act 1984* requires that marine protected areas can only be created following the release of an indicative management plan and the formal concurrence of the Ministers of Fisheries and Mines. Of the twelve marine protected areas

currently making up the marine conservation reserve system in Western Australia, eleven have approved final management plans.

Effective management of existing MPAs depends on developing strong working relationships between the state government agencies and relevant Commonwealth agencies, including the Australian Customs Service, the Australian Fisheries Management Authority, the Australian Defence Forces, and also state police and fisheries enforcement operators in state MPAs. Delivery mechanisms include Annual Business Agreements for operational activities, and Steering and Consultative Committees to advise on developing and implementing management activities.

Some of the barriers to implementation that have been experienced include:

- The scale of some issues which are beyond the control of individual MPA management (e.g.- climate change);
- Current levels of human and financial resourcing;
- The remote localities of many Reserves and associated logistical constraints; and
- Uncertainty over future funding and resource allocation.

Australia is working proactively to overcome these barriers by:

- Reviewing legislative frameworks to ensure that they enable the effective management of the marine environment; and
- Strategically prioritising tasks so as to achieve environmental outcomes in a cost effective manner.

Additionally, working with an extensive network of stakeholders, while central to the effectiveness of the system, is costly in terms of time and resources. However, these time and resource requirements are being minimised by developing and strengthening stakeholder networks to ensure that timely information is received to inform the decision making process as efficiently as possible.

One of the assessments required every five years under the legislation as part of the Outlook Report for the Great Barrier Reef (outlined above, section 1.3) is an assessment of "..the existing measures to protect and manage the ecosystem".

3.4: To provide support for and facilitate monitoring of national and regional systems of marine and coastal protected areas

Research and monitoring programs are currently in place in all Commonwealth Marine Reserves under Reserve Management Plans. These programs provide information on the key conservation attributes of each reserve and provide a mechanism to monitor the status of reserve biodiversity. Management Plans include a performance assessment regime to evaluate how well management strategies have worked in the past and how best to improve management practices across the Commonwealth marine estate in the future. Management Plans are reviewed before expiry to assess management effectiveness, and to inform the development of new plans. All results are made publicly available on the internet. Performance monitoring is discussed further in item 1.3.

The New South Wales Government has adopted a Marine Parks Strategic Research Plan 2005-2010 to build on the Strategic Framework for Evaluation and Monitoring of Marine Parks. Each established marine park in New South Wales has a research workplan that outlines and prioritises both long-term monitoring initiatives as well as site-specific research. The research workplans are publicly available on the internet.

The Northern Territory's Department of Primary Industry, Fisheries and Mines undertakes substantial research on the Territory's fisheries and aquatic resources, including annual monitoring of stock status. This research is a valuable input to the marine reserve planning and management process. In addition, a tropical rivers research project provides useful data on northern Australian rivers.

Research and monitoring relevant to marine parks in Queensland is integrated in broader strategies relating to, for example, seabirds, turtles, dugong, coral bleaching, water quality and lyngbya. The Environmental Protection Agency conducts significant research on marine turtles, including the endangered loggerhead turtle, at the Mon Repos turtle rookery located in the Great Sandy Marine Park. A Cooperative Research Centre for Coastal, Estuary and Waterway Management study evaluated the effectiveness of inshore marine reserves in Moreton Bay Marine Park in Queensland. Effectiveness was assessed in terms of the marine reserves ability to sustain fisheries species and conserve marine biodiversity. Results revealed that the marine reserves provided benefits to a range of fisheries species included exploited invertebrates and finfish. The marine reserves were also found to provide protection to aspects of marine biodiversity, thus partially achieving their management objective.

The South Australian Government has a research and monitoring program in place for the Great Australian Bight Marine Park. A broader program is being developed to support future marine parks across South Australia. A performance assessment system is being developed for all South Australian waters as part of the Marine Planning Framework for South Australia. Performance assessment of individual marine reserves will be integrated into this system.

The Tasmanian Government continues to sponsor long-term biological monitoring and research into changes in biodiversity that arise from implementing the Tasmanian marine reserve system. This monitoring and research commenced before the establishment of the first marine reserves in 1991 and includes comparison with sites outside these protected marine areas.

The Victorian Government entered into a research partnership with the Coastal Zone Co-operative Research Centre to map the deep water habitats in six of the largest outer coast marine national parks in Victoria. The project has involved some of the most comprehensive seabed mapping undertaken in Victoria, employing the combined expertise of universities, government agencies and private enterprise. Detailed habitat mapping has been finished for the shallower (less than about 10m) areas of 15 of the 24 marine national parks and sanctuaries by using aerial photography. The Victorian marine habitat mapping classification system has been updated on the basis of the park mapping and is available for other users in the Parks Victoria Technical Series (Vol. 26). Marine baseline data collection (for future monitoring) has been completed in 19 of the 24 marine national parks and sanctuaries in a form relevant to the major habitat types. Diver-based transect surveys for subtidal reefs occurs at most sites. Intertidal reef monitoring occurs at 9 parks with higher use on the intertidal platforms. Some towed video surveys have been done in a few parks to augment baseline monitoring.

The Western Australian Government has established a Marine Sciences Program to focus on ecological and social marine science necessary to inform adaptive management of the State's marine protected areas. The program also takes the lead role in ensuring that the biophysical and social surveys and research needed to identify and plan for new marine protected areas are undertaken. This includes through the continuing establishment and delivery of marine science through strategic collaborations with universities, the Australian Institute of Marine Science, CSIRO, other agencies such as the Department of Fisheries, and industry and community groups.

Australia has a National MPA Working Group to monitor the progress of the implementation of the NRSMPA, delivering MPA declaration and management across domestic jurisdictions. The Australian Government also facilitates monitoring of national and regional systems of marine and coastal protected areas by working closely with a wide range of stakeholders. This includes activities such as the 2008 workshop on the 'Science for managing remote coral reef MPAs', which had wide ranging attendees including scientists, state MPA managers, and a representative from the Coral Triangle Initiative. Outcomes included improved understanding of how a range of scientific disciplines can support adaptive management of remote coral reef MPAs, identification of options for improving communications and partnerships among researchers/managers, and establishment of researcher and manager networks that strengthen links between science and management of remote coral reef MPAs.

The Australian Government has allocated $40 million for a Marine and Tropical Sciences Research Facility (MTSRF). The MTSRF funds public good, applied research and monitoring to support the protection, conservation, sustainable use and management of the Great Barrier Reef and its catchments, tropical rainforests including the Wet Tropics World Heritage Area and Torres Strait.

Australia participates in a number of international fora monitoring MPA management, including a regional bilateral environment consultative forum with New Zealand, and the Coral Triangle Initiative with the Asian and Pacific nations of Indonesia, Malaysia, the Philippines, the Solomon Islands, Timor Leste and Papua New Guinea.

Barriers to implementation that have been experienced include:

- Current levels of human and financial resourcing;
- Limitations of international legal frameworks pertaining to the management of the high seas;
- Uncertainty in regards to future funding and resource allocation; and
- The remote localities of Reserves and associated logistical constraints;

Australia is proactively trying to overcome these barriers by:

- Reviewing the EPBC Act 1999 to examine the extent to which the objects of the Act have been met and the effectiveness of biodiversity and wildlife conservation arrangements; and
- Securing resourcing through forward planning.

As outlined in section 3.3, while it is central to the effectiveness of MPA management systems, working with an extensive stakeholder network is expensive in terms of time and resources These time and resource requirements are being minimised by further developing relationships with stakeholders to ensure that timely information is received to inform the decision making process.

3.5: To facilitate research and monitoring activities that reflect identified global knowledge gaps and priority information needs of management of marine and coastal protected areas

Australia continues to initiate and fund research to facilitate our understanding of marine ecosystems and associated impacts or pressures on these systems. This includes protected marine species research, habitat assessment, support of community coastal initiatives and assessment of threats such as marine debris. Many of these activities are described in section 3.4.

As detailed in section 2.2, Australia is carrying out several monitoring studies testing new and emerging technologies, many of which are providing information on identified knowledge gaps including: biological surveys, genetic analysis and classification of remote deepwater habitats; remote sensing for habitat typing and benthic mapping; data logging technology to monitor water temperature and indicate climate change effects in reserves. The results of these studies are

publicly available on the internet, and can be used by organisations to assist in the management of MPAs.

Barriers to implementation include:

- Current levels of human and financial resourcing;
- Uncertainty over future funding and resource allocation; and
- The remote localities of Reserves and associated logistical constraints;

Australia is working proactively to overcome these barriers by:

- Reviewing the EPBC Act 1999 to examine the extent to which the objects of the Act have been met and the effectiveness of biodiversity and wildlife conservation arrangements; and
- Securing resourcing through forward planning.

An on-line Research Information System for the Great Barrier Reef provides information on the research needs for management of the GBRMP and research projects that address those needs. The system aims to:

- organise the research areas and specific questions identified as important to the management of the GBR Marine Park[7]
- relate existing research activity to those needs
- streamline collaboration and communication between the research community and Marine Park managers
- help the research community and general public to explore current and past research that is relevant to the management of the GBRMP
- identify research gaps
- allow strategic review of research investment and funding

Programme element 4: Mariculture

4.1: To promote use of techniques, which minimize adverse impact of mariculture on marine and coastal biological diversity.

The assessment and approval process under the EPBC Act promotes the adoption of techniques to minimise the negative environmental impacts of all types of activities, including mariculture, on Matters of National Environmental Significance (NES). Matters of NES include the Commonwealth marine environment, listed threatened species and communities, listed migratory, Ramsar wetlands, world heritage properties and national heritage places.

In order to proceed, any project or 'action' that is likely to have a significant impact on a matter of NES must be assessed and approved by the Minister for the Environment, Heritage and the Arts. Guidance on assessing the risk of a significant impact to matters of NES, including the Commonwealth marine environment, is provided in Significant Impact Guidelines 1.1[8]. Approval to proceed with an action may be dependent upon the activity meeting certain additional environmental standards and requirements specific to the situation in order to minimise negative environmental impacts.

[7] Weblink to Information Needs: <http://www.gbrmpa.gov.au/corp_site/info_services/science_management/research_priorities/database/files/research_needs.pdf>

[8] Weblink Link to Significant Impact Guidelines 1.1 for Matters of National Environmental Significance: http://www.environment.gov.au/epbc/publications/nes-guidelines.html

The potential environmental impacts of offshore aquaculture projects are outlined in the policy document Offshore Aquaculture, EPBC Act Policy Statement 2.2[9], which provides guidance to proponents of potential aquaculture projects on the possible environmental impacts and the assessments and approval regulations under the EPBC Act.

Programme element 5: Invasive alien species

5.1: To achieve better understanding of the pathways and the causes of the introduction of alien species and the impact of such introductions on biological diversity.

The Australian Government is funding research to evaluate the translocation risk of marine pests in Australian waters through vessel ballast water discharge and vessel biofouling pathways. It is anticipated that the outcomes of this research will significantly support proposed measures to prevent the introduction and translocation of invasive species through ballast water discharge and biofouling on vessels.

5.2: To put in place mechanisms to control all pathways, including shipping, trade and mariculture, for potential invasive alien species in the marine and coastal environment

In 2001, the Australian Government put mandatory ballast water management arrangements in place. These arrangements apply to all vessels entering Australian waters to reduce the risk of introducing harmful exotic marine species into the marine environment via ballast water. More information about these requirements can be found at:
http://www.daff.gov.au/aqis/avm/vessels/ballast/requirements

In May 2005, Australia signed, subject to ratification, the *International Convention for the Control and Management of Ships' Ballast Water and Sediments* (the Convention). Australian governments are developing nationally consistent ballast water management arrangements that will be consistent with the Convention and allow Australia to enhance its management of the risk from marine pest introductions from both internationally and domestically sourced ballast water and sediments.

The Australian Government has developed national control plans (NCPs) for six agreed national marine pests of concern that have established in Australia. The species of agreed concern are *Asterias amurensis* (northern Pacific seastar), *Carcinus maenas* (European green crab), *Musculista senhousia* (Asian date mussel), *Sabella spallanzanii* (European fan worm), *Undaria pinnatifida* (Japanese seaweed) and *Varicorbula gibba* (European clam). An implementation strategy for each of the NCPs is being developed in collaboration with the states and the Northern Territory.

In relation to marine pest risks from biofouling, the Australian Government is developing guidelines, voluntary protocols and regulations for managing marine pest risks from biofouling for all marine sectors including aquaculture, aquarium trade, commercial and recreational fishing, commercial shipping, marinas, slipways, shipyards and dry docks, non-trading vessels, the petroleum industry and recreational vessels.

Regarding commercial shipping, as there are currently no international measures in place to address the risks of the introduction of invasive aquatic species through ships' biofouling, Australia has jointly sponsored the addition of a new high priority item to the work program within the

[9] Weblink to Offshore Aquaculture, EPBC Act Policy Statement 2.2:
http://www.environment.gov.au/epbc/publications/aquaculture-policy.html

International Maritime Organization to develop measures to minimise the transfer of invasive aquatic species through the biofouling of ships.

5.3: To maintain an incident list on introductions of alien marine species

The Consultative Committee on Introduced Marine Pest Emergencies (CCIMPE) coordinates the national operational response for Australian marine pest emergencies. A list of species not yet established in Australia, but likely to have significant impacts if introduced, is maintained (the CCIMPE Trigger list). This list assists with the rapid response to new incursions. A baseline survey of thirty five key locations has been completed to establish their pest status. An ongoing monitoring program is under development. The program has been trialled in two locations and is intended to be completed regularly (every 1-2 years) in a minimum network of 18 locations.

Programme element 6. General

6.1: To assemble a database of initiatives on programme elements through a cooperative approach with relevant organizations and bodies, with special emphasis on integrated marine and coastal areas management.

Australia does not currently maintain a dedicated database on initiatives, however Australia has funded a number of marine and coastal initiatives that in effect provide similar outputs to that of an 'initiatives' database. Most notably are the Marine Biodiversity Research Hub, the Marine Tropical Sciences Research Facility (MTSRF) and Tropical Rivers and Coastal Knowledge Research Hub (TRaC). The hubs have been jointly funded through the Commonwealth Environment Research Facilities Program (CERF) and parternship contributions and are intend to deliver coordinated, and high quality research with a focus on marine and coastal areas management. A complete list of the Hubs and a brief description of objectives can be found at http://www.environment.gov.au/programs/cerf/research.html#hubs.

6.2: To undertake effective collaboration, cooperation and harmonization of initiatives with relevant conventions, organizations and agencies while recognising their independent mandates.

As detailed in section 2.4, Australia is a Party to and participates in many international conventions, organisations and fora that relate to the conservation and sustainable use of marine living resources including UNCLOS, the United Nations Food and Agriculture Organization, the Convention on Migratory Species of Wild Animals, the 1996 Protocol to the Convention on the Prevention of Marine Pollution from the Dumping of Wastes and Other Matter, 1972 and the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Australia is also a member of numerous RFMOs, and within these fora consistently promotes the implementation of precautionary and ecosystem based management approaches, and pursues these approaches as they may appropriately apply in the various conventions. Australia is also actively engaged with the Joint Tuna RFMOs initiative which has formed to improve coordination between the RFMOs and enhance the compatibility of conservation and management measures adopted by each organisation.

Australian Commonwealth, state and territory government agencies collaborate and cooperate when taking part in whole-of-government consultative processes and policy development processes in relation to these conventions, and throughout this process efforts are made to maintain a coherent approach across these fora.

For example, in May 2005, Australia signed, subject to ratification, the *International Convention for the Control and Management of Ships' Ballast Water and Sediments*. Australian governments are developing nationally consistent ballast water management arrangements that will implement this Convention. Australia is also participating in a work program under the International Maritime Organization to develop international measures for the management of biofouling on vessels.

Further, another example of an effective working partnership between differing levels of government occurs in relation to management of the Great Barrier Reef by the State of Queensland and the Australian Government. Cooperative arrangements exist at policy and operational levels, underpinned by an Intergovernmental Agreement. Examples of collaboration include a Ministerial Council providing a forum for policy coordination, complementary Australian and Queensland government marine and national (island) parks within the Great Barrier Reef World Heritage Area, a joint program of field management (i.e. ‘on water’ management) and the Reef Water Quality Protection Plan (see section 1.2).