Australian Government

Australia's Fourth National Report to the United Nations Convention on Biological Diversity

March 2009

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Cover photo: Kennedy Ranges National Park, Western Australia by Nick Rains

Background

Article 26 of the Convention on Biological Diversity (CBD) states that the objective of national reporting is to provide information on measures taken for the implementation of the Convention and the effectiveness of these measures. In accordance with Article 6, measures to be addressed, in light of specific national circumstances, are reflected in Australia's National Biodiversity Strategy.

An effective system of national reporting can assist the Conference of the Parties to:

- consider the lessons learned by Parties in the implementation of the Convention
- identify gaps in capacity for policy research and analysis at the national, regional and global levels, including technical and financial requirements
- formulate appropriate requests and guidance to Parties and to its subsidiary bodies, the Secretariat, the financial mechanism, and other organizations with expertise relevant to the implementation of the Convention.

Australia's third national report to the CBD was submitted in October 2005.

The 8th Conference of the Parties to the CBD decided that Parties' fourth national reports should be submitted by 30 March 2009 and agreed the parameters for the reports (Decision VIII/14). It further agreed that the reports should facilitate the provision of essential information to assess progress towards the 2010 Biodiversity Target, at national level, and through their contributions to the third edition of the Global Biodiversity Outlook, at global level.

Executive Summary

Australia lies in the southern hemisphere and has seven external territories, including the Australian Antarctic Territory. In biodiversity terms, Australia is a mega-diverse country with a notably high proportion of terrestrial and marine endemic species. Australia's biodiversity makes a significant contribution to its economy and is regarded as an important part of the nation's heritage. It is essential to the identity and culture of Australia's Indigenous peoples.

Australia is a federation of six self-governing states and two self-governing mainland territories. The states and territories have established systems of local government. Environmental powers are not the sole responsibility of any one level of government, but state and territory governments have primary responsibility for land management legislation.

The private sector, academic institutions, non-government organisations and the general community also play an important role in environmental issues, including biodiversity conservation and sustainable use.

The Environment Protection and Biodiversity Conservation Act (EPBC Act)
The EPBC Act is the Australian Government's key piece of environmental legislation, which commenced 16 July 2000. It enables the Australian Government to join with the states and territories in providing a truly national scheme of environment and heritage protection and biodiversity conservation. The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.

Overall status and trends in biodiversity and major threats

Conservation efforts within Australia have increased since the last report to the Convention. Despite this, the *Australia State of the Environment 2006* report found that biodiversity is in serious decline (Beeton et al. 2006). Similarly, the second environmental performance review of Australia by the Organisation for Economic Cooperation and Development (OECD 2008) reports that the downward trend in the conservation status of some species continues. It also found some major pressures on biodiversity have not eased since the previous OECD performance review in 1998.

The challenge of conserving Australia's biodiversity is compounded by the fact that at least 75 per cent of our native species remain undiscovered or undescribed from a western taxonomic perspective. Only 172 000 of Australia's estimated 680 000 plant and animal species have been described. Forty-five per cent of Australia's land mass has not been fully biologically surveyed and the vast majority of Australia's Exclusive Economic Zone (EEZ), which covers an area double the size of the land mass, is yet to be been mapped and surveyed. The rate of vascular plant species discovery in Australia currently exceeds the rate of discovery of Amazon plant species. In the sea mounts off Tasmania, 120 previously unknown seabed mountains with a 30 per cent rate of unknown and undescribed organisms have recently been discovered.

Both the *National Approach to Addressing Marine Biodiversity Decline* (Marine Biodiversity Decline Working Group, 2008) report and the *National Approach to Biodiversity Decline* report (Biodiversity Decline Working Group, 2005) identified the major current and long term threats to Australia's biodiversity as being:

- climate change and enhanced climate variability
- the spread and introduction of new invasive species and diseases
- loss, fragmentation and degradation of habitat
- marine and coastal pollution, including from land based sources and vessels
- changes to the aquatic environment and to water flows
- inappropriate grazing and fire regimes
- population growth and unsustainable development.

Key actions taken in support of the Convention's three objectives and to achieve the 2010 target and goals and objectives of the Strategic Plan of the Convention

The Australian Government is implementing the Convention through the *National Strategy for the Conservation of Australia's Biological Diversity* (the strategy), first launched in 1996 and endorsed by the Council of Australian Governments.

This strategy is currently being reviewed to provide an overarching and high-level strategic national policy framework for biodiversity conservation and sustainable use. The revised strategy will cover all of Australia's biodiversity including terrestrial, marine and aquatic biodiversity and ecosystems. It includes six 'priorities for change' which aim to provide a clear framework for all levels of government, industry and the community on actions needed to reverse biodiversity decline in Australia.

There are a number of other Australian Government programs and policies that support the strategy. Since 1997, the Natural Heritage Trust (NHT) has provided funding to invest in activities that restore and conserve Australia's environment and natural resources, and contribute to the sustainable use of those natural resources. The NHT was established under the *Natural Heritage Trust of Australia Act 1997* and ended on 30 June 2008, when it was incorporated into the 'Caring for our Country' initiative.

Caring for our Country is an ongoing Australian Government initiative that will provide $2.25 billion in funding over its first five years (from 1 July 2008 to June 2013). It has brought together delivery of a raft of Commonwealth programs into an integrated package with one clear goal—a business approach to investment, clearly articulated outcomes and priorities and improved accountability. It integrates a number of existing natural resource management measures into a consolidated initiative. These measures include the NHT, the National Landcare program, the Environmental Stewardship program and elements of the Working on Country program.

The goal of Caring for our Country is to have an environment that is healthy, better-protected, well-managed, resilient, and provides essential ecosystem services in a changing climate. Caring for our Country will focus on achieving strategic results and invest in six national priority areas:

- building Australia's National Reserve System

- biodiversity and natural icons
- coastal environments and critical aquatic habitats
- sustainable farm practices
- natural resource management in remote and northern Australia
- community skills, knowledge and engagement.

Areas where national implementation has been most effective or most lacking

Most effective:

- protected areas
- marine and coastal biodiversity
- access and benefit sharing through effective national legislation and a nationally consistent approach

Most lacking:

- healthy river flows
- broad scale ownership of the first National Biodiversity Strategy.

Major obstacles encountered in implementation

- broad scale ownership of the first National Biodiversity Strategy
- lack of data on biodiversity status, threats and trends to inform actions.

Future priorities

The future priorities are:

- building ecological resilience at landscape scale by protecting habitats and reducing existing pressures
- increasing connectivity by establishing conservation linkages across the landscape and therefore facilitating the adaptation of species to climate change
- mainstreaming biodiversity issues in the government, business, scientific and education sectors thus ensuring that biodiversity is not discounted in development process and government and industry decisions
- establishing base-line data sets and long-term monitoring sites to inform decision making.

Chapter I - Overview of biodiversity status, trends and threats

Overview of biodiversity in Australia

Australia is the world's largest island continent and has been isolated from other continents for millions of years. As a result, 80 per cent of Australia's species of flora and fauna are endemic. Eighty three per cent of Australia's mammals are endemic, as are approximately 45 per cent of its land birds, 85 per cent of its flowering plants, 96 per cent of its conifers, 90 per cent of its vascular plants, almost 90 per cent of its reptiles and over 90 per cent of its frogs. These high levels of endemism are not restricted to terrestrial Australia. Of the estimated 600 inshore fish species in the southern temperate zone, about 85 per cent are found only in Australian waters.

In addition to its substantial land mass, Australia has the world's third-largest Exclusive Economic Zone (EEZ), covering an area of about 14 million square kilometers – an area larger than Australia's continental land mass. Our EEZ extends from the tropics (9°S) to temperate waters (47°S) and includes Antarctic waters (70°S) and a vast array of highly diverse marine habitats and ocean features. Australian waters are recognised globally for their significant biodiversity and endemism, with an estimated 60 per cent of Australia's temperate marine species being endemic.

The challenge of conserving Australia's biodiversity is compounded by the fact that at least 75 per cent of our native species remain undiscovered or undescribed from a western taxonomic perspective. Only 172 000 of Australia's estimated 680 000 plant and animal species have been described. Forty five per cent of Australia's land mass has not been fully biologically surveyed.

The Australian landscape and seascape are fundamental to the wellbeing of Indigenous Australians and are at the core of their spiritual beliefs. Indigenous Australians see themselves as an integral part of country and Indigenous traditions are intimately linked to the protection of Australia's biodiversity. Australia's biodiversity is of deep spiritual and cultural importance to Indigenous Australians. Their understanding of Australia's biodiversity has developed over an immense timespan and is often regionally and culturally specific, complex and highly structured. Indigenous Australians classified biodiversity in numerous ways, such as totemic and non-totemic, which refers to the recognition of plants, animals and natural phenomena as belonging to particular social groups or nations.

Australia is the most megadiverse of developed countries—it has almost 10 per cent of the world's known species. It also has 10 per cent of the world's threatened species.

The Australian environment

Australia contains a diverse range of biogeographic regions. The Interim Biogeographic Regionalisation for Australia (IBRA) divides the Australian continent into 85 bioregions (Fig. 1). Australia-wide, 403 sub-regions have now also been defined, based on major geomorphic features in each bioregion. The bioregions and sub-regions are the reporting unit for assessing the status of native ecosystems and their protection in Australia's National Reserve System. The bioregions and sub-regions are also used in the monitoring and evaluation framework for the Australian Government's current natural resource management initiatives. IBRA is a cooperative approach by all environment agencies in Australia and continues to be refined as more detailed information on ecosystems or other base layers comes to hand.

The rangeland and arid interior occupies approximately 70 per cent of Australia, with tropical monsoon areas to the north and Mediterranean and temperate climates to the

south. Several mountain regions in the south-east are snow clad in winter and Australia's external territories extend to subantarctic and antarctic regions.

Australia's marine habitats are also diverse, ranging from extensive coral reefs to seagrass plains, giant kelp forests and sand-bottomed habitats that cover much of the continental shelf.

Australia's biological diversity has a high degree of endemism. This results in part from the tectonic history of the continent and its relative isolation for more than 20 million years, following the break-up of the ancient Gondwanan landmass. This period saw extensive evolutionary divergence of Australia's plants, animals and microorganisms. The subsequent aridification of Australia and the movement of the Australian landmass towards south-east Asia have resulted in explosive radiation in groups such as skinks, land snails, wattles and eucalypts and the development of a unique drought-adapted biota.

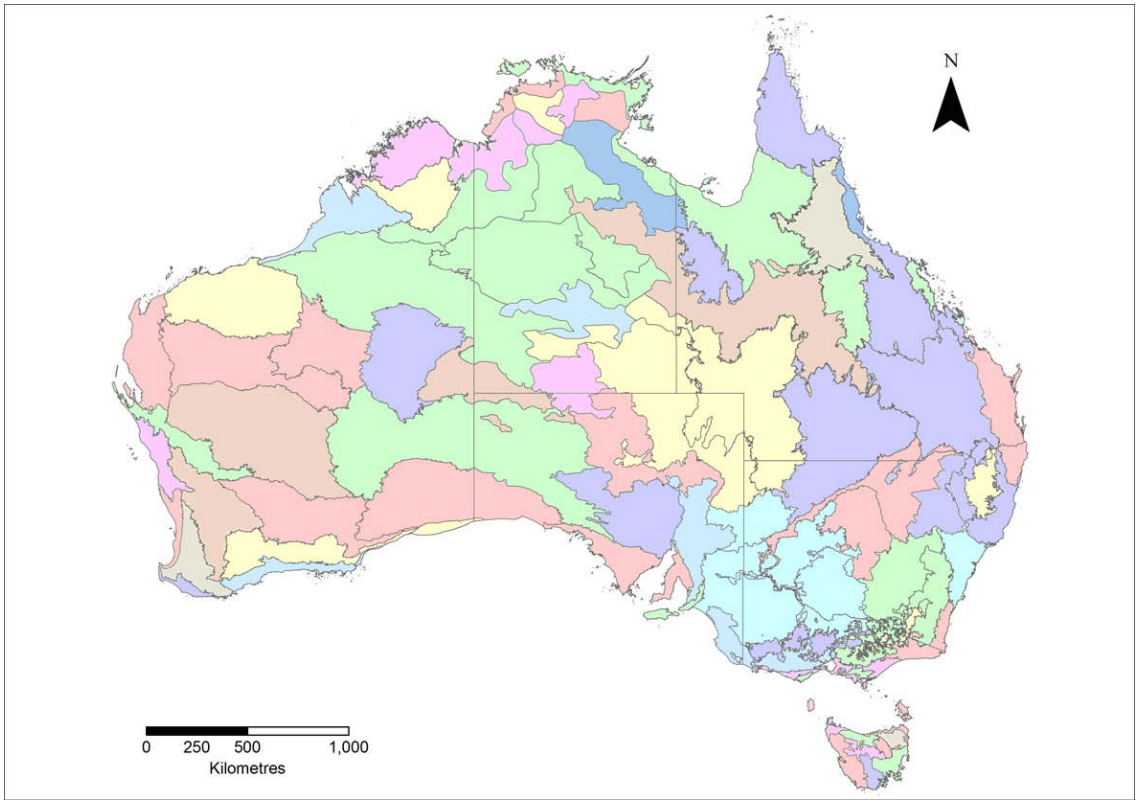

Figure 1: Interim Biogeographic Regionalisation for Australia (IBRA 6.1)

Australia's highly endemic biota includes a number of groups exhibiting high species richness. For example, Australian marsupials have evolved into a great diversity of species, filling an extraordinary range of niches that in other countries are largely occupied by placental mammals. The state of Victoria alone has around 270 species of orchid; on the other hand, the entire North American continent has only 165 species of orchid, while Europe has only 116 species. Australian deserts have a greater number of lizard species per square kilometre than do either the Kalahari or American deserts. With an estimated 4000 species, Australian ants are also highly diverse compared with elsewhere. Britain, for example, has only 41 species of native ants. This number is well exceeded by the 452-hectare Black Mountain Nature Reserve in Australia's capital city, Canberra, which has more than 100 species of native ant.

The genus *Eucalyptus* consists of approximately 900 taxa with all but 13 species being endemic to Australia. Most of the approximately 1070 Australian taxa of *Acacia* occur nowhere else in the world. Indeed, the ubiquitous presence of eucalypts and acacias characterises Australia's flora. They have diversified into almost every habitat on the continent. Eucalypts range in form from giant forest trees to shrubby groundcovers and can be found from snowline to shoreline, in deserts and swamps and on floodplains. Australia's river red gums (*Eucalyptus camaldulensis*) have an extraordinarily wide distribution, ranging from south-east Australia through the Red Centre (in the middle of the continent) to the north-west. They are a good example of a species complex comprising populations that differ markedly in their genetic makeup.

Components of Australia's biota are of major evolutionary significance. An example is that some species of the relict Gondwanan rainforests of north-east Queensland have important ancestral links in the history of plant evolution. Nowhere else in the world is there such a known concentration of primitive flowering plants. Of the 19 known families of primitive flowering plants in the world, 13 are found in northern Australia—two of which are endemic.

Australia's southern marine platform, one of the largest in the world, has remained stable for at least the last 40 million years and thus provides a unique glimpse of the direct ancestral lineages of many species found there today. Examples of ancient marine animals, or 'living fossils', which occur off this platform, are members of the family *Trigoniidae*, a bivalve mollusc group widespread 200 million years ago and now reduced to a single genus, *Neotrigonia*, found only in Australian waters.

Australia's external territories also contain unusual and significant biota. For example, the endemic red crabs on Christmas Island dominate the forest floor and influence the unique structural characteristics and species composition of the island's vegetation. Lord Howe Island and Norfolk Island, recognised as global biodiversity hotspots, had one of the greatest concentrations of endemic land snails in the world prior to the arrival of Europeans and pest animals.

CASE STUDY: BIODIVERSITY TRENDS, STATUS AND THREATS IN THE NORTHERN TERRITORY

The Northern Territory of Australia includes some of the world's most extensively undisturbed natural landscapes—particularly for tropical savannas—and seascapes. This means that for many components of biodiversity their conservation status is unusually secure.

The conservation status of all described Northern Territory plant and vertebrate species and some invertebrate species was comprehensively reviewed in 2007 using IUCN criteria. A total of 103 plant and animal taxa are considered threatened, of which 16 species are considered extinct in the Northern Territory. The list of threatened species includes 1.7 per cent of the plant species, 1.3 per cent of the fish species, two per cent of the frog species, seven per cent of the reptile species, six per cent of the bird species and 30 per cent of the mammal species in the Northern Territory. There was no substantial difference in the number of listed threatened species between the 2007 review and the previous review in 2002.

Most threats to biodiversity in the Northern Territory are extensive in nature, rather than as a result of intensive development pressure. The total human population density of the Northern Territory is exceptionally low (<0.2 persons per square kilometre); the extent of clearing is unusually limited (<2% of the Northern Territory); and the ongoing clearing rate is low (ca. 12 000 hectare per year).

Exotic predators (cats and foxes) are a major threat to biodiversity across the entire Northern Territory, with particularly significant impacts on small and medium-sized native mammals.

Exotic herbivores (particularly camels, rabbits, donkeys, horses, cattle and water buffalo) occur widely and often at high densities. They have pervasive detrimental impacts upon native vegetation, and hence biodiversity more broadly. Other exotic species with more localised but still significant biodiversity impacts include pigs, cane toads, big-headed ants, yellow crazy ants and black rats.

Exotic plants have both localised and extensive impacts upon biodiversity. Exotic invasive ('pasture') grasses (e.g. buffel grass, gamba grass, mission grass) are among the most problematic of these species, particularly because of their tendency to increase fuel loads and hence support more frequent and/or intense fires.

Across much of the Northern Territory fire regimes have changed substantially since European settlement. In many areas the existing regime has marked negative impacts upon biodiversity, particularly upon plants that require a relatively long fire-free interval to mature sufficiently to set seed. In some parts the fire regime is largely unmanaged, as a consequence of depopulation of historically intensively managed Indigenous clan estates.

The extensive natural areas of the Northern Territory with characteristically gradual spatial transitions in climate may provide an unusual degree of resilience to climate change. However, some environments will be particularly susceptible, including the extensive coastal floodplains (that are likely to be inundated by seawater), low-lying islands and refugial areas in central Australia. Climate change is also likely to exacerbate some existing threats to biodiversity, particularly the threat of fire. There is some evidence of expansion of woody vegetation in the monsoonal north of the Northern Territory (with consequential decrease in the area of grasslands), probably due to increased concentrations of atmospheric carbon dioxide.

There are established monitoring programs for relatively few components of biodiversity in the Northern Territory. Most of the existing monitoring programs relate to threatened species, feral animals, exploited species and threats (e.g. fire).

The most extensive biodiversity monitoring program relates to more than 200 fixed plots in three large national parks (Kakadu, Litchfield and Nitmiluk) in the tropical north of the Northern Territory. The plots are monitored at five-year cycles. Recent results from these plots indicate a sustained and pervasive decline in the richness and abundance of small to medium-sized native mammals, even in areas remote from intensive disturbance. These declines are variably related to predation by feral cats, poisoning by invading cane toads (*Rhinella marinus*) and inappropriate fire regimes.

Intensive management intervention has benefited some threatened species. Through exclusion of exotic predators, populations of mala (*Lagorchestes hirsutus*) and red-tailed phascogale (*Phascogale calura*) have been returned to the Northern Territory.

Status and trends of important biodiversity components

The *Australia State of the Environment 2006* report found that biodiversity is in serious decline (Beeton et al. 2006). Similarly, the second environmental performance review of Australia by the Organisation for Economic Cooperation and Development (OECD) in 2008 reports that despite improved conservation efforts the downward trend in the conservation status of some species continues. It also found some major pressures on biodiversity have not eased since the previous OECD performance review in 1998.

In Australia, European settlement has been a major cause of biodiversity decline, through degradation and destruction of native habitat and the introduction of invasive species. European settlement also caused biodiversity loss by curtailing, and often times disregarding, Indigenous management practices which had become a part of Australia's natural environment.

Terrestrial Biodiversity

A total of 1700 species are listed under the EPBC Act as threatened, migratory and/or protected marine species as of December 2008. Of these, 1597 are listed as threatened and a further 103 are listed as extinct.

A total of 40 ecological communities are also listed as threatened under the EPBC Act. These encompass over 100 small described communities/assemblages across the country covering a range of ecosystems including woodlands, forests, grasslands and wetlands.

There are also 17 key threatening processes listed under the EPBC Act. 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 (e.g. predation by the European red fox).

The list of threatened species and ecological communities may reflect changes in listing effort and available information rather than changes in the actual number of threatened entities. Therefore these lists may be a better measure of the number of entities receiving protection, than of the number of entities requiring protection.

Major vegetation changes

As a consequence of the processes of economic and social development that were encouraged by all governments following European settlement, about 90 per cent of the native vegetation in the eastern temperate zone has been removed for human habitation, industry and transport or replaced by introduced pastures and crops. About 50 per cent of rainforests have been cleared and the proportion of Australia covered by forest or woodland has been reduced by more than one-third. Extensive clearing and vegetation modification continue to result in severe reduction and fragmentation of the mallee, mulga and brigalow woodlands.

With more than 80 per cent of Australia's population (21 million people) living in urban centres—most of them within 50 kilometres of the coast—land use and population pressures have had substantial impacts on the biological diversity of coastal ecosystems, including mangroves, estuaries and tidal marshes. Freshwater habitats have also suffered in recent decades as a result of increasing salinity and nutrient levels, other pollutants, the impacts of introduced species and the disturbance of acid sulfate soils resulting in degraded water quality, land fill or dredging operations.

Marine and Coastal Biodiversity

Australia's 14 million square kilometre Exclusive Economic Zone is home to thousands of marine species, many of which are known are endemic to Australia. Australia's vast and varied coasts and oceans are largely unexplored and there is little information about Australia's marine biodiversity. This is especially the case for species and ecosystems in more remote, deeper oceanic areas.

The information that does exist is generally for fisheries and coastal biodiversity, with some species and systems showing mixed trends and others in apparent decline. For example:

- Of the limited number of seabird species studied in a narrow range of monitored habitats, seven species appear to be stable, seven are declining, four have declined but appear to be rising or stabilising again, and five have expanded either their population or their range in at least one location.
- Mangroves are declining in some places as they are cleared for coastal development and expanding in certain areas, especially northern Australia. However, the extent to which they are expanding into other ecosystems is unclear.
- Monitoring of the Great Barrier Reef and Ningaloo Reef shows considerable local damage and changes in resident species from cyclones, bleaching, fishing, sedimentation and pollution. The ability of the Reef to evolve and adapt to climate change depends heavily on the survival rate of corals after major catastrophic events, such as bleaching. However, poor water quality, particularly from agricultural runoff, significantly lowers the survival rate of corals to these events and hinders the Reef's adaptive resilience.

- Major seagrass losses have been documented in Queensland, Victoria, South Australia and Western Australia.

The Natural Resource Management Ministerial Council's report *A National Approach to Addressing Marine Biodiversity Decline* states that the past 200 years of human activity have had substantial impacts on marine environments in Australia. This applies not just near population centres but also in the most remote areas of Australia. Further, over long time spans the report suggests that incremental impacts have led to major shifts in biodiversity composition.

The report also states that current trends in the status of Australia's marine biodiversity are difficult to determine for several reasons, particularly lack of information. Despite the lack of comprehensive information on marine biodiversity, expert opinion based on observations of significant decline in some marine species in some areas suggests that there is a continuing decline occurring in Australia's marine biodiversity and ecosystems.

Main threats to biodiversity in Australia

Both the *National Approach to Addressing Marine Biodiversity Decline* (Marine Biodiversity Decline Working Group, 2008) report and the *National Approach to Biodiversity Decline* report (Biodiversity Decline Working Group, 2005) identified the major current and long term threats to Australia's biodiversity as being:

- climate change and enhanced climate variability
- the spread and introduction of new invasive species and diseases
- loss, fragmentation and degradation of habitat
- marine and coastal pollution, including from land based sources and vessels
- changes to the aquatic environment and to water flows
- inappropriate grazing and fire regimes
- population growth and unsustainable development.

The National Approach to Biodiversity Decline report also noted that individual risk assessments are carried out and may conclude that an activity poses a low or manageable risk. However, the cumulative (over time) or combined (simultaneous) impacts of these activities on an ecosystem or species also needed to be assessed. This is currently not done. Also, risk assessments are often undertaken for specific marine animals rather than marine biodiversity overall.

Climate Change

Many Australian species are at risk from rapid climate change because they are restricted in geographical and climatic range (Hennessy et al. 2007).

Australian average temperatures have increased by 0.9ºC since 1950 (CSIRO and Australian Bureau of Meteorology 2007). Regardless of future human actions, the inertia in the climate system means that the earth will experience further warming of at least 0.4°C. Because global emissions are tracking at or near the upper limit of the suite of projections developed by the Intergovernmental Panel on Climate Change (IPCC) (Raupach et al. 2007) there is a real risk that global mean temperatures will rise by more than 2°C, a level that may be the threshold of 'dangerous climate change'.

Associated changes in Australia's climate are also occurring, or predicted to occur, such as increasing marine water temperature and acidity, altered wind and rainfall patterns, including reduced rainfall in the south-west and south-east of the continent.

The IPCC *Fourth Assessment Report* (IPCC 2007) notes that significant loss of Australian biodiversity is projected to occur by 2020 in ecologically rich sites including the Great Barrier Reef and the Queensland Wet Tropics. Other sites at risk include the Kakadu wetlands, south-west Australia, sub-Antarctic islands and alpine areas. Changes in Australian species and some ecosystems have already been detected that are consistent with recent changes in temperature, rainfall and sea level (Dunlop and Brown 2008).

A preliminary assessment of the implications of climate change for Australia's National Reserve System (Dunlop and Brown 2008) has found that climate change will affect ecological processes operating across landscapes and will increasingly present a major challenge for biodiversity conservation in Australia. Some species will need protected islands of habitat, while others will need connected chains of protected areas. Larger areas and larger numbers of individual plants or animals will be needed to provide the same viability for species as could be expected without climate change. The likely impacts of climate change increase the importance of having a resilient, well-managed National Reserve System to form the cornerstone for biodiversity conservation, protecting samples of all regional ecosystems, constituent biota and conservation values. Integrating the National Reserve System with off-reserve conservation mechanisms, such as other habitat protection schemes by private land managers, will help maintain ecological processes across the landscape. The effective management of ecological linkages across the landscape ensures that the natural movement of species and gene flow between populations will enhance resilience in the face of a changing climate and system-wide threats to biodiversity.

In the marine environment, critical thresholds loom.

Unusually warm water temperatures have now caused serious and lasting damage to 16 per cent of the world's coral reefs. While the Great Barrier Reef has fared well by comparison, major bleaching events in 1998 and 2002 saw over 50 per cent of the world's reefs bleached and up to five per cent seriously damaged in each year. Recent studies have shown a 14 per cent drop in coral calcification rates since 1990, mainly due to elevated atmospheric carbon warming and acidifying Great Barrier Reef waters.

In the marine environment, as for the terrestrial environment, climate change is happening in the context of several other pressures on and uses of the marine system. These pressures include coastal development, fisheries, marine pollution and increased terrestrial runoff. Climate change will exacerbate the effects of many of these pressures. Natural resource management is moving to an ecosystem-based approach, requiring joint consideration of the biological systems and all their uses to provide a holistic management response. It is therefore important to see climate change as another driver of change in the marine environment that will need to be considered in ecosystem-based management within and outside reserve areas.

Climate change brings particular challenges that require us to re-examine our traditional approaches to biodiversity conservation. In many Australian biodiversity management frameworks there is often an underlying assumption of conserving what is there now or trying to restore the environment to pre-European settlement conditions. In a rapidly changing environment, attempting to maintain the status quo or work against historical baselines will not work. Environments will change; species will be lost and others will not persist in their current locations. Planning approaches that manage for dynamic, resilient systems will therefore be critical.

Another significant challenge in responding to climate change is the lack of information on Australia's existing biota. Because few of Australia's native species have been scientifically named and described, identifying changes in biota or cataloguing the existing biota of an area is difficult.

Conservation connectivity and building resilience will be key strategies to ensure that Australia's natural systems have the capacity to adapt to shifting climatic zones. Securing and enhancing critical intact habitats through Australia's National Reserve System will be important to increase ecosystem resilience (Taylor and Figgis 2007). Other important adaptation strategies include appropriately managing habitat connectivity, in many cases restoring connectivity through revegetation on private lands and linking with core protected areas.

Botanic gardens, zoos, seed banks and gene banks will have an increasing role to play in ex situ conservation mechanisms for species that may not be able to survive in the wild. For some species, this may be the only means of survival in the short to medium term.

Invasive species

Australia is host to 56 invasive terrestrial vertebrate animal species. These species cost Australia at least $1 billion per annum through environmental, economic and social damage. Internationally, Australia is regarded as having a strong biosecurity system, particularly as it applies to agriculture. However, a recent review of Australia's biosecurity arrangements has identified significant gaps in capability for managing biosecurity risks, especially threats to the natural environment. The Australian Government has undertaken to accept the recommendations of this review, with the new arrangements to be in place by July 2010.

Australian farmers reported spending more than $3 billion on natural resource management in 2006–07 (ABS, 2008). Approximately 78 per cent of this was spent on management of invasive species. Weed related issues were the highest category of spending (53 per cent) followed by pest management (25 per cent) and management of land and soil (22 per cent).

The cost of lost production is not reflected in these figures but is known to be significant. The latest analysis of the economic impact of weeds in Australia (Sinden et al 2004) estimated the cost of weeds to Australia to be in excess of $4 billon per annum. It is likely that this would now be significantly higher.

There are also 150–250 known introduced marine species in Australian waters, most of which have been introduced through the discharge of ballast waters (Hayes et al. 2005).

Invasive species continue to be a major cause of pressure on Australia's biodiversity. For example, weeds place significant pressure on natural systems and have invaded most ecosystems in Australia, particularly those that were already fragmented or degraded.

Feral animals, such as rabbits, goats, cattle, buffalo, pigs, donkeys, horses and camels, degrade terrestrial habitats by intensive or selective grazing. All of these species compete with native animals for food and habitat. Some agricultural animals also compact the soil, contributing to erosion and making it difficult for native plants to grow. Feral cats, dogs and foxes are major predators of native animals.

Pathogens can also cause widespread declines in native species. The soil pathogen, *Phytophthora cinnamomi,* is believed to have entered Australia with the early European settlers. It is responsible for a type of dieback in many native plants, and has infected thousands of hectares in Western Australia, Victoria, Tasmania and South Australia, as well as wet coastal forests in Queensland. The introduction of *Phytophthora* dieback into natural areas has devastated many native plant communities and threatens a number of rare plants with extinction. Once a region is infected with *Phytophthora cinnamomi* it is regarded as always infected.

The economic impact of invasive marine pests is significant. The International Maritime Organisation has estimated that marine pests cost the world tens of billions of dollars every year. The cost imposed by invasive marine species in Australia has not been well quantified, but their impacts on local biodiversity and estuarine and marine industries, such as commercial fisheries and aquaculture, can be considerable. Of most concern is the impact of the northern Pacific seastar (*Asterias amurensis)* on scallop production in Australia (costs Australia AUD$25 million per year).

Freshwater fish and other species introduced to Australia for fishing or released from private aquaria place significant pressure on native communities through predation and competition. Pathogens and parasites introduced with these aquatic species potentially cause impacts on native fish, although the extent of these impacts is poorly understood. Invasive fish, such as the plague minnow and common carp, are now common in many Australian waterways. Carp can constitute 90 per cent of the fish biomass in some areas. They cause significant damage to aquatic habitats because they are predominantly benthic (bottom-feeding) and stir up sediment, decreasing water quality and causing habitat modification.

Other emerging pest fish threats include tilapia, considered to be one of the world's 100 worst pests. Tilapia were originally brought into Australia as a tropical aquarium fish, but have now invaded river and dam systems in Queensland and Western Australia. As they spread westwards and southwards they are expected to take a heavy toll on native wildlife by eating the eggs and young of prawns, barramundi and several threatened species.

Preventing harmful introductions before they occur is the most cost-effective means to avoid or minimise risk preventing significant long-term economic, environmental and social costs. However, there are gaps in our national approaches to dealing with invasive species. For example, there have been many instances where plants banned in one state are still being sold in neighbouring states. This complicates management.

It would be preferable to rid Australia of the invasive species that cause the greatest impacts but this is generally not achievable. Instead, management of invasive species focuses on reducing their impacts as cost effectively as possible, while preventing new incursions. The distribution of some invasive species across a vast, often inaccessible landscape often means that biological control is the only effective method; but biological control requires intensive research effort to identify and release suitable agents. Yet, like many other agricultural areas, it is difficult to secure adequate funding for research and there is evidence that researchers in these disciplines are ageing, with younger researchers diverting into other areas or going overseas in search of employment.

Because it is usually impossible to eradicate an invasive species, management is often targeted to protect a particular threatened native species or environmental asset. However, interactions between native species and invasive species are often hard to

measure and management of single species can have unforeseen consequences. For example, a previously suppressed invasive species can dramatically increase if a targeted invasive species is controlled. For instance, removing rabbits can result in a rapid increase in weeds, which in turn affects native vegetation. This situation can complicate decisions about controlling invasive species.

There is an increase in use of novel techniques in plant and animal breeding (e.g. biotechnology techniques used to produce genetically modified organisms (GMOs)). Although these new technologies offer us opportunities for changes in the ways we produce food and use agricultural land or control invasive species, there may be some cases in which they may also present risks, such as the potential to be more invasive than their conventional counterpart. To manage the potential risks associated with the introduction of new organisms into the environment, it is important for countries to establish rigorous, science-based national biosafety frameworks. Australia's case-by-case, science-based risk assessment process, carried out by the Office of the Gene Technology Regulator, considers, among other risks, the potential for GMOs to become invasive and have adverse environmental impacts and may impose conditions to manage these risks prior to release into the environment.

Trends in globalisation, trade and travel present a particular challenge in dealing with biosecurity issues that may affect biodiversity. Despite stringent quarantine requirements and protocols there is still a risk that invasive species may enter. Dangers include ocean species caught in ship ballast water, insects, spiders and reptiles transferred via cargo crates and other commercial packaging. The pet trade—including the aquarium industry—and garden escapes remain a major pathway for the unintentional introductions of invasive species.

Australia is moving to better link and database its biological collections through the Atlas of Living Australia initiative which will offer direct online access to specimen date held in collections across Australia. Nevertheless, Australia's taxonomic workforce has declined by 14 per cent since 1991 and is forecast to fall by between 30 and 50 per cent over the next 10 years. This workforce provides the primary source of species identification in Australia, so the continued decline presents an increasing risk of serious pathogens, weeds or pests entering Australia and becoming established because they are not being identified properly.

Invasive species are usually generalists so they are well placed to adapt to a changing environment. They can dominate ecological niches when native species are placed under stress. Climate change is already increasing the impact of invasive species on biodiversity. For example rabbits were regarded in the 1970s as climatically marginal at 1370 metres but now have to be controlled in the Perisher Valley an altitude of 1800 metres (Green and Pickering 2002).

Loss and fragmentation of habitat

> *'…about 87 per cent of Australia's original native vegetation cover remains, but its condition is variable and masks an underlying issue of the decline of many ecological communities'* (Beeton et al. 2006).

Loss and fragmentation of habitat due to land clearance and other human-related disturbances continues to be a significant threat to the long-term survival of Australia's biodiversity. Despite broad scale clearance controls, native vegetation is still being cleared for housing and other urban development around Australia (particularly along

the coastline) as well as for agriculture and dam construction. However, the rates of broad scale clearance are reducing.

Legislation to reduce land clearing has been implemented by states and territories in order to achieve a range of environmental benefits such as biodiversity conservation, soil protection, water quality and reduced greenhouse gas emissions.

Much of Australia's native vegetation exists on private land. Private landowners and managers are responsible for over 60 per cent of all land in Australia. Their engagement is essential to realise environmental benefits on a broad national basis.

Under the Australian Constitution, state and territory governments have primary responsibility for land use decisions, including the clearing of native vegetation. However, the Australian Government protects matters of National Environmental Significance under the *EPBC Act,* including threatened species and ecological communities.

The Australian Government recognises the importance of managing native vegetation to conserve biodiversity, improve water and soil quality and reduce greenhouse gas emissions as well as the need to balance this with farm productivity. With this shared understanding, all governments have recently commenced a review of the *National Framework for the Management and Monitoring of Australia's Native Vegetation* and to build on its successes. This Framework established a national agenda for sustainable native vegetation management.

The condition and connectivity of vegetation as habitat have declined in many areas. In cleared landscapes there has been a general decline of ecological community functionality and processes. A major concern is that old trees in these landscapes are not being replaced as they die. All of these changes in vegetation condition and extent have major implications for biodiversity (Beeton et al. 2006).

Most Australian native fish are highly mobile and many require the ability to travel great distances to complete life history stages (Nevill and Phillips 2004). The introduction of water infrastructure (especially dams and weirs) in Australia has removed or seriously decreased access for many fish species to areas essential for life history stages. As many native fish are endemic to particular areas in Australia, there is a need for installation of fishways on dams and other flow control structures to ensure these structures do not hinder the natural migration and passage of native fish.

Marine and coastal pollution

> *'Land-based sources of pollution have been identified as some of the greatest threats to the health, productivity and biodiversity of Australia's coasts and oceans'* (Natural Resource Management Ministerial Council 2006).

Coastal and marine pollutants in Australia include oil, sewage, suspended and settled sediments, marine debris, chemicals, nutrients/fertilisers and thermal pollution. These originate from land- and marine-based activities, such as shipping, oil and gas exploration, stormwater run-off and agriculture. Urban development or other land use changes may also disturb or expose acid sulfate soils potentially resulting in the liberation of acid and heavy metals and deoxygenation.

Pollutants have a range of impacts on biodiversity in the marine environment. These include degradation of habitats, changes in the distribution and density of species,

increasing levels of contaminants in some species (which have impacts throughout the food chain) and loss of top-order predators. In coral reef ecosystems, land-based run-off of nutrients and sediment decreases the capacity of corals to withstand and recover from bleaching events.

Changes to the aquatic environment and water flows

> *'Altered flow regimes have resulted in the loss of 90 per cent of floodplain wetlands in the Murray-Darling Basin'* (Beeton et al. 2006).

Biodiversity in aquatic ecosystems in Australia is under threat from the combined effects of river regulation, overallocation of water for consumptive uses including irrigation, drought and climate change, pollution, invasive species and habitat degradation. Natural patterns of wetting and drying have been altered and the frequency and magnitude of floods have changed. Significant numbers of floodplain wetlands across Australia have been lost as a result.

The disturbance of acid sulfate soils is also now a major issue nationally. Acid sulfate soils are soils that either contain sulfuric acid, or have the potential to form sulfuric acid when exposed to oxygen in the air. Left undisturbed these soils are harmless but when excavated or drained the soil sulfides react with oxygen in the air and form sulfuric acid. The results of this disturbance may include sometimes severe effects on water quality like acidification, deoxygenation and the liberation of heavy metals. This may have serious consequences for aquatic biodiversity and include mass fish kills. The drying of many permanent wetlands in the Murray-Darling Basin is resulting in the exposure of acid sulfate soils and the acidification of some wetlands.

Urban development has resulted in the widespread loss of wetland biodiversity, including a decline in the number of waterbirds and native fish. Populations of frogs, which are very sensitive indicators of aquatic health, have also declined significantly over the past decade. Twenty seven species of frogs are listed as vulnerable under the EPBC Act (Beeton et al. 2006).

Some riparian habitat fringing rivers and streams has also declined as a consequence of changed water flow regimes and river regulation (including major water-supply reservoirs and farm dams). River red gum communities along Australia's longest river, the Murray River, are stressed and seedling recruitment severely impaired due to reduced flooding.

Rivers, wetlands and other aquatic environments have also been significantly affected by pollution from a range of sources, including urban stormwater run-off, sewage inflows, livestock grazing along watercourses, excessive applications and/or leaching of fertilisers and pesticides, vegetation clearance, and gully and streambank erosion. Excess nutrients, primarily phosphorus and nitrogen, were a major water quality issue in about 60 per cent of basins assessed by the National Land and Water Resources Audit in 2001 (Beeton et al. 2006).

The impacts of aquatic pollution include a decline in the distribution and abundance of phytoplankton, zooplankton and aquatic invertebrate populations sensitive to this pollution. Other impacts include an increase in fish kills and an increase in the incidence of toxic blue-green algal blooms.

The *Australia State of the Environment 2006* report notes that the 2001 and 2003 bushfires in south-east Australia led to massive inputs of sediment and nutrients to

rivers and reservoirs in affected catchments, with consequent impacts on water quality. Recovery from these natural disasters could take many years (Beeton et al. 2006).

A number of Australia's rivers are still relatively pristine because they are either not suitable for dam construction or located in less populated mountain areas or in northern tropical regions. There is growing concern that these rivers, particularly those in tropical Australia, may come under increasing pressure as sources of water to support irrigation development are exhausted in southern Australia (Beeton et al. 2006).

The pressures on stressed aquatic ecosystems will always be exacerbated by long-term drought. Climate change is expected to exert further stress as rainfall patterns change.

Comprehensive assessments of the values, condition of, and threats to aquatic ecosystems have not been undertaken in many parts of Australia, particularly outside highly populated areas. Assessments should include identification and management of aquatic ecosystems with regional, state and national significance. For nationally significant aquatic ecosystems, the *Directory of Important Wetlands in Australia* should be reviewed for its adequacy in representing all aquatic ecosystem types across the country.

Inappropriate grazing and fire management regimes

Biodiversity in the rangelands is in decline—rangelands are extremely vulnerable to invasive species and inappropriate grazing and fire management practices. The rangelands have a naturally low productivity and can suffer significant degradation from production or extraction based land use activities. In some of the more remote regions, ecosystems are still relatively intact and major conservation gains can be made for relatively small investments. Opportunities exist to improve conservation in the rangelands, including shifting to more sustainable land uses on leasehold land, improving the capacity of land managers to incorporate biodiversity considerations into their management, reservation of intact landscapes, and management of public lands in relatively good condition.

Fire has been present in Australian ecosystems for millions of years, and our native plant species, including eucalypts and acacias, have evolved in a fire-prone environment.

Indigenous Australians arrived in Australia tens of thousands of years ago and began using fire management to successfully manage the Australian landscape. Burning regimes used by Indigenous Australians are not thought to have caused evolutionary changes to Australian ecosystems but may have had a major impact on the distribution of vegetation communities.

Fire regimes changed again with European settlement, when settlers used fire extensively for clearing land and creating 'green pick' for stock. Following devastating bushfires in the 1850s, 1910–20s and 1939, a fire suppression and protection approach was gradually adopted, particularly in forested areas.

The change in intensity and frequency of fires in Australia since European settlement has dramatically affected vegetation composition and structure across the nation. In turn, this has affected the habitat of native animals.

Climate change will alter the frequency of high-fire-danger weather and the intensity, frequency and seasonality of fires. This will lead to changed and often more intense fire regimes in the long term (Hennessy et al. 2005).

Population growth and unsustainable development

By world standards, Australia has a relatively low human population density. This is due mainly to our relatively infertile soils and the large extent of arid and semi-arid lands; however, urbanisation is growing. More recently, concerns about the growth of Australia's larger cities have led to greater attention to urban design and planning, as well as the development of strategies to minimise urban sprawl (Beeton et al. 2006).

Australia's ecological footprint—a measure of our consumption of natural resources relative to how much is available—is one of the highest in the world.

The release of pollutants into the environment due to urbanisation factors and from agricultural run-off can kill organisms outright, reduce species diversity and abundance, degrade habitats and disrupt ecological processes. These impacts can occur in areas of high biodiversity value, such as reefs and mangroves (Beeton et al. 2006). Impacts can also occur in important aquatic ecosystems, such as the Murray-Darling Basin, where they can cause extensive algal blooms (Australian State of the Environment Committee 2001).

Continued urban expansion is placing at risk highly productive agricultural lands, areas of heritage significance and ecologically significant remnant habitats. In other areas coastal development is encroaching into fire-prone areas of coastal heath, forest and shrubland.

Implications of changes on human well-being

Loss of biodiversity and related ecosystem services could affect the quality of life of Australians dramatically. Ironically, this is occurring at a time when the economic and social value of these assets and services is being increasingly recognised (e.g. the value placed on the parks system and tourism, clean water and the amenity value in the landscape).

Biodiversity supports the Australian economy. It forms the basis of our primary production industries, such as agriculture, forestry and fisheries. It provides services to those industries (e.g. by pollinating plants, contributing to soil health and recycling nutrients). Biodiversity is also the basis for the production of many other important human services, such as medicines.

Parks, wilderness areas and open spaces offer scenic and peaceful places to relax and exercise, as well as providing a focal point for community gatherings. Natural systems are the basis for recreational activities, such as fishing, boating, diving, camping and hiking. The economic and social benefits of biodiversity are considerable. For example the recreational fishing industry in Australia is worth an estimated $2.9 billion per year. Similarly, national parks are Australia's biggest tourism asset, as more than 40 per cent of all international visits include a trip to a national park (Griffin and Vacaflores 2004).

Chapter II - Current status of national biodiversity strategies and action plans

In 1996, Australia's first national biodiversity strategy—*the National Strategy for the Conservation of Australia's Biological Diversity* (the strategy)—was prepared by the then Australian and New Zealand Environment and Conservation Council (ANZECC) and endorsed by the Council of Australian Governments.

The strategy contained six 'themes' covering terrestrial, marine and other aquatic (freshwater) biological systems. These themes were:

- conservation of biological diversity across Australia
- integrating biological diversity conservation and natural resource management
- managing threatening processes
- improving our knowledge
- involving the community
- Australia's international role.

Earlier reviews of the strategy

The strategy and its implementation have been reviewed at five-yearly intervals. In June 2001, ANZECC systematically assessed the extent to which the strategy's objectives had been achieved. The review found that some advances had been made (e.g. the adoption of ecologically sustainable wildlife management practices and the implementation of sustainable forestry management practices). However, several of the strategy's objectives had not been fully met. These objectives were identified as gaps and included:

- recognition of the contribution of Indigenous peoples to biodiversity conservation
- adoption of ecologically sustainable practices in fisheries, agricultural and pastoral management
- management of threatening processes
- effective controls on the clearance of native vegetation.

To address these gaps, ANZECC developed the *National Objectives and Targets for Biodiversity Conservation 2001–2005* (DEH 2001) which set objectives and targets for 10 priority outcomes. These objectives and targets were endorsed by the Australian Government, the Australian Capital Territory and the states of Victoria, New South Wales, South Australia and Western Australia.

Second five year review of the strategy

A National Biodiversity Strategy Review Task Group was set up in 2006 to manage the second five-yearly review of the strategy. It reports to the Natural Resource Management Ministerial Council (NRMMC), which superseded ANZECC. The NRMMC consists of the government ministers from the Australian Government, state and territory governments, and the New Zealand Government who are responsible for primary industries, natural resources, environment and water policy.

The task group consists of members from state and territory governments, the Australian Government, the Bureau of Meteorology and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The task group reviewed the strategy by:

- Seeking feedback on the original strategy through consultation with the community, including Indigenous peoples, and with key stakeholders across Australia. This was done through face-to-face meetings (supported by the circulation of a discussion paper), workshops, focus groups and phone interviews. Discussions focused on issues of importance to each group.
- Seeking feedback on the original strategy (and on challenges and opportunities for biodiversity conservation) from different levels of government. One of the avenues used was discussion through committees with responsibility for a diverse set of environment issues and natural resource management responsibilities.
- Reflecting on the effectiveness of the *National Objectives and Targets for Biodiversity Conservation 2001–2005* (DEH 2001) and lessons learnt from their implementation and the implementation of the strategy.

The major issues raised were:

- the extent to which a revised strategy would address the underlying causes of biodiversity decline
- suggestions for how the revised strategy could support specific market based or spatially explicit approaches to prioritising conservation effort
- the need for an increased focus on marine issues
- education and raising awareness of issues impacting on biodiversity conservation and sustainable use
- identifying information gaps and ways to address these gaps.

Research was also commissioned to identify the community's understanding and awareness of the importance of biodiversity. A separate consultancy assessed levels of consistency between the goals of the national biodiversity policy (the original strategy and national objectives) and state and territory biodiversity strategies.

These research projects concluded that:

- awareness of the concept of biodiversity was low in the community and that this low level of understanding had been consistent over the last decade
- issues of biodiversity are perceived as very important amongst biodiversity stakeholders such as Indigenous people, landholders, environmental activists, relevant business sector officials, Australian and state and territory natural resource management agency officials, local government, scientists and educators
- biodiversity is a topic on which biodiversity stakeholders can find common understanding and agreement
- the existence of the strategy was generally viewed as positive as all target audiences recognise the need for an overarching vision and a framework to set the agenda for the nation
- despite positive views about the existence of a strategy, its relevance and application in on-ground activity was questioned by many.

Revising Australia's National Biodiversity Strategy

The National Biodiversity Strategy Review Task Group has developed a draft revised strategy which provides an overarching and high-level strategic national policy framework for biodiversity conservation and sustainable use. The revised strategy covers all of Australia's biodiversity including terrestrial, marine and aquatic ecosystems. It includes six 'priorities for change' which aim to provide a clear framework for all levels of government, industry and the community on actions needed to reverse biodiversity decline in Australia.

The revised strategy is still under development. There will be a public consultation phase for the revised strategy including the national distribution of the consultation draft, an online submission facility, and state and territory based information sessions. There will also be a separate focus on Indigenous consultation.

The revised strategy's vision

While still a draft document, the revised strategy's vision is that Australia's biodiversity is healthy, resilient to climate change and valued for its essential contribution to our existence.

The following principles underlie the development and implementation of the strategy:

- biodiversity is essential for our existence
- biodiversity is of value in its own right
- biodiversity is best conserved in its natural state
- the state of biodiversity reflects the state of the nation
- natural systems are dynamic but have a finite capacity to respond to changes in their biodiversity
- we should apply the precautionary approach to biodiversity conservation
- all Australians have a stake in biodiversity and should contribute to its wellbeing
- our efforts to conserve biodiversity must acknowledge and respect the culture, values, innovations, practices and knowledge of Indigenous peoples
- biodiversity should not be further degraded by the actions of the current generation.

An ecosystem approach to biodiversity conservation and sustainable use should be used to optimise conservation and sustainable use outcomes.

The six 'priorities for change' in the revised strategy are:

- building ecosystem resilience
- mainstreaming biodiversity
- knowledge for all
- getting results
- involving Indigenous peoples
- measuring success.

Ecological resilience, landscape scale connectivity and mainstreaming biodiversity are new areas of focus.

The revised strategy will contribute to addressing the global target of a significant reduction of the current rate of biodiversity loss at the national level. It will do so by focusing on:

- building ecological resilience at landscape scale by protecting habitats and reducing existing pressures
- increasing connectivity by establishing conservation linkages across the landscape and therefore facilitating the adaptation of species to climate change
- mainstreaming biodiversity issues in the government, business, scientific and education sectors. This will ensure that biodiversity is not discounted in development process and government and industry decisions
- establishing base-line data sets and long-term monitoring sites to inform decision making.

The revised strategy aims to guide actions by all levels of government, the community and the private sector. Successful implementation will depend on targeting the following areas:

- raising awareness of the strategy and the issue of biodiversity within the community
- building partnerships with Indigenous Australians, the community and the private sector to conserve biodiversity
- improving the ability of governments to measure success
- focusing implementation at the landscape or regional scale.

All actions in the revised strategy are important but the following stand out:

- Prepare and implement plans for biodiversity conservation at all levels (local, regional, state and continental) that maintain ecosystem health and protect threatened and endangered species.
- Establish a national framework for off-reserve conservation.
- Teach young children about biodiversity and its benefits to their well-being and the world at large.
- Implement an ongoing national campaign that demonstrates the importance of biodiversity to the sustainability of communities and the quality of our lives.
- Wherever possible and appropriate, recognise traditional Indigenous knowledge and environmental management expertise. Apply or extend the utilisation of Indigenous expertise in biodiversity conservation.

Other Australian Government programs and policies that support the strategy

Australian Government natural resource funding programs

Since 1997, the Natural Heritage Trust (NHT) has provided funding to invest in activities that restore and conserve Australia's environment and natural resources, and contribute to the sustainable use of those natural resources. The NHT was established under the *Natural Heritage Trust of Australia Act 1997*, but ended on 30 June 2008 when it was incorporated into the Caring for our Country initiative.

Some achievements of the NHT included:

- treating more than 400 000 hectares of soil for salinity, erosion and acidity
- improving irrigation methods across 19 300 hectares of land
- controlling pests like rabbits, foxes and weeds across 15 million hectares
- involving more than 800 000 volunteers in NHT activities
- leveraging over $4 billion from private landholders, industry, environment organisations and local communities in on-ground action and private investment
- monitoring the health of around 1.3 million hectares of coastal land
- protecting 180 000 hectares of land across the Great Barrier Reef catchment—improving the quality of water reaching the reef lagoon
- adding over 29 million hectares of land to the National Reserve System, Australia's network of protected areas, through the Indigenous Protected Areas and National Reserve System programs
- supporting the uptake of sustainable farming techniques and technology and enhancing land managers' awareness of Landcare and natural resource management activities through the National Landcare Program (NLP)
- developing a regional delivery model with the establishment of 56 community-based regional natural resource management bodies covering all of Australia to focus projects on achieving landscape scale change.

Projects funded by the NHT are listed at www.nrm.gov.au/

NHT investments are also detailed in the annual reports of the NHT and regional investments are detailed in regional program reports available at www.nrm.gov.au/publications.

The NHT provided total funding of $3.1 billion over its life (1997–2008) to projects and research.

The following are examples of obstacles encountered and lessons learnt:

- In 2002, the NHT was refocused with an emphasis on regional delivery. Fifty-six community based natural resource management bodies were created to deliver the NHT and the National Action Plan for Salinity and Water Quality at a regional scale. This was in response to the perception that a regional focus was required to more effectively deliver landscape scale improvements, to provide for greater co-ordination of projects and to meet regional scale environmental targets. The previous approach was considered to not be sufficiently focused on achieving on-ground outcomes and to be too administratively cumbersome.
- Significant human capital, time and financial resources were required to build the necessary links between communities, industry and government for the successful regional delivery of NHT programs.
- The partnership between the Australian Government and state and territory governments has been instrumental in leading effective regional delivery of the NHT.
- Many NHT issues require a sustained, long-term commitment to address environmental degradation and repair, and to develop a more sustainable approach to the use of Australia's natural resources.
- Strategic landscape-scale change is most effectively achieved where communities have a sense of ownership over planning and investment

decisions. They are therefore prepared to make the investments in time, resources and better practices to achieve good outcomes.

The Caring for our Country initiative

Caring for our Country is an ongoing Australian Government initiative that will provide $2.25 billion in funding over its first five years (1 July 2008–June 2013).

It has brought together delivery of a raft of Australian Government programs into an integrated package with one clear goal, a business approach to investment, clearly articulated outcomes and priorities and improved accountability. It integrates a number of existing natural resource management measures into a consolidated initiative. These include the NHT, the National Landcare Program, the Environmental Stewardship program and elements of the Working on Country program.

The goal of Caring for our Country is to have an environment that is healthy, better-protected, well-managed, resilient, and provides essential ecosystem services in a changing climate. Caring for our Country will focus on achieving strategic results and invest in six national priority areas:

- building Australia's National Reserve System
- biodiversity and natural icons
- coastal environments and critical aquatic habitats
- sustainable farm practices
- natural resource management in remote and northern Australia
- community skills, knowledge and engagement.

Achievements of Caring for our Country, while a relatively new initiative, already include the following:

- A statement has been published setting out the expected outcomes of Caring for our Country (*Caring for our Country Outcomes 2008–2013)*. The publication also includes long-term (20 year) projections of outcomes to be achieved and strategies to achieve the five year outcomes.
- The Caring for our Country Business Plan was released in November 2008. The plan seeks proposals for investment in 2009–10. It identifies priorities for investment, outcomes for each of the national priority areas for investment, short-term (one to four) year targets to achieve these outcomes and the process for inviting proposals for activities to deliver investments.
- Caring for our Country has provided the 56 regional bodies across Australia with guaranteed base level funding.
- Environmental Stewardship is a key element of the Australian Government's Caring for our Country initiative. It differs from other Caring for our Country elements by purchasing environmental services from land managers by way of long term contracts of up to 15 years. The aim is to protect high value environmental assets on private land. These environmental assets are chosen from the matters of National Environmental Significance listed under the EPBC Act.
- Through Caring for our Country, Community Coastcare Grants provide small grants for protecting and rehabilitating coastal environments and critical aquatic habitats and enhancing community skills, knowledge and engagement with Indigenous Australians, volunteers and coastal communities.

- Open Grants funding is targeted to several Caring for our Country priority areas—biodiversity and natural icons, coastal environments and critical aquatic habitats, and sustainable farm practices.
- Water Quality Grants funding under the Reef Rescue program have been allocated to projects to improve the water quality of the Great Barrier Reef lagoon. Projects focus on changing land management to reduce nutrient, pesticide and sediment run-off from agricultural land. Reef Rescue is made up of five integrated components:
    - Water Quality Grants
    - Reef Partnerships
    - Land and Sea Country Indigenous Partnerships
    - Reef Water Quality Research and Development
    - Water Quality Monitoring and Reporting, including the publication of an annual Great Barrier Reef Water Quality Report Card.
- The Working on Country element of Caring for our Country is already providing funding for Indigenous land management projects. Working on Country builds on the history of Indigenous land management by contracting Indigenous people to provide environmental services.

Since the Sustainable Farm Practices initiative commenced under Caring for our Country in July 2008, considerable progress has been made. This includes:

- 140 landcare sustainable farm practices (small grants) projects have been approved with a total value of $28 million. Projects range from capacity building and education initiatives to demonstration sites to encourage the uptake of sustainable farm practices.
- 73 open sustainable farm practices grants projects have been approved with a total value of $14.8 million. Projects range from encouraging adoption of best management practices such as integrated pest management, to industries taking stock of and better monitoring and reporting their environmental impacts.

CASE STUDY – THE GREAT BARRIER REEF RESCUE PROGRAM

a) What is Reef Rescue?

Australia's Great Barrier Reef is one of the natural wonders of the world. Its biological diversity is of critical value to the nation and the area is listed as a World Heritage site. Reef-related tourism and primary production in reef catchments also make significant contributions to the Australian and Queensland economies. However, the future health of the Reef is under threat from the impacts of climate change and declining water quality (often resulting from nutrients, chemicals and sediments running into reef waters from nearby farms).

In May 2008, the Australian Government committed $200 million over five years through the Reef Rescue element of Caring for our Country. This funding will address the impacts of declining water quality by helping farmers build on their successful efforts to date to reduce nutrients, chemicals and sediments leaving their land.

Reducing these pollutants flowing from land-based activities onto the reef will give it a chance to regain its inbuilt natural resilience and ability to cope with the impact of climate change.

Through these actions, Reef Rescue will contribute to Australia achieving the following the goals, contributing towards the 2010 Biodiversity target:

- Goal 1: Promote the conservation of the biological diversity of ecosystems, habitats and

biomes

- Goal 5: Pressures from habitat loss, land use change and degradation, and unsustainable water use are reduced
- Goal 7: Address challenges to biodiversity from climate changes and pollution
- Goal 8: Maintain capacity of ecosystems to deliver goods and services and support livelihoods.

b) How will Reef Rescue be implemented?
Reef Rescue will be achieved over five years. For 2008–09 Reef Rescue's focus is on the Water Quality Grants and Reef Partnerships components. The Water Quality Grants component seeks targeted water quality outcomes for the reef lagoon by providing funds to implement land management practices that improve the quality of water entering the reef lagoon. Reef Partnerships provides funding for extension services and capacity building. The other Reef Rescue components interact to support the on-ground actions of the Water Quality Grants, such as through the validation of management practices and assessing the links between practice change and water quality outcomes.

The implementation of the Water Quality Grants and Reef Partnerships component in 2008–09 will contribute to the Convention on Biological Diversity 2010 Biodiversity target Goals 5, 7 and 8, as the funding will be used to increase the adoption of land management practices that reduce the run-off of nutrients, pesticides and sediments from agricultural land into the Great Barrier Reef lagoon.

c) Obstacles encountered in 2008–09
The greatest challenge encountered in 2008–09 in Reef Rescue has been difficulties with compiling the enormous amount of scientific information on the Great Barrier Reef, its threats and impacts from land-based activities. Numerous research and development providers were used to supply the information for Reef Rescue. This information was then assimilated to inform Reef Rescue decisions, identify priorities for investments and identify best management practices. In future years of Reef Rescue, this issue will be overcome through the use of a software tool that can logically analyse large amounts of data.

Policies and programs relating to articles 8(j) and 10(c)

The Australian Government has taken steps to respect, preserve and maintain traditional ecological knowledge, innovations and practices of Indigenous Australians.

The challenges and threats that some Indigenous Australians have identified to their traditional ecological knowledge vary across local and national contexts and differ through individual experience.

At a local level, social, cultural and economic pressures are perceived to be major pressures. Indigenous Australians, particularly the younger generations, are seen to be alienated from their traditional knowledge systems as a direct result of poverty, poor health, low life expectancy, substance abuse, lack of access to lands, displacement, disempowerment and internalised oppression, stolen generation effects, poor regard of knowledge from outside Indigenous communities and general assimilation pressure (as presented by governments, media, educational and religious systems). At a national level, some Indigenous Australians believe progress is hindered by the different policies and programs that operate in different jurisdictions.

Australian governments are taking action on several fronts to help Indigenous Australians conserve their traditional ecological knowledge. These initiatives are outlined below.

National policy

The importance of traditional Indigenous ecological knowledge has been included in the *National Strategy for the Conservation of Australia's Biological Diversity* (NSCABD) which strategy seeks to address Indigenous interests in

biodiversity and includes as an objective - '*to recognise and ensure the continuity of the contribution of the ethnobiological knowledge of Australia's Indigenous peoples to the conservation of Australia's biological diversity.*'

Australian Government legislation and policies

The objectives of the EPBC Act include the explicit recognition of the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity. The EPBC Act promotes the use of Indigenous Australians' knowledge of biodiversity with the involvement and co operation of the Indigenous owners of the knowledge.

Australia's approach to securing access to genetic resources on equitable terms, with the involvement of holders of Indigenous knowledge, is reflected in the Australian Government's recent amendment to the *Environment Protection and Biodiversity Conservation Regulations 2000* (EPBC Regulations). The use of Indigenous traditional knowledge is also addressed in the inter-governmental agreement that governs access to Australia's genetic resources for scientific research and development – the *Nationally consistent approach for access to and the utilisation of Australia's native genetic and biochemical resources* (2002). The agreement requires that all parties 'recognise the need to ensure the use of traditional knowledge is undertaken with the cooperation and approval of the holders of that knowledge and on mutually agreed terms'.

Australian legislative and judicial systems have also recognised customary law in some circumstances. The High Court's 1992 *Mabo* decision is one example. It found that the common law recognises a form of 'native title', where the native title rights and interests in relation to land or waters are founded in and arise from the traditional laws and customs of Aboriginal and Torres Strait Islander people. The *Native Title Act 1993*, enacted in response to the *Mabo* decision, provides a mechanism by which Indigenous Australians can bring claims in the Australian legal system to have their native title rights and interests recognised.

Indigenous investment through Caring for our Country

Through the Australian Government's Caring for our Country initiative a number of the Government's 2007 election commitments relating to Indigenous investment will be implemented. These include:

- employing additional Indigenous rangers
- assisting Indigenous Australians to prepare sea country plans in the Great Barrier Reef
- expanding the Indigenous Protected Area network
- assisting Indigenous Australians to enter the carbon trading market
- providing on-going support for the Indigenous Land Management Facilitator network.

Caring for our Country includes several targets which recognise the importance of traditional knowledge, including:

- to use traditional ecological knowledge in the development of management plans in at least 32 newly initiated Indigenous Protected Area projects over four years
- to involve at least 15 projects in the use or recording of traditional knowledge from Indigenous communities over two years.

Indigenous Advisory Committee
In recognition of the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity, an Indigenous Advisory Committee has been established under the EPBC Act. The committee advises the Minister for the Environment, Heritage and the Arts on the operation of the EPBC Act, taking into account the significance of Indigenous peoples' knowledge of the management of land and the conservation and sustainable use of biodiversity. The first Indigenous Advisory Committee was appointed in 2000. All committee members are Indigenous Australians and are selected for membership on the basis of their expertise in Indigenous land management, conservation and cultural heritage management.

National Land and Sea Conference
The National Land and Sea Conference is a bi-annual conference which supports Indigenous Australians involved in land and sea management. In 2005, Indigenous Traditional Owners and Custodians initiated and coordinated National Land and Sea Management conference at Ross River Station in the Northern Territory. The conference brings together community land and sea managers to share stories and determine future direction for land and sea management across Australia. In 2009, another National Land and Sea Conference will be held with the Australian Government continuing as a collaborative sponsor.

Indigenous Protected Areas
An Indigenous Protected Area is an area of land managed for conservation and cultural heritage protection by its Indigenous traditional owners. Traditional owners enter into a voluntary agreement with the Australian Government and the Government provides some funding to help them fulfill their aspirations to care for their land and their cultural heritage. Australia's Indigenous Protected Areas make an important contribution to Australia's National Reserve System.

For Indigenous communities, managing their land as an Indigenous Protected Area provides direct employment and supports the development of cultural and eco-tourism ventures. It also supports communities to develop management plans for their land which integrate traditional knowledge with contemporary land management practices. The land management activities undertaken on Indigenous Protected Areas involve a wide cross-section of the Indigenous community in work on country with flow-on health, education and social benefits.

Caring for our Country currently provides support to 25 declared Indigenous Protected Areas which protect more than 20 million hectares of high quality habitat and rich cultural landscapes. Another 35 Indigenous communities are taking steps to develop an Indigenous Protected Area on their land with support from Caring for our Country.

Working on Country
Indigenous Australians have long protected and managed land and sea country using traditional knowledge. The Working on Country element of Caring for our Country builds on this knowledge by contracting Indigenous Australians to provide environmental services in remote and regional areas. This work helps to maintain, restore, protect and manage Australia's environment—the land, sea and heritage.

Working on Country creates employment opportunities in remote and smaller regional areas of Australia, where there are often fewer jobs compared with large regional centres and urban areas. Working on Country contributes to broader Australian Government work to build an Indigenous workforce and create jobs in government service delivery.

Australian World Heritage Indigenous Network and Australian World Heritage Advisory Committee

The Australian World Heritage Indigenous Network (AWHIN) is made up of Indigenous representatives from Australia's World Heritage properties. The AWHIN provides a forum to discuss Indigenous issues and share information and experiences relating to Australian World Heritage properties. The network met in 2002, 2004 and 2007 at Australian World Heritage Managers workshops and most recently in October 2008.

The Australian World Heritage Advisory Committee (AWHAC) has been established to provide advice to the Environment Protection and Heritage Council on national issues affecting the management of Australia's World Heritage properties and Australia meeting its international obligations under the World Heritage Convention. AWHAC membership comprises one Advisory Committee chair from each World Heritage property. It also includes Indigenous representation from AWHIN to provide Indigenous perspectives on strategic issues, in recognition of the importance of Indigenous engagement regarding World Heritage issues.

Indigenous Heritage Program

The Indigenous Heritage Program supports the identification, conservation and promotion of Indigenous heritage values of places that are important to Aboriginal and Torres Strait Islander people. Projects funded include those that actively teach traditional knowledge and understanding of customary responsibilities in relation to land and waters, including heritage places.

The Indigenous Heritage Program is delivered in cooperation with the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and Indigenous Coordination Centres (ICCs) as part of the whole of government delivery of services to Indigenous Australians.

Joint management of Commonwealth reserves

The Australian Government, through the Director of National Parks, jointly manages three national parks with their respective traditional owners. These are Kakadu and Uluru-Kata Tjuta national parks in the Northern Territory and Booderee National Park in the Jervis Bay Territory. The parks are all managed in accordance with the EPBC Act. The two parks in the Northern Territory are also managed in line with the *Northern Territory Land Rights Act*.

Each of the three parks has a formal lease in place between the Director of National Parks and land trusts or councils that hold title to land on behalf of traditional owners. The various park leases include broad obligations to promote Indigenous Australian employment and encourage Indigenous Australian business activities.

The obligations vary among the leases but include specific obligations to mount training programs for Indigenous Australians, to contract services and engage as many Indigenous Australian people as possible, to engage training officers and to provide cross-cultural training for non-Indigenous staff. Considerable effort is also being invested in supporting traditional owners to establish tourism ventures in the parks.

The three parks are all managed through a Board of Management which has a majority of traditional owners.

Other policy and program investments

The Australian Government has previously contributed to traditional knowledge recording and maintenance through funding provided by the NHT, the Australian Government Envirofund and the Indigenous Heritage Program. Previous support includes NHT Strategic Reserve funding of $1.035 million in 2006–08 for a traditional

knowledge recording program involving seven traditional owner groups across five natural resource management regions in Queensland. An Indigenous Environmental Knowledge project is currently underway in the Northern Territory with $2.7 million support from the Australian Government, targeted at securing and utilising Indigenous knowledge for environmental outcomes. The Indigenous Heritage Program has provided $190 000 towards the implementation of the Balkanu traditional knowledge recording project which involves three Cape York Indigenous communities. A key objective of the National Partnership Approach for the Sustainable Harvest of Turtle and Dugong, an initiative of the Natural Resource Management Ministerial Council, is to respect traditional knowledge and value the use of traditional practices in relation to the conservation and management of these species.

National Framework for the Management and Monitoring of Australia's Native Vegetation 1999 (Native Vegetation Framework)

Australia's Native Vegetation Framework was first agreed by all Australian governments in 1999. It is currently being reviewed by the Natural Resource Management Ministerial Council to ensure it is up to date and complementary to the revised National Biodiversity Framework.

The goal of the 1999 Native Vegetation Framework was to:

- reverse the long-term decline in the extent and quality of Australia's native vegetation cover by:
    - conserving native vegetation and substantially reducing land clearing
    - conserving Australia's biodiversity
    - restoring, by means of substantially increased revegetation, the environmental values and productive capacity of Australia's degraded land and water
- conserve and where appropriate restore native vegetation to maintain and enhance biodiversity, protect water quality and conserve soil resources, including on private land managed for agriculture, forestry and urban development
- retain and enhance biodiversity and native vegetation at both regional and national levels
- improve the condition of existing native vegetation.

The specific biodiversity outcomes sought were:

- protection of biological diversity and maintenance of essential ecological processes and life-support systems
- maintenance of viable examples of native vegetation communities, species and dependent fauna throughout their natural ranges
- maintenance of the genetic diversity of native vegetation species
- enabling Australia's native vegetation species and communities threatened with extinction to survive and thrive in their natural habitats, and to retain their genetic diversity and potential for evolutionary development, and prevent additional species and communities from becoming threatened
- return of threatened native vegetation species and communities to a secure status in the wild

- reduction in the numbers of listed threatened native vegetation species and downgrading of the conservation threat category of listed threatened species
- limitation of broad scale clearance of native vegetation to those instances in which the proponent can clearly demonstrate that regional biodiversity objectives are not compromised
- no clearing of endangered or vulnerable vegetation communities, critical habitat for threatened species, or other threatened species or communities listed under State or Commonwealth legislation, or identified through the Natural Resource Management Ministerial Council or other government processes
- no activities that adversely affect the conservation status of vegetation communities or the species dependent on them.

The Native Vegetation Framework has been an important basis for the development of vegetation management policy and legislative review in Australia's states and territories. All state and territory jurisdictions now have legislation in place to protect native vegetation from broad scale clearing.

The Australian Government White Paper on the Carbon Pollution Reduction Scheme (released 15 December 2008) will be addressed in the Native Vegetation Framework in light of increased attention within governments and the public on the proposed carbon reduction measures and their potential impacts on land management and native vegetation.

Maintaining Australia's Biodiversity Hotspots program

The Maintaining Australia's Biodiversity Hotspots program aimed to manage threats to biodiversity in areas that are relatively intact, in order to maintain their high conservation value. The program had two components—voluntary land acquisitions and stewardship payments for on-ground biodiversity improvements. A panel of eight non-government conservation organisations was established as service delivery agents to identify investment opportunities for the Australian Government and to deliver program funds in targeted areas across the country.

Large properties with outstanding biodiversity values were targeted for voluntary acquisition by the delivery agents and suitable properties were recommended to the Australian Government for purchase. Through the program seven significant properties were purchased by three of the delivery agents, with the Australian Government funding up to two-thirds of the purchase price. The properties total more than 1.2 million hectares, at a cost to the Australian Government of $13.5 million. The delivery agents will now manage these properties for biodiversity conservation in perpetuity.

Stewardship payments offered direct financial support to landholders to help them protect existing natural habitat with high conservation values. Landholders who accepted an invitation to participate in the program had their properties assessed for biodiversity values and to ensure they met the program criteria. If eligible, a property management plan was then prepared, in collaboration with the delivery agent, with landholders submitting a subsequent bid for funding through a competitive tender process. The most cost-effective bids (biodiversity conservation value for money) were accepted by the Australian Government. Successful landholders entered into a stewardship contract with the delivery agents to undertake the agreed actions in their management plan. Eight stewardship tenders were conducted around the country, with resulting stewardship agreements spanning 183 000 hectares at a cost of $5.95 million.

The competitive tender process for allocating stewardship funds is an innovative method of funding biodiversity conservation on private land. Delivery agents who implemented the tenders used a 'metric' to assess bids in terms of their biodiversity values and costs. Private landholders retained the flexibility to nominate their own management actions and price they would accept to undertake those actions. Through the competitive tender process, program funds were awarded to those landholders that could offer the most cost-efficient biodiversity outcomes.

CASE STUDY – GREAT EASTERN RANGES INITIATIVE

After more than 200 years of development, the landscape of eastern Australia has changed significantly. Fences, roads, dams, industrial and agricultural lands, powerlines, towns and cities dissect the country, creating ‘islands’ on which plants and animals are isolated, restricting spread or movement.

The Great Eastern Ranges Initiative is a globally significant and internationally recognised program that will help people, plants and animals adapt to future environmental threats by maintaining, improving and reconnecting ‘islands’ of natural vegetation along the great eastern ranges. These ranges are 2800 kilometres long and extend from the Australian Alps north of Melbourne, Victoria to the Atherton Tablelands to the west and north of Cairns in far north Queensland.

In NSW, these ranges are 1200 kilometres long. These great eastern ranges, which include the Great Dividing Range and the Great Escarpment of Eastern Australia, and in some places large sections of the intervening highlands:

- are a source of clean water for more than three-quarters of Australians and contain the catchments for the most reliable rainfall in eastern Australia
- contain three World Heritage areas, and many national parks, nature reserves and wilderness areas
- contain almost two-thirds of NSW's vulnerable and endangered plant and animal species
- contain areas of spiritual significance to Indigenous people, and national parks owned by Indigenous people
- are a reservoir for biodiversity, and a 'lifeline' for biodiversity and cultural heritage
- contain rainforests with the greatest concentration of primitive flowering plants in the world—there are over 8000 plant species, of which more than 1200 are endemic
- are one of Australia's most important tourism destinations
- are the only continental-scale north-south area that can support conservation linkages in Australia over the maximum possible elevation, latitude and climate range.

The NSW Government is providing more than $7 million over three years to implement the Great Eastern Ranges Initiative in NSW. The success of the initiative will depend on partners and the voluntary involvement of landholders and the community.

Each partnership will involve the development of local or regional strategies to maintain and improve the conservation management and connectivity of ecosystems and habitats along the great eastern ranges. The Great Eastern Ranges Initiative will integrate and complement a wide range of existing land management programs, including voluntary conservation activities. It will encourage partners to conserve lands that extend over local, bioregional, catchment and state boundaries, as well as encourage visitation and exploration of these ranges by domestic and international tourists.

Much of the great eastern ranges is well protected in national parks, particularly in southern NSW and Victoria. However, there are areas which can be reconnected, and conservation on public and private land can be improved through the combined efforts of partners. This will involve collaborative cross-tenure management of habitat and restoration activities, as well as integrated management of pests, weeds and fire, guided by best available science.

National Reserve System

The National Reserve System is Australia's network of parks, reserves and protected areas. It represents the premier terrestrial biodiversity conservation investment in Australia and includes more than 9000 protected areas covering more than 11 per cent of the continent. The aim is to protect samples of the full range of native Australian ecosystems. The National Reserve System is developed in parallel with the National Representative System of Marine Protected Areas, which provides for the conservation, protection and management of marine and estuarine environments.

The National Reserve System component of the Caring for our Country initiative was previously funded through the NHT. Since 1997, Australian Government funding of more than $103 million has leveraged over $106 million from partner organisations to add almost nine million hectares to the National Reserve System.

It is recognised that the National Reserve System will not, of itself, ensure that all biodiversity conservation objectives are met. Rapid and far reaching changes in the environment due to climate change is amplifying species loss and the expansion of pests and weeds, as well as dramatically altered rainfall patterns. Greater effort is now being applied under the Caring for our Country initiative to address these issues through integrated landscape-scale solutions.

An inter-government National Reserve System Task Group is currently updating the national policy framework for the National Reserve System. The resulting Strategy for the National Reserve System will set out priority actions and a coordinated approach to achieve by 2030 a coherent and truly national reserve system that secures Australia's biodiversity assets in their landscape setting and ensures that they are effectively managed. It is intended that the strategy will be endorsed by the Natural Resource Management Ministerial Council.

Australia's National Biodiversity and Climate Change Action Plan (2004–2007)

Australia's National Biodiversity and Climate Change Action Plan (2004–2007) provided an overall guiding framework to coordinate the activities of different jurisdictions to address the impacts of climate change on biodiversity. An important aspect of future work will be gaining a better understanding of the policy implications. The management of climate risk to Australia's biodiversity in addition to a range of other threatening processes has been a central theme of the review of Australia's National Biodiversity Strategy.

Biodiversity and the 2007 National Climate Change Adaptation Framework

In 2007, through the National Climate Change Adaptation Framework, Australian governments identified biodiversity as one of a number of vulnerable sectors for climate change adaptation. Key actions relevant to biodiversity identified in the National Climate Change Adaptation Framework include:

- Review of the National Biodiversity and Climate Change Action Plan 2004–2007.
- Produce a Climate Change Action Plan for the Great Barrier Reef 2007–2012. In 2007, the Australian Government committed AU$8.9 million towards the implementation of the Great Barrier Reef Climate Change Action Plan (2007–2012).
- Produce practical guidance on how to integrate existing and emerging knowledge about climate change in to management of disturbance regimes.
- Assess the vulnerability of Australia's World Heritage properties and Ramsar wetlands.

The National Climate Change Adaptation Framework also focuses on improving the coordination of national adaptation research, including for biodiversity. To this end, research networks have been established for terrestrial biodiversity, marine biodiversity and resources, and water resources and freshwater biodiversity. Associated National Adaptation Research Plans are being developed.

Since the development of the National Climate Change Adaptation Framework, a number of national climate change action plans relevant to biodiversity have been progressed. The National Strategy and Action Plan for the Role of Australia's Botanic Gardens in Adapting to Climate Change was agreed to by Australian governments in November 2008, and the development of a Climate Change Adaptation Plan for World Heritage and Iconic Areas is in progress.

Natural Resource Management Ministerial Council Climate Change Priority Actions

The Natural Resource Management Ministerial Council has identified a number of priority actions to generate a better understanding of the climate change risks to biodiversity. These actions include a strategic assessment of the vulnerability of Australia's biodiversity to climate change. Other priority actions include work to better understand the impact of climate change on fire regimes and biodiversity in Australia, on Australia's aquatic ecosystems and on ecosystem level impacts for selected biomes.

The strategic assessment of the vulnerability of Australia's biodiversity to climate change will highlight our current state of knowledge, identify future directions for a biodiversity adaptation response and discuss knowledge gaps in research and management. It is due to be finalised in April 2009.

Other activities complementary to the council's priorities are underway and include:

- a preliminary assessment of the implications of climate change for Australia's world heritage properties
- an evaluation of the vulnerability of coastal biodiversity to climate change (being conducted by the CSIRO Division of Marine and Atmospheric Research)
- examining how refuges can reduce the risk posed by climate change for Australia's biodiversity and identifying climate change refuges for Australia's native plants and animals
- a preliminary assessment of the vulnerability of Australia's forests to the impacts of climate change (led by the National Climate Change Adaptation Research Facility in consultation with Australian Government, state and territory agencies).

A series of reports relevant to improving understanding about the likely impacts of climate change on Australia's biodiversity have been released by the Australian Government. These include:

- *Implications of climate change for Australian fisheries and aquaculture - a preliminary assessment* (2008)
- *Variability and trends in the Australian wave climate and consequent coastal vulnerability* (2008)
- *Implications of climate change for Australia's National Reserve System – a preliminary assessment* (2008)

- *The impacts and management implications of climate change for the Australian Government's protected areas* (2008)
- *Climate Change in Australia* (2007)
- *Climate change and the Great Barrier Reef: a vulnerability assessment* (2007)
- *Biodiversity conservation research in a changing climate – Workshop Report* (2007)
- *Climate Change and Invasive Species: A Review of Interactions Workshop Report* (workshop held 2006)
- *Impacts of climate change on Australian marine life* (2006).

Commonwealth Environment Research Facilities

The Commonwealth Environment Research Facilities (CERF) program is a four year, multimillion dollar Australian Government initiative that funds research to identify, assess and develop solutions to the critical challenges facing the current and future health of our national environmental assets. The CERF program addresses Australian environmental research challenges through funding public good and publicly accessible research.

The CERF program is funding multi-disciplinary environmental research providers, which were chosen because they are researching some of Australia's key challenges and are each led by world-class researchers. Much of the research relates directly to the better protection of Australia's biodiversity.

The Global Strategy for Plant Conservation

The Council of Heads of Australian Botanic Gardens and Council of Heads of Australian Herberia have used the principles of the Global Strategy for Plant Conservation as the foundation for a National Climate Change Adaptation Strategy for Australia's Botanic Gardens. This is an outcomes oriented strategy and action plan with four key goals:

- coordinate a national safety net for Australia's plant species through ex situ conservation
- deliver integrated and easily accessible information about Australian plant species
- establish a long-term monitoring program of plant responses to environmental change
- increase national community awareness of climate change in terms of biodiversity conservation and facilitate effective response.

Key actions in this strategy focus on establishing national priorities and best practice standards for ex situ conservation, national coordination of data and data standards, developing a national phenology program integrating science and the community and seeking new strategic partnerships for a national climate change awareness program.

Current research in Australia tends to focus on ecosystems, seed biology and storage, taxonomy and systematics, ecosystem restoration, horticulture and/or threatened species. Approximately 3800 Australian species have been collected in seed banks including 1281 threatened species. Collectively, Australia's botanic gardens are involved in 130 national and regional threatened species recovery projects, including propagation, seed collection and studies, re-introduction biology and strategies to reduce the likelihood of species extinction.

The Australian Natural Heritage Assessment Tool (ANHAT)
ANHAT is a map-supported database that covers the Australian continent. It was developed by DEWHA to assist the efficient and effective assessment of natural heritage values for Australia's World Heritage, National Heritage and Commonwealth Heritage List places. It is also used for managing these values and is also likely to have applications beyond these functions.

ANHAT is used to identify and prioritise areas of Australia for their natural heritage significance, principally biodiversity. Based on rigorous comparisons of known occurrences of specific natural values, ANHAT is an important tool to aid an evolutionary understanding of Australia's biodiversity.

Heritage assessments, whether at an international, national or other level, rely on comparative data. ANHAT enables quick analysis and comparison of recorded biodiversity values across Australia to meet statutory timeframes and provides scientifically robust and repeatable results.

ANHAT uses the most complete, integrated dataset for locations of Australian species. ANHAT holds, manages and analyses data on the location of over 25 000 Australian species to help identify places which best represent what is unique about Australia's biodiversity.

Coastal and Marine policies and programs
Within the context of the *National Strategy for the Conservation of Australia's Biodiversity* there are a number of policies and programs aimed at protecting marine biodiversity. These include:

- marine bioregional planning
- a Nationally Representative System of Marine Protected Areas
- ecosystem-based management of fisheries
- legislated species protection, species recovery, habitat protection and threat abatement activities
- a national system for the prevention and management of marine pest incursions.

Marine Bioregional Planning is being implemented under the EPBC Act. Regional profiles are being developed to provide a detailed picture of each of Australia's five marine regions (North, East, South-east, South-west, and North-west). These profiles include information on key habitats, species, natural processes, heritage values, threats to long-term ecological sustainability and human uses and will form the basis for bioregional plans.

The bioregional plans will inform policy decisions and management actions. They will include key conservation and heritage priorities, such as current and emerging pressures on the marine environment. The plans will set out a range of legislative and administrative tools to manage each marine bioregion, detail the various statutory obligations under the EPBC Act and describe existing conservation and management measures relevant to each of the bioregions. Once finalised, the bioregional plans will act as inputs to decisions addressing matters of relevance to the marine environment. All five of the marine bioregional plans are expected to be completed by mid-2010.

Marine bioregional plans will identify the Australian Government's contribution to the National Representative System of Marine Protected Areas. The system involves

establishment and management of marine parks that 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 National Representative System of Marine Protected Areas in the past five years. Since 2003, approximately 240 000 square kilometres of ocean has been included in the system and the total estate protected area estate now covers more than 900 000 square kilometres.

Some of the recent major achievements in establishing the National Representative System of Marine Protected Areas include:

- Establishment of the Australian Government's south-east network of 13 marine protected areas 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 per cent, protecting representative examples of each of the 70 mapped broad habitat types or bioregions.
- Declaration of the Port Stephens–Great Lakes Marine Park and the Bateman's Marine Park in the state of NSW, so that one-third of that state's marine jurisdiction is now protected by marine protected areas.

Ecosystem based management of fisheries

In all Australian waters ecosystem based fisheries management regimes are being pursued. These regimes consider the impact that fishing has on all aspects of the marine ecosystem.

In the Australian federal jurisdiction, the environmental performance of fisheries is evaluated through the strategic assessment of fisheries. This is a requirement under Part 10 of the EPBC Act. Evaluation includes assessments relating to impacts on protected marine species under Part 13 of the Act and assessments for the purpose of export approval under Part 13A. The assessments are conducted against the second edition of the *Guidelines for the Ecologically Sustainable Management of Fisheries*. The guidelines provide a strategic and transparent way of evaluating the ecological sustainability of fishery management arrangements. Only after passing these assessments is a fishery approved as a Wildlife Trade Operation and allowed to export. Assessment for export approval under Part 13A of the Act also applies to any state fishery with an export component.

Important fisheries management programs, policies and initiatives include:

- *Commonwealth Fisheries Harvest Strategy Policy* which ensures that Commonwealth fisheries are being managed for long-term biological sustainability and economic profitability
- The Fisheries Ecologically Sustainable Development program
- The *National Plan of Action to Prevent, Deter and Eliminate IUU [Illegal, Unreported and Unregulated] Fishing*
- Minimisation of bycatch under the Commonwealth and National Bycatch Policies, including through the use of bycatch reduction devices. Bycatch Action Plans (also known as *Bycatch and Discarding Work Plans*) are required under the Commonwealth Bycatch Policy
- Ecological Risk Assessment/Risk management of the effects of fishing

- Indigenous fisheries policy
- The *National Plan of Action for the Conservation and Management of Sharks*
- *Threat Abatement Plan for the Incidental Catch (or by-catch) of Seabirds During Oceanic Longline Fishing Operations*
- National Strategy to Address interactions Between Humans and Seals: Fisheries, Aquaculture and Tourism
- Recovery plans for listed threatened marine species.

Legislation is in place in all Australian waters making it an offence to harm protected species and providing for species recovery activities. The EPBC Act includes provisions for the protection and management of threatened, migratory and marine species. Under the Act, it is an offence to kill, injure, take, trade, keep, or move any member of a listed threatened, migratory or marine species on Australian Government land or in Commonwealth waters without a permit. Conservation and sustainable use of marine species and ecosystem involves:

- determining the threats faced by marine species
- preventing, mitigating and/or managing those threats
- supporting the recovery of the species such that they can be removed from the EPBC list of threatened species
- scientific research, community education, partnership building and working with relevant industries and other stakeholders.

Australian Government activities to support marine and migratory species protection have in recent years focused on cetaceans, the six species of marine turtles that occur in Australian waters, seabird conservation, dugongs and sharks.

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. This was done through implementation of the *National System for the Prevention and Management of Marine Pest Incursions*. The national system has three elements that are being progressively implemented:

- Strategies to minimise the risks of species incursion or translocation in Australia aim to manage all potential vectors. This is done by addressing ballast water and biofouling risks for commercial ships, together with biofouling risks associated with recreational, non-trading, petroleum and fishing vessels, marine aquaculture operations, port, harbour and marina facilities, and the aquarium trade.
- The emergency preparedness and response element aims to contain or eradicate new marine pest incursions to Australia when feasible, through nationally coordinated responses and sharing of costs.
- The ongoing management and control element of the national system aims to contain and control introduced marine pests that have established viable populations within Australia and are having, or are expected to have, a significant impact on the marine environment, industry, human health or amenity. National control plans have been developed for six established species.

Genetic resources and benefit sharing

Australia has a legislative framework in place to ensure that when new products or scientific advances are generated using genetic information from Australian species, Australia shares a portion of the benefits. This allows a portion of any profits to aid biodiversity conservation in the area the native species came from.

Benefit sharing agreements are negotiated between the jurisdiction that the genetic material is sourced from and the organisation using it. These are commercial contracts and normal commercial practice applies regarding intellectual property.

Australia has long shared the genetic resources of its woody flora, especially eucalypt, acacia and casuarina trees, with the rest of the world.

The CSIRO Australian Tree Seed Centre has functioned for nearly 40 years as a national and international tree seed bank. Australia's unique woody flora has significant social and commercial significance in more than 100 countries and seeds have been distributed mostly without restriction concerning rights to genetic resources or intellectual property**.**

Seed banking

The Council of Heads of Australian Botanic Gardens and Heads of Australian Herbaria are engaged in programs of scientific research and technical cooperation and technical transfer such as the Millennium Seed Bank Project under the broad direction of the Royal Botanic Gardens Kew. The Millennium Seed Bank Project has an international membership and traces its origins to the *Convention on Biological Diversity*. In addition, there is a fledgling Australian nationally coordinated effort, Australian Seed Conservation and Research, funded by the Kew Gardens and Australian state agencies until 2010. The Australian Network for Plant Conservation published nationally accepted guidelines for conserving seed—*Germplasm Conservation Guidelines for Australia* (Touchell et al. 1997)—and these guidelines are currently under review with the revised guidelines expected to be published in 2009.

Implementing the *Convention on Biological Diversity* in Queensland – sharing benefits of genetic resources

Australia is home to hundreds of thousands of species of plants and animals, many of which are found nowhere else on earth. This means Australia offers enormous potential when it comes to biodiscovery—but we must carefully manage access to genetic resources so biodiversity doesn't suffer.

In 2004, the Australian state of Queensland enacted the *Biodiscovery Act 2004*. The Act provides streamlined, sustainable access to Queensland's native biological resources while returning a fair and equitable benefit to the community. This means that if the genetic code of a native plant or animal species from Queensland is used to develop a new medicine or industrial product for instance, then a portion of the profits is returned to the state. This profit can be used to help protect habitat for the species behind the advancement.

The Act is Queensland's mechanism for complying with Australia's national genetic resources policy (the *Nationally Consistent Approach for Access to and the Utilisation of Australia's Native Genetic and Biochemical Resources*). It also helps fulfill Queensland's commitment to Article 15 of the *Convention on Biological Diversity*.

The Biodiscovery Act seeks to create legal certainty for biodiscovery organisations; ensure ecologically sound and sustainable collection activities; provide an equitable sharing of benefits

for all Queenslanders; and encourage value-added research and commercialisation in Queensland.

Under the Act, organisations apply for a single permit from the Queensland Government to collect genetic resources. They sign up to a contractual benefit sharing agreement which gives them legal certainty if the research leads on to commercialisation of a discovery.

Ecologically sustainable use
The Biodiscovery Act ensures that the collection of native biological material is ecologically sustainable. This is in line with the nationally consistent approach and the regulations controlling access to, and utilisation of, the genetic resources of native species in Commonwealth areas. Only quantities reasonably required for laboratory-based biodiscovery research can be collected under the Act. To support efficient, consistent and transparent administration of the permitting regime, the Queensland Government developed a Compliance Code[i], information sheet[ii] and guidelines[iii] for taking native biological materials. The code was developed in consultation with researchers, industry and other relevant stakeholders.

Benefit sharing – world's best practice
A biodiscovery plan, detailing the applicant's proposed biodiscovery activities, must be submitted with the application for a permit. Biodiscovery plans are prepared by organisations in consultation with the Queensland Government. These plans form the basis for negotiating benefit sharing agreements which govern the use of native biological resources under the Act.

The benefit sharing agreements are based on the world's best practice guidelines, the *Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilisation.* This offers a flexible and practical approach to benefit sharing.

The Biodiscovery Act acknowledges the value of both non-monetary and monetary benefits. Training, education, technology transfer, the discovery of new species and mapping Queensland's biodiversity are recognised as valuable benefits arising from concerted biodiscovery efforts. Biodiscovery has contributed to the Queensland Museum's knowledge of marine invertebrate faunas of Queensland, with thousands of new species discovered. To give one example, the knowledge of sponge fauna has increased threefold. Most of these discoveries are new to science. In addition, through biodiscovery new populations of threatened species of plants have also been discovered in remote areas, providing the genetic resources to propagate the threatened species.

Indigenous biodiversity knowledge

In line with the national genetic resources policy, the Queensland Government recognises the need to ensure the use of traditional knowledge is undertaken with the cooperation and approval of the Indigenous holders of that knowledge and on mutually agreed terms. This is achieved through the *Queensland Biotechnology Code of Ethics* which provides an ethical framework to guide the development of biotechnology in Queensland. While the code is not legally binding, it is mandatory for all organisations undertaking biotechnology activities, including biodiscovery, if they receive state funding or assistance and/or enter into a benefit sharing agreement with the state.

By subscribing to the code, organisations agree that

'Where in the course of biodiscovery we obtain and use traditional knowledge from Indigenous persons, we will negotiate reasonable benefit sharing arrangements with these persons or communities.'

PUTTING THE BIODISCOVERY ACT 2004 (QLD) INTO PRACTICE

Case Study 1: Value-added biodiscovery in regional Queensland

Located in far north Queensland close to the Wet Tropics, EcoBiotics Ltd specialises in discovery and preclinical development of small molecule drug candidates for the human and animal health markets using its proprietary EcoLogic™ technology. Research and development

focuses in four therapeutic areas: oncology, infectious diseases, inflammation and parasite control. A subsidiary of the company also discovers new plant extracts and purified chemicals for use as nutraceuticals and cosmetic ingredients. Cosmetic work focuses on antioxidants, anti-inflammatories, weight control agents, skin whiteners, skin rejuvenators and treatment for acne.

One of EcoBiotics' major competitive strengths lies in its proprietary technology EcoLogic™ for identifying rich sources of chemical talent in nature. EcoLogic™ provides hit rates in crude extracts that are at least 10 times higher than the industry standard by integrating: specific knowledge of the plants, animals and microbes of tropical rainforest ecosystems and the chemistry that drives their ecological interactions; and mechanistic understanding of defence chemistry and signal transduction in rainforest plants.

EcoBiotics has benefit-sharing agreements with the Queensland Government as well as private landholders in Queensland and Melanesia. These agreements grant access to more than a million hectares of the world's most diverse rainforests, from humid coastal lowlands to mountain cloud forests.

To further develop and market its products EcoBiotics builds partnerships with companies with complementary expertise and technologies. EcoBiotics has industry partners in the USA, Europe, Japan and Australia. The company actively seeks new partners and opportunities for its chemicals and discovery capabilities.

Case Study 2: Maximising the return on ecologically sustainable collections

Griffith University's Eskitis Institute for Cell and Molecular Therapies investigates novel drug and cell therapies to target the molecular and cellular mechanisms of human disorders, including neglected diseases. Eskitis has an extremely strong biodiscovery capability as a result of a 14 year collaborative partnership with pharmaceutical company AstraZeneca.

The basis of Eskitis' biodiscovery activities is Nature Bank, a unique library of optimised natural product fractions. The fractions are derived from a collection of over 45 000 samples of plant and marine invertebrates drawn from megadiverse areas in tropical Queensland, Tasmania, Papua New Guinea and China. The collection has an unparalleled taxonomic breadth containing almost 60 per cent of global plant diversity at the family level and includes all major plant families containing more than one genus. The collection contains 9500 biota of marine invertebrates, including 10 per cent of global diversity of the world's sponges and ascidians and five per cent of global diversity of soft corals and gorgonians.

In collecting the samples that have been processed to produce Nature Bank, Eskitis has ensured that benefit sharing agreements are in place with relevant land owners, such as the Queensland Government (in accordance with the Biodiscovery Act, landowners in Papua New Guinea and the Chinese government.

Samples in Nature Bank have been processed using Eskitis' proprietary techniques to yield over 200 000 natural product fractions that contain only drug- and lead-like compounds. These fractions are a unique source of novel compounds.

The Nature Bank has attracted a significant partnership with Sweden's Innate Pharma and the pharmaceutical giant Pfizer in the quest to develop new medicines. Eskitis is working towards engaging more drug discovery entities. Eskitis is also undertaking screening for non-profit drug development organisations, such as the Medicines for Malaria Venture and the Drugs for Neglected Diseases Initiative.

The Global Taxonomy Initiative

Australia contributes to the implementation of the Global Taxonomy Initiative through the Australian Biological Resources Study. The study is an Australian Government initiative that funds, documents and disseminates information on the taxonomy of Australia's biota. Australian collection institutions, including herbaria, museums and

CSIRO are significant focus points for taxonomic research in Australia. A number of Australian universities still provide some formal training in systematics, though this has been in a steady decline. The Australian Biological Resources Study works closely with the Council of Heads of Australian Herbaria, the Council of Heads of Australian Fauna Collections, the Council of Heads of Entomological Collections, the Australian Microbial Research Network and the recently formed Council of Universities Teaching Systematics.

Australia held a National Taxonomy Forum in 2007 which bought together over 90 taxonomists, government officials and users of taxonomy to identify the major issues for the future of taxonomy in Australia and actions required. The forum report can be viewed at www.environment.gov.au/biodiversity/abrs/workshop-forum/ntf.html.

Australia has also conducted a recent review of the taxonomic workforce. The review shows a continued drop in numbers of taxonomists, with a 14 per cent loss of capacity since 1991 and over 30 per cent of the workforce either retired or voluntary. The average age of the workforce is over eight years above the national average. The Australian Biological Resources Study has forecast that Australia will lose between 30 and 50 per cent of its taxonomists over the next 15 years. This represents a significant impediment to Australia's biosecurity, agriculture, fisheries and conservation activities.

In 2006, the Australian Government funded the Atlas of Living Australia, a four year project involving a partnership of Australian scientific institutions and organisations (www.ala.org.au). This builds on Australia's existing commitment to online biodiversity information presentation, Australia's Virtual Herbarium (www.anbg.gov.au/avh/), and the On-line Zoological Collections of Australian Museums (www.ozcam.gov.au/). The Atlas of Living Australia is developing a data management system to catalogue and organise information relevant to the study of Australia's biodiversity. The project will bring together information from a wide variety of sources, including many of the country's most significant natural history collections and herbaria, ecological and observational datasets, images, online literature, diagnostic tools and molecular data sets. The atlas is linked to global initiatives, notably the Global Biodiversity Information Facility and the Encyclopedia of Life.

In 2007, the Australian Government funded the Taxonomy Research and Information Network (www.taxonomy.org.au/), a consortium of the CSIRO and a number of universities. The network will address critical gaps in taxonomic knowledge of key Australian animal and plant groups and is working to develop creative technological responses to impediments to taxonomy.

Australia has also formed an Australian Barcoding Network as part of the global International Barcode of Life (iBOL). It aims to use the CO1 gene region to rapidly identify biodiversity for a range of conservation, biosecurity and industry uses. This is a potentially important new direction for diagnostics globally.

In 2008, Australia reviewed funding under the National Taxonomy Research Grant Program administered by the Australian Biological Resources Study. The program has been comprehensively restructured in response to the National Taxonomy Forum, with a requirement for cash co-funding and defined streams for research and capacity. The Australian Biological Resources Study has sought to expand the program by forming corporate partnerships. The first such partnership, under the CReefs global research initiative, is with BHP Billiton, the Great Barrier Reef Foundation and the Australian Institute of Marine Science. This partnership will allow taxonomic work to be conducted on Australian reef sites. A consortium of scientists will sample and analyse coral reef biodiversity at three key Australian reef sites—the Great Barrier Reef's Heron and

Lizard islands and Ninglaoo Reef in Western Australia. The resulting changes to the program have substantially increased the commitment to encouraging early career researchers and information capture from late career researchers.

National Water Reforms

Significant reforms to water resources management has occurred during the reporting period which are directed toward improving provision for ecological values and ecosystem services of the Murray-Darling Basin. The *Water Act 2007* (the Act) commenced on 3 March 2008 and will enable water resources in the Murray-Darling Basin to be managed in the national interest, optimising environmental, economic and social outcomes.

The Act establishes an independent Murray-Darling Basin Authority with the functions and powers, including enforcement powers, needed to ensure that Basin water resources are managed in an integrated and sustainable way.

The Act requires the Authority to prepare a strategic plan for the integrated and sustainable management of water resources in the Murray-Darling Basin. This plan is referred to as the Basin Plan. The Act establishes mandatory content for the Basin Plan, including:

- Limits on the amount of water (both surface water and groundwater) that can be taken from Basin water resources on a sustainable basis—known as long-term average sustainable diversion limits. These limits will be set for Basin water resources as a whole and for individual water resources.
- Identification of risks to Basin water resources, such as climate change, and strategies to manage those risks.
- Requirements that a water resource plan will need to comply with if it is to be accredited under the Act.
- An environmental watering plan to optimise environmental outcomes for the Basin by specifying environmental objectives, watering priorities and targets for Basin water resources.
- A water quality and salinity management plan which may include targets.
- Rules about trading of water rights in relation to Basin water resources.

The Basin Plan will help to give effect to relevant international agreements (to the extent that those agreements are relevant to the use and management of Basin water resources) and to balance environmental, social and economic considerations as they relate to the integrated management of Basin water resources. Some relevant international agreements include the Biodiversity Convention, the Ramsar Convention, the Migratory Species Convention and the Climate Change Convention.

The Act establishes a Commonwealth Environmental Water Holder (CEWH). The CEWH will manage the Commonwealth's environmental water to protect and restore the environmental assets of the Murray-Darling Basin, and outside the Basin where the Commonwealth owns water.

Funding for Water Reform: Water for the Future

In April 2008, the Australian Government announced an investment of AU$12.9 billion over 10 years to support water reform. Water for the Future is built on four key priorities that integrate what all levels of government in Australia should be striving to achieve in the area of water:

- taking action on climate change
- using water wisely
- securing water supplies
- supporting healthy rivers.

The Australian Government's water holdings will include its share of water savings made through the programs under Water for the Future.

In the Murray-Darling Basin, these holdings will be managed consistent with the Environmental Watering Plan that will be developed by the Murray-Darling Basin Authority. The Environmental Watering Plan will be part of the Basin Plan and will be developed in consultation with state governments and stakeholders. The Murray-Darling Basin Authority will coordinate its activities with other holders of environmental water in the Basin.

The National Water Initiative

The National Water Initiative (NWI) is Australia's blueprint for national water reform. The NWI Agreement was signed by all governments at the 25 June 2004 Council of Australian Governments (COAG) meeting (with the exception of Tasmania which signed the Agreement on 3 June 2005 and Western Australia which signed the Agreement on 6 April 2006).

The NWI builds on the previous COAG framework for water reform signed in 1994 by the Australian Government and all state and territory governments. Since then, national reform agreements of this kind have proved important in Australia for guiding the shape of water reform and maintaining the pace of water reform.

The NWI represents the shared commitment of the Australian Government and the state and territory governments to water reform in recognition of:

- the continuing national imperative to increase the productivity and efficiency of Australia's water use
- the need to service rural and urban communities
- ensuring the health of river and groundwater systems, including by establishing clear pathways to return all systems to environmentally sustainable levels of extraction (paragraph 5, NWI).

The National Water Initiative signifies:

- a commitment to identifying over-allocated water systems, and restoring those systems to sustainable levels
- the expansion of the trade in water resulting in more profitable use of water and more cost-effective and flexible recovery of water to achieve environmental outcomes
- more confidence for those investing in the water industry due to more secure water access entitlements, better registry arrangements, monitoring, reporting and accounting of water use, and improved public access to information
- more sophisticated, transparent and comprehensive water planning
- better and more efficient management of water in urban environments, for example through the increased use of recycled water and stormwater.

The Living Murray Initiative
The Living Murray Initiative was initiated in 2004 and has a total committment of AU$700 million over five years to recover an annual average of up to 500 gigalitres of water for environmental use at six icon sites, which include parts of the following Ramsar sites:

- 'Riverland', South Australia
- New South Wales Central Murray State Forests
- Barmah Forest, Victoria
- Gunbower Forest, Victoria
- Hattah-Kulkyne Lakes, Victoria
- The Coorong, and Lakes Alexandrina and Albert Wetland, South Australia.

The Murray-Darling Basin Commission has a complementary investment stream under the Living Murray Environmental Works and Measures Program. This Program facilitates effective application of recovered water through the design and construction of site-specific infrastructure and other measures.

The NSW Wetlands Recovery Program
The NSW Wetland Recovery Program (total funds AU$26.8 million) is a suite of projects that aim to restore the ecological health of the Gwydir Wetlands and the Macquarie Marshes. The Australian Government AU$13.4 million contribution will ensure best use of environmental water in NSW. It will target projects to improve the science, water delivery and community engagement aspects of environmental water management.

The Program consists of four sub-projects:

- acquisition and management of water for environmental benefit
- enabling better use of environmental water by modelling, monitoring and decision support system
- ensuring better delivery of environmental water through works and river management measures
- boosting the benefits of environmental water on private land through conservation agreements, and recording Aboriginal culturally significant wetland activities.

The Program will build on the NSW Wetland Recovery project previously funded through the Water Smart Australia Program and expand the NSW Governments Riverbank Initiative.

NSW Rivers Environmental Restoration Program (RERP)
The NSW Rivers and Environmental Restoration Program will build on the NSW Wetland Recovery program, previously funded through the Water Smart Australia Program, and expand the NSW Government's Riverbank Initiative. RERP, with AU$101.5 million NSW Government funding and AU$71.7 million Australian Government funding,) supports threatened environments, primarily through the purchase and delivery of greater volumes of water. Specifically, the program purchases water access licences through the existing water market and directs this water to the targeted wetlands.

Under the RERP, funding is available for water purchase and the costs associated with the management and use of water licences. Australian Government funds will also be used to ensure that the benefits of the acquired water are secured, maximised and demonstrated. In particular, it will:

- help to build a better understanding of the eco-systems we are trying to support through various research projects and the development of management tools;
- invest in the infrastructure needed to maximise the benefits of water delivered for these systems; and
- communicate and seek partnerships with landholders, whose co-operation and commitment is required to ensure the success of the program.

Wild River Catchments

The then Australian Heritage Commission's Wild Rivers Project defined wild rivers as:

> 'A channel, channel network, or connected network of waterbodies, of natural origin and exhibiting overland flow (which can be perennial, intermittent or episodic) in which: the biological, hydrological and geomorphological processes associated with river flow; and the biological, hydrological and geomorphological processes in the river catchment with which the river is intimately linked, have not been significantly altered since European settlement.'

Wild rivers are rare, unique environments, with many important environmental and social values. Some of the most important values of wild river catchments include:

- rarity (wild river catchments are becoming increasingly scarce on a global scale; as their scarcity increases, their environmental value also increases)
- habitat (wild river catchments are often biologically diverse and productive habitats)
- water quality protection
- scientific (e.g. wild river catchment can provide baseline data for environmental monitoring and information on the functioning of natural systems).

The current and future pressures on these catchments include: increasing recreation and tourism (e.g. eco-tourism enterprises); fire; land clearing; stock grazing and crop cultivation (including pastoral diversification); mining; infrastructure for access and services; commercial and recreational fishing and aquaculture projects; and timber production and harvesting.

Chapter III - Sectoral and cross-sectoral integration or mainstreaming of biodiversity considerations

The following are primarily extracts from a soon to be published study (the Griffin Study) commissioned by the Australian Government that explored the alignment of the 1996 National Biodiversity Strategy with relevant natural resource management policies and codes of practice.

In the past few decades, industries across all sectors have been proactive in development of strategies to address environmental issues and to implement environmental management. Several industries are at the forefront of developing accreditation and best management practice systems, many of which involve practices that impact positively on biodiversity. Examples include:

- the mining industry in relation to protection of the surrounding environment and rehabilitation post mining
- the cotton industry in relation to management of chemicals
- intensive animal industries in relation to waste and water quality management
- the rice industry in relation to groundwater accessions and efficient water management.

Environmental management activity relating to the manufacturing sectors is dealt with largely by Australian, State and Territory legislation aimed at reducing pollution and environmental impacts. As such, environmental issues are considered on a case-by-case basis as they relate to specific projects or operations. In the service industries, including tourism, the trend towards eco-markets and environmentally sound management is becoming stronger, encouraged by an increasingly informed market and customer demand for demonstrable commitment by firms to environmental values.

In the primary industries, the growing commitment to environmental management is also driven to some extent by new legislation. This is particularly the case in relation to chemicals, product safety, health and safety, water management, off-farm pollution from intensive industries, resource security and vegetation management. But there is also a strong stewardship ethos among landholders and a common desire to look after both the natural resources and the farm environmental values.

Several primary industries have developed best practice guidelines and are implementing programs to encourage adoption by members. Some have progressed to accreditation systems that provide incentives for members to achieve higher levels of environmental management. A few industries have been able to capitalise on premium prices for produce produced under accredited branding that requires meeting environmental management standards.

The organic produce industry, growing at an estimated 30 per cent per annum globally, has successfully developed a premium market based on consumer preference for food grown with minimal chemicals. Despite problems with accreditation systems, including a lack of consistent standards, the organic produce industries have responded to and further promoted a rapidly growing premium market.

Some of the major buying chains are also responding to growing consumer demand for higher quality produce and a preference for food and other products produced without degrading natural resources, including water and land. Buying chains are expanding

their accreditation systems to include environmental performance criteria and are increasingly seeking to secure suppliers who can become accredited to produce food that meets environmental standards.

Some key industries are working closely with governments to develop practical systems that will enable their businesses to meet environmental and NRM legislative requirements through best practice accreditation. The cotton industry is one example. In Queensland, the state government and peak industry body, the Queensland Farmers Federation, has signed a memorandum of understanding that sets the basis for development of industry accreditation. It is focused on meeting the raft of state regulations relating to water, threatened species and vegetation management. Other partnerships to meet regulatory requirements include:

- the Victorian vegetable growers and the Victorian Environment Protection Agency
- members of the Greenhouse Challenge and the Australian Government
- rice growers and the NSW Environment Protection Agency
- individual landholders, state governments and regional natural resource management groups engaged in negotiated agreements relating to native vegetation.

A range of industry policies were reviewed to examine as part of the Griffen study to see how well they align with national biodiversity policy and objectives. These are listed in Table 1.

Table 1: Industry biodiversity/environment policy reviewed for the study

Industry/industry association	**Biodiversity policy**
Cotton industry	Sustainability policy relating to river health, vegetation management, soil health, salinity, climate change and biotechnology
Rice industry	A *Biodiversity Strategy for the Australian Rice Industry* (2002)
Dairy industry	*Dairying for Tomorrow: A National Strategy for Sustainable Resource Management*
Wine industry	*Sustaining Success: The Australian Wine Industry's Environment Strategy* (2002). Advocates a national approach, integrated across industry component, proactive and focussed on education. *Water to Wine* – a policy for water management in the wine industry. Advocates building knowledge regarding water use and requirements in the industry, water conservation, efficiency measures and re-used options.
Tourism industry	Independent accreditation systems include nature conservation standards and monitoring
Sugar industry	*Cane Growers Public Environment Report 2005*
Forest industries	Biodiversity protection and sustainable forest management are key elements of the *Australian Forestry Standard* (2007)
Coal industry	No specific biodiversity policy Coal in a Sustainable Society (CISS) Cooperative Research Centre for Coal in Sustainable Development

Industry/industry association	Biodiversity policy
	Australian Coal Association Sustainable Development Program
Meat and livestock	*National Environmental Guidelines for Piggeries* Egg Corp Assured – a quality assurance program that addresses environmental sustainability Various programs have biodiversity objectives. For example, the Grain and Graze Research and Development project has joint aims of increasing profits and improving environmental management. Meat and Livestock Australia supports investment (A$6.75m in 2008–09) into sustainability objectives including improving biodiversity and weed management
Wool	The Land, Water and Wool program of Australian Wool Innovation Ltd. and Land and Water Australia supports research and development into sustainable landscapes including biodiversity conservation, through the Biodiversity and Native Vegetation Program
National Farmers Federation	Have policy relating to native vegetation management
Queensland Farmers Federation	Queensland Farmers Federation Environment and Natural Resources Committee (1994)

The industry policies and strategies reviewed for the Griffen study give a reasonably representative view of the range of responses emerging in recent times. While highly variable in breadth and focus, they share a number of features in common including:

- they target issues of perceived highest risk (e.g. resource security, product health and safety, operational health and safety)
- they are generally focused on production parts of chain where legislation is operating
- cradle to grave approaches are rare
- mechanisms for implementation include best practice, environmental management systems, accreditation/branding
- they focus on demonstrating credentials and lobbying
- there is a push pull response to legislation
- a very strong focus on research and development and strong links with research and development agencies such as Cooperative Research Centres and the CSIRO
- the responses are primarily voluntary and regulation is resisted.

In relation to biodiversity specifically, the industry policies and strategies have the following characteristics:

- a tendency to be aspirational
- limited use of targets
- a reticence to create green markets
- almost all industry development in this area is co-sponsored by government

- a growing integration with regional natural resource management groups in linking best practice on farm with incentives to achieve regional biodiversity targets.

Table 2: Industry biodiversity targets

Industry	Targets
Cotton industry	BMP criteria and accreditation No specific biodiversity targets
Rice industry	Participation targets, best practice targets Specific biodiversity targets in level three of the Environmental Champions Program
Dairy industry	Dairying for Tomorrow best practice targets encompass a range of water, land, soil and vegetation management practice that will impact on biodiversity
Seafood industry	No specific biodiversity targets
Wine industry	No specific targets but action plans proposed could have targets
Tourism industry	No specific targets
Sugar industry	Targets in relation to riparian vegetation conservation and reduced nutrient and soil run-off to the Great Barrier Reef
Forest industries	Biodiversity targets were set during the establishment of a Comprehensive, Adequate and Representative Forest Reserve System
Coal industry	No specific biodiversity targets
Meat and livestock	No specific biodiversity targets
Wool	No specific biodiversity targets
National Farmers Federation	No specific biodiversity targets
Queensland Farmers Federation	No specific biodiversity targets

Source: Industry interviews and documents 2006, data in Griffin Study (soon to be published)

Table 3: Alignment of industry environment policy with NBS and national objectives 1

Industry	Key focus and links to biodiversity policy	Mechanisms for implementation
Cotton	Primarily focused on chemical residues, weeds and diseases, water use efficiency. To a lesser extent, protection of native plants and animals and soil health, linked to state water management legislation and development controls, linked with pesticide residue standards	BMP criteria and accreditation No specific biodiversity targets
Rice	Integrating production and biodiversity conservation. Ultimately will be linked to water license conditions and state water sharing plans and catchment targets.	Environmental Champions Program to integrate environmental management and productive rice farming including research and development, piloting and implementation Flexible, voluntary, industry-based environmental management system
Dairy	Effluent management and water use efficiency. To a lesser extent grazing and soil management, greenhouse emissions and management of riparian areas. Linked with state pollution control and water quality legislation.	Dairying for Tomorrow partnerships between industry, farmers association, government and regional natural resource management groups Murray Diary Action Plan proposes an Environmental Quality Assurance System
Seafood industry	Minimising bycatch and improving technology to target cohort/size and maximise recruitment to breeding. Includes environmental issues - protected areas, marine pests and diseases.	Environmental management system supported by partnership between the Australian Government Department of Agriculture, Fisheries and Forestry, Fisheries Research and Development Corporation and the industry
Wine	Water quality and waste water; waste management and chemicals Priority issues include enhancing ecological systems and protecting biodiversity	Propose environmental standards and guidelines and a national environment wine reporting system Propose benchmarking
Tourism	Independent accreditation systems include nature conservation standards and monitoring	Accreditation systems for tourism – e.g. the EarthCheck system used by Green Globe
Sugar	Biodiversity issues include impacts on the Great Barrier Reef and fisheries Raising awareness and increasing engagement by farmers in the codes of practice and FMS Specific targets in relation to riparian vegetation conservation and reduced nutrient and soil runoff to the reef	Code of Practice (1998) – need new program to promote more change Proposed development of a Farm Management System

1 Data from Griffen Study

Industry	Key focus and links to biodiversity policy	Mechanisms for implementation
Forests	Biodiversity and sustainable forest management are key elements of the Australian Forestry Standard Consistent with RFAs and National Forest Policy Statement	Comprehensive codes of practice and regulations apply in each jurisdiction. Independent certification and accreditation systems – e.g. Australian Forestry Standard, Forest Stewardship Council, ISO 14000 series of environmental management standards, and Joint Accreditation System of Australia and New Zealand
Coal	No specific biodiversity policy Broadly consistent with Australian Government climate change policy Greenhouse, improve image of coal and produce clean coal	Emphasis on research and development and communication Greenhouse Challenge partner Extensive partnerships in the Cooperative Research Centre
Meat and Livestock	Focus is strongly industry-based Key issue is product safety and quality Various programs have biodiversity objectives – e.g. Grain and Graze Research and Development project	Research and development into grazing systems, pasture management and natural resource management Product quality standards
Wool	Improvements in productivity while retaining native vegetation and habitat Consistent with policy for development of industry best practice that includes biodiversity conservation	It is a research and development program aimed at developing best practice guidelines and provide inputs to an accreditation scheme in the future. There are several documented case studies (2005) showcasing ways woolgrowers are conserving biodiversity and increasing productivity – e.g. Traprock Wool Association has an environmental management system - the Traprock Integrated Management System.

Sources: Source: Industry interviews and documents 2006, data in Griffin Study (soon to be published)

Among the industry strategies, there are notable examples of highly developed policies and codes of practice that stand out in relation to biodiversity. These strategies specifically address biodiversity conservation as an issue (Table 1). They are linked to implementation programs such as best practice and accreditation systems. They include:

- the rice industry – *A Biodiversity Strategy for the Australian Rice Industry (2002)*
- the dairy industry – *Dairying for Tomorrow: A National Strategy for Sustainable Resource Management*
- the wine industry – *Sustaining Success: The Australian Wine Industry's Environment Strategy (2002)*
- the forest industry – *Australian Forestry Standard* and Forest Stewardship Council as independent third party forest certification standards for Australia's production forests.

It is common among industry implementation environmental management programs to operate a tiered system for accreditation. For example, the rice industry Environmental Champions Program takes producers through five levels of development from basic industry standards, beyond industry standards, putting plans into action, trade, innovation and eco-efficiencies and regional/catchment partnerships. Biodiversity conservation comes into effect in the third tier.

Similarly, the environmental framework for the wine industry includes a tiered approach to environmental accreditation. It begins with identification of the various elements of a grower's operations that can impact on the environment and an analysis of the impacts, culminating in an independently certified environmental management systems. The viticulture framework focuses on ensuring that growers are confident they have reached a tier that meets their business needs.

Industry monitoring indicates that the majority of growers participating in these programs do not progress to the higher levels of accreditation (the levels that more fully encompass biodiversity conservation). While there are exceptions, most industry associations are satisfied that their members meet the needs of their businesses and comply with legislation. The drivers to encourage producers to extend to higher levels of accreditation seem to remain relatively weak in many industries.

An examination of the dairy industry example provides interesting insight into this issue. The dairy industry strategy—*Dairying for Tomorrow: A National Strategy for Sustainable Resource Management*—identifies industry best practice targets encompassing a range of water, land, soil and vegetation management practice that will impact on biodiversity. As part of the program, the dairy industry recently funded a study that examined how to convert regional natural resource management targets into on-farm practice[2]. The study then ranked the practices according to cost/benefit estimates of implementing the practices. The cost/benefit rankings resulted in all but one of the biodiversity targets being dropped from the priority list because the practices to achieve them (e.g. fencing remnants, off-stream watering) were deemed to be high cost to the producer relative to the benefits on-farm.

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2 *Dairying for Tomorrow Targets for Change: Guidelines for setting NRM targets to convert catchment targets into land management targets*. Published by Dairy Australia

This study has important implications for the place of biodiversity conservation in industry accreditation systems. It highlights the mandatory requirement for cost sharing between governments and industry to ensure that biodiversity is affordable as part of industry best practice.

The last decade has seen the development of substantial, wide-ranging partnerships between industry, government and the non-government sector to achieve adoption of best practice on-farm that takes account of the range of public benefit as well as private environmental issues. Examples include:

- Partnerships in regional areas to meet catchment targets, in which biodiversity is a key element. Many industries are engaging with regional groups to develop on-farm programs to achieve the targets. Notable examples include the NSW Property Vegetation Planning system which enables landholders and regional natural resource management groups to negotiate agreed plans for conservation of native vegetation (including conservation offsets for permitted clearing).
- Partnerships between governments and individual landholders to conserve high value biodiversity through cost shared covenanting arrangements.
- A memorandum of understanding between the Queensland Government and the Queensland Farmers Federation to develop farm management systems that will assist landholders to meet a suite of regulatory requirements including those relating to conservation of native vegetation and threatened species.
- The Greenhouse Challenge partnership between the Australian Government and a number of partner industries (e.g. the coal industry).
- Integrated Area Wide Management in the cotton industry. Groups of farmers work together on pest control, pesticide reduction and broader catchment issues.

CASE STUDY - LEADING PRACTICE SUSTAINABLE DEVELOPMENT PROGRAM FOR THE MINING INDUSTRY

PROGRAM BACKGROUND

The Leading Practice Sustainable Development Program for the Mining Industry, launched in 2006, supports the sustainable development of the Australian minerals industry. The Program is consistent with the objectives set out in the *Vision* of the Ministerial Council on Mineral and Petroleum Resources (MCMPR), and in the Minerals Council of Australia's *Enduring Value*, the Australian mining industry framework for sustainable development.

The program has been endorsed by the Coal Mining Task Force of the Asia Pacific Partnership as a key work priority, and is designed to promote leading practice across the minerals industry in Australia and to build Australia's leading practice profile among international stakeholders.

PROGRAM OBJECTIVES

The program seeks to promote industry self regulation through the pro-active adoption of leading practice principles. Its objectives are to:

INFORM – provide credible information of leading practice sustainable development in the Australian mining industry for the purpose of building greater capacity and understanding to those

who have an interest in Australia's mining industry including non-government organisations, mining communities, students and international stakeholders

INFLUENCE – seeking commitment to leading practice sustainable development principles from high level decision makers in key organisations such as mining companies, government agencies, regulators, industry bodies, and mining contractors and service providers

IMPLEMENT – practically implementing leading practice sustainable development practices at the operational level by on-site mine management and consultants, academics and regulators who work at the site level provide training for those working at site level or regulating the mining industry.

HANDBOOKS

The program's primary output is in the form of handbooks that are published in hard copy and are available online (http://www.ret.gov.au/sdmining).. There are 14 themes in the LPSDP series including Biodiversity Management; Community Engagement and Development;; Mine Rehabilitation; Stewardship; Tailings Management, Working With Indigenous Communities and Water Management,.

PROGRAM MANAGEMENT

The program is managed by a Steering Committee chaired by the Australian Government Department of Resources, Energy and Tourism (RET). It includes representatives from state and Northern Territory mining departments, the Minerals Council of Australia, the Australian Centre for Mineral Extension and Research (a unit of the Sustainable Minerals Institute), DEWHA and the Chairs of the program's current working groups.

CASE STUDY – NATIONAL LANDSCAPES – CONSERVATION PARTNERSHIPS WITH THE TOURISM INDUSTRY

PROGRAM BACKGROUND

National Landscapes is a partnership between Tourism Australia and Parks Australia to promote sustainable nature-based tourism and conservation outcomes. The first eight National Landscapes were announced in June 2008 and include Australia's Red Centre, the Australian Alps, the Green Cauldron, the Great Ocean Road, Kakadu, Australia's Coastal Wilderness, the Greater Blue Mountains and the Flinders Ranges.

Each National Landscape is locally managed by a steering committee of interested stakeholders. Local steering committees include protected area management agencies, local and state government, regional tourism organisations, Indigenous representatives, tourism operators, NGOs and community members.

To be selected as a National Landscape, an area must have strong management arrangements in place to ensure tourism returns benefits to the regional community and doesn't threaten natural values.

PROGRAM AIMS

The program seeks to promote tourism and conservation outcomes through strong partnerships, a landscape-scale approach and the adoption of best practice. The program aims to:

- populate *Brand Australia* with iconic natural and cultural experiences matched by high quality visitor experiences, outstanding interpretation, facilities and services
- enhance the role of protected areas in the national and regional economies
- enhance conservation outcomes through planning and effective management

- connect Australia's global target audience (the experience seeker) with landscapes and experiences, achieving high yielding and high dispersing tourism outcomes.

PROGRAM MANAGEMENT

The program is managed by a Reference Committee including representatives of the Australian Tourism Export Council, Ecotourism Australia, the Tourism and Transport Forum, Indigenous Tourism Australia, the World Commission on Protected Areas, the Department of Resources Energy and Tourism, Tourism Australia and DEWHA.

Nature-based tourism provides significant benefits to Australia's economy. Domestic and international visitors undertaking at least one nature-based tourism activity in Australia spent $26.8 billion—$11.8 billion for international visitors, $13.6 billion for domestic visitors and $1.4 million for domestic day-trip visitors.

The natural environment is a key motivator for international visitors to travel to Australia, with 56 per cent being influenced to visit based on their intent to visit a natural area. Australia has the largest number of endemic mammal species of any country, the second largest number of endemic birds and the third largest number of endemic plants. Australia's biodiversity is increasingly recognised by the tourism industry as a competitive advantage. A number of state and territory tourism strategic plans acknowledge the need to protect the integrity of the natural environment and protect biodiversity values to promote sustainable growth or this sector.

Working with States and Territories

The Australian Government and state and territory governments both maintain lists of threatened species. Species Information Partnerships aim to achieve consistency between these lists, and to increase exchange of information in the listing and recovery of threatened species. The Australian Government has partnerships with South Australia, Western Australia, the Northern Territory, Tasmania and Victoria to prepare information on threatened species listed under state and territory legislation. The information provided is used as the basis for assessment of species by the Threatened Species Scientific Committee, for listing by the Minister as threatened under the EPBC Act. The partnerships help to focus limited conservation resources to achieve the best possible conservation outcomes for threatened species.

Both the Australian Government and most of the state and territory governments have mechanisms to identify and protect threatened ecological communities/habitats. Threatened ecological communities that are protected at a national level under the EPBC Act are generally broad communities that can extend over more than one state or territory. Consequently, many of the listed ecological communities, and those that are currently being considered for national listing, equate to many more smaller communities or regional ecosystems that receive varying levels of protection by the states and territories. To address confusion that may arise from multi-jurisdictional protection of ecological communities and to ensure that those ecological communities under greatest threat are protected, the Australian Government adopted the following two approaches:

- descriptions of national ecological communities which include clear cross-references to state and territory vegetation classification systems
- a process to identify priority ecological communities listed by states and territories that are under the greatest threat and would benefit most from additional national protection under the EPBC Act.

Greenhouse gas emissions trading and biodiversity
As well as stress from climate change itself, actions to mitigate and adapt to climate change may also impact positively or negatively on biodiversity. Australia's 'Carbon Pollution Reduction Scheme' will primarily focus on contributing to the Government's mitigation objectives. The Government considers that Australia's natural resource management and protection legislation, policies and programs will be adequate and effective to prevent or mitigate any perverse impacts on biodiversity arising from the operation of the Scheme. Measures complementary to the natural resource management and protection legislation may also be considered if required.

Integration of Biodiversity into Sectoral and Cross-sectoral Strategies and Plans
Australia faces major challenges in ensuring the sustainable use of water resources and the protection of aquatic biodiversity in the face of drying climate and rising demand for water. The Australian Government is investing $12.9 billion over 10 years through *Water for the Future* to address four key priorities:

- taking action on climate change
- using water wisely
- securing water supplies
- healthy rivers and waterways.

Included in this investment is $3.1 billion to improve the health of river systems in the Murray-Darling Basin. As part of Caring for Our Country, nationally significant high conservation value aquatic ecosystems will be identified, managed and protected.

The management of Australia's water catchments and river basins is undertaken by the states and territories. Management agreements for the sustainable use of water resources include the *Intergovernmental Agreement on a National Water Initiative (2004)*, the *Commonwealth Water Act 2007*, the *Intergovernmental Agreement of Murray-Darling Basin Water Reform (2008)*, the *Lake Eyre Intergovernmental Agreement (2000),* the *Great Artesian Basin Strategic Management Plan (2000)* and the *National Water Quality Management Strategy* (1992 onwards). Through the Living Murray initiative, jurisdictions have committed $700 million over five years to improve the health of six icon sites of high ecological value. Jurisdictions have also committed $425 million over 10 years to improve the health of the iconic Snowy River.

As a signatory to the Ramsar Convention on Wetlands, Australia promotes the conservation and wise use of all wetlands. Australia currently has 65 wetlands of international importance. The Australian Government, with the states and territories, is progressively improving the management and reporting framework for Australia's Ramsar wetlands. Initiatives to support the management of Ramsar wetlands include the development and implementation of:

- *National Guidelines for Ramsar Wetlands* to improve implementation of the Ramsar Convention in Australia
- ecological character descriptions and management plans for Ramsar sites
- a *Rolling Review* approach to report on the condition of Australia's Ramsar sites and inform future management and investment priorities.

Environmental Stewardship

The Australian Government is providing ongoing support for environmental stewardship by committing $42.5 million over four years as part of Caring for our Country. The Environmental Stewardship Program will use market-based incentives, such as tender and auctions, to conserve environmental assets on privately-owned land. The Australian Government recognises that using market-based incentives, such as those under environmental stewardship programs, can be an effective way of engaging land managers to protect and maintain environmental assets on private land. There is strong support among key stakeholder groups in the Australian community for stewardship payments as a means of protecting biodiversity and to meet specific biodiversity objectives.

The first environmental asset targeted under the Environmental Stewardship Program is the critically endangered 'White Box, Yellow Box and Blakely's Red Gum grassy woodland and derived grasslands ecological community', which stretches from southern Queensland through central NSW, the ACT and across north-eastern Victoria—covering about 405 000 hectares. The Box Gum Grassy Woodland also provides an important habitat for some of Australia's threatened species, such as superb parrots (*Polytellis swainsonii*), regent honeyeaters (*Xanthomyzra Phrygia*) and squirrel gliders (*Petaurus norflocensis*).

CASE STUDY – BIOBANKING

The NSW Biodiversity Banking and Offsets Scheme ('BioBanking') provides a market-based framework for conserving biodiversity. The scheme, commenced on 1 July 2008 and aims to reduce cumulative biodiversity losses caused by population growth and development pressures.

BioBanking provides a framework for offsetting the impact on biodiversity from development at one site through positive management actions at another site, provided that overall biodiversity values are improved or at least maintained. The scheme gives developers the option of obtaining a BioBanking statement if their development meets this 'improve or maintain' test. The statement sets out the number and class of biodiversity credits they need to purchase and retire for the development. These biodiversity credits must have been generated by biobank sites that have the same threatened species or ecological community as those being affected by the development.

Landowners can also establish a biobank site on their land under a BioBanking agreement and generate credits they can sell. The sale of credits will provide funding to carry out management actions for the ongoing protection and enhancement of biodiversity values at the site. The scheme provides that outcomes cannot be affected by change of land ownership, as BioBanking agreements will be registered on the land title and exist in perpetuity. Participation in the scheme is voluntary.

The BioBanking assessment methodology is used to determine the number and type of credits which must be purchased to offset the impacts of a development and the number and type of credits which can be generated by landowners who enter BioBanking agreements.

Developers who do not obtain a BioBanking statement will still need to comply with current threatened species assessment requirements. More information is available at www.environment.nsw.gov.au\biobanking.

National Landcare Program

From its establishment in 1992 to 30 June 2008, the Australian Government's National Landcare Program (NLP) has committed almost $1 billion for activities targeted at the broad range of primary industries across Australia. These activities protect and improve the natural resource base and reduce off-farm impact for the benefit of all communities.

The NLP has been a major program to support the community landcare movement and improve natural resource management at the farm, regional and national level. The engagement of producers, who manage 60 per cent of land and 70 per cent of diverted water across a vast range of landscapes, is essential to obtain public environmental benefits from privately-owned land.

Under the NLP Community Support component, between 2003–04 and 2007–08, the Australian Government provided $138 million for projects, many of which have resulted in outcomes which have benefited on-farm biodiversity.

Sustainable farming is one of the six national priority areas of the Australian Government's Caring for our Country initiative. Landcare is a vital component of this initiative and the Australian Government has allocated funding of $189.2 million for Landcare over the next five years.

Australia's Farming Future

The Australian Government's key climate change initiative for primary producers is Australia's Farming Future. It will provide $130 million over four years to help farmers adapt and adjust to the impacts of climate change and manage their emissions.

The primary industries sector is particularly vulnerable to the impacts of climate change and Australia's Farming Future will provide primary producers with the scientific and economic information to make important commercial decisions.

It comprises programs that support research, development and demonstration, communication and awareness activities, training, and professional adjustment advice and assistance, including for those who choose to leave farming.

The Australian Government also recognises that best practices in biodiversity conservation will also contribute to climate change adaptation and mitigation.

The $46.2 million Climate Change Research Program is part of Australia's Farming Future. It will fund research projects and on-farm demonstration pilots that address the following priorities:

- reducing greenhouse pollution
- better soil management
- adapting to a changing climate, including research into new adaptation technologies and new techniques.

Case Study: The Australian Minerals Industry and Biodiversity Policy

In line with the mining industry's commitment to sustainable development, the Minerals Council of Australia (MCA) has developed *Enduring Value – The Australian Minerals Industry Framework for Sustainable Development.* Developed with the input of over 900 stakeholders, *Enduring Value* provides a framework for the integration of environmental, social and economic considerations into mining and minerals processing at the site level. Commitment to *Enduring Value*, including public reporting of implementation, is a condition of membership to the MCA.

MCA members, representing over 85 per cent of minerals production in Australia, have a long-standing commitment to sustainable development including the responsible stewardship of natural resources. As members of the MCA, over 30 leading minerals companies are signatories to *Enduring Value* (see www.minerals.org.au for a list of members)*. Enduring Value* provides operational guidance on the implementation of the International Council on Mining and Metals' 10 principles of sustainable development.

Companies that are signatories to *Enduring Value* are required in their Australian operations to contribute to conservation of biodiversity and integrated approaches to land use planning through approaches such as:

- respecting legally designated protected areas
- disseminating scientific data on and promote practices and experiences in biodiversity assessment and management
- supporting the development and implementation of scientifically sound, inclusive and transparent procedures for integrated approaches to land use planning, biodiversity, conservation and mining.

Although *Enduring Value* was only established in 2005, there are several examples of how biodiversity conservation has been mainstreamed for minerals operations. In 2008, the MCA released an updated land use policy to better-reflect land use, including biodiversity management activities of industry in the landscape (see http://www.minerals.org.au/enduringvalue and http://www.minerals.org.au/environment/Land_Use_Policy).

Several leading companies have also developed policy positions regarding biodiversity, which have direct influence over practices and impacts associated with biodiversity values. Many of these policies are explicit regarding the company's commitment to supporting and protecting World Heritage values, threatened ecological entities, and the approaches taken to avoiding, mitigating, and remediating any impacts. Some examples of company-specific biodiversity policy positions are:

- BHP Billiton: http://bhpbilliton.com/bb/sustainableDevelopment/environmentalCommitment/biodiversityAndLand.jsp
- Rio Tinto: http://www.riotinto.com/ourapproach/7195_biodiversity.asp
- Xstrata: http://www.xstrata.com/sustainability/environment/biodiversity/
- Barrick Gold Corporation: http://www.barrick.com/CorporateResponsibility/Environment/Biodiversity/default.aspx
- Newmont: http://www.newmont.com/en/social/environment/biodiversity/index.asp

To support operational implementation of these policies and principles, the mining industry has worked collaboratively with the Australian Government to provide implementation guidance to support the protection and conservation of biodiversity through mining operations. The Leading Practice Sustainable Development program has helped 'mainstream' biodiversity conservation, and further integrate its consideration into mining industry practices through a series of handbooks which provide leading practice guidance to operations.

Importantly, many of these handbooks have been translated into other languages, and are influencing landscape management practices in developing countries. Further information about the program is available at http://www.ret.gov.au/resources/mining/leading_practice_sustainable_development_program_for_the_mining_industry/Pages/LeadingPracticeSustainableDevelopmentProgramfortheMiningIndustry.aspx

Putting the Biodiversity Policy Framework into Practice

Most minerals operations are in regional and remote Australia. Many companies own or manage much larger tracts of land than those that are subject to extraction activities. Additionally, many companies undertake exploration activities across land owned or leased by others. In regional and remote Australia, minerals companies are a major contributor to natural resource management, including biodiversity conservation outcomes.

Traditionally, the investment that mining operations made in landscape management was mandated by regulatory authorities through the impact assessment process, including the application of the EPBC Act. However, companies now recognise that initiatives to better-manage their non-operational lands beyond duty of care requirements reflect on their 'social license to operate'. Accordingly there has been an increasing effort by minerals companies to invest in landscape management far-beyond mandated requirements.

Appendix IV contains case studies of how the minerals industry in Australia has incorporated biodiversity conservation into its business operations. These are presented to parallel the major phases of industry's intersection with the landscape, and align with our land use policy: the planning and exploration phase; the land management phase; and the rehabilitation phase. Some of these examples include partnerships with Australian Government-funded bodies, and all include local community engagement.

How the ecosystem approach has been adopted and employed in mainstreaming biodiversity into sectoral and cross-sectoral strategies, plans and programs

The EPBC Act is the primary mechanism at the national level for ensuring that environmental considerations, including biodiversity, are considered in planning and decision-making processes across all sectors.

Caring for our Country is designed as an integrated initiative with a single clear objective—a business approach to investment with clearly articulated outcomes and priorities and improved accountability.

The extent to which biodiversity is included in environmental impact assessments and strategic environmental assessments undertaken at various levels

Level 1 – State Jurisdiction Environmental Impact Assessment (through development control)
All Australian states and territories include biodiversity (or related issues such as impacts on species and habitats) as a matter for consideration in environmental impact assessment (EIA). These considerations apply through development control regulations associated with land use planning, infrastructure development, and natural resource management laws. The regulations generally prescribe:

- a hierarchy of impact assessment processes with environmental impact statements (or their equivalent) as the peak EIA document
- the structure and content of development applications including environmental impact statements.

The threatened species laws of each state also apply EIA (or species impact assessment) aligned with planning, development and resource management laws through EIA standards and governance provisions.

Level 1 – State Jurisdiction Strategic Environmental Assessment (through planning and policy)

All Australian states and territories apply biodiversity principles (or related issues such as impacts on species or habitats) in the making of planning instruments and policies. Strategic environmental assessment (SEA) is generally developed through constraints analyses as a precursor to statutory regional and local land use or resource management planning. SEA may also apply to non-statutory instruments that execute policies at a broad scale and design criteria at the local scale. Application of SEA may be through planning regulations, Ministerial directions, state policies and administrative or design guidelines. Regulations, directions and policies generally prescribe:

- a methodology for SEA
- an outcome for SEA implementation
- a process for review and adaptive management.

Level 2 – Australian Government Jurisdiction Environmental Impact Assessment (through development control)

The Australian Government includes biodiversity (or related issues such as impacts on species and habitats) in EIA for matters of national environmental significance (NES) under the EPBC Act and Regulation. Relevant NES matters include:

- listed threatened species and ecological communities
- listed migratory species
- internationally important wetlands
- the Commonwealth marine environment
- World Heritage properties
- National Heritage places.

Excluding national heritage places, NES matters generally relate to Australia's international treaty obligations. Biodiversity including all species and habitats is applied through EIA on Commonwealth land and Commonwealth actions (development proposals).

The EPBC Act and Regulation prescribe:

- a hierarchy of impact assessment processes with environmental impact statements (or their equivalent) as the peak EIA document
- the structure and content of development proposals including environmental impact statements
- delegations for other agencies to assess impacts and approve proposals on behalf of the Federal Government.

<u>Level 2 – Australian Government Jurisdiction Strategic Environmental Assessment (through planning and policy)</u>

The Australian Government includes biodiversity principles (or related issues such as impacts on species or habitats) through strategic approaches outlined in the EPBC Act. SEA is generally applied through:

- Strategic assessments (accrediting other agencies SEA and EIA processes)
- Ministerial Declarations
- Conservation Agreements
- Threat Abatement Plans
- Conservation Advices
- Bio-regional Plans
- Recovery Plans
- Administrative Guidelines.

These approaches include statutory and non-statutory activities that apply SEA from regional to site scales. They generally prescribe:

- a methodology for SEA
- an outcome for SEA implementation
- a process for review and adaptive management.

Outcomes achieved through implementation of these measures and the extent to which these measures contribute to the implementation of National Biodiversity Strategies and Action Plans.

The Griffin Report explored the alignment of the National Biodiversity Strategy with relevant natural resource management policies and codes of practice and found that:

- The strategy was a ground breaking document for biodiversity conservation.
- State and territory government biodiversity strategies and programs were significantly aligned with the strategy, particularly at the level of overarching goals and strategic directions.
- There is evidence that industry is taking up biodiversity conservation in their business activities, though some specific industry sectors are still lagging. The mainstreaming of biodiversity conservation considerations into business is also being facilitated through partnerships between governments and industry.

How biodiversity has been taken into account in programs of overseas development assistance (ODA), scientific and technical cooperation and technology transfer

Australia is engaged with several partnerships and initiatives to protect biodiversity in the context of developing alternative livelihoods and reducing poverty. Australia is currently developing a new Strategy on Development Assistance and the Environment which will describe how biodiversity is taken into account in Australia's International Development Program.

Scientific and Technical Cooperation and Technology Transfer

Australian is a financial member of the Global Biodiversity Information Facility (GBIF), a global effort to make specimen and observation data on biodiversity available on-line. Australia has made a concerted effort to make biodiversity data available on-line (see

Global Taxonomy Initiative) and also provides information to the Catalogue of Life and is in partnership with the Encyclopedia of Life, global initiatives to make species information available. These global collaborations have been fundamental in allowing transfer of technological knowledge.

Australia provides bursaries via the National Taxonomy Research Grant Program (NTRGP) in the Australian Biological Resources Study for scientists to travel to conferences and workshops to present information on the taxonomy of Australia's biota, supporting scientific cooperation. The NTRGP has been restructured and now targets early career researchers and information transfer from senior researchers to junior researchers and students. It also provides research funding to any international scientists to study the Australian biota. In 2008, ABRS, the University of Adelaide, the Environmental Futures Network and the Atlas of Living Australia cofunded a national skills workshop for doctoral students pursuing research in taxonomy and systematics. The workshop was highly successful involving nearly 30 students from a range of institutions around the country.

In 2008, Australia hosted GBIF's Taxonomic Database Working Group, an international meeting of biodiversity infomatricians in Perth. A number of Australian institutions have provided technical support and training to sister institutions in Pakistan, South-east Asia and Oceania over the past two years.

Australia provides a member to the Diversitas Scientific Committee and the board of the Global Invasive Species Program (a clearinghouse mechanism for the CBD), and provides scientific expertise to the GEOBON working group.

Forests

Australia's $200 million International Forest Carbon Initiative is supporting international efforts to demonstrate that reduced emissions from deforestation and forest degradation (REDD) can be part of an equitable and effective future global outcome on climate change. A central element of the initiative is taking practical action on REDD through collaborative Forest Carbon Partnerships with Indonesia and Papua New Guinea.

Within IFCI, Australia's $15.8 million Asia-Pacific Forestry Skills and Capacity Building Program is supporting biodiversity outcomes by increasing forest management expertise—including encouraging forest rehabilitation and promoting legal and sustainable forestry practices.

Marine

The Australian Government contributes to a range of regional marine and coastal biodiversity related fora both financially and with technical assistance to enhance the conservation of marine and coastal biodiversity. These fora include:

- Participation in, and technical support for, the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI), which is a recent collaborative partnership between Indonesia, Malaysia, the Philippines, the Solomon Islands, Timor Leste and Papua New Guinea to enhance the protection and conservation and sustainable management of marine and coastal biodiversity and resources.

- Membership of the APEC Marine Resources Conservation Working Group, which supports projects that bring together best practice frameworks for action on marine conservation and management issues.
- Collaborations with non-governmental organisations, such as one with the Nature Conservancy and the World Wide Fund for Nature on a study within Fiji, Indonesia and the Phillipines demonstrating the importance of marine protected areas as a conservation tool that brings benefits to local communities.
- Being a member and major donor of the Pacific Regional Environment Programme, supporting ongoing marine biodiversity conservation activities in the Pacific Region and providing technical and financial assistance to key marine biodiversity related activities. Activities such as the development of the Pacific Island Marine species Programme and Action Plans for Whales and Dolphins, Marine Turtles and Dugongs (2008–2012) and in country training workshops on marine conservation techniques.
- A strong commitment to advancing practical actions in Pacific fisheries under the *Vava'u Declaration on Pacific Fisheries Resources*. Australia provides assistance to Pacific island countries to manage their fisheries resources through support for fisheries-related Pacific regional organisations, the Pacific Islands Forum Fisheries Agency and the Secretariat of the Pacific Community. These agencies provide high quality technical assistance to member countries to manage their coastal and oceanic fisheries. Australia is also working with the governments of several small island states in the Pacific region to strengthen national fisheries authorities.
- Conducting a number of capacity building workshops and technology transfer programs to assist developing states to conserve and manage their fish stocks. The Australian Government has also encouraged sustainable fisheries management in the region and globally through participation in the Pacific Islands Forum Fisheries Agency (FFA); the Regional Plan of Action to Promote Responsible Fishing Practices and Combat Illegal, Unreported and Unregulated Fishing in the Region—a cooperative arrangement between 10 south-east Asian countries and Australia; and through the High Seas Task Force, an alliance including Australia and seven other developed states, and the FFA, which has the primary aim of fostering effective actions against IUU fishing.
- Specific development assistance provided by the Australian Government to activities targeted at improving fisheries governance and compliance, particularly in the south-east Asian and South Pacific regions. Australia established the Pacific Patrol Boat program which provides South Pacific countries with a credible maritime surveillance capability, enhancing the capacity of these countries to protect their marine resources.

Chapter IV – Conclusions: Progress towards the 2010 Target and Implementation of the Strategic Plan

A. Progress towards the 2010 Target

Provisional framework of goals, targets and indicators to assess progress towards the 2010 Biodiversity Target

<table>
<tr><th colspan="2">Protect the components of biodiversity</th></tr>
<tr><td colspan="2">Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes</td></tr>
<tr><td>Target 1.1: At least 10 per cent of each of the world’s ecological regions effectively conserved</td><td>• Coverage of protected areas
• Trends in extent of selected biomes, ecosystems and habitats
• Trends in abundance and distribution of selected species</td></tr>
<tr><td>Target 1.2: Areas of particular importance to biodiversity protected</td><td>• Trends in extent of selected biomes, ecosystems and habitats
• Trends in abundance and distribution of selected species
• Coverage of protected areas</td></tr>
<tr><td colspan="2">The Australian Government’s regulatory mechanism for national environment protection and biodiversity conservation is the EPBC Act. The EPBC Act provides a legal framework to protect matters of national environmental significance, including ecosystems through conservation of ecological communities, Ramsar wetlands, World, National and Commonwealth Heritage places, and Commonwealth marine areas. In addition to providing a framework for protection of Ramsar wetlands, the EPBC Act also provides a framework for management of Australia's wetlands through the Australian Ramsar management principles set out in the Regulations and cover matters relevant to the preparation of management plans and environmental assessment of actions that may affect Ramsar sites.

Ecological Communities
The EPBC Act provides for identification, listing, protection and recovery of threatened ecological communities. These ecological communities are important to biodiversity because they provide habitat, food and protection for a diversity of species and provide ecological services important for the ongoing function of broader ecosystems. A total of 40 ecological communities are listed as threatened under the EPBC Act. The growing number and type of listed ecological communities are contributing significantly to the protection of biodiversity in a range of natural ecosystems, such as woodlands, grasslands, forests and wetlands. Collectively they cover vast areas of the Australian continent and their protection helps maintain biological diversity across the landscape.</td></tr>
</table>

National Reserve System

Eight of the world's 14 ecological regions (biomes) occur in Australia. Specific national targets are not set for the protection of each biome, but Australia is able to report against the CBD millennium target of 10 per cent of each biome through the relative level of protection in each of the 85 bioregions that occur across the country. Bioregions are large, geographically distinct areas of land with common characteristics, such as geology, landform patterns, climate, ecological features and plant and animal communities. They represent a finer scale of analysis than the biomes. In 2006 36 bioregions had less than 10 per cent of their area in protected areas and these are a high priority for the further development of the National Reserve System.

In 2005, the Natural Resource Management Ministerial Council released the *Directions for the National Reserve System – A Partnership Approach.* This document was jointly developed and agreed by the Australian, state and territory governments and contains qualitative targets for the National Reserve System (NRS). The targets are:

- Comprehensiveness – 80 per cent of regional ecosystems within an Interim Biogeographic Regionalisation of Australia (IBRA) region are represented in the NRS by 2010.
- Representativeness – 80 per cent of regional ecosystems within an IBRA sub region are represented in the NRS by 2015–20.

The document is currently being reviewed and updated and now also links more closely to the millennium targets.

The Australian Government has committed additional funds to increase the number of Indigenous Protected Areas that support Indigenous people to manage biodiversity on their own lands and as part of the National Reserve System.

Additionally, under specific programs such as Working on Country, there has been an increase in the identification and management of Indigenous culturally and environmentally important sites that are not necessarily part of the National Reserve System. Much of this work involves rangers surveying, monitoring and managing listed species, using both scientific and traditional methods. With the implementation of country-based programs, Indigenous people are being assisted to reinstate their traditional land and sea management practices so that there are greater parts of the country being managed in a holistic and physical way. The government recognises the value of Traditional Owners delivering environmental outcomes on their land, particularly given that it is often Indigenous managed lands where biodiversity values remain the most intact.

In much of northern Australia it is now widely recognised that it was the regular, cooler early dry season fires, promoted by the Traditional Owners that underpinned much of the land's biodiversity. Once Indigenous people were removed from the land irregular, much hotter, late season fires dominated the landscape causing the destruction of established habitats and promoting a succession to fire tolerant perennial grass species. These fire tolerant grasses do not provided habitat for native animals. Traditional Owners are re-establishing traditional fire regimes, supported by government funding, to promote the recovery of more complex habitats thereby reducing the decline of fauna that rely upon them.

Maintaining Australia's Biodiversity Hotspots Program (MABH Program)
The MABH Program aimed to manage threats to biodiversity in areas that are relatively intact, in order to maintain their conservation value. The program had two components—voluntary land acquisitions and stewardship payments for on-ground biodiversity improvements. A panel of eight non-government conservation organisations was established as service delivery agents to identify investment opportunities for the Australian Government, and to deliver program funds across the country.

Large properties with outstanding biodiversity values were targeted for acquisition by the delivery agents and suitable properties were recommended to the Australian Government for purchase. Through the MABH Program, seven significant properties were purchased by three of the delivery agents, with the Australian Government funding up to two-thirds of the purchase price. The properties total more than 1.2 million hectares, at a cost to the Australian Government of $13.5 million. The delivery agents will now manage these properties for biodiversity conservation in perpetuity.

Stewardship payments offered direct financial support to landholders to help them protect existing natural habitat with high conservation values. Landholders who accepted an invitation to participate in the MABH Program had their properties assessed for biodiversity values and to ensure they met the program criteria. If eligible, a property management plan was then prepared, in collaboration with the delivery agent, with landholders submitting a subsequent bid for funding through a competitive tender process. The most cost-effective bids (biodiversity conservation value for money) were accepted by the Australian Government and successful landholders entered into a stewardship contract with the delivery agents, to undertake the agreed actions in their management plan. Eight stewardship tenders were conducted around the country, with resulting stewardship agreements spanning 183 000 hectares at a cost of $5.95 million.

The competitive tender process for allocating stewardship funds is an innovative method of funding biodiversity conservation on private land. Delivery agents who implemented the tenders used a 'metric' to assess bids in terms of their biodiversity values and costs. Private landholders retained the flexibility to nominate their own management actions and price they would accept to undertake those actions. Through the competitive tender process, program funds were awarded to those landholders that could offer the most cost-efficient biodiversity outcomes.

The Australian Government will be monitoring progress in achieving biodiversity outcomes over time through regular reporting by the delivery agents.

Water (aquatic hotspots – critical water habitats)
On13 September 2007 Australia’s 65th Ramsar site, the Paroo River Wetlands, was added to Australia’s wetlands of international importance under the Ramsar Convention. The 138 304 ha Ramsar site is on the Paroo River, the last remaining free-flowing river in the northern Murray-Darling Basin. The Paroo River’s wetlands include large lakes, tree-lined creeks and waterholes, lignum, canegrass swamps, and artesian mound springs. The Ramsar site contains one of the last remaining unregulated wetland systems in NSW.

Australia’s Ramsar estate now encompasses approximately 7.5 million hectares and represents approximately 4.4 per cent of the total global area of wetlands designated under the Ramsar Convention.

Australia does not have specific targets for the area of wetland to be identified as internationally important under the Convention. The Australian Government is working with the states and territories to develop national guidelines for nomination of new areas to the Ramsar list.

CASE STUDY – PAROO RIVER WETLANDS RAMSAR LISTING

Nearly 10 years of discussion and negotiation led to the 2007 listing of the Paroo River Wetlands as wetlands of International Importance under the Ramsar Convention.

The area listed includes Nocoleche Nature Reserve and a portion of Paroo-Darling National Park. Both areas are managed by the NSW Department of Environment and Climate Change.

The Paroo River is the last remaining free-flowing (unaltered) river in the Murray-Darling Basin in Australia. It is considered to be both an arid and semi arid zone river and has one of the most variable flow regimes of any river in the world.

The Paroo River Wetlands meet six of the nine criteria for Ramsar Listing. Wetland types within the Paroo River Wetlands Ramsar site include large overflow lakes, floodplains, clay-pans, tree-lined creeks and waterholes, lignum and cane grass swamps and artesian mound springs (Kingsford and Porter 1999). It is one of the most important wetland systems for waterbirds in eastern Australia (Kingsford and Porter 1999) and supports a number of threatened plant and animal species as well as significant native fish communities. The artesian mound springs at Peery Lake represent the largest active complex in NSW and one of the rarest landforms in Australia.

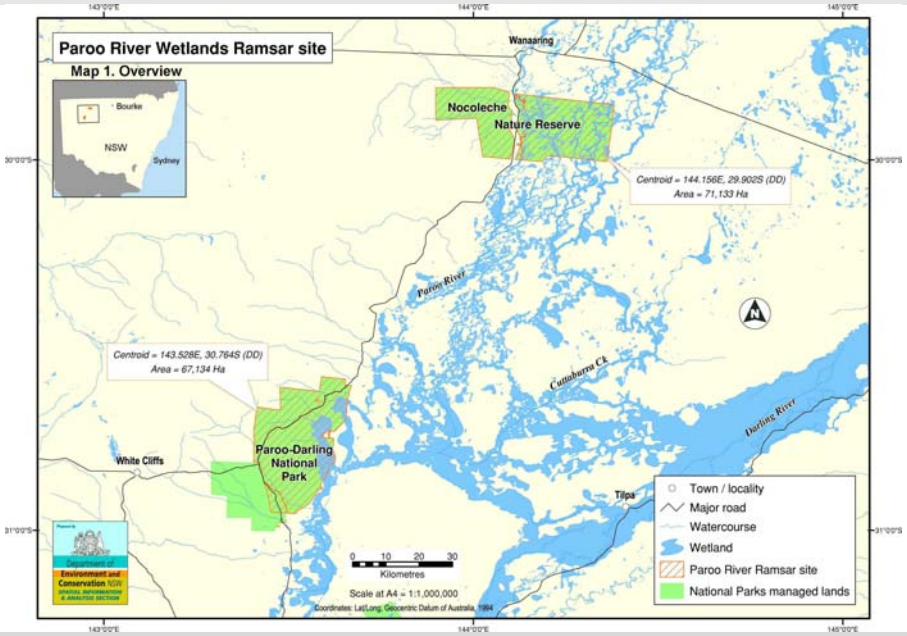

Figure 2: Map of the Paroo River Ramsar site

The Paroo River Wetlands have natural, cultural and spiritual significance to the Aboriginal people whose identity is tied to their 'country'. The traditional owners of the Paroo country in NSW include both the Baakandji and Budjiti people.

Aboriginal people living on the Paroo traditionally moved up and down the river and between rivers with the seasons, for ceremonies and seeking resources. Following European settlement on the Paroo many Aboriginal people were displaced into more permanent camps and towns, some were moved by the government to other parts of Australia, and others were fortunate

enough to find work on properties on the Paroo, which allowed them some continued access to their country.

Consultation with Aboriginal communities about the proposed Paroo River Wetlands Ramsar site began in 2001.

A cultural mapping study to report on the Aboriginal values of the Paroo River for the nomination was established. Two community members were trained in oral history collection and a community booklet and video were produced. The values identified in the project included:

- Traditional – stories, beliefs, living and cultural practice (eg. ceremonies, births and burials)
- Historical – employment, conflict, refuge and survival
- Identity – meeting, teaching, management, recreation and relationships

A group of five Baakandji and five Budjiti people were nominated to take part in a Paroo River Wetlands Steering Group to be consulted and involved in the Ramsar nomination. Three members of this group attended the 9th meeting of the Contracting Parties to the Ramsar Convention in 2005 to explain the Indigenous values for wetlands and inform discussion about the importance of recognising Indigenous values of wetlands.

The Paroo River Wetlands Ramsar nomination was also supported by reserve neighbours, the Western CMA and the Paroo River Association.

The NSW Department of Environment and Climate Change, which includes the NSW National Parks and Wildlife Service, will continue to manage the Ramsar site as a nature reserve and national park in partnership with the Baakandji and Budjiti people and support the ongoing free flow of the Paroo river.

Forests

Since 2004, the area of native forest in formal nature conservation reserves in Australia has increased by about 1.5 million hectares to 23 million hectares—from 13 per cent to 16 per cent of all Australia's forests. There has also been an increase in informal reserves on both public and private lands.

Over 73 per cent of known old growth forests are now in conservation reserves. Between 2003 and 2008 the area of old growth forest reduced by around 200 000 hectares, due to severe fires where younger forests replace older growth, and some re-mapping. Around 4.6 million hectares of native forests are in World Heritage-listed areas.

The area of rainforest and mangrove forest in conservation reserve increased from 33 per cent to 55 per cent and 13 per cent to 18 per cent respectively.

Marine

Australia's maritime jurisdiction is divided into Commonwealth waters (administered by the Australian Government) and State waters (administered by state governments). The Australian Government, along with the state and Northern Territory governments is progressing the establishment of the National Representative System of Marine Protected Areas (MPAs). The primary goal of the National Representative System is to establish and manage a comprehensive, adequate and representative system of MPAs to contribute 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.

There are currently 27 Commonwealth MPAs, with a total area of 84 284 074 hectares, including the Great Barrier Reef Marine Park (34 million hectares) and the Heard Island and McDonald Islands Marine Reserve (6 million hectares).

Presently there are over 200 MPAs in Australian waters (including State and Commonwealth MPAs), which comprise around 10 per cent of Australian waters (excluding Antarctic waters).

The rezoning of the GBRMP in 2004, which increased no-take zones to around one third of the marine park, is showing benefits. For example, research findings by scientists show a spectacular recovery in coral trout numbers in no-take areas. Researchers have found coral trout numbers rebounded by 31 per cent to 75 per cent on a majority of reefs closed to fishing for as little as 1.5 to two years. There has been a 57 per cent improvement in closed reefs offshore of Mackay.

Goal 2. Promote the conservation of species diversity	
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups	• Trends in abundance and distribution of selected species • Change in status of threatened species
Target 2.2: Status of threatened species improved	• Trends in abundance and distribution of selected species • Coverage of protected areas

The EPBC Act provides for:

- identification and listing of threatened species and threatened ecological communities
- development of Conservation Advice and where appropriate, Recovery Plans, for listed species and ecological communities
- recognition of key threatening processes and where appropriate,

reducing these processes through Threat Abatement Plans.

Nominations for listing species and ecological communities as threatened under the EPBC Act can be made by members of the public. Nominations are assessed by the Threatened Species Scientific Committee (TSSC), an independent scientific advisory panel.

In February 2007, amendments to the EPBC Act established a new process for listing nationally threatened species, ecological communities and key threatening processes. The new listing process aims to improve the effectiveness of listing, set timeframes for assessment and focus on species and ecological communities that are in greatest need of protection.

In March 2007, for the first time under the new arrangements, the public were invited to nominate species, ecological communities and key threatening processes for listing. In September 2007, following advice from the TSSC, the first Finalised Priority Assessment List under the new arrangements received ministerial approval. The list detailed which nominations would be included in the assessment period commencing 1 October 2007. All nominations included in the Finalised Priority Assessment List were available publicly on the department's website for two months. As part of the assessment process, the TSSC also consulted scientific experts and other interested parties for each assessment. Members of the public were also invited to comment on the nominations.

Under the new process, the Minister is now required to ensure there is an approved conservation advice for each listed species and ecological community. Each new assessment of a species or ecological community by the TSSC includes a conservation advice, which contains information on key threats to species or ecological communities and actions needed to aid in their recovery.

Forests

All states and the Northern Territory have developed lists of forest-dwelling vertebrates and vascular plant species. The lists show that the number of forest-dwelling species generally increased over the period from 1998 to 2006, reflecting improved information.

Partial ecological information is available on around 60 per cent of forest-dwelling vertebrate and vascular plant species, and comprehensive ecological information is available on at least 10 per cent of mammal, bird and amphibian species. Information is very limited on forest-dwelling invertebrates, fungi, algae and lichens.

Birds are the taxonomic group with the largest number of programs in place to track population trends. State and territory agency efforts are supplemented by a large scale investment by non-government groups.

In total, 1287 forest-dwelling species are listed as vulnerable, endangered or critically endangered under the EPBC Act. Thirty-nine species or sub-species were removed from the national list of threatened species between 2003 and 2008, and 71 were added.

Most additions of forest-dwelling species to the national list were made based on inherently small population sizes and ongoing impacts on habitat extent and quality, including the impacts of introduced species and inappropriate fire regimes.

Most removals of forest-dwelling species from the national list were made as a result of improved information.

Goal 3. Promote the conservation of genetic diversity	
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated Indigenous and	• Trends in abundance and distribution of selected species

local knowledge maintained	

While the number of forest-associated species for which data on genetic variation are available is still low, it has increased since the *State of the Forests Report, 2003*. Then, data were available for one faunal and two floral species; now, data are available for more than 10 faunal and 13 floral species.

Tree-breeding and genetic improvement programs are expanding the scope for conserving native forest genetic resources, including non-commercial endangered species.

While Australian agriculture predominantly depends on exotic animal breeds and crop varieties, this is not so in other parts of the world. In the south-west Pacific region, Australia has been assisting countries to manage the conservation, development and sustainable use of their plant and livestock genetic resources for food and agriculture. This has been carried out through practical on-ground project assistance. During 2006 and 2007, Australia provided approximately AU$500 000 for capacity building work, through high levels of cooperation and collaboration with the Secretariat of the Pacific Community (SPC). In 2007, this work included:

- Workshops on both plant and animal genetic resources for food and agriculture. One of the key outcomes from both workshops was a strong recognition of the need for Pacific Island countries and territories to conserve and sustainably use rare and endangered species and traditional breeds, particularly given the current and future threats to their production bases, including from climate change and increased pest and disease threats.
- Ongoing funding for an animal genetic resources (AnGR) inventory and categorisation project to assess genetic variation within traditional pig and poultry breeds in the region as a precursor to developing conservation and sustainable use projects.
- The development of a regional information-sharing network on animal genetic resources.

Assistance with travel costs for a small Pacific Island delegation to participate in the International Technical Conference on Animal Genetic Resources held in September 2007, at which the Interlaken Declaration was agreed, the *State of the World's Animal Genetic Resources for Food and Agriculture* was released, and the strategic priorities for action finalised.

Promote sustainable use	
Goal 4. Promote sustainable use and consumption	
Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity	• Area of forest, agricultural and aquaculture ecosystems under sustainable management • *Proportion of products derived from sustainable sources (indicator under development)* • Trends in abundance and distribution of selected species

	• Marine trophic index • Nitrogen deposition • Water quality in aquatic ecosystems
The Australian Government sustainably manages wildlife through Wildlife Trade Management Plans (WTMP) and Wildlife Trade Operations (WTO). Since 2005, 35 have been approved. These cover a range of native fauna and flora including kangaroos, crocodiles, butterflies and tree ferns. *Forests* In 2005–06, 112.6 million hectares of native forest was in tenures in which timber harvesting is allowed, compared to 119.8 million hectares in 2000–01. While large, much of the available area contributes little to timber supply. The area of multiple-use public native forests sustainably managed for timber production declined from 11.4 million hectares in 2000–01 to 9.4 million hectares in 2005–06. This change was as a result of the transfer of areas of multiple-use public native forests to reserved public native forest. *Fisheries* Strategic assessments are a requirement under the EPBC Act for Australian Government managed fisheries and fisheries with an export component. Assessments are conducted in accordance with the second edition of the *Guidelines for the Ecologically Sustainable Management of Fisheries*. *Water Quality in Aquatic Ecosystems* Under the National Water Initiative (NWI), the Australian Government works with the states and territories to implement the National Water Quality Management Strategy (NWQMS). The NWQMS aims to protect the nation's water resources by protecting or enhancing their quality while maintaining economic and social development. The Australian Government has been working in collaboration with the states and territories to implement the NWQMS by developing water quality improvement plans to reduce pollution being released into coastal hotspots across the country. An investment of $2.25 billion under Caring for our Country has been made to protect coastal environments and critical aquatic habitats through management actions to improve the quality of water discharged into coastal environments. Water Sensitive Urban Design is increasingly being considered in planning as a way to improve urban water efficiency and quality and to reduce the impacts resulting from urbanisation on the condition of aquatic ecosystems.	
Target 4.2. Unsustainable consumption, of biological resources or that impacts upon biodiversity, reduced	• Ecological footprint and related concepts
Target 4.3: No species of wild flora or fauna endangered by international trade	• Change in status of threatened species
The EPBC Act regulates the movement of internationally recognised endangered	

species, fulfilling Australia's obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The EPBC Act also regulates the export of Australia's native wildlife and the import of live exotic species.

Consideration is also given in environmental assessment on potential impacts of trade on wild populations of the species.

Compliance:

- A total of 18 526 seizures were made between 1 January 2005 and 31 December 2007 under Part 13A of the EPBC Act.
- In combating illegal trade, DEWHA works closely with partner agencies, sharing intelligence and resources. These include state and territory wildlife authorities, the Australian Customs Service, the Australian Federal Police, overseas CITES management authorities, Interpol, and some non-government organisations, such as TRAFFIC.
- DEWHA has enhanced its compliance capability by implementing a permit review program.
- DEWHA has also identified species for which there are significant levels of illegal trade, such as hoodia, and has developed compliance plans to focus our enforcement activities.

Australia, as a member of the Coalition Against Wildlife Trafficking (CAWT), continues to carry out activities to support CAWT's three-pronged approach of, jointly and separately, reducing consumer demand for illegally traded wildlife, improving wildlife law enforcement, and catalysing high level political will to fight wildlife trafficking.

Forests

A number of non-wood native forest species are subject to commercial harvesting regimes. Some species are significant in terms of value, quantity or both.Permits are usually required to harvest native plant and animal products from forests, although the requirements for permits may differ by jurisdiction and land tenure. All Australian states and territories have legislation restricting the harvest of threatened species.

Address threats to biodiversity	
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced	
Target 5.1. Rate of loss and degradation of natural habitats decreased	• Trends in extent of selected biomes, ecosystems and habitats. • Trends in abundance and distribution of selected species • Marine trophic index

The major threats driving loss of species habitat and/or ecosystem function include:

- total grazing pressure and fire management regimes
- introduced plants, animals and diseases
- broad scale land clearing
- intensification of natural resource use for agriculture, infrastructure and development projects, especially on the more fertile soils and in coastal areas or high human population areas.

Coupled with these system-wide threats and their interactions is the emerging threat of climate change and its effect on biodiversity.

There are a range of primary conservation strategies employed to achieve the protection and conservation of ecosystems and species, including the formal reservation of lands for the conservation reserve system, off-reserve conservation through a variety of mechanisms, and more indirect measures through investing in sustainable industries. A range of measures will be needed to address biodiversity decline effectively. Those considered most important are discussed below, along with challenges in their delivery.

The establishment and management of the conservation reserve system that meets the criteria of CAR3 is regarded as a cornerstone strategy to achieve biodiversity conservation and address biodiversity decline. It provides for the formal protection of viable samples of ecosystems and long-term security of tenure and management. The system of parks and reserves also plays an important role in the nation's economy, provision of community well-being, and in public education and awareness of biodiversity and environment-related matters. In addition, the conservation reserve system will play an increasingly significant future role to ameliorate climate change impacts on biodiversity by allowing continental scale networks or pathways for flora and fauna to move and adapt.

Governments, industry and non-government organisations have been actively involved in the investigation of a range of market based mechanisms, some of which have been remarkably successful in practice though implemented on a limited scale. Many of these can be adopted to deliver multiple NRM outcomes with a focus on biodiversity

3 A conservation reserve system that meets the CAR criteria is one that includes the full range of ecosystems (*comprehensive*), maintains viability of species and ecosystems (*adequacy*) and reflects the biodiversity of the ecosystems from which they are derived (*representative*)

conservation, including price based (auctions), quantity based (cap and trade) and market friction mechanisms (that apply conditions to market transactions). Market based instruments usually rely on an underpinning regulatory framework and/or establishing a market for specific biodiversity or ecosystem services.

Historically there have been substantial declines in rangeland biodiversity. There is no reason to believe that the declines have ceased given current land uses and time lags between impacts and their biolofival consequences (Bastin et al. 2008). Rangelands are vulnerable to invasive species, to total grazing and to inappropriate fire management practices. The rangelands have a naturally low productivity and can suffer significant degradation from production or extraction based land use activities within the context of an extremely variable climate. In some of the more remote regions, ecosystems are still relatively intact and major conservation gains can be made for relatively small investments. Opportunities exist to improve conservation in the rangelands, including shifting to more sustainable land uses on leasehold land, improving the capacity of land managers to incorporate biodiversity considerations into their management, reservation of intact landscapes, implementation of stewardship arrangements and management of public lands in relatively good condition.

Regulatory frameworks have common features but, before introducing new regulatory instruments, it is important to consider whether existing government policies or programs are having unintended consequences for biodiversity.

Loss, degradation and fragmentation of habitats are consistent drivers for the listing of ecological communities and species under the EPBC Act. The aim of listing these threatened entities is to, where possible, slow or stop their rate of decline and maintain or restore the connectivity of fragments. Listing ecological communities is consistent with a landscape-level approach to natural resource management and biodiversity conservation. Ecological communities provide crucial habitat for wildlife, including threatened species, and contribute significantly to connectivity of vegetation remnants and wildlife corridors. Climate change is increasingly recognised as a threat to ecological communities, particularly in more extreme environments, such as our alpine zones and northern tropical Australia.

Forests

State and territory governments have codes of forest practice and other regulatory frameworks requiring the regeneration and/or restocking of harvested multiple-use public native forests to specified standards; some states have similar codes of practice and regulations for private forests. These regulatory frameworks also aim to control the conversion of native forests to plantation, for example, through native vegetation legislation.

Reported regeneration success rates in multiple-use public native forests are high.

Marine

Australia is continuing to implement its National Representative System of Marine Protected Areas with marine protected areas being established in Commonwealth, state and territory waters, with some associated intertidal areas.

In addition, the Great Barrier Reef Marine Park was re-zoned in 2004, increasing the area of no-take areas in that region by over 30 per cent.

Goal 6. Control threats from invasive alien species	
Target 6.1. Pathways for major potential alien invasive species controlled	• Trends in invasive alien species
See Target 6.2 below.	
Target 6. 2. Management plans in place for major alien species that threaten ecosystems, habitats or species	• Trends in invasive alien species

AusBIOSEC is the Australian biosecurity system for primary production and the environment. It is currently being enhanced to allow biosecurity arrangements to be implemented consistently and efficiently across all sectors and jurisdictions. AusBIOSEC covers the entire biosecurity continuum.

The EPBC Act regulates the export of Australia's native wildlife and the import of live exotic species. There is in place pre-border assessments of proposals to import new live specimens, including biocontrol agents as part of the permitting system under the EPBC Act. These assessments are to determine the potential for that specimen to have a significant impact on the Australian environment, including biodiversity.

There are also a variety of strategies, policies, programs and measures that have been developed and implemented to improve biosecurity which include:

- *The National System for the Prevention and Management of Marine Pest Incursions* which includes strategies to minimise the risks of species incursion or translocation in Australia.
- *The Australian Pest Animal Strategy* which provides key principles and actions to be undertaken.
- *The Australian Weed Strategy* provides overarching principles and a framework that helps in the management and eradication of weeds at the national level, with key goals outlined to manage significant weeds
- *The Weed Incursion Response Plan* provides a framework that helps jurisdictions respond to weed incursions
- *The Australian Weed Response Plan* sets out procedures and activities to be carried out for a national response to weed incursions.
- *National Weed Management Toolkit* has identified tools being used in weed surveillance, detection and eradication; and provides all this information in one place. The toolkit is dynamic, and can be considered a living document, so as new tools become available they will be incorporated into the Toolkit.
- *The National Red Imported Fire Ant Eradication* Program is responsible for removing all colonies of Red Imported Fire Ants (RIFA) from south-east Queensland. The program has achieved considerable success in reaching this goal. This has been achieved through restrictions being imposed within urban

and non-urban areas to control the spread of RIFA by human movement and immediate eradication and treatment of any new colonies detected on the outskirts of the restricted areas, or in non-urban areas. In order to detect more colonies in non-urban areas research and development is being undertaken into remote sensing and aerial vehicle technology to detect more RIFA colonies, especially in non-urban areas.

- *National Electric Ant Eradication* Program - the populations of electric ants in Cairns have been completely eradicated from the areas in which they were detected. A surveillance program is being run to determine if electric ants have been completely eradicated. The surveillance model used for the verification of eradication will be used for similar programs for other tramp ant species. Importantly the results from this eradication program will be compiled and used for similar programs currently in progress or included in contingency plans.
- *Siam Weed Eradication Program* – Siam weed is considered one of the world's worst weeds—it has the potential to impose serious economic, environmental and social impacts in Australia if allowed to spread. A national cost-sharing program has been established to prevent this from happening, managed by Biosecurity Queensland and the Queensland Department of Primary Industries and Fisheries. The majority of infestations are restricted to two regions. The program is on course and is trying to meet the following critical objectives: increasing the proportion of sites monitored; reducing infestation density; reducing the footprint of Siam Weed; reducing the number of plants allowed to seed; and maintaining delimitation confidence through surveying.
- *Queensland Four Tropical Weeds Eradication Program* – the four tropical weeds only occur in Northern Queensland, and are a target for eradication by the Queensland Government. The program includes surveillance, management and public awareness components. Target species include miconia (*Miconia calvescens* and *M racemosa*), mikania vine (*Mikania micrantha*), Koster's curse (*Clidemia hirta*), and limnocharis (*Limnocharis flava*). These species are potentially very serious weeds for tropical and subtropical Australia due to the weeds' proximity to each other there are efficiencies in managing these weeds collectively under a combined national cost-sharing arrangement.
- *Ballast Water* – mandatory ballast water management arrangements for international shipping were introduced on 1 July 2001 by the Australian Quarantine and Inspection Service. In May 2005, Australia signed, subject to ratification, the International Convention for the Control and Management of Ships' Ballast Water and Sediments. The Australian Government is drafting new ballast water legislation to implement the Convention and provide a basis for national consistency, with a view to its introduction to Parliament in 2009. A set of consistent national operational procedures for ballast water management are currently being finalised.
- *Biofouling – t*he Australian Government is developing biofouling management requirements for international vessel arrivals. It is intended that once the requirements come into effect all vessels entering Australian waters will need to be free from specific biofouling pests. The requirements are intended to be implemented through amendments to legislation subordinate to the *Quarantine Act 1908.* A specific implementation date has not been determined. The Australian Government has developed biofouling management guidelines for

delivery to a range of maritime sectors to assist in the management of domestic marine pest risks.

CASE STUDY- MANAGEMENT OF BITOU BUSH THROUGH A THREAT ABATEMENT PLAN IN NSW

Bitou bush (*Chrysanthemoides monilifera* ssp. *rotundata*) is a highly invasive coastal shrub of South African origin, which has invaded 900 kilometres of the NSW coastline. Bitou bush has been declared a weed of national significance, a noxious weed, and a Key Threatening Process in NSW.

The NSW Bitou Bush Threat Abatement Plan is part of a national effort to address this threat. The plan identifies priorities for management independent of land tenure by prioritising the species at greatest risk from bitou bush and the sites where its control is most critical. The plan lists 19 species, two endangered plant populations and eight ecological communities at greatest risk from a total of 158 species, three populations and 24 ecological communities that are adversely affected by bitou bush invasion.

A bitou bush biological control program has resulted in the release of four agents. One of these, the bitou seed fly, is established along the NSW coastline and in some areas, fly populations have reduced bitou seed production by over 50 per cent. Current research is focusing on the leaf-roller moth (*Tortrix* sp.). Poor moth establishment has been linked to high predation of the larvae (98 per cent mortality) and drought conditions. However, Botany Bay National Park now has an established and expanding population of moths and if this can be replicated at other locations, it is likely to have a significant impact on bitou bush infestations.

Bitou bush control programs must continue for several years to reduce seed reserves in the soil. Volunteer groups such as Dunecare groups, are important in maintaining long-term control.

Goal 7. Address challenges to biodiversity from climate change, and pollution	
Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change	• Connectivity/fragmentation of ecosystems

Loss, degradation and fragmentation of habitats are consistent drivers for the listing of ecological communities and species under the EPBC Act. The aim of listing these threatened entities is to, where possible, slow or stop their rate of decline and maintain or restore the connectivity of fragments. Listing ecological communities is consistent with a landscape-level approach to natural resource management and biodiversity conservation. Ecological communities provide crucial habitat for wildlife, including threatened species, and contribute significantly to connectivity of vegetation remnants and wildlife corridors. Climate change is increasingly recognised as a threat to ecological communities, particularly in more extreme environments, such as our alpine zones and northern tropical Australia.

Terrestrial biodiversity

As well as stress from climate change itself, actions to mitigate and adapt to climate change may also impact positively or negatively on biodiversity. Relevant considerations are being taken into account through the development of Australia's 'Carbon Pollution Reduction Scheme' (CPRS). The CPRS White Paper (December 2008) which outlines

the design of the scheme, proposes that biodiversity considerations should be addressed through existing natural resource management frameworks and not built into the design of the scheme. The Australian Government intends that Australia's natural resource management and protection legislation, policies and programs will be adequate and effective to prevent or mitigate any perverse impacts on biodiversity arising from the operation of the scheme. Measures complementary to the natural resource management and protection legislation may also be considered, if required.

A national assessment of the vulnerability of Australia's biodiversity to climate change is also being finalised. It considers the potential impact of climate change on Australia's freshwater, marine and terrestrial biodiversity and discusses the management responses that might be required. It will highlight our current state of knowledge, identify future directions for a biodiversity adaptation response and discuss knowledge gaps in research and management.

In addition to the national biodiversity vulnerability assessment, Australia has a number of other significant projects that are facilitating the sharing of research and information about climate change impacts on biodiversity. Key national projects include:

- Consideration of the implications of climate change for Australia's National Reserve System, which is the framework for coordinating the efforts of the Australian Government, state and territory governments, non-government organisations and Indigenous landholders to achieve a nation-wide system of terrestrial protected areas as a major contribution to the conservation of our biodiversity. There are currently more than 9000 terrestrial protected areas in the National Reserve System covering 89 million hectares in all the bioregions of Australia. The report of the first phase of work to understand the implications of climate change for Australia's National Reserve System was released in March 2008. A second phase of work is underway to examine vulnerability of major ecosystems (biomes).
- A preliminary assessment of the vulnerability of Australia's World Heritage properties to climate change is also being finalised. This project will inform the future management of Australia's World Heritage estate. It assesses the vulnerability and adaptive capacity of the World Heritage values of each property, and identifies research and information gaps, and priorities for adaptation planning.

Marine Biodiversity

Marine bioregional planning is ensuring strategic responses to a range of risks to marine biodiversity, including climate change. Enhanced resilience of Australia's marine environment to climate change impacts will be one outcome of this approach. The establishment and management of a national system of Marine Protected Areas will also contribute to the long-term protection and viability of marine systems in a changing climate.

An assessment of the vulnerability of the Great Barrier Reef to climate change was also released in 2007. The Australian Government has committed AU$8.9 million towards the implementation of the Great Barrier Reef Climate Change Action Plan (2007–2012).

Target 7.2. Reduce pollution and its impacts on biodiversity	• Nitrogen deposition • Water quality in aquatic ecosystems
Under the National Water Initiative (NWI), the Australian Government works with the states and territories to implement the National Water Quality Management Strategy (NWQMS). The NWQMS aims to protect the nation's water resources by enhancing their quality while maintaining economic and social development. The Australian Government has been working in collaboration with the states and territories to implement the NWQMS by developing water quality improvement plans to reduce pollution being released into coastal hotspots across the country. Caring for our Country is protecting coastal environments and critical aquatic habitats through investing in management actions to improve the quality of water discharged into coastal environments.	

Maintain goods and services from biodiversity to support human well-being	
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods	
Ecological communities provide a wide range of valuable ecosystem services and protecting them under the EPBC Act has benefits beyond biodiversity conservation. By maintaining or restoring the functional integrity of ecological communities the important ecosystem services they provide are protected. For example, the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia is an ecological community that, although now very fragmented, extends almost the entire length of the east coast of Australia, and throughout that large range it plays an important role in buffering against coastal wind damage and storm erosion that can damage coastal towns and infrastructure.	
Target 8.1. Capacity of ecosystems to deliver goods and services maintained	• *Biodiversity used in food and medicine (indicator under development)* • Water quality in aquatic ecosystems • Marine trophic index • Incidence of Human-induced ecosystem failure
Ecosystem service capacity has generally been increasingly well protected and regulated through water allocation planning. The implementation of the National Water Quality Management Strategy at a waterbody level involves a participatory process between communities and governments to identify: the community preferences on the use and values of local waters; the current water quality of local waters; and the economic and social impacts of maintaining current water quality or of meeting new local water quality goals. A management plan is developed that contains feasible management options that aim to achieve the environmental values that have been agreed for that water body.	

Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained	• Health and well-being of communities who depend directly on local ecosystem goods and services • *Biodiversity used in food and medicine*
There are numerous examples of the use of biological resources for food and medicine, especially by Indigenous Australians. Through Working on Country, Indigenous Australians can be supported to identify and protect areas where important native plants and animals occur. In addition, economic development opportunities can arise from propagation of native species for replanting or commercial harvesting, such as the macadamia nut.	

Protect traditional knowledge, innovations and practices	
ARTICLE 8. IN-SITU CONSERVATION With the implementation of government programs that relate specifically to Indigenous land and sea management practices, traditional knowledge and methodologies are recognised by government, and community understanding of the importance of biodiversity and sustainable use is promoted and practiced. Western natural resource management practices are enhanced through the use of traditional knowledge by Indigenous Australians undertaking land and sea management activities on behalf of the government and the Indigenous 'rangers' respective communities. Through programs that allow for Indigenous Australians to undertake activities on their own land, or land they have rights and obligations to, broader outcomes are achieved, such as improvements to health, education, social cohesion and employment opportunities.	
Goal 9 Maintain socio-cultural diversity of Indigenous and local communities	
Target 9.1. Protect traditional knowledge, innovations and practices	Status and trends of linguistic diversity and numbers of speakers of Indigenous languages

In Australia there are a number of examples where traditional knowledge, innovations and practices are respected, preserved and maintained.

Traditional knowledge has been documented serially for many Aboriginal languages, and this documentation continues. A major problem has been the erosion of knowledge ad loss of the few older people who are custodians of particular languages.

A number of government programs support the recording, storage and transfer of traditional ecological and cultural knowledge. These programs include: Working on Country; the Indigenous Heritage Program; Indigenous Protected Areas Program; National Arts and Crafts Industry Support Program; Indigenous Broadcasting Program; Maintenance of Indigenous Languages and Records Program; Indigenous Culture Support Program; and Return of Indigenous Cultural Property Program. These programs have helped to ensure that that traditional knowledge is recorded in a culturally sensitive way and that this knowledge is shared with younger generations.

For example, work plans for Indigenous rangers are overseen by a committee of Traditional Owners who ensure that cultural issues are identified, understood and respected by the rangers while they are undertaking their on-ground work requirements. This ensures that cultural knowledge is preserved and passed on to rangers as they learn about land management needs.

Indigenous managed land includes about 21 million hectares of forest, which is 14 per cent of Australia's total forest area. The presence of Indigenous Australians in natural resource management committees and other forest stakeholder forums continues to increase.

Both planted and natural forests are increasingly valued by Indigenous Australians for their ability to contribute to economic independence. In 2005, the National Indigenous Forestry Strategy was launched to encourage Indigenous participation in the forest industry by forming business partnerships with the forestry industry to provide long-term benefits to Indigenous communities, as well as to the forest and wood products industry.

Target 9.2. Protect the rights of Indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing	*Indicator to be developed*

As at December 2008 Australia-wide, 122.5 million hectares (more than 16 per cent of Australia's land) is under Indigenous ownership.

All Australian governments have in place legislative protection for significant Indigenous heritage and additional protection under codes of practice and other procedures that support the discovery and management of Indigenous heritage sites.

In the Great Barrier Reef region, there are over 70 coastal Aboriginal and Torres Strait Islander groups who maintain strong cultural relationships to the area. Traditional Owners are encouraged to develop Traditional Use of Marine Resources Agreements (TUMRAs) that describe how individual groups agree to sustainably manage the traditional use of marine resources in their sea country areas. The Torres Strait Protected Zone established by the Torres Strait Treaty acknowledges and protects the traditional way of life and livelihood of the traditional inhabitants, including their traditional fishing and free movement. A further objective of the Torres Strait Protected Zone is to protect and preserve the marine environment and indigenous fauna and flora in and in the vicinity of the Protected Zone. Further information is available at: http://www.reefed.edu.au/explorer/traditional_owners/

The *Torres Strait Fisheries Act 1984* was introduced to give effect to the Protected Zone fisheries provisions of the Torres Strait Treaty between Australia and Papua New Guinea through a range of measures, including providing a special licence for traditional inhabitant commercial fishers. Since 1989, all non-Indigenous participation in Torres Strait fisheries has been capped to reserve any further expansion for traditional inhabitant commercial fishing.

In ensuring Australia has met its obligations to Papua New Guinea under the Torres Strait Treaty, a voluntary surrender process was initiated in the Torres Strait Finfish fishery. On 18 December 2007, the Australian Government Minister for Agriculture, Fisheries and Forestry announced that funding totaling $10.6 million from the Australian Government and the Torres Strait Regional Authority (TSRA) resulted in the buyout of 100 per cent of the non- Indigenous commercial licences in the Torres Strait Finfish fishery. This means that the TRSA now holds 100 per cent of the Australian share of the Spanish mackerel and coral trout quota in trust for Torres Strait communities. Similarly the Australian Government also conducted an open market process in the Torres Strait Tropical Rock lobster fishery that resulted in a partial reallocation of non-Indigenous commercial licences. The Australian Government now holds 25 per cent of the provisional quota to meet its obligations to Papua New Guinea, and the Indigenous sector controls just over 50 per cent of the quota.

Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources	
Target 10.1. All access to genetic resources is in line with the Convention on Biological Diversity and its relevant provisions	*Indicator to be developed*
Target 10.2. Benefits arising from the commercial and other utilisation of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions	*Indicator to be developed*

The development of Access and Benefit Sharing legislation and policy in Australia has been shaped by our federal system of government and the complex web of existing law governing the ownership or use of native biological resources. Under Australia's federal system, powers over the use of land, seas and native biological resources rest mostly with the state and territory governments. ABS legislation is therefore required in all nine Australian jurisdictions, and in each of them a range of relevant common and statutory law exists which pre-date the CBD.

In October 2002, the Natural Resource Management Ministerial Council endorsed an intergovernmental agreement—the Nationally Consistent Approach for Access to and the Utilisation of Australia's Native Genetic and Biochemical Resources—to establish a common approach to genetic resource management in Australia.

Regulations under the EPBC Act control the taking of genetic resources in Commonwealth areas and ensure the sharing of benefits arising from their use. They also provide a mechanism to exempt existing permitting regimes that are consistent with the Regulations' purposes in order to minimise duplication. Legislation is also in place in Queensland and the Northern Territory. In October 2008, Victoria also announced a legally effective policy to implement the nationally consistent approach in that state.

Agreements that bring existing permit arrangements under the benefit-sharing requirements of the Commonwealth Regulations have been made with the Great Barrier Reef Marine Park Authority, the Australian National Botanic Gardens, the Australian Institute of Marine Sciences and the Australian Antarctic Division. As a result, 115 access permits issued have been issued under Commonwealth legislation which incorporate an obligation to share the benefits arising from the use of biological resources, both monetary and non-monetary, with the Australian Government and the managers of that resource. 'Model' agreements are publicly available, as are details of permits issued under the Commonwealth Regulations.

Ensure provision of adequate resources	
Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention	
Target 11.1. New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20	• Official development assistance provided in support of the Convention
Australia has committed $200 million over five years through the International Forest Carbon Initiative, which is supporting international efforts to demonstrate that REDD can be included in an equitable and effective future global outcome on climate change. Australia is supporting Orangutan conservation in Indonesia under a four-year $500 000 partnership with The Nature Conservancy	
Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4	
Fisheries Australia cooperates in scientific and technical cooperation through our active participation in several RFMOs which aim to ensure that sustainable and scientifically based conservation and management measures are adopted to manage fish stocks in the region. Examples include: • conducting a number of capacity building workshops and technology transfer programs to assist developing states manage their fish stocks • hosting a number of foreign fisheries agency staff visits to improve fisheries management skills, including participating as observers on Australian patrol boats to provide instruction in fisheries compliance • training of foreign government officers to assist in the implementation of CCAMLR's Catch Documentation Scheme (CDS) for Patagonian toothfish • assisting in preparing fleet development plans for coastal and developing island states aspiring to develop tuna fisheries in the Indian Ocean • establishing the Pacific Patrol Boat program to provide South Pacific countries with a credible maritime surveillance capability and enhance their capacity to protect their marine resources.	

B. Progress towards the Goals and Objectives of the Strategic Plan of the Convention

<table>
<tr><th>Strategic goals and objectives</th><th>Possible indicators</th></tr>
<tr><td colspan="2">Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues.</td></tr>
<tr><td>1.1 The Convention is setting the global biodiversity agenda</td><td rowspan="3">CBD provisions, COP decisions and 2010 target reflected in workplans of major international forums</td></tr>
<tr><td>1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence</td></tr>
<tr><td>1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks</td></tr>
<tr><td colspan="2">Part 13A of the EPBC Act regulates international wildlife trade involving Australia and contains a number of provisions relating to conservation and sustainable use. Through implementation of the EPBC Act, Australia continues to fulfill its obligations as a Party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Conservation and sustainable use principles are considered for the approval of programs for the taking for export of Australian native species. For CITES listed species, non-detriment findings are made by the CITES Scientific Authority to determine the impact of trade on the survival of the species.

The 14 Addis Ababa principles are consistent, where possible, with the objects of Part 13A of the EPBC Act or current government policy relating to sustainable use. One of the specified aims of Part 13A of the EPBC Act is ensuring compliance with Australia’s obligations under the Convention on Biological Diversity.</td></tr>
<tr><td>1.4 The Cartagena Protocol on Biosafety is widely implemented</td><td></td></tr>
<tr><td colspan="2">Australia is not a party to the Protocol.</td></tr>
<tr><td>1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programs and policies at the regional and global levels</td><td></td></tr>
<tr><td colspan="2">Fisheries

Australia is establishing ecological based fisheries management arrangements to address the broader environmental impacts of fishing.

Australia has also developed a national system of fisheries management plans, a national system of marine protected areas, and carries out ecological risk assessments (ERAs) for all major species with which Commonwealth fisheries interact. The ERAs come under an Ecological Risk Management framework which ties into current fishery processes and</td></tr>
</table>

Strategic goals and objectives	*Possible indicators*
structures, including developing harvest strategies for all target species and a bycatch and discard program to address the priority impacts on other affected species. The *Harvest Strategy Policy* aims to ensure that an evidence-based precautionary approach is taken to monitor and assess the long-term biological sustainability and economic profitability of fisheries for target species. It sets the framework for controlling the intensity of fishing on Australian managed fish stocks and provides a science-based approach to setting total allowable catch levels in all Commonwealth fisheries on a fishery by fishery basis. Australia has policies and plans in place to manage the impact of fishing on populations of seabirds, sharks and seals, and a threat abatement plan to address the threat posed by marine debris to vertebrate marine life.	
1.6 Parties are collaborating at the regional and subregional levels to implement the Convention	*Possible indicator to be developed:* *Number of Parties that are part of (sub-) regional biodiversity-related agreements*

Goal 2: Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention	
2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategy and action plans	
The Australian Biodiversity Conservation Strategy, currently under review, is funded by the various Australian Government and state and territory government NRM programs, including the $2.25 billion Caring for our Country initiative.	
2.2 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention	Official development assistance provided in support of the Convention (OECD-DAC Statistics Committee)
Australia has committed $200 million over five years through the International Forest Carbon Initiative, which is supporting international efforts to demonstrate that REDD can be included in an equitable and effective future global outcome on climate change Australia is supporting Orangutan conservation in Indonesia under a four-year $500 000 partnership with The Nature Conservancy.	
2.3 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biosafety	
Australia is not a party to the Protocol	

2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety	
Australia is not a party to the Protocol	
2.5 Technical and scientific cooperation is making a significant contribution to building capacity	*Indicator to be developed consistent with decision VII/30*
Australia is not a party to the Cartagena Protocol.	

Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention	
3.1 Every Party has effective national strategies, plans and programs in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities	Number of Parties with national biodiversity strategies
Australia has a biodiversity conservation strategy in place and is currently revising it.	
3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol	
Australia is not a party to the Cartagena Protocol	
3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programs and policies	*To be developed* *Percentage of Parties with relevant national sectoral and cross-sectoral plans, programs and policies in which biodiversity concerns are integrated*
The period since the National Biodiversity Strategy and the national objectives were developed has seen greater, proactive involvement of industry in biodiversity conservation. However, in general, industry environment strategies do not refer directly to national biodiversity policy; nor do they explicitly adopt the objectives and targets of the national objectives. The below information is primarily derived from the Griffin Study. Industry policy tends to be very focused and specific to the needs of members. It operates at a level that is close to the ground. The natural partnerships in relation to environmental management are with groups of landholders and, more recently, with NRM groups. Their objectives and targets relating to biodiversity tend to be more closely aligned with biodiversity targets at this level than with national policy. Industry programs relating to environmental management tend to contain large components of R&D. At the level of R&D, the initiatives of industry embody many of the strategic directions of the national biodiversity policy, such as integrating production and environmental management. Examples include: the Grain and Graze R&D program; the Land, Water and Wool program and Integrated Area Wide Management in the cotton industry. Among the industry strategies, there are notable examples of highly developed policies and codes of practice that stand out in relation to biodiversity (e.g. the rice industry: A Biodiversity Strategy for the Australian Rice Industry (2002); the dairy industry: Dairying for Tomorrow: A	

National Strategy for Sustainable Resource Management). These strategies specifically address biodiversity conservation as an issue (Table 1). They are linked to implementation programs such as best practice and accreditation systems.

It is common among industry implementation environmental management programs to operate a tiered system for accreditation. For example, the rice industry Environmental Champions Program takes producers through five levels of development from basic industry standards, beyond industry standards, putting plans into action, trade, innovation and eco-efficiencies and regional/catchment partnerships. Biodiversity conservation comes into effect in the third tier.

Industry monitoring indicates that the majority of growers participating in these programs do not progress to the higher levels of accreditation, i.e. the levels that more fully encompass biodiversity conservation. While there are exceptions, most industry associations are satisfied that their members meet the needs of their businesses and comply with legislation. The drivers to encourage producers to extend to higher levels of accreditation seem to remain relatively weak in many industries.

Although there have been significant advances, the drivers for engaging in biodiversity conservation as part of best practice and accreditation still tend to be weak in many industries. Strong market signals and associated branding remain rare, and even where they are strong, they tend to relate to chemical use and production system principles of which biodiversity conservation is only a minor component (e.g. the organic produce industries).

In the absence of strong market signals, or regulation (such as the clearing controls in NSW and Queensland), there is little pressure on producers to take part in biodiversity components of industry best practice programs, as illustrated by the cotton industry example. In the cotton industry, Annual Pest Application Management Plans are compulsory for all growers and there are stringent chemical registration procedures. However, the biodiversity elements of the best practice program are voluntary and best practice audits are voluntary.

In many industries, biodiversity conservation is widely assessed as providing little net return to the producer relative to other practices, such as water conservation and soil management. This perception has important implications for the place of biodiversity conservation in industry accreditation systems. It highlights the importance of cost sharing between governments and industry to ensure that biodiversity is affordable as part of industry best practice, particularly while markets for environmentally sound production (as opposed to produce) remain relatively weak across key industries.

In fact, the last decade has seen the development of substantial, wide ranging partnerships between industry, government and the non-government sector to achieve adoption of best practice on-farm that takes account of the range of public benefit as well as private environmental issues.

Are the national objectives cascading through state/territory/regional and industry levels?
The states and territories have developed a wide range of responses to the threats to biodiversity. Their responses are driven by their own assessments of risk, and their obligations under various national strategies and agreements. The Australian Government is exerting influence on the states and territories largely through funding and other arrangements under the national agreements.

It is clear that the National Biodiversity Strategy and national objectives have influenced state and territory biodiversity policy, particularly at the level of overarching goals and strategic directions. Below this level, the approaches and specific focuses of the states and territories diverge.

There is, however, strong evidence of increasing uniformity between jurisdictions in the way

risks to biodiversity are assessed and managed. The overwhelming trend in all jurisdictions is towards increasingly stringent and comprehensive regulation of threats to biodiversity and increasing consistency with Australian national policy and objectives. In some aspects, such as native vegetation management and threatened species and ecological communities, biodiversity emerges as a major theme driving policy. In others, including water reform and integrated regional NRM, biodiversity is one of the key themes but not a major driver of policy.

In the past decade, partnerships have evolved and strengthened between governments at different levels, and between governments and industry. The developments in NRM are among the most significant of these partnerships for biodiversity conservation. The CoAG agreements in water management that include environmental flow allocations as a central tenet, and the bilateral agreements between the Australian, state and territory governments for implementation of the NHT and NAP are key examples.

3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the Convention, and as a significant contribution towards the global biodiversity agenda	*To be developed* *Number of national biodiversity strategies and action plans that are being actively implemented*

See Chapter 3.

Goal 4: There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation	
4.1 All Parties are implementing a communication, education, and public awareness strategy and promoting public participation in support of the Convention	*Number of Parties implementing a communication, education and public awareness strategy and promoting public participation* *Percentage of public awareness programs/projects about the importance of biodiversity* *Percentage of Parties with biodiversity on their public school curricula*

Public education will be a significant component of the revised biodiversity conservation strategy.

The Australian Government undertakes a number of targeted communications and education activities relating to the regulation of wildlife trade. These activities are designed to improve compliance with Part 13A of the EPBC Act by communicating effectively with current and potential exporters/importers and other stakeholders. Activities include:

- development and implementation of the Endangered Species Certification Scheme in cooperation with the Australian Acupuncture and Chinese Medicine Association (AACMA)
- sponsorship of “The Thin Green Line” documentary to raise awareness of the work of rangers around the world

- hosting an information booth at the Customs Brokers and Freight Forwarders Council of Australia annual conference 2008
- development and distribution of information products and brochures to a variety of stakeholder groups, such as a national mail-out to all Australian travel agents.

Australia continues to work with the Coalition Against Wildlife Trafficking (CAWT) on activities and initiatives to combat illegal wildlife trade. Activities are focused on achieving the three CAWT objectives agreed to by partners, which are:

- reducing consumer demand for illegally traded wildlife
- improving wildlife law enforcement
- catalysing high level political will to fight trafficking.

4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol	
Australia is not a party to the Cartagena Protocol	
4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels	*To be developed by the Ad Hoc Open-ended Working Group on Article 8(j)*
Indigenous Australians are well aware of their rights under Article 8(j) of the CBD and have been vocal with past Australian Governments and state and territory governments to have their traditional knowledge in terms of biodiversity recognised and incorporated into overarching government policies and programs. In terms of the current revision of the National Biodiversity Strategy, a considerable effort has been undertaken on behalf of governments to consult with Indigenous people about the use of traditional knowledge and other Indigenous issues as they relate to biodiversity. The Indigenous Advisory Committee has suggested a useful indicator could be - 'Participation of Indigenous people on Government committees etc. that implement the CBD at all levels.'	
4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programs and policies	*To be developed* *Indicator targeting private sector engagement, e.g. Voluntary type 2 partnerships in support of the implementation of the Convention*
In terms of the current revision of the National Biodiversity Strategy, a considerable effort has been undertaken on behalf of governments to consult with all stakeholders about the priority areas and actions contained within the strategy.	

C. Conclusions

An overall assessment of whether the implementation of the Convention has had an impact on improving conservation and sustainable use of biodiversity, and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources, in their country (If yes, how so? If not, why not?)

All the governments of Australia have invested considerably in the development and implementation of biodiversity conservation and sustainable use policies and programs.

Since the release of the 1996 *National Strategy for the Conservation of Australia's Biological Diversity* (DEST 1996), Australia has achieved:

- a significant increase in the size of terrestrial and marine reserve systems, including World Heritage places
- improvements in the conservation status of particular species and ecological communities
- collaborative development of Indigenous Protected Areas, where Indigenous Australians manage their country to preserve its values
- emergence of private conservation reserves run by non-government organisations
- development and implementation of sustainable fisheries management plans for all of Australia's major fisheries
- strengthened requirements and outcomes for conservation and sustainable forest management through regional forest agreements
- legislation by all governments to protect native vegetation from broad scale land clearing
- clarification of rights to extract water, and formal recognition of the right to allocations for environmental flows (i.e. the water needed to keep a watercourse healthy)
- incorporation of biodiversity objectives in all 56 natural resource management regions across the country
- development of new markets for protecting native habitat on private land
- efforts to reduce greenhouse gas emissions and reduce the adverse impacts of economic development
- increased protection of the biodiversity of the Great Barrier Reef—the zoning network introduced in 2004 includes the world's largest network of no-take areas (> 117 000 sq km), which protects representative examples of all 70 identified bioregions, plus many other spatial and temporal measures to increase biodiversity protection.

Our responses to biodiversity conservation and sustainable use are growing more sophisticated and what we have learnt is informing our current approaches. We are placing an increasing emphasis on acting at the right scale, getting the right mix of management within and outside protected areas, using a mix of legislative and incentive mechanisms, and developing management processes and systems that promote the sustainable use of biological resources. An important challenge now is to improve our

understanding of ecosystem resilience and manage for this in an environment that is under pressure from the consequences of human activity, including climate change.

Indigenous Advisory Committee's perspective

Overall, the implementation of the CBD is not well known (if at all) to Indigenous people to have an impact on the improvement of conservation of biodiversity and while they are interested parties and would embrace fair and equitable sharing benefits, they are not included in such consultations and negotiations for this to happen.

An analysis of lessons learned regarding implementation, highlighting examples of successful and less successful actions taken

There are two notable successes—the development of water allocation planning and the institution of a weed risk assessment program. Both provide a regulatory but objective framework, based on evidence, for the resolution of potential natural resource conflicts, in a setting that allows appropriate public participation fully informed by evidence, especially evidence relating to environmental consequences.

Through Working on Country and the Indigenous Protected Areas program, we have been able to establish that on-country based activities provide opportunities for biodiversity outcomes. For example, using Indigenous traditional practices in fire management ensures the resilience of ecosystems to resist weed and feral animal colonisation, as well as providing opportunities for intergenerational transfer of traditional knowledge.

Under Caring for our Country, both Working on Country and the Indigenous Protected Areas program will continue. There will also be other opportunities to strengthen the inclusion and the role of Indigenous people in the development and delivery of Caring for our Country through partnering with regional bodies, NGOs and governments in achieving biodiversity objectives consistent with the CBD and with Indigenous aspirations and interests.

A summary of future priorities and capacity-building needs for further national-level implementation of the Convention

The future priorities are being set out in the revised draft national biodiversity strategy which will contribute to the addressing the global target of a significant reduction of the current rate of biodiversity loss at the national level by focusing on:

- building ecological resilience at landscape scale by protecting habitats and reducing existing pressures
- increasing connectivity by establishing conservation linkages across the landscape and therefore facilitating the adaptation of species to climate change
- mainstreaming biodiversity issues in the government, business, scientific and education sectors thus ensuring that biodiversity is not discounted in development process and government and industry decisions, and
- establishing base-line data sets and long-term monitoring sites to inform decision making.

Suggestions for actions that need to be taken at the regional and global levels to further enhance implementation of the Convention at the national level, including: refining existing programs of work or developing new ones to address emerging issues; suggesting goals and objectives that may be included in the future Strategic Plan of the Convention; and identifying mechanisms that need to be established at various levels.

Suggestions for action at the regional and global level to further enhance implementation of the Convention at the national level are:

- A greater emphasis on the program of work on biodiversity and climate change, including a focus on resilience and adaptation measures, such as connectivity.
- Raising awareness of biodiversity issues globally.

Priorities for strengthening or enhancing programs include the consolidation and integration of national biodiversity monitoring programs (including specifically a focus on threatened species); and the development of strategy that will reward landholders for the management of native vegetation.

Australia, in collaboration with the Pacific Regional Environment Programme (SPREP), is working on a project to streamline reporting by Pacific Island countries (PICs) to the biodiversity-related multilateral environmental agreements (MEAs), including the CBD. A consolidated reporting template to the five main biodiversity-related MEAs was developed and trialled in the Pacific in 2008. Further work is planned in 2009 to progress the project.

Appendix I - Information concerning reporting Party and preparation of national report

A. Reporting Party

Contracting Party	Australia
NATIONAL FOCAL POINT	
Full name of the institution	Department of the Environment, Water, Heritage and the Arts
Name and title of contact officer	Robyn Bromley, Director
Mailing address	GPO Box 787 Canberra ACT AUSTRALIA 2601
Telephone	+61 2 6274 1906
Fax	
E-mail	***robyn.bromley@environment.gov.au***
CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	Department of the Environment, Water, Heritage and the Arts
Name and title of contact officer	Joanne Elphinstone, Senior Policy Officer
Mailing address	GPO Box 787 Canberra ACT AUSTRALIA 2601
Telephone	+61 2 6274 2929
Fax	
E-mail	jo.elphinstone@environment.gov.au
SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	31 March 2009

B. Process of preparation of national report

The process was comprehensive and involved the following steps:

- seeking input from key stakeholder groups, including industry and conservation organisations; however, only the mining industry sector elected to submit input
- seeking input from relevant Australian, state and territory government agencies
- collating the input into a first draft and then seeking further Australian Government agency comments and input
- a first major edit for style, consistency, and readability
- a consultation period with state and territory agencies of four weeks
- incorporation of further state and territory agency input and comments
- second major edit and layout
- agreement to finalise and submit by relevant Australian Government ministers.

Appendix II - Progress towards Targets of the Global Strategy for Plant Conservation and the Programme of Work on Protected Areas

A. Progress towards Targets of the Global Strategy for Plant Conservation

Overview of Progress

Australia supports the Global Strategy for Plant Conservation (GSPC) and its implementation. Within Australia, there are significant government and non-government bodies whose objectives mirror those of the GSPC at local, regional, national and international levels. Generally, these government bodies implement policies and programs that are not 'labeled' as GSPC. For example, government programs in natural resource management and threatened species, the National Reserve System and the Weeds of National Significance project. Consequently, the GSPC is not coordinated at a national level and this would require the provision of resources and focused leadership.

At the national level, the Council of Heads of Australia's Botanic Gardens (CHABG) and Council of Heads of Australia's Herbaria (CHAH), which include state and territory and Australian Government members, have collectively embraced the principles of the Global Strategy for Plant Conservation as a foundation for the integration of in situ and ex situ conservation. The draft National Biodiversity Strategy under development integrates both in-situ and ex-situ approaches to conservation and broadly embraces the principles of the GSPC.

PROGRESS TOWARDS TARGETS

Target 1: A widely accessible working list of known plant species, as a step towards a complete world flora
ABRS, APNI and APC are contributing to this target. The development of a working list of known plant species is progressing well in relation to the higher vascular plants. Cryptograms (lower plants) require some attention.

Australia's Virtual Herbarium (AVH) is a world-first, web-based database on Australia's native plants, assembled in real-time from data held by the national and state and territory herbaria. It is a collaborative project with all jurisdictions, with private sector support and was initiated in 2001 through the former ANZECC. Data on over six million herbarium specimens from nine herbaria are now accessible due to this project.

Target 2: A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels
Plants that are identified as potentially being at risk of extinction may be considered for priority assessment by the Threatened Species Scientific Committee (TSSC). If the TSSC finds the species eligible for listing as threatened under the EPBC Act, it will recommend to the Minister for the Environment that the species be protected as a matter of National Environmental Significance.

Target 3: Development of models with protocols for plant conservation and sustainable use, based on research and practical experience

The Australian Network for Plant Conservation is working on a model of protocol for plant conservation and sustainable use. The National Flora Management Network has developed harvesting guidelines for two plant species in trade, and is working on national sustainability guidelines.

Target 4: At least 10 per cent of each of the world's ecological regions effectively conserved

In Australia the world ecological regions are defined by the 85 IBRA regions. The Australian Government's Caring for our Country initiative has a priority on building the National Reserve System in IBRA regions with less than 10 per cent protected. In 2006, there were 36 IBRA regions with less than 10 per cent protected. These protected areas consist of a mixture of government reserves, Indigenous protected areas and protected areas on private land. Continental Australia has more than 11 per cent protected in more than 9000 protected areas.

Target 5: Protection of 50 per cent of the most important areas for plant diversity assured

There is currently no national collection of this data. However Australia's approach to prioritizing areas for protection is based on IBRA regions. The goal is to include examples of at least 80% of the number of regional ecosystems in each IBRA region and subregion. Over the next 5 years there will be a particular focus on the remaining 36 bioregions with levels of protection less than 10 per cent - places such as the arid lands of Central Australia and the Mitchell grass country of north-western Queensland. The Australian Government will also target areas of conservation significance on a global scale, such as the world's largest relatively intact sub-tropical savannah, which stretches across Australia's north from Cape York to the Kimberly.

Target 6: At least 30 per cent of production lands managed consistent with the conservation of plant diversity

In south-eastern Australia, woodlands have been cleared to support the development of intensive agricultural production. This area now supports many rural communities and produces a significant proportion of Australia's food and fibre.

Farmers are managing some of the valuable remnants of these woodlands; about three million hectares are on private land.

Some remnants, with appropriate planning and management to improve their condition and secure their protection, could make a more significant contribution to landscape scale conservation of biodiversity at the district or sub-catchment scale.

Within this area of woodlands there are 44 per cent of the farm businesses in Australia (ABS 2007) that contribute over $16 billion or 42 per cent of Australia's gross value of agricultural production.

An intent of Caring for our Country is to enable groups of landholders to work together to contribute to biodiversity conservation and the provision of associated ecosystem services in a way that complements the National Reserve System (including protected areas on private land) and the Environmental Stewardship Program (that is currently focussing on

protection of the Box Gum Grassy Woodlands).

Priority for the next two years will be given to proposals that bring together groups of landholders to improve the protection on farm of woodlands and their derived native grasslands in Victoria, southern NSW and eastern South Australia. Proposals are particularly invited from groups of landholders to protect woodlands along rivers and creeks, especially those in the Central West, Murrumbidgee, North East, Goulburn Broken and Murray regions of the Murray-Darling Basin.

Proposals are invited from groups of landholders (who represent at least 10 properties) for support to develop cross property biodiversity conservation plans and management arrangements for woodlands in priority areas.

Proponents are encouraged to work with other organisations, such as government agencies, non-government organisations, community groups, regional natural resource management organisations and research organisations to develop proposals.

Target 7: 60 per cent of the world's threatened species conserved in situ

The data to measure this target from a national perspective is scattered and Australia is unable to report at the current time because of limited resources. However all listed threatened plant species in Australia that are the subject of a recovery plan have as one of the key objectives of the recovery plans that efforts be made to ensure in situ conservation.

Target 8: 60 per cent of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programs

A nationally coordinated policy framework which will assist monitoring progress against this target in the future has recently been developed as part of the Climate Change Adaptation Strategy for Australia's Botanic Gardens (CHABG 2008). Seed collections of species by state conservation agencies, botanic gardens and others in partnership with the Millennium Seed Bank have resulted in seed of 5000 flora species (approximately 21 per cent of the Australian flora) being stored in seed banks. By 2010 the target is to have 8000 species represented (approximately 33 per cent of the Australian flora). It is not known the exact proportion of threatened species in these figures.

Australian botanic gardens are active participants in 130 threatened species recovery and restoration programs. Australia has 21 per cent of its threatened plant species in ex-situ conservation and 11 per cent (135 species) are the subject of restoration.

Target 9: 70 per cent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated Indigenous and local knowledge maintained

There is currently no national collection of this data. However active participation in seed banking programs and activities should realise achievement of this target from an Australian perspective.

Target 10: Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems
States and territories in Australia are making a good contribution to this target; however, there is currently no national collection of this data. There are a number of hreat abatement plans in place and under development that address invasive species that threaten Australia's flora.

Target 11: No species of wild flora endangered by international trade
In Australia, trade in threatened plant species continues to be regulated under Part 13A of the EPBC Act. Enforcement and penalty provisions are included in Part 17 of the EPBC Act.

Target 12: 30 per cent of plant-based products derived from sources that are sustainably managed
Unless exempted, plant-based products from Australian native species for commercial export must be sourced from an approved harvest program (management plan, wildlife trade operation or artificial propagation program) that has been assessed for sustainability.

Target 13: The decline of plant resources, and associated Indigenous and local knowledge innovations and practices that support sustainable livelihoods, local food security and health care, halted

Indigenous people have practiced sustainable management of plant resources for their livelihood over thousands of years. They continue to use and maintain these practices through land management techniques which include cooperatively working with western science and traditional ecological knowledge of plant and animals. Indigenous people are major stakeholders who need to be included in any national coordination in this area.

Through the Indigenous Protected Areas program and the Working on Country program, the Australian Government has greatly increased resources for Indigenous Australians to manage their land. The management plans and work priorities for Indigenous rangers funded under these programs target improvement in the condition of ecosystems by reinstating traditional fire management regimes, controlling feral animals and ensuring intergenerational transfer of knowledge.

While these land management practices will assist in halting the decline of plant resources that are of importance to Indigenous people, it is the transfer of knowledge from elders that will help preserve the knowledge of plant resources for future generations. Knowledge transfer is an integral component of both the Indigenous Protected Areas and Working on Country programs.

Target 14: The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programs
The work to achieve this target is undertaken by a range of government and non-government agencies throughout Australia, including botanic gardens, the CSIRO, herbaria, museums, schools and tertiary institutions. The CHABG held a workshop of education staff from Australia's botanic gardens in April 2008 to coordinate education and awareness messages in relation to climate change in botanic gardens programs. Raising public awareness about these issues are actions in many national threatened plant recovery plans.

Target 15: The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy

Australia has a skill and capacity shortage in this area and requires national leadership to address this shortfall. For example, Australia has conducted a recent review of the taxonomic workforce. The review shows a continued drop in numbers of taxonomists, with a 14 per cent loss of capacity since 1991 and over 30 per cent of the workforce either retired or voluntary. The average age of the workforce is over eight years above the national average. The Australian Biological Resources Study has forecast that Australia will lose between 30 and 50 per cent of its taxonomists over the next 15 years. This represents a significant impediment to Australia's biosecurity, agriculture, fisheries and conservation activities.

Target 16: Networks for plant conservation activities established or strengthened at national, regional and international levels

Australia has several national plant networks including the Council of Heads of Australia's Botanic Gardens, Council of Heads of Australia's Herbaria and the Australian Network for Plant Conservation. Botanic Gardens of Australia and New Zealand is a recently formed network which is contributing significantly to strengthening the role of regional botanic gardens in supporting plant conservation. All of these networks were involved in the development of and endorsed the Climate Change Adaptation Strategy for Australia's Botanic Gardens.

The Partners in Vegetation Management group is a partnership between eight organisations involved in vegetation management at a national level. The partnership aims to improve the delivery of information and knowledge and improve the coordination of partner information from each organisation, across a spectrum of natural resource management themes. The organisations work together through shared interests in order to achieve a greater benefit than what may be possible by their individual efforts. They aim to better understand the synergies complementing activities, gaps and diversity of information needs between partner organisations and to streamline their individual efforts. They also aim to learn from each other, share information, align programs and avoid duplication.

The partners include Research and Development Corporations, Australian and state governments, research organisations, universities, training providers, industry groups and non-government practitioners including:

- Bureau of Rural Sciences
- CSIRO Sustainable Ecosystems
- Department of Agriculture, Fisheries and Forestry
- Department of the Environment, Water, Heritage and the Arts
- Greening Australia
- Land and Water Australia
- Joint Venture Agroforestry Program
- Australian Master Treegrower Program.

B. Progress towards Targets of the Programme of Work on Protected Areas

Goal, target	Key evaluation questions and national considerations
Description	
Goal: To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals. Target: Establish a global network of comprehensive, representative and effectively managed national and regional protected area systems.	• **Is the existing national protected area system comprehensive, ecologically representative and effectively managed (provide number of existing protected areas, total area covered, and type and percentage of biomes covered)?** o What are the definitions of 'comprehensive', 'ecologically representative' and 'effectively managed' in your country? o What is the progress made in quantitative and qualitative terms against the national targets relating to 'comprehensiveness', 'ecological representation', and 'effective management'? o What biomes are adequately represented? o What biomes are underrepresented or not represented? o What IUCN categories of protected areas are included? The policy document, *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005) defines comprehensiveness, adequacy and representativeness (CAR) in the Australian context. • Comprehensiveness – inclusion of the full range of ecosystems recognised at an appropriate scale within and across each *Interim Biogeographic Regionalisation of Australia* (IBRA) bioregion. • Adequacy – the maintenance of the ecological viability and integrity of populations, species and ecological communities. • Representativeness – the principle that those areas that are selected for inclusion in protected areas reasonably reflect the biotic diversity of the ecosystems from which they derive. The metric used is the extent to which regional ecosystems are sampled within sub-bioregions of the IBRA framework. The definition of effectively managed is being addressed by all Australian governments in the development of national principles of protected area management. In addition, a framework for the effective management of protected areas is being jointly developed by the Australian, NSW and Victorian governments in association with Dr Mark Hockings of Queensland University. A project is also underway in South Australia to incorporate park management effectiveness measures into park management plans. National targets were also laid out in the *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005). The principal relevant quantitative targets are: • Comprehensiveness – Examples of at least 80 per cent of the number of extant regional ecosystems in each IBRA region are to be represented in the National Reserve System. • Representativeness – Examples of at least 80 per cent of the number of extant regional ecosystems in each IBRA subregion are represented in the National Reserve System by 2010–2020. Progress towards establishing a comprehensive, adequate and representative (CAR) National Reserve System can, in the first instance, be gauged from current reservation levels on a bioregional basis and progress towards meeting reservation targets. National reservation targets currently have two

foci in Australia: those outlined in the Protected Areas Programme of Work (PoW) under the *Convention on Biological Diversity*, to which the Australian Government is a signatory and those agreed by all Australian governments in the *Directions for the National Reserve System - A Partnership Approach* (NRMMC 2005).

Reservation targets outlined in the PoW under the CBD process in Australia equate to 10 per cent of the area for each of the 85 bioregions, determined by the Interim Biogeographic Regionalisation of Australia (IBRA), to be protected by 2010. Forty-six bioregions meet or exceed this target and 39 fall below this level of protection (Figure 3).

The 10 per cent target is not achievable in all bioregions given the high levels of clearing and fragmentation of native vegetation. Vegetation removal and modification has occurred predominantly in the agricultural zones, such as the Victorian Volcanic Plain, Avon Wheatbelt, South East Coastal Plain, Naracoorte Coastal Plain and Victorian Midlands, but also in areas under pressure from urban development, such as the Swan Coastal Plain and south-east Queensland. Five bioregions cannot reach the reservation target for this reason.

Taking these issues into consideration, it is estimated that while protected areas, including Indigenous Protected Areas, cover more than 90 million hectares, an additional 27 million hectares will be required to meet the CBD PoW target, principally in Australia's rangelands.

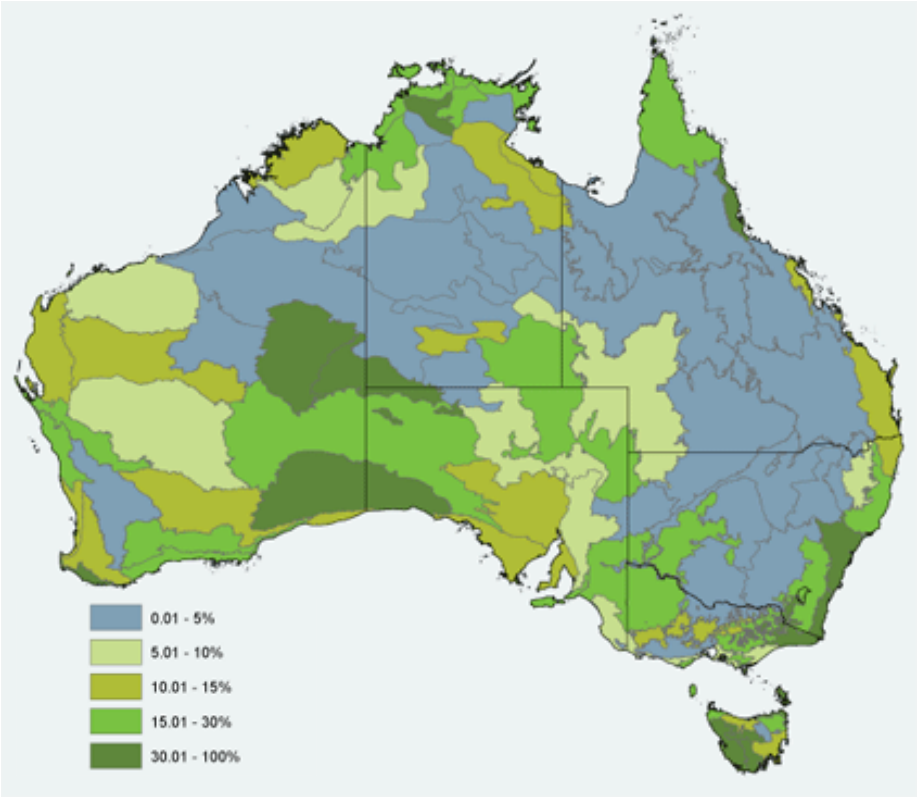

Figure 3: National Reserve System: percent of each bioregion in protected areas (CAPAD 2006 and IBRA 6.1 DEWHA)

The reservation targets in the *Directions for the National Reserve System - A Partnership Approach* (NRMMC 2005) relate to looking at the reservation of native ecosystems on a bioregional (IBRA) basis for Comprehensiveness and on an IBRA sub-regional basis for Representativeness.

It is extremely difficult to quantify progress towards these ecosystem based targets in a meaningful way, as we do not have an agreed national list of native ecosystems across Australia or vegetation mapping to support such analyses. It is most problematic for bioregions that cross state and territory borders and clearly contain native ecosystems that occur in one or two jurisdictions.

The overview below has been developed from current state and territory vegetation mapping, except for NSW which is based on other data given the lack of coherent statewide vegetation mapping. This analysis was undertaken with input from the states and territories by the National Reserve System Scientific Advisory Sub-group (SASG), which looked at the proportion of native ecosystems found within each bioregion included in protected areas and grouped into the following classes:

- *Nil*
- *Very Low*: if <10 per cent of native ecosystems in that bioregion were found in protected areas
- *Low*: if between 10-25 per cent
- *Medium*: if between 50-80 per cent
- *High*: if more than 80 per cent of native ecosystems were sampled in protected areas.

Progress towards these Comprehensiveness targets can be seen in Map 2, where it is evident that 45 of Australia's 85 bioregions have low or very low ratings for Comprehensiveness and only 11 bioregions meet the 80 per cent (high) target. As noted above, few opportunities exist to improve this situation in five bioregions given the removal of native vegetation.

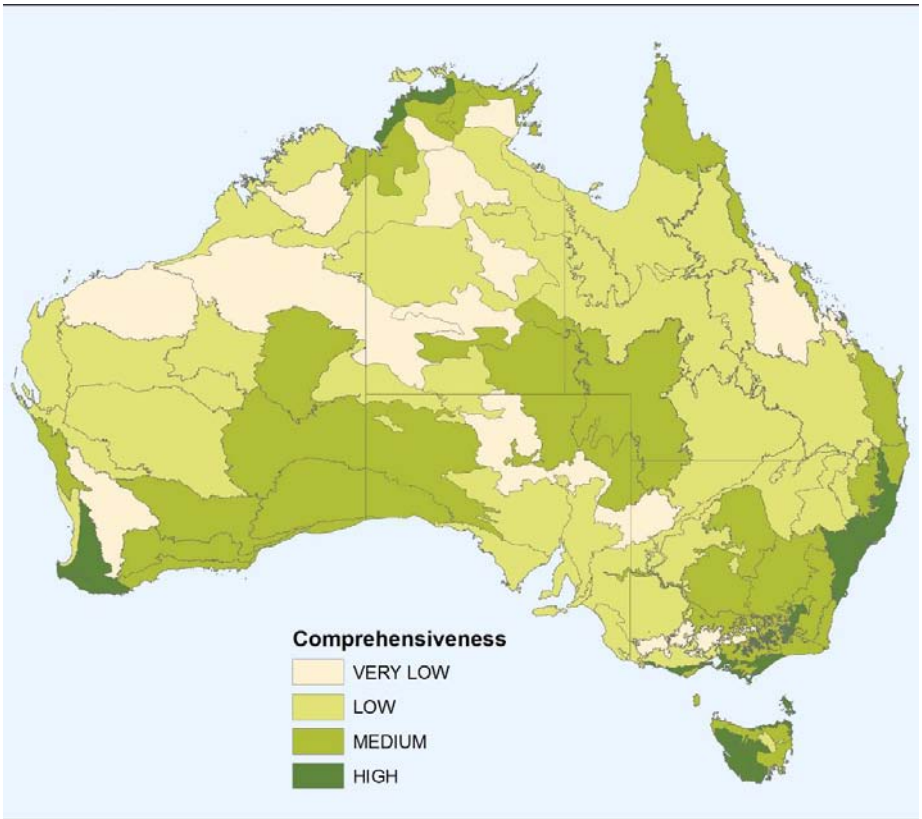

Figure 4 Progress towards comprehensiveness in the National Reserve System (NRS Scientific Advisory Sub Group and DEWHA 2008)

Progress towards the Representativeness targets is demonstrated in Map 3 where it can be seen that 196 of Australia's 403 sub-regions have a low or very low rating and in 64 sub-regions native ecosystems have no representation in protected areas. Forty six sub-regions meet the 80 per cent target. This picture is incomplete and does not include full and accurate data for the Northern Territory (NT). The NT, given the coarseness of much of their vegetation mapping, could not give an accurate representativeness rating for the 61 IBRA sub-regions found in the jurisdiction. It is evident however that, with 40 of the 61 IBRA sub-regions in the NT having <2 per cent of their area in protected areas, including 28 that have zero area in protected areas, the level of representation of native ecosystems is very low. Similarly six sub-regions have high levels of reservation and would most probably meet the 80 per cent target.

In relation to Adequacy, the SASG is currently looking at how best to measure Adequacy in a meaningful way. The emerging approach looks at Adequacy at three scales:

- National
- Bioregional
- Landscape

The SASG discussions have been influenced by the work of the CSIRO in looking at the impacts of climate change on the National Reserve System

(Dunlop and Brown 2008). A discussion paper on the revised approach to Adequacy will be completed by the SASG later this year.

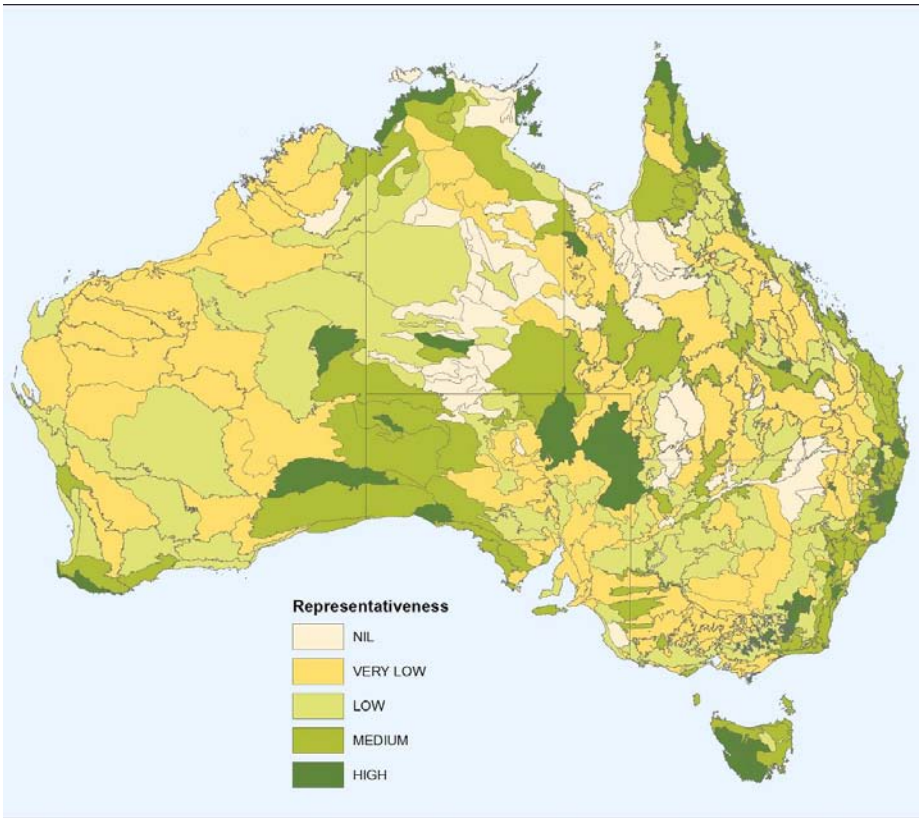

Figure 5 Progress towards representativeness in the National Reserve System (NRS Scientific Advisory Sub Group and DEWHA 2008)

All IUCN protected area categories are applied by the various jurisdictions in Australia. Application of the IUCN protected area categories is being harmonised across jurisdiction through the multi-lateral National Reserve System Taskgroup.

Information on the status of Australia's biodiversity is also drawn from other sources:

1. Under the Natural Heritage Trust, the *National Land and Water Resources Audit* was established to provide data, information and nationwide assessments of Australia's land, water and biological resources to support sustainable development. http://audit.deh.gov.au/ANRA/atlas_home.cfm

2. Several key assessments of the Audit, notably *Landscape Health in Australia 2001*, *Australian Native Vegetation Assessment 2001* and *Terrestrial Biodiversity Assessment 2002* have provided quantitative Australia-wide information for the first time relevant to the development of the National Reserve System and major gaps. These assessments built on the biological inventory studies undertaken by the states and territories.

3. The *National Vegetation Information System* has also been developed through the Audit in cooperation with the states and territories as a primary data source for monitoring the development of the National Reserve System and for target setting in the Australian Governments' Natural Resource Management initiatives. Additional assessments are planned by the Audit in 2009 to update some of this earlier work. http://www.deh.gov.au/erin/nvis/index.html

The National Reserve System has grown from 10.52 per cent (80.89 million hectares) in 2004 to 11.6 per cent (90 million ha) in 2006. New data in 2008 is expected to show a further increase to nearly 100 million hectares. The National Reserve System includes nearly 9000 protected areas. Among them are crown reserves such as national parks, private protected areas, Indigenous Protected Areas and other reserves. Forty-six of Australia's 85 bioregions now contain a minimum of 10 per cent of their area within protected areas.

Since 1997, with support from the Australian Government's National Reserve System, more than AUD$122 million has been contributed for the protection of an additional 29.2 million hectares of land. This covers 325 properties, including 25 Indigenous Protected Areas.In order to be included in the National Reserve System, the protected area must be able to be classified into one or more of the six IUCN Protected Area Managed Categories as well as meet other criteria.

The implementation of the *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005) includes commitments to further evaluate gaps in Australia's protected area estate which will build on previous gap assessments within the protected area estate of specific jurisdictions.

With regard to Australia's marine protected areas (MPAs), the Marine Protected Area Program is managed by the state and territory governments for waters out to three nautical miles from the coastal baseline and by the Australian Government for waters from three to 200 nautical miles. In NSW, six multiple-use marine parks now include about one-third of coastal waters.

An exception is the Great Barrier Reef Marine Park (GBRMP) which is the only Commonwealth MPA in Australia that abuts the mainland coast at low water.

In the Australian marine environment, the National Representative System of Marine Protected Areas (NRSMPA) is being developed under the ecosystem-based classification, the Integrated Marine and Coastal Regionalisation of Australia (IMCRA 4). IMCRA 4 is a spatial framework for classifying Australia's marine environment into bioregions that make sense ecologically and are at a scale useful for regional planning and as a framework for subsequent finer levels of planning and management. The GBRMP represents an example of this finer planning level. The Zoning Plan for the GBRMP, brought into effect in 2004 provides adequate and effective protection from extractive use for representative examples of all 70 fine-scale reef bioregions within the GBRMP.

The Australian Government is seeking representation in each of the 41

broader provincial-scale bioregions identified in the IMCRA 4. Of the 41 provincial bioregions 29 (or 70 per cent) are represented in MPAs. State and territory governments are developing MPAs using the meso-scale bioregions that are also identified in IMCRA 4. Typically the state and territory governments are using multiple-use marine reserves with zoning to achieve MPA objectives.

In many jurisdictions, MPAs have also existed for many years as part of coastal parks. For example, parks include about 45 per cent of the NSW coastline and the estuaries in Royal National Park, established in 1879, are the oldest known MPAs in the world. These areas are recognised as valuable components of MPA systems.

The Australian Government has made it a priority to establish MPAs in provincial bioregions not already represented within the NRSMPA. State and territory jurisdictions are also undertaking bioregional assessments to better understand gaps in representation and priority areas for MPAs development.

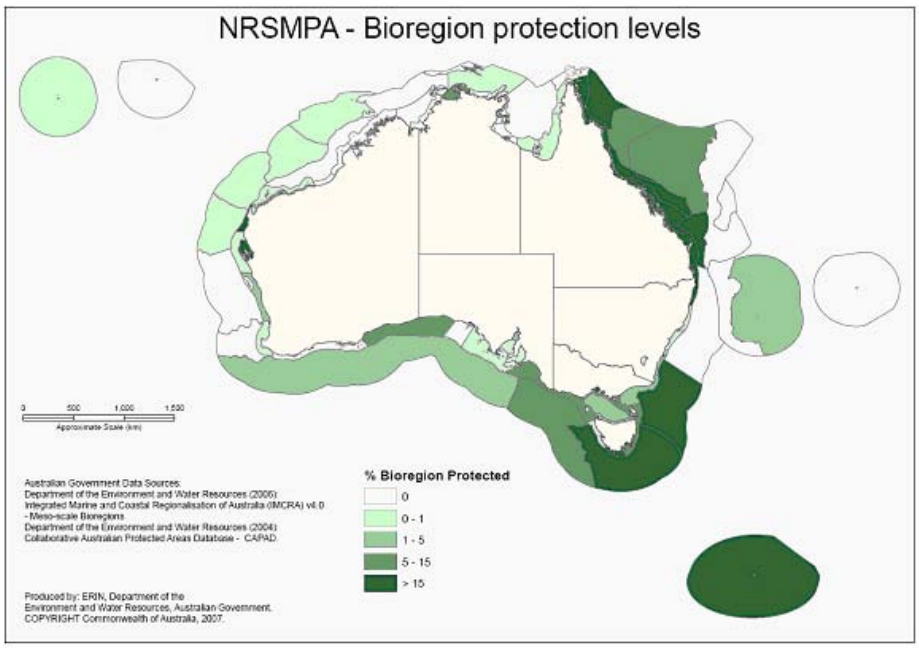

Figure 6 National Representative System of Marine Protected Areas – Bioregion protection levels (2006)

CAPAD 2008 is currently being collated to review reservation levels in each of Australia's 85 bioregions and 403 sub-regions, including native ecosystems contained in the *National Vegetation Information System* and threatened species listed under the EPBC Act. Information on reservation levels for each of Australia's 41 marine provincial bioregions is also being collated. This analysis has already been completed for CAPAD 2006.

State and territory jurisdictions have also developed reservation strategies (e.g. Northern Territory and New South Wales), or state-wide biodiversity strategies (e.g. Victoria and Western Australia) to address gaps in current protected areas and MPAs.

In June 2002, Victoria established 13 marine national parks and 11 marine

sanctuaries across all five marine bioregions in Victoria, which has ensured the network now represents all major marine and coastal habitats. Victoria was the first jurisdiction in the world to create an entire system of highly protected Marine National Parks at the same time. In most bioregions more than one park and/or sanctuary was created to ensure the diverse range of habitats and communities were protected. These marine protected areas protect 5.3 per cent of Victoria's coastal waters. Further information is available at:http://www.parkweb.vic.gov.au/1bays.cfm

- **Do new protected areas established since COP-7 cover underrepresented ecosystems and biomes (number of new protected areas since COP-7, area covered by them, type and percentage of biomes covered by them)?**

- **Are there plans for the establishment of additional protected areas by the year 2010 (terrestrial) and 2012 (marine)?**
    - Have plans or actions for protected area system (incorporating elements for filling ecological gaps, securing financial resources, capacity-building, addressing policy, legislative and institutional barriers) been developed?

Figures on increases in protected areas established since COP-7 are still being compiled through CAPAD 2008. CAPAD collates information on protected areas in Australia, reviews reservation levels in each of Australia's 85 bioregions and 403 sub-regions and is updated every two years. CAPAD 2008 is currently being compiled.

Since COP-7 there have been significant additions to Australia's marine protected area estate. Precise figures are currently being collated, but an estimated 43 MPAs totaling almost 240 000 km^2 of ocean have been identified for inclusion in the NRSMPA. Australia is committed to establishing the NRSMPA by 2012.

In the GBRMP, the highly protected 'no-take' zones (i.e. Preservation Zones, Scientific Research Zones, and Marine National Park Zones) are representative of all 70 reef bioregions that occur within the Marine Park. This no-take network (equivalent to IUCN categories I and II) covers an area of over 115 200 km2, equal to around 33.3 per cent of the total area of the GBRMP. The 'no take' areas of marine parks in NSW and Victoria cover around six per cent of state waters. In Tasmania, the area of 'no take' marine reserves is 991.41 km^2 (82 per cent of the total area of marine reserves or 4.4 per cent of Tasmanian state waters).

As part of the *Blueprint for the South Australian Representative System of Marine Protected Areas* (Government of South Australia 2004), 19 marine protected areas are proposed to be established in South Australia by 2010. This is also a key state target in *South Australia's Strategic Plan* (Government of South Australia 2007).

These South Australian marine protected areas will be established to further the protection and maintenance of biological diversity and of natural and cultural resources and in many cases will complement existing coastal and island reserves established under the *National Parks and Wildlife Act 1972*.

Guidelines for the selection of areas for inclusion in the National Reserve

System were developed cooperatively with state and territory governments (see *Australian Guidelines for Establishing the National Reserve System*, Commonwealth of Australia 1999 at:http://www.environment.gov.au/parks/nrs/sciguide/index.html

The National Reserve System guidelines include a series of goals, including to:

- contain samples of all ecosystems identified at an appropriate regional scale
- contain areas which are refugia or centres of species richness or endemism
- consider the ecological requirements of rare or threatened species and rare or threatened ecological communities and ecosystems, in particular those listed in the EPBC Act and other state, territory and local government legislation or policy instruments http://www.environment.gov.au/epbc/index.html
- take account of special groups of organisms (e.g. species with specialised habitat requirements or wideranging or migratory species, or species vulnerable to threatening processes that may depend on reservation for their conservation).

Within this context, priority for funding the establishment of new protected areas through the Australian Government's National Reserve System is being given to viable samples of native ecosystems or key fauna habitats in high priority bioregions, or poorly protected ecosystems/fauna habitats of national or state importance in other bioregions. Where large areas of remnants do not exist, priority is given to those areas managed as part of a larger network of protected areas to assist in maintaining the long-term viability of native biota. High priority bioregions are those with very low levels of reservation and high levels of threat to native biota.

The Australian and state and territory governments affirmed their commitment to developing a comprehensive, adequate and representative (CAR) system of terrestrial protected areas in the *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005). This document identifies national-level protected area targets which are:

- by 2010–2015, examples of at least 80 per cent of the number of extant regional ecosystems in each bioregion to be represented in protected areas (comprehensiveness)
- by 2010–2020, examples of at least 80 per cent of the number of extant regional ecosystems in each sub-region to be represented in protected areas (representativeness).

This policy document also identifies strategic directions to progress issues related to:

- filling ecological gaps in the current protected area system
- securing financial resources for protected areas establishment and management
- partnerships with industry and the community to protect key areas for biodiversity conservation legislative and institutional barriers to protected

	area development • development of management effectiveness frameworks.
Goal: To integrate protected areas into broader land- and seascapes and sectors so as to maintain ecological structure and function. Target: All protected areas and protected area systems are integrated into the wider land- and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity and the concept, where appropriate, of ecological networks.	• **What measures have been taken for developing enabling environment (legislation, policies, tools) for integrating protected areas into broader land and seascapes and sectoral interests (i.e. agriculture, infrastructure, energy)?** o Are the needs of protected areas taken into account in the wider land and seascape to address the need for connectivity, including ecological networks? o Has the concept of the 'ecosystem approach' been applied while developing protected area system? All jurisdictions in Australia are working towards a comprehensive, adequate and representative (CAR) protected area system. Non-government organisations, private landholders and Indigenous groups also contribute new protected areas to broaden the scope and coverage of the National Reserve System. Broad targets for the protection of ecological communities within biogeographic regions are established in the *Directions for the National Reserve System - A Partnership Approach* (NRMMC 2005) This overarching policy framework for the National Reserve System provides a strategic national approach to making quantifiable progress towards the establishment and management of a CAR terrestrial protected area system. The national target established in the directions document is designed to bring effect to the CBD target of at least 10 per cent of each of the world's ecological regions effectively conserved. Protected area growth is unequal among bioregions and jurisdictions reflecting the varying opportunities to progress protected areas across the country. In some bioregions with high levels of protection there may be particular high priority biodiversity assets in need of further protection. In underrepresented regions targets may not be achieved due to highly fragmented landscapes or where land is not available for acquisition or covenanting. Achieving National Reserve System targets for isolated reserves will not on its own safeguard biodiversity. Ecological connectivity requires that the reserve system is seen as part of a bigger, connected set of landscape elements. An integrated approach to achieving targets for protected areas with other conservation mechanisms on surrounding lands is critical for effective biodiversity conservation. This broader 'whole of landscape' approach is essential to management effectiveness and a key component of building resilience in the face of climate change. The National Reserve System will complement other efforts by the Australian Government and its investment partners to conserve biodiversity and meet Australia's international obligations to protect our native species and their habitats. Australia applies the ecosystem approach to establishment and management of protected areas. The directions document recognises that for protected areas to be effective, they must be managed as part of the broader landscape and outlines four key processes to address this. 1. The *Interim Biogeographic Regionalisation for Australia* (IBRA) ensures a common approach to measure and monitor the status

and threats to native ecosystems.

2. Cooperation between Australian governments is resulting in improved landscape scale approaches to biodiversity conservation. For example, protection mechanisms for biodiversity conservation, including the development of the National Reserve System, have been reviewed, and nationally agreed criteria for measuring the adequacy of the protected area estate and a national approach to better accommodating freshwater ecosystems in the development of the National Reserve System are being developed.
3. Australian Government initiatives in Natural Resource Management. For example, natural resource management plans are being developed at the catchment level through a whole-of-government approach. These plans address priority biodiversity conservation issues at the catchment level, and provide the basis for addressing biodiversity conservation priorities within regional investment strategies. Key components are meeting conservation targets within IBRA sub-regions, and the joint management and planning of natural resources by natural resource management and conservation agencies.
4. The improved integration of National Reserve System goals and targets is being supported through Australian Government initiatives in Natural Resource Management. For example, the Protected Areas on Private Lands project in Tasmania seeks to harmonise on-ground conservation measures with the objectives of further developing the National Reserve System.

Where appropriate, complementary marine protected area arrangements are implemented in adjoining Australian jurisdictions to provide better protection for ecosystems that cross political boundaries. For example, the Great Barrier Reef Coast Marine Park falls under the jurisdiction of the State of Queensland and has complementary zoning and management arrangements to the adjacent Great Barrier Reef Marine Park, which falls under the jurisdiction of the Australian Government. Both Marine Parks are jointly managed by a variety of Queensland and Australian Government agencies.

National coordination of marine protected area issues occurs through the Marine Protected Area Working Group (MPA Working Group) which sits within the Council of Australian Governments framework. The MPA Working Group focuses on:

- providing national policy direction, where appropriate, for the development and management of the NRSMPA
- facilitating cross-jurisdictional cooperation and exchange of information
- national reporting on the implementation of the NRSMPA
- provision of advice on broader national marine environment goals as considered appropriate.

Under the national commitment to developing the NRSMPA, each government has appropriate legislation for the declaration and management of MPAs. State and territory governments are able to integrate the management of

	coastal parks and MPAs under existing legislation. Coordination of the management of MPAs and fisheries also occurs at this level. The Australian Government takes a whole-of-government approach to developing MPAs, getting endorsement of MPA proposals from environment and resource management agencies. MPAs are viewed as one component of integrated spatial management of the marine environment.
Goal: To establish and strengthen regional networks, transboundary protected areas (TBPAs) and collaboration between neighbouring protected areas across national boundaries. Target: Establish and strengthen by transboundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international cooperation.	• **What collaboration across national boundaries has been implemented in relation to protected areas?** o Has any consultation process been established to identify potential transboundary, including marine, protected areas? o How many protected areas feature in regional networks and how many of these are transboundary? o Has the potential for regional cooperation under relevant conventions been utilised for the establishment of migratory corridors? The Australian and New Zealand governments have agreed to explore the possibility of marine protection in areas where Australia and New Zealand's exclusive economic zones meet. The East Asian Australasian Flyway includes the migratory routes of 65 populations of migratory shorebirds with a combined minimum population total of four million, including 11 species of special conservation concern. These species are protected in Australia under the EPBC Act through their listing under bilateral migratory bird agreements with Japan (JAMBA) and China (CAMBA). Migratory birds and their habitat in Australia and the Republic of Korea (South Korea) are also protected under the Agreement between the Government of the Republic of Korea and the Government of Australia on the Protection of Migratory Birds (ROKAMBA), which was signed in December 2006. These agreements have been made under the provision of the Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) A tri-nation agreement links Kakadu National Park in Australia, Wasur National Park in Indonesia and the Tonda Wildlife Management Area in Papua New Guinea. A series of exchange visits by technical staff and community members is aimed at improving management of these three protected areas. Further information is available at: http://www.environment.gov.au/parks/cooperation.html

Goal: To substantially improve site-based protected area planning and management. Target: All protected areas have effective management using participatory and science-based site planning processes that incorporate clear biodiversity objectives, targets, management strategies and monitoring programs, drawing upon existing methodologies and a long-term management plan with active stakeholder involvement.	• **What percentage of protected areas (area and number) have up-to-date science-based management plans that** **a) Are under development?** **b) Are under effective implementation?** o Have consultation been undertaken involving protected area functionaries, local stakeholders and researchers to identify science-based biodiversity conservation targets? This is currently not documented Australia-wide, though all jurisdictions seek to develop plans of management for protected areas over time. In the meantime all have statutory obligations to ensure the adequate protection of native flora and fauna. Private and Indigenous protected areas included in the National Reserve System by virtue of Australian Government funding all have plans of management developed as a condition of funding. All parks and reserves managed by the Australian Government have management plans in place with the exception of the Southeast network of marine protected areas, which have interim arrangements in place. South Australia has reformed its reserve management planning program and accelerated plan production. Between 1997–98 and 2006–07 the percentage of reserves with management plans increased from 42.8 per cent to 61.7 per cent. At the current rate of plan production, South Australia could achieve complete statewide coverage by 2010–11 and also ensure that no adopted plans are more than 10 years old. In addition, South Australia has been undertaking a project to develop a framework for park management effectiveness measures being incorporated into management plans which commenced in mid-2007. Further information is available at: http://www.parks.sa.gov.au/parks/management_plans/index.htm The effective management of protected areas is being addressed by all Australian governments in the development of national principles of protected area management. In addition, an effective management framework for protected areas is being jointly developed by the Australian, NSW and Victorian Governments in association with Dr Mark Hockings of Queensland University for use in State of the Parks reporting. Increasingly, management plans are being developed which include clear statements of management intent (e.g. statements of key desired outcomes) and requirements for performance monitoring, evaluation and reporting. For example, the management plan for the Tasmanian Wilderness World Heritage Area integrates a framework for evaluating management effectiveness. The majority of declared marine protected areas have a management plan in place or have a plan under development. Each jurisdiction in Australia is responsible for developing and implementing management plans for its marine protected areas created within its waters. While approaches vary in each jurisdiction, the governments of Australia are committed to consulting with all relevant stakeholders regarding the management of marine protected areas. Consultation may be focused on MPA establishment and/or the development of management plans, including zoning plans. Victoria's system of 13 marine national parks and 11 marine sanctuaries had management plans approved for all areas by June 2007.

Goal: To prevent and mitigate the negative impacts of key threats to protected areas. Target: Effective mechanisms for identifying and preventing, and/or mitigating the negative impacts of key threats to protected areas are in place.	• **What measures have been put in place to identify, prevent and/or mitigate the negative impacts of threats?** o What measures have been taken to restore and rehabilitate the ecological integrity of protected areas? The Australian Government is concerned about the impact of climate change on its native biodiversity and the protected area system. Most of Australia is going to become warmer and drier with some areas becoming warmer and wetter. The major impacts of climate change will be changes in the availability of water, changed fire frequency and patterns, changes in the distribution and abundance of invasive species and changing land use patterns with intensification of land use. Australia's approach will be to minimise the loss of biodiversity as some species and ecosystems require habitat that will disappear as the climate changes. Alpine, cooler elevated areas and aquatic ecosystems are particularly vulnerable. The Australian Government has commissioned a number of reports that draw together the understanding of scientists and protected area managers to document the implications of climate change on the national reserve system. These reports found that continuing to develop a comprehensive, adequate and representative reserve system was the main action the government could take to protect native biodiversity in the face of climate change. Several other reports are in the process of being developed to further guide the conservation of native biodiversity. These include a report on the vulnerability of Australia's biodiversity to climate change and a report soon to be released on the vulnerability of aquatic ecosystems to climate change. To further guide the management and development of the protected area network reports are also being prepared on fire, key habitat management and identification and protection of climatic refuges. Severe drought over the past decade and competition for water has emphasised the vulnerability of aquatic ecosystems to degradation and loss of biodiversity values. The *Directions for the National Reserve System - A Partnership Approach* (NRMMC 2005) recognised that aquatic ecosystems are poorly accounted for in the National Reserve System. The Australian Government is sponsoring the development of a national framework to identify and protect aquatic ecosystems of high conservation value. This framework is developing a nationally agreed bioregionalisation and classification system and criteria for identifying high conservation value aquatic ecosystems. The framework will be used to review the *Guidelines for Establishing the National Reserve System*. The identification of threats to protected areas is identified as part of the preparation of the plan of management for individual reserves. Some jurisdictions have more detailed overviews of threatening processes and how they impact on the biodiversity values of reserves or park management operations. The synthesis of information from individual protected areas into an Australia-wide list of major threats has not been undertaken; however, major threats to Australia's protected areas are outlined in Chapter 14 of *Protected Area Management. Principles and Practice* (Worboys et al. 2005). Several other

	national landscape scale studies, such as *Landscape Health in Australia 2001* and the *Terrestrial Biodiversity Audit 2002* and climate change studies, provide additional relevant information for such an overview. A further review by the Audit is currently in progress. In addition to the legislative measures in place for the establishment and management of protected areas at the jurisdictional level, the EPBC Act requires assessment of all proposals that are likely to have a significant impact on a matter of national environmental significance: World Heritage properties, Ramsar wetlands, nationally threatened species and ecological communities, migratory species, national heritage places, Commonwealth marine areas and nuclear actions. The Act also includes provision to ensure rigorous assessment of proposals that may have an impact on an Australian Government reserve. The *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005) seeks to address the management effectiveness of protected areas, including the improved monitoring and reporting on threats to the biodiversity values of protected areas. A variety of tools and templates have been developed to assist protected area practitioners to evaluate and report on the effectiveness of their conservation management programs. A recent review for Parks Australia and the Australian Greenhouse Office identifies the impacts of climate change on the development and management of the National Reserve System. Further information is available at: http://www.climatechange.gov.au/impacts/publications/pubs/protected-areas.pdf As part of the reporting arrangements for the NRSMPA, each jurisdiction identifies threats to marine protected areas. Measures to address related issues remain the responsibility of each jurisdiction with discussion between jurisdictions occurring through mechanisms such as the national Marine Protected Areas Working Group. Key threats to MPAs are typically managed using zoning arrangements, including 'no take' zones. All Australian Government MPAs have management plans in place that identify threatening processes and outline management responses to those threats.
Goal: To promote equity and benefit sharing. Target: Establish mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas.	• **What legislative or policy frameworks are in place to establish frameworks for the equitable sharing of costs and benefits arising from the establishment and management of protected areas?** o Have assessments been made of the economic and socio-cultural costs and benefits of protected areas, particularly for Indigenous and local communities? o What measures have been taken to avoid and mitigate negative impacts on Indigenous and local communities? o What mechanisms have been put in place to identify and recognize community conserved areas and how many such areas have been integrated into the national protected areas system? Australia's National Reserve System has initiatives in relation to the

participation of Indigenous communities in the development of protected areas on their lands to improve the comprehensiveness, adequacy and representativeness of the National Reserve System. To date, 22 Indigenous protected areas covering more than 14 million hectares have been declared. The program also has initiatives in relation to the participation of local communities and non-government organisations in the development of private protected areas. Since 2005, there have been 35 properties purchased with $32.7 million funding from the Australian Government, covering 2.6 million hectares mostly in bioregions with less than 10 per cent protected.

An independent evaluation of the National Reserve System Program estimated that between 1996 and 2006, the program gave out acquisition grants of AUD$68 million. State, territory and local governments contributed AUD$59.6 million and the private sector AUD$18.2 million to these acquisitions.

The states, territories and private sector owners have been spending highly variable amounts on management of protected areas ranging from AUD$3.08 per hectare in Western Australia to AUD$35.17 per hectare in NSW in 2004–5 according estimates reported in the same evaluation.

WWF – Australia has estimated from Tourism Australia figures that of the order of AUD$5 billion is spent by visitors to terrestrial parks and reserves every year. This spending generates of the order of AUD$500 million annually through the Goods and Services Tax, which is collected by the Australian Government and apportioned to the states and territories. Further information is available.

The Australian Government funding for certain World Heritage Areas in Australia has been continued in recognition of the need to share some costs associated with management of these internationally significant areas.

The Australian Government has contributed to sharing the costs of reservation of forest areas through a series of Regional Forest Agreements (RFAs) in several states. The 1997 Tasmanian RFA resulted in formal reservation of several hundred thousand hectares of native forest, greatly improving the CAR forest values of the reserve system. In recognition of forest resources foregone, especially in rural areas, considerable funds were provided for a range of forest management and forest industry improvements. The recent Tasmanian Community Forest Agreement expanded on this program.

A series of covenanting programs and revolving funds under the Bushcare Program funded by the Australian Government's National Heritage Trust explored and successfully implemented new forms of conservation which make an important contribution to national biodiversity conservation goals.

The development of Australia's *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005) provided an important review of appropriate reservation tenures included in the National Reserve System and fostered discussion within the state and territory governments as to the potential role of non-government organisations, Indigenous communities and local community groups in the development and management of the National Reserve System. Public comment on a draft of this document was sought before it was finalised with all key stakeholders notified and their comments

considered.

Australia is reviewing the *Directions for the National Reserve System - A Partnership Approach* (NRMMC 2005) to provide an updated strategy for developing the National Reserve System. The revised strategy will reflect realistic short term targets that are achievable by government. The updated policy strengthens the value of the National Reserve System as part of a suite of conservation tools to be applied in a landscape setting while maintaining the role of the National Reserve System as the primary means of securing biodiversity conservation outcomes. This new approach recognises the importance of ecological connectivity to improve resilience and long term viability in the face of climate change.

The draft Strategy and its targets for the National Reserve System complement reinforce and operationalise the Australian Government's Caring for our Country outcomes and the targets set out in the *Convention on Biological Diversity Protected Area Programme of Work*.

All state and territory Governments in Australia operate programs to foster the effective participation of local and Indigenous communities and other stakeholders in the management, including joint management in some instances of their protected area estates (see Agency Links). For example, the Australian Government jointly manages Boodoree, Kakadu and Uluru–Kata Tjuta national parks jointly with the local Indigenous owners.

The Australian Government regularly reviews the effectiveness of existing and potential forms of conservation. For example, the Australian Productivity Commission has investigated economic issues relating to the role of the private sector involvement in biodiversity conservation.

The regulations apply to the taking of biological resources of native species in all Commonwealth protected areas for research and development on any genetic resources, or biochemical compounds, comprising or contained in the biological resources. Where the regulations apply, gaining access will now involve obtaining a permit and entering into a benefit-sharing agreement with the owner or manager of the biological resources.

Each Australian jurisdiction is responsible for taking economic and social considerations into account when developing and implementing MPAs. For example, the Australian Government released the *Marine Protected Areas and Displaced Fishing: A Policy Statement* which describes the Australian Government's position on structural adjustment for displaced fishing effort caused by MPAs. This policy has been used to assist in the development of Australian Government structural adjustment programs for activities displaced by the creation of MPAs in Australian Government waters.

Socio-economic assessment of Batemans and Port Stephens–Great Lakes marine parks in NSW was carried out in establishing these MPAs. Analysis of the impacts of zoning arrangements at the Solitary Islands Marine Park on local small businesses has also been performed.

The Great Barrier Reef (GBR) and its associated features directly contribute significantly to Australia's economy, contributing annually an overall gross product amount of AUD$5.4 billion (Access Economics 2008). This comprises AUD$5.1 billion from the tourism industry, AUD$153 million from recreational activity (including recreational fishing) and AUD$139 million from commercial

	fishing. This economic activity generates about 53 800 jobs, mostly in the tourism industry, which brings over 1.9 million visitors to the GBR each year. About 70 000 recreational vessels are registered in the area adjoining the GBR. These industries, and their flow-on, underpin a significant and growing proportion of the regional and national economy.
Goal: To enhance and secure involvement of Indigenous and local communities, and relevant stakeholders. Target: Full and effective participation of Indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international obligations, and the participation of relevant stakeholders, in the management of existing, and the establishment and management of new, protected areas.	• **What mechanisms have been implemented to ensure full and effective participation of Indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international obligations, in the management of existing, and the establishment and management of new, protected areas?** o What measures have been taken to support areas conserved by indigenous and local communities? Each Australian jurisdiction is responsible for managing Indigenous and local community considerations in the management of their protected area estate. The Australian Government, through the Director of National Parks, manages Commonwealth parks and reserves. Three of the six Commonwealth National Parks, namely Kakadu National Park and Uluru-Kata Tjuta National Park in the Northern Territory and Booderee National Park in the Jervis Bay Territory are managed jointly with their Aboriginal Traditional Owners. Australia's Indigenous Protected Area Program provides support and recognition for Indigenous landowners who want to manage their land for conservation. The IPA program supports Indigenous landowners to conduct broad consultations and planning before deciding whether they wish to declare an IPA. The consultation and planning process focuses on the conservation issues from both the scientific and Indigenous perspectives and helps to develop better understanding and a relationship of trust between the Indigenous community and government. IPA plans of management specify IUCN categories and details of work programs for on ground works. Following IPA declaration funding support is provided for the Indigenous landowners to deliver the on-ground works specified in the plans of management. This year marks the 10th year of the program which has to date resulted in the declaration of 22 IPAs covering 14.8 million hectares of land. A recent independent review of the IPA program found that the program has been extremely successful both in supporting Indigenous conservation aspirations and in achieving significant social and cultural benefits for participating Indigenous communities. The review has recommended the expansion of the program. Each Australian jurisdiction is responsible for managing Indigenous and local community considerations into account when developing and implementing MPAs. For MPA development, the Australian Government consults with Indigenous communities through Aboriginal organisations, such as Aboriginal Land Councils, and through representation on the National Oceans Advisory Group. In NSW, statutory local advisory committees are established for each marine park and specific consultative arrangements are often developed for local Indigenous communities. In the Great Barrier Reef region, there are over 70 coastal Aboriginal and

Torres Strait Islander groups who maintain strong cultural relationships to the area. Traditional Owners are encouraged to develop Traditional Use of Marine Resources Agreements (TUMRAs) that describe how individual groups agree to sustainably manage the traditional use of marine resources in their sea country areas.

- **What mechanisms have been put in place to ensure the participation of relevant stakeholders, in the management of existing, and the establishment and management of new protected areas?**

Through collaborative arrangements between state, territory, private, Indigenous and Australian Government agencies, a variety of mechanisms have emerged or been consolidated over the past four years to promote the addition of privately-managed lands across Australia to the National Reserve System. Particular effort has been directed to securing conservation values on lands that are under-represented in the National Reserve System. Through voluntary agreements Indigenous and other private landholders have established protected areas over areas they own or lease on land that would otherwise be too expensive for acquisition, or is simply not for sale.

Successive Australian governments have expanded and strengthened their efforts to promote these partnered 'protected area on private land' initiatives which operate through existing (state and territory) conservation covenanting programs. The arrangements operate at both strategic and practical levels. Typically, Australian Government funding has been used to place staff in partner agencies who in turn provide support to landholders, which can range from relief from rates and taxes to equipment and expert advice. The local partners help to prepare management plans which take into account the need to manage for conservation and the fundamental requirement to maintain a viable working property.

Since 2005, the Australian Government has invested $4.8 million in establishing protected areas on private land in cooperation with state conservation agencies and conservation NGOs. To date, landholders have registered at least 3500 in-perpetuity covenants conserving more than 1.3 million hectares of land. The extent to which landholders themselves have embraced the initiatives demonstrates to other landholders the benefits of registering covenants over all or parts of their properties.

During a period of prolonged and intense drought covering much of southern Australia, protected area on private land initiatives have helped to conserve biodiversity while reinforcing the importance of keeping skilled landholders 'on the land' managing (all or portions of) their land not dedicated to sustainable production.

The protected area on private land initiatives build on and complement other efforts by Australian governments designed to engage landholders in conservation activities on their land and across regional landscapes. The initiatives provide a sound foundation for, and will increasingly be used to, facilitate access to complementary tools and incentives such as payments for positive management actions tied to the achievement of specific biodiversity outcomes.

There is a need to develop a consistent framework to support stronger covenanting regimes across the country. Under Australia's federal system, the states retain much of the responsibility for land management. With eight jurisdictions involved, a patchwork of arrangements exists in terms of tenure

types, covenant registration processes and planning laws.

Two inter-related obstacles arise at a national level—complexity and consistency. For instance, the provision of incentives delivered through Australia's taxation system to encourage conservation covenants is not available on leasehold lands, which cover more than 40 per cent of the country. In another example, there is no single approach to planning for, monitoring, and/or evaluating protected areas on private lands.

Recognising the need to minimise the complexity and address the inconsistencies, in March 2008 national criteria were endorsed by state, territory and Australian governments for accrediting protected areas on private land as part of the National Reserve System. To be recognised and included in the National Reserve System each protected area on private land must:

1. contribute to the National Reserve System, i.e. they must be managed primarily for the protection and maintenance of biological diversity, including in accordance with one of the IUCN protected area management categories
2. be perpetual and enforceable, such as via a conservation covenant registered on the land title for a period of not less than 99 years
3. require Ministerial-level agreement (or equivalent) for their termination
4. help to meet nationally-agreed National Reserve System priorities and targets
5. be monitored, evaluated and reported, just like the public reserve system.

In March 2008, the development of a national framework was endorsed by state, territory and Australian governments to increase the contribution of private land to the National Reserve System. The national framework will establish clear roles, set standards and guide landholders who establish, plan for, or manage protected areas on private land, and agencies who support the establishment and/or improved management of the National Reserve System. Considering the full spectrum of available incentives promoting the range of conservation efforts across all tenures and uses of private land, the national framework will promote establishment and improve management of the National Reserve System by assisting all stakeholders to work in consistent ways to:

- apply a strategic approach to the selection of
- provide on-going support to landholders who establish
- provide a framework for monitoring and evaluating protected areas on private land.

To provide improved on-going support for landholders managing protected areas on private land, the framework will establish an accreditation system. This system will assist administrators and markets to better recognise landholder contributions to the National Reserve System and should facilitate access to incentives, including funds to be made available through private-public partnerships and Australia's taxation system. The accreditation system will provide certainty for landholders seeking to maximise their access to any future benefits.

Most recently, an increasing number of partnerships have been formed with local governments. These arrangements are seen as an important development, providing opportunities to leverage significant acquisitions and

	to develop better arrangements for the on-going management of council-controlled lands that complement the publicly-owned reserve system. Each Australian jurisdiction is responsible for managing stakeholder engagement and considerations into account when developing and implementing all terrestrial and marine protected areas. Management plan preparation is the main ongoing mechanism for engaging relevant stakeholders. The most comprehensive process of community involvement and participatory planning for any environmental issue in Australia's history occurred when the GBRMP was rezoned between 1999 and 2003. This included over 31 000 public submissions and over 1000 meetings. As a consequence, the GBRMPA has now moved towards a new way of community engagement, including the creation of four regional offices, as well as a range of expert and local marine advisory committees. Extensive consultation also typically occurs for other MPAs in Australian jurisdictions. For example, the zoning plans for Batemans and Port Stephens–Great Lakes marine parks in NSW included the distribution and analysis of almost 100 000 community questionnaires (across both parks) and about 50 000 copies of a draft zoning plan brochure for each park. More than 200 formal stakeholder and public meetings were held and over 10 000 responses received during the three month public exhibition period of the draft zoning plans.
Goal: To provide an enabling policy, institutional and socio-economic environment for protected areas. Target: By 2008 review and revise policies as appropriate, including use of social and economic valuation and incentives, to provide a supportive enabling environment for more effective establishment and management of protected areas and protected area systems.	• **Are the appropriate policy, institutional and socio-economic frameworks in place to value goods and services and enable more effective establishment and management of protected areas?** • **What kind of social and economic valuation methods and incentives for more effective establishment and management of protected areas are developed and incorporated into national policies, institutional and socio-economic structures?** o What are the main impediments to effective establishment and management of protected areas? Have measures been taken to overcome these? Australia is a federation in which land management responsibilities are divided between various levels of government. Cooperative federalism in relation to the environment is managed through bodies such as the Council of Australian Governments (COAG) and various Australian Government–State Ministerial Councils, particularly the Natural Resource Management Ministerial Council, co-chaired by the Ministers for Environment, Heritage and the Arts and Agriculture, Fisheries and Forestry. The National Resource Management Ministerial Council (NRMMC), on which all states, territories and the Commonwealth are represented, has been established to develop a coordinated approach to issues affecting natural resource management in Australia. The NRMMC has published three national level documents to assist jurisdictions in the establishment, management, monitoring and reporting on the National Reserve System. These documents are the: • *Australian Guidelines for Establishing the National Reserve System* • *Interim Biogeographic Regionalisation of Australia* • *Directions for the National Reserve System – A Partnership Approach.*

A Natural Resources Policies and Programs Committee has been established under the Natural Resource Management Ministerial Council to progress this work. The National Reserve System Task Group is convened under the Natural Resource Policy and Program Committee of the Natural Resource Management Ministerial Council. The Task Group is chaired by the Australian Government and all state and territory agencies responsible for protected areas are represented. It provides the mechanism for all jurisdictions to coordinate activities and cooperatively develop national policy and common approaches to the establishment and management of terrestrial protected areas. Individual protected areas are declared under the appropriate legislation for each jurisdiction.

This structure promotes the effective national coordination of the National Reserve System but also allows each jurisdiction to operate under their own legislative and management framework.

Meeting National Reserve System targets is one of the six national priorities of the Australian Government's $2.25 billion Caring for our Country initiative. The Australian Government is investing $180 million over five years to accelerate development of the National Reserve System and $50 million for expansion of Indigenous Protected Areas.

By 2013, this investment will expand the area that is protected by helping to buy land for new reserves and supporting conservation covenants. This support may also include funding to NGOs to develop a management plan or to undertake remedial work, such as fencing, to establish the protected area.

The target is to expand the area that is protected within the National Reserve System to at least 125 million hectares (a 25 per cent increase) with priority to be given to under-represented bioregions. Indigenous Protected Areas will increase by between eight and 16 million hectares (at least 40 per cent). The proportion of Australian Government funded protected areas that are effectively implementing plans of management will increase from 70 per cent to 100 per cent.

The $180 million investment through Caring for our Country, announced in March 2008, significantly increased the Australian Government funding for the National Reserve System.

The government identified a set of key priorities for the program:

- Administrative processes will be streamlined to maximise the use of funds to establish new parks and reserves.
- Standard monitoring and reporting systems will be set up across all protected areas funded by the Australian Government, to better track on-ground outcomes.
- The Government will provide up to a maximum of two-thirds of the purchase price for land for new reserves. This will improve transparency and accountability, and guarantee that every dollar the Government invests will leverage at least an extra 50 cents.
- The Government will enhance the existing partnerships, working harder to involve Indigenous communities, farmers and local government in building the National Reserve System.
- The Government will implement strategic approaches to protecting

key remnants of bushland in peri-urban areas.

- Funding will be prioritised so that the major gaps in the current reserve system are targeted, alongside those areas that greatly improve the resilience of key biodiversity values in current protected areas.
- A three-year funding cycle will be instituted, so properties that can't be purchased and paid for within one financial year don't have to be overlooked.

These improvements have been driven by some new challenges and opportunities that have emerged in recent years:

- Demographic changes and drought in rural Australia have seen many properties of high conservation value becoming available for purchase, while development pressures around major cities and in coastal areas have highlighted the need for urgent action to protect key areas.
- State processes have highlighted urgent priorities, as have crown land lease renewal processes and increased land acquisition budgets.
- The growth of the private conservation sector in recent years has resulted in more opportunities and options being available to fund, establish and manage new protected areas.
- There is an urgent need for accelerated action to respond to the threat that climate change poses for our biodiversity.

Australia's National Reserve System Task Group has reviewed major impediments to the development of the National Reserve System as part of implementing the *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005). This includes ongoing dialogue with the major conservation NGOs. The 38 directions fall into four broad streams:

- improving, monitoring and reporting on the comprehensiveness, adequacy and representativeness of the national reserve system
- reviewing and implementing with more consistency models and mechanisms for protection
- improving frameworks and standards for protected area management
- exploring partnerships for funding, protection, engaging the public and implementing the *Directions for the National Reserve System - A Partnership Approach* (NRMMC 2005).

Many directions relate to work currently in progress within the jurisdictions and the National Reserve System Task Group has proved a valuable vehicle for gaining common approaches across the states and territories to many protected area development and management issues.

An independent review of Australia's National Reserve System Program in 2006 supported current approaches for establishing and managing protected areas on both public and private lands and raising awareness in government and non-government sectors of the importance of a comprehensive, adequate and representative system of reserves.

	Each Australian government is responsible for monitoring and assessing the jurisdiction's MPAs including the use of performance indicators and incentives. Similarly, identifying and addressing impediments to MPA establishment and development is managed by each jurisdiction within Australia. As a national coordination body, the Marine Protected Areas Working Group has the scope to examine in detail the main impediments to the establishment and management of marine protected areas. Some identified challenges to the development and implementation of the National Representative System of Marine Protected Areas include: • the high costs of marine research and enforcement and compliance operations • the need to improve national coordination between the high numbers of management agencies in Australia • providing nationally consistent performance monitoring and assessment for marine protected areas in different jurisdictions • developing community support and understanding of marine protected area goals and objectives. Input-output modelling has been used in NSW to estimate the economic impact of zoning marine parks. Surveys of visitors to NSW marine parks have been undertaken to estimate the values that visitors place on their experience. This work is based on travel cost methods.
Goal: To build capacity for the planning, establishment and management of protected areas. Target: comprehensive capacity-building programs and initiatives are implemented to develop knowledge and skills at individual, community and institutional levels, and raise professional standards.	• **Has a comprehensive capacity-needs assessment for protected areas management been carried out?** • **What capacity-building programs have been undertaken or are being undertaken. How successful have the completed programs been?** o Does your country consider a multidisciplinary approach to protected areas management? A national-scale, comprehensive capacity-needs assessment for protected areas management has not yet been carried out in Australia. The Australian Government is leading the development of national principles for protected area management in collaboration with all Australian jurisdictions. The national approach to protected areas management effectiveness is being jointly developed by the Australian, NSW and Victorian governments in association with the Queensland University. Under Caring for our Country, the National Reserve System provides financial assistance to NGOs and community groups to establish protected areas included in the national reserve system. Financial assistance has also been provided to stakeholders to facilitate their participation in the development and management of MPAs. The Indigenous Protected Areas (IPA) Program provides financial assistance to traditional owners for the establishment and management of Indigenous Protected Areas and on-ground support from IPA facilitators. The Australian Government and the states and territories also have capacity building initiatives to facilitate the joint management of protected areas with traditional owners across Australia. The development and management of protected areas requires consideration

	of all stakeholder interests and must take into account a range of issues. These issues include matters of an economic, social or scientific nature and commonly require management input from a range of disciplines.
Goal: To develop, apply and transfer appropriate technologies for protected areas. Target: development, validation, and transfer of appropriate technologies and innovative approaches for the effective management of protected areas is substantially improved, taking into account decisions of the Conference of the Parties on technology transfer and cooperation.	• **What new innovative approaches and technologies have been identified, developed and implemented for protected areas establishment and management on the national and regional level?** o Has there been collaboration within the country and/or with other countries to share information and technologies? The *Interim Biogeographic Regionalisation for Australia* (IBRA) has been developed in cooperation with the states and territories and is updated from time to time as better information becomes available. It forms the scientific basis of the national planning framework for Australia's National Reserve System and facilitates the spatial analysis by government, non-government organisations and scientists interested in protected areas planning and management. Australia's National Reserve System Task Group is the national conduit for disseminating information approaches for the effective management of protected areas. Parks Heads of Agencies is the forum for information exchange, discussion, collaborative action and to facilitate staff exchanges and joint projects between agencies in relation to protected areas in Australia. Both fora include representatives from every jurisdiction in Australia. Parks Heads of Agencies includes a representative from New Zealand's park agency. Parks Australia, Parks Victoria and NSW National Parks and Wildlife in conjunction with Queensland University are developing a management effectiveness framework for protected areas including the use of appropriate approaches and technology. There has been considerable collaboration between governments and organisations on marine research. For example, two recent research voyages in the Tasman Fracture and Huon Commonwealth Marine Reserves in November 2006 and April 2007 identified an additional 80 seamounts south of Tasmania, raising the total in the region to at least 144. In addition, an additional 145 canyons were discovered, raising the regional total to at least 276. Also discovered during the voyages were 338 species new to science, 86 new records for Australia and 242 described species. Examples of significant technical innovations that enabled a high quality zoning plan for the Great Barrier Reef Marine Park to be produced in an accurate and timely manner included: • Development and application of clear Operating Principles for developing the new network that clarified the planning 'rules' for stakeholders in advance of the process. • 'Post-hoc' accounting GIS procedures to assess various network options against each of the operating principles • Legal boundary descriptions automatically generated from GIS maps using processes developed within the GBRMPA Spatial Data Centre, allowing the zone locations to be translated into legal descriptions rapidly and accurately

Goal: To ensure financial sustainability of protected areas, and national and regional systems of protected areas. Target: Sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in transition and small island developing States.	• **Have financial needs been identified? What are the results of this needs assessment (quantitative and qualitative)?** • **What strategies are in place to meet these needs, and in particular to secure long-term funding for the national protected areas system?** o What financial support has been given to developing countries and countries with economies in transition and small island developing States? o What proportion of the budget is dedicated to supporting the national protected areas system (What proportion of the total funding for the national protected areas comes from private and public funding sources, and how much from the state budget?) o Have studies been made on the efficient use of the resources in contribution to financial sustainability of protected areas? The estimate of financial needs was in 2002, through *Setting Biodiversity Priorities* developed by a panel reporting to the Prime Minister's Science Engineering and Innovation Council, where it was estimated that achieving just the principal target of 80 per cent comprehensiveness of the reserve system by the 2010 deadline would cost of the order of AUD$300–$400 million. The acquisition of new protected areas for Australia's system of terrestrial and marine protected areas is financed primarily by the jurisdiction responsible for their ongoing management. Over the past few years there has been a significant increase in philanthropy through the activities of non-government organisations, such as Trust for Nature, Bush Heritage Fund and Australian Wildlife Conservancy in establishing private protected areas, with and without government assistance. The recent Evaluation of the National Reserve System documented the respective contribution to protected area acquisitions over the decade 1996–2006 by all contributors. Under Caring for our Country, the National Reserve System has been allocated $180 million funding over five years (2008–13). Key funding areas targeted under the program are: • land acquisition by state and territory conservation agencies • land acquisition for management by community groups • voluntary establishment of protected areas on private land • voluntary establishment of Indigenous protected areas • development and implementation of best practice protected area management. Information from research on the economic and social aspects of protected areas is shared through the National Reserve System Task Group and collated by Parks Australia. Under the Commonwealth Environment Research Facilities, the Environmental Economics hub is undertaking a series of initiatives to better understand the economic and social impacts of protected areas to local communities as well as measure the value of ecosystem

	services from natural areas. Information was provided to a 2007 Senate Committee of the Australian Parliament Inquiry into national parks which suggested that government park agencies in aggregate spent around AUD$680 million (recurrent) on protected areas. The Australian Government has committed to a four year funding program for large scale marine bioregional planning including the identification of MPAs.
Goal: To strengthen communication, education and public awareness. Target: Public awareness, understanding and appreciation of the importance and benefits of protected areas is significantly increased.	• **Is there a review mechanism for public education programs to measure if they have been effective in communicating the basic biodiversity values of protected areas?** o What education measures and programs have been developed and implemented regarding protected areas, including for raising public awareness? There is no national review mechanism for public education and awareness of protected areas. Each Australian jurisdiction engages in education strategies and programs communicating the biodiversity and other values of protected areas. In particular, emphasis is placed on communication with stakeholders during periods of public consultation in the development and implementation of management plans. Parks Australia is developing a communication strategy for the National Reserve System and a range of information products in consultation with the National Reserve System Task Group and major conservation NGOs. The Australian Government has a communication strategy for marine planning and MPAs which includes evaluating the success of communication tools. A market research project is underway to ascertain public attitudes to and awareness of marine planning and MPA programs to inform future strategies.
Goal: To develop and adopt minimum standards and best practices for national and regional protected area systems. Target: Standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas are developed and adopted.	• **Have standards, criteria and best practices for a) site selection, b) management, c) governance, and d) long-term monitoring of outcomes been applied and documented? (Please provide a reference).** The *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005) sets out 38 strategic directions for the on-going development and implementation of site selections, management, governance, and long-term monitoring of outcomes. The directions fall into four broad streams: • improving, monitoring and reporting on the comprehensiveness, adequacy and representativeness of the national reserve system • reviewing and implementing with more consistency models and mechanisms for protection • improving frameworks and standards for protected area management • exploring partnerships for funding, protection, engaging the public and implementing the *Directions for the National Reserve System - A Partnership Approach*.

	In addition to the National Reserve System, protected areas are also established under state and territory legislation, either as formal reserves (crown reserves), reserves on crown lands enacted through forest management planning, or other planning processes, local government planning schemes. Specific sites outside of the reserve system, which include Ramsar sites where they are not conservation reserves, and important habitat for rare and threatened flora and fauna may be protected matters under the EPBC Act or similar State and Territory threatened species legislation. All states and territories have also enabling legislation relating to the placing of conservation covenants on the title of private lands and/or enabling legislation that allows conservation covenants being placed on private lands through organisations, such as the National Trust and Trust for Nature in Victoria. A key element of the Australian Government's National Reserve System Program has been initiatives for the participation of Indigenous communities in the development of protected areas on their lands, and since 1998 on other private lands. The Australian Government's Bushcare Program, funded under the Natural Heritage Trust, focused on the establishment of covenants on private lands and revolving funds where land is on-sold once a covenant has been placed on the title to protect biodiversity values. The *Directions for the National Reserve System – A Partnership Approach* (NRMMC 2005) recognises the important role of non-government organisations, Indigenous communities and local community groups in the development and management of Australia's National Reserve System. The allocation of IUCN protected area management categories to crown reserves, Indigenous protected areas and protected areas on private lands is tracked through the *Collaborative Australian Protected Area Database* (CAPAD), where the reserves meet the IUCN definition of a protected area. Other protected areas are tracked through state and territory processes. Parks Australia, Parks Victoria and NSW National Parks and Wildlife in conjunction with Queensland University are developing a management effectiveness framework for protected areas. Australia's National Reserve System Task Group with representatives from every jurisdiction is developing a national code of protected area management which links to this work. Since that time, the governments of Australia have applied the experience gained through the design and implementation of marine protected areas to refine practices and build on the original criteria. Under the common objectives of the NRSMPA, each jurisdiction documents its own standards, criteria and practices for marine protected area selection, design and management. The approach taken in the Representative Areas Program (RAP) in the Great Barrier Reef is widely recognised as a comprehensive and innovative advancement in the systematic protection of marine biodiversity and marine conservation.
Goal: To evaluate and improve the effectiveness of protected area management.	• **Has your country evaluated management effectiveness of protected areas in a systematic way? If yes,** **(a) What percentage of national protected area system surface area has been evaluated?** **(b) What are the conclusions for the national protected areas system, and to what extent were results incorporated into**

Target: Frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and transboundary protected area levels adopted and implemented by Parties.	**management plans and strategies?** Australian and state and territory governments have re-affirmed their commitment to implementing appropriate management standards to the national reserve system and the monitoring and reporting on management effectiveness, as outlined in the publication *Directions for the National Reserve System – A Partnership Approach*. Initiatives include the development of a national code of management (Dir. 24), and agreed national reporting system (Dir. 34) and an assessment against ANZECC best practice standards to be undertaken in each jurisdiction as part of the regular State of the Parks Reporting (Dir. 35). A protected areas management effectiveness framework is also being jointly developed by the Australian, NSW and Victorian governments in association with Queensland University and will form the foundation for an agreed national approach. South Australia is also undertaking a project to incorporate park management effectiveness measures into park management plans and is currently trialing this for some key parks. Under the NRSMPA, each jurisdiction evaluates the effectiveness of its MPA management practices. Nationally, there are provisions for reporting on the progress of the NRSMPA every two years through the Marine Protected Areas Working Group. This report includes a qualitative report on the MPA program undertaken by each jurisdiction. The Marine Protected Area Working Group will be reviewing the national reporting framework in the near future. The Australian Government monitors management effectiveness using management planning processes. Australian Government MPAs operate in an adaptive management framework where the success or otherwise of management actions inform future management arrangements. The Great Barrier Reef Marine Park Authority (GBRMPA) annually assesses seven Key Performance Indicators (KPIs) derived from the overall Authority Goal, and these are reported in the Authority's Annual Report to Parliament. These KPIs are not intended to replace any of the more detailed monitoring assessments, but do provide a broader evaluation in a form more appropriate for public reporting.

Appendix III – Relevant policy documents, legislation and reports

National frameworks, legislation and policies

Year	Framework/policy
1908	*Quarantine Act*
1975	*Great Barrier Reef Marine Park Act 1975*
1980	*Antarctic Treaty (Environment Protection) Act 1980*
1981	*Environment Protection (Sea Dumping) Act 1981*
1981	*Antarctic Marine Living Resources Conservation Act 1981*
1984	National Conservation Strategy for Australia
1987	*Sea Installations Act 1987*
1991	*Fisheries Management Act 1991*
1992	National Forest Statement
1992	National Strategy for Ecologically Sustainable Development
1992	Intergovernmental Agreement on the Environment
1993	*Native Title Act 1993*
1994	*Wet Tropics of Queensland World Heritage Area Conservation Act 1994*
1994	Council of Australian Governments Water Reform Framework
1995	Commonwealth Coastal Policy
1996	National Strategy for the Conservation of Australia's Biological Diversity
1996 (onwards)	Threat Abatement Plans (various)
1997	Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia (JANIS criteria)
1997	Wetlands Policy of the Commonwealth Government of Australia
1997	*Natural Heritage Trust of Australia Act 1997*
1997	National Weeds Strategy
1998	Quarantine Proclamation 1998
1998	National Water Quality Management Strategy
1998	National Oceans Policy
1998	National Greenhouse Strategy
1999	Strategic Plan of Action for the National Representative System of Marine Protected Areas
1999	National Local Government Biodiversity Strategy
1999	National Framework for the Management and Monitoring of Australia's Native Vegetation
1999	National Principles and Guidelines for Rangeland Management
1999	*Environment Protection and Biodiversity Conservation Act 1999*
2001	National Objectives and Targets for Biodiversity Conservation 2001–2005
2001	Coastal Catchments Initiative
2001	National Approach to Firewood Collection and Use in Australia
2001	State of the Environment report
2001	Biodiversity Conservation Research: Australia's Priorities
2002	*Regional Forest Agreements Act 2002*
2002	National Framework for Environmental Management Systems in Australian Agriculture

Year	Framework/policy
2002	National Framework for NRM Standards and Targets
2003	Framework for a National Cooperative Approach to Integrated Coastal Zone Management
2003	Native Fish Strategy for the Murray-Darling Basin 2003–2013
2004	National Water Initiative
2004	National Biodiversity and Climate Change Action Plan 2004–2007
2004	Great Barrier Reef Marine Park Zoning Plan
2005	Farm Forestry National Action Statement
2005	Marine Protected Areas and Directions for the National Reserve System—a Partnership Approach
2006	Australian Weeds Strategy
2006	State of the Environment report
2007	Australian Pest Animal Strategy
2007	*Water Act 2007*
2008	National Standard for Organic and Biodynamic Produce
2008	National Control Plan for the Northern Pacific Seastar (Asterias amurensis)

Appendix IV - Case Studies of Minerals Council Activities

Land Use Planning to Integrate and Balance Biodiversity Conservation and Development Outcomes

Case Study 1

Biodiversity Assessment and Planning in the Bowen Basin
(http://www.fba.org.au/programs/miningbiodiversity.html)

The Fitzroy Basin Association is working in partnership with BHP Billiton Mitsubishi Alliance, Xstrata Coal, Anglo Coal, and Rio Tinto Coal Australia and the Queensland Resources Council to examine ways in which the industry can contribute to biodiversity gains in the Bowen Basin. Four sub-regions of the Brigalow Belt Bioregion host more than 30 coal mines and another four subregions are being explored to find more coal. The project is looking at how best to address the cumulative impacts of many coal mines over time and across the ten million hectares that make up the eight biogeographical subregions.

The aim of this project is to ensure the future survival of threatened species and communities that live in central Queensland's coal mining areas. In January 2006 the project produced a report into the statutory framework that the Queensland and Commonwealth Governments use to assess and refuse or approve coal mines and set requirements in respect of biodiversity. More recently, selected biodiversity values of the coal mining areas in the Bowen Basin have been mapped with the aim of delineating areas whose vegetation, size and condition can contribute to the long term survival of listed ecological communities and species.

Case Study 2

Biodiversity Assessment and Planning in the Pilbara
(http://www.austmus.gov.au/riotintopartnerships/pilbara/index.htm)

In a partnership between the Australian Museum and Rio Tinto, the biodiversity values of the Pilbara region of Western Australia are being systematically documented to support understanding and improved land use planning processes. With the support of Rio Tinto, an Australian Museum team is conducting a biological survey in the Pilbara region to address this knowledge gap. This work is being conducted in consultation with the Western Australian Department of Conservation and Land Management, the Western Australian Museum and other Western Australian stakeholders.

The studies are designed to build understanding of the underlying processes that govern the region's biodiversity. This will enable Rio Tinto and other land managers to monitor and evaluate production regimes with biodiversity protection in mind. Data collected through survey and ecological research will underpin tools for use in development and conservation in the region.

Case Study 3

Important Bird Areas (http://www.birdsaustralia.com.au/our-projects/important-bird-areas.html)

Important Bird Areas (IBAs) are sites of global bird conservation importance. Each IBA meets one of four global criteria used by BirdLife International. IBAs are priority areas for bird conservation - we aim to monitor birds at our IBAs, advocate their importance to government, and work with land-holders and other local people to conserve them.

In partnership with Rio Tinto, Birds Australia has identified and documented almost all of the Australian IBAs.

Through a joint commitment to conserving Australia's biodiversity, Birds Australia and Rio Tinto agreed to work together for three years to develop and implement the IBA program. The program helps Birds Australia deliver biodiversity conservation through building knowledge of birds and their threats, identifying solutions, and assisting policy makers and land managers to use this knowledge. For Rio Tinto, program outcomes will help deliver its biodiversity strategy in Australia. Rio Tinto has worked in other areas of the world to identify IBAs through its global partnership with BirdLife International.

Case Study 4

Development and Conservation Organisation's Strategic Alignment in WA

The NGO Industry Environmental Forum's (NIEF) objective is to provide a forum for conservation NGOs and the Chamber of Mineral and Energy of Western Australia (CME) member companies to identify strategic environmental issues related to the

resources sector with a view to achieving mutually agreed tangible outcomes. Biodiversity and biodiversity planning issues have been central to NIEF discussions to date.

Forum members have identified the need for a better understanding of the states biodiversity values to underpin responsible resource utilisation and biodiversity conservation decision making at a strategic level. Clearer understanding of these values would help to facilitate the environmental approvals process for resource projects.

Land Management to Avoid, Minimise and Manage Biodiversity Impacts

Case Study 5

The Lake Cowal Foundation (http://www.lakecowalfoundation.org.au/)

The Lake Cowal Foundation Limited (LCF) is a non-profit Environmental Trust established in June 2000 with the support of Barrick Gold. Its primary goal is to protect and enhance Lake Cowal, a nationally significant wetland located 45km north of West Wyalong, New South Wales (NSW), Australia.

The Lake Cowal Foundation plans and implements projects with a variety of regional stakeholders to support the conservation of the lake's biodiversity values. These projects deliver significant on-ground components by providing financial assistance and working with landholders in the Lake Cowal area to protect, enhance and restore the Lake Cowal environment in a partnership arrangement. The resultant on-ground outcomes included the protection of 325 hectares of the Lake Cowal foreshores and major tributaries, including 20 km of Sandy and Bland Creeks. Community engagement and capacity building is a cross-cutting element of the projects; many people have been involved in the project including eleven local landholders and over 50 other individuals from various groups, organisations and government departments.

Case Study 6

The Bendigo Mining Environment Fund
(http://www.bendigomining.com.au/our_environment/community_relationship/environment_fund.htm
)

Established in 1995, the Bendigo Mining Environment Fund is administered by a Committee and chaired by the Mayor of the City of Greater Bendigo. Through its grant allocations each year, the Bendigo Mining Environment Fund assists organisations with environmental projects to the benefit of the Bendigo community.

The grants are awarded annually, and encourage biodiversity conservation and associated capacity building in the community. Over 50 projects have been funded to date, with many focussed on biodiversity protection and rehabilitation, the fostering of cultural uses of biodiversity (e.g. bush tucker plantings), wildlife rescue and rehabilitation and targeted capacity building for further biodiversity conservation initiatives (e.g. investments in nursery infrastructure, and communication and education initiatives).

Case Study 7

Sustainable Rangeland Management in the WA Goldfields
(http://sustainability.bhpbilliton.com/2006/environment/caseStudies/biodiversity/rangelandManagement.asp)

Nickel West (BHP Billiton) is a major landowner in the northern Goldfields of Western Australia; with pastoral leases surrounding the Mount Keith and Leinster nickel operations covering approximately 1.2 million hectares. These holdings are managed by a team of 12, who are undertaking a variety of pastoral activities, including sheep and beef herding and horticulture.

In aiming to manage the rangelands in a sustainable manner, the team faces several challenges, including the remoteness of the holdings, historical overgrazing, impacts of previous exploration and mining activity, and changing pastoral methods and land use. To assist their endeavours, they participate in the Ecosystem Management Understanding (EMU) process.

The EMU process was originated in 2003 by the Centre for the Management of Arid Environments (CMAE) in collaboration with the Western Australian Department of Agriculture. It is designed to help land managers understand the complexity and inter-connectedness of rangeland biodiversity. The process provides a learning framework based on ecological patterns and processes, with a focus on drainage systems and critical eco-junctions. Integrated EMU projects have been established for all our pastoral holdings, targeting areas identified as significant in terms of biodiversity values and sustainability.

Case Study 8

Tanami Biodiversity Strategy (http://www.beyondthemine.com/2007/)

The Tanami is a region in central Northern Territory, which supports grasslands, shrublands and savanna communities. Traditional Aboriginal land owners of the Northern Tanami Desert, the Warlpiri people have managed their land for more than 25,000 years.

In 2006, Newmont Tanami started a unique Regional Biodiversity Project in collaboration with the Central Land Council and the Warlpiri Rangers from local communities to monitor the impact of current mining activities on wildlife abundance in the area. The project involves collecting data from the wider Tanami bio-region to evaluate the impact operations have had on regional biodiversity.

The study covers both plants and animals, and identifies wildlife populations, health and other information. The local knowledge and insight of the Warlpiri Rangers, enabled Newmont scientists to collect more accurate baseline data that will help in comparison to future assessments. This information also helps Newmont develop management protocols and programs for future proposed exploration, mining or other operations.

Case Study 9

Hay Point Rehabilitation and Community Education
(http://sustainability.bhpbilliton.com/2005/repository/environment/caseStudies/caseStudies21.asp)

The Hay Point terminal, located near Sarina on the central Queensland coast, handles and despatches coal from the mines operated by BHP Billiton Mitsubishi Alliance (BMA). An ongoing challenge is sustainably operating a facility adjacent to the Great Barrier Reef Marine Park World Heritage area.

On their own initiative, Hay Point Services employees began cleaning general community rubbish from the beach and foreshore. Their activities have evolved into the Hay Point Foreshore Development Project, a community partnership with the environmental group Green Corps, Sarina Landcare Catchment Management Association (SLCMA) and Sarina Shire Council.

The project site is an 18-hectare buffer zone within terminal land. Based on a master vegetation plan, the project aims to protect and revegetate the zone and provide habitat for native species of plants and animals, while still allowing public access. A five-year implementation plan is being developed to ensure restoration works and public access points do not adversely impact flora and fauna. The point and foreshore are significant in terms of regional biodiversity, with extensive mangrove forest and dune vegetation ecosystems. The beach is a nesting site for marine turtles including the vulnerable green turtle (*Chelonia mydas*) and flatback turtle (*Natator depressus*).

Landscape Rehabilitation for Biodiversity Return or Improvement

Case Study 10

11,000 ha Offset in the Stony Plains Bioregion
(http://www.ozminerals.com/Media/docs/2007_SDR_Oxiana_Limited_full-1cd2c524-f9be-4998-b738-4754ea8f5c8e-0.pdf)

Oz Minerals' Prominent Hill operations are located in the western region of the Stony Plains Bioregion, within the Breakaway land system that is characterised by low hills and dissected tablelands. The vegetation of the project area generally comprises low open to very open chenopod shrubland and mallee and mulga woodland, while the vegetation of the wellfield area generally comprises chenopod low shrubland, with shrubland and hummock grassland associated with watercourses.

In order to offset the impacts at Prominent Hill, a significant environmental benefit (SEB) offset area of 11,129 ha located within the Mt Eba pastoral lease has been set aside. Contained within the SEB area are 5 major and 2 minor fauna habitats, which support 47 bird species, 11 reptile and 7 mammal species. Management of the SEB offset area is aimed at identifying and managing processes which threaten biodiversity including grazing, disturbance, weed and feral invasion. Control strategies include baiting and trapping of foxes and cats, weed management and the implementation of an extensive monitoring program. Works undertaken in the SEB during 2007 included the construction of stock exclusion fencing and the commencement of biannual monitoring during autumn and spring.

Case Study 11

Mt Owen Forest Offsets (http://www.mtowencomplex.com.au/biodiversity_conservation.html)

The Central Hunter Valley floor region of NSW has been extensively cleared of native vegetation, primarily for agriculture, mining and urban development. Ongoing pressures from economic development have resulted in further threats to natural

habitats and increased the need for “biodiversity sensitive” development practices. In recognition of the importance of conserving biodiversity, Mt Owen Mine has implemented innovative practices, which will help conserve and enhance biodiversity values in the Upper Hunter Valley. Mt Owen’s program of biodiversity management forms part of Xstrata Coal NSW’s broader biodiversity and land management commitments.

The key components of Mt Owen’s Biodiversity Management Program include a ‘Biodiversity offset strategy’, progressive rehabilitation of disturbed areas to native woodland, a flora and fauna monitoring and management program, and an on-going program of native forest restoration research. To offset the impacts of mining through forest communities, a new 430 hectare area of woodland (known as the “New Forest”) has been established. The New Forest, originally open pastureland, was planted with native tree and shrub species indigenous to the forest and surrounding area. Growth rates and survival of the trees have been encouraging and the re-afforestation programme has established key species for fauna habitat and encouraged the movement of native fauna into the area.

Case Study 12

Arid Recovery Project

(http://sustainability.bhpbilliton.com/2006/environment/caseStudies/biodiversity/aridRecoveryProject.asp)

The combined impacts of feral species and unsustainable farming have devastated Australian ecosystems since European settlement. Over 60 per cent of desert mammals have been driven to total or regional extinction, and many other animals and plants remain threatened. However, a unique partnership titled ‘Arid Recovery’ has started reversing these trends.

Located near BHP Billiton’s Olympic Dam mine in South Australia, Arid Recovery is the largest fenced reserve in Australia from which all feral cats, foxes and rabbits have been removed. The reserve straddles the mine lease and sections of four other pastoral properties, two of which are leased by the Company. Native animals and plants are now thriving within the 86-square-kilometre enclave, which has become both a centre for ecological research and the site of a nationally significant conservation program.

Arid Recovery was initiated in 1987 by a partnership comprising the Olympic Dam mine, the South Australian Department for Environment and Heritage, the University of Adelaide and a community group, Friends of Arid Recovery. The partnership's mission is to 'facilitate restoration of arid zone ecosystems through on-ground works, applied research and industry, community and government partnerships'.

Together with other Arid Recovery partners and collaborators, BHP are committed to ensuring maintenance of the existing reserve and the sustainability of research and public education programs. A key future objective is to leverage broad-scale benefits to the environment and to the perception of resource industries by re-establishing threatened species outside the reserve, on both the Olympic Dam mine lease and surrounding pastoral properties.

Case Study 13

Koala Venture (http://www.pacificcoal.com.au/media/38_media_releases_1134.asp)

Koala Venture is an award-winning partnership between the University of Queensland and Rio Tinto Coal Australia, and is the country's longest running koala study. Koala Venture is an important element of the company's Central Queensland mining operations.

The findings that the research partners develop are used to guide land management and rehabilitation activities. Due to the partnership, there is now a better understanding of the impact of mining operations on the koala population, the mine is able to reduce the likelihood of harm to koalas, and has increased knowledge of plant species required for successful rehabilitation practices.

The research programme was recently expanded last year to include the new Clermont Mine lease, where development is progressing quickly. Radio tracking of koalas on the development site enables vegetation clearing activities to be planned to minimise the potential negative impacts on koalas during that process.

Case Study 14

Rehabilitation in the Bandalup Corridor

(http://hsecreport.bhpbilliton.com/2004/repository/caseStudies/environment16.asp)

The Ravensthorpe Nickel Project (RNP; BHP Billiton) is located 155 kilometres west of Esperance in Western Australia. The project is within an agricultural region with an established network of small towns. The RNP is located within the Bandalup Corridor, a band of remnant vegetation in an agricultural region adjacent to the Fitzgerald River National Park, and falls within the buffer zone of the Fitzgerald River Biosphere, a world-renowned biodiversity area. The Western Australian Department of Conservation and Land Management (CALM) manages both the National Park and the Biosphere. One of the allowable activities within the buffer zone of a Biosphere is mining, subject to responsible environmental management.

The project's ore deposits are located in areas covered by remnant vegetation. The clearing of this vegetation associated with project development has two main impacts on biodiversity, including loss of habitat for fauna and, to a lesser extent, direct fauna impact from road traffic. The loss of fauna habitat has been compensated through the purchase of an adjacent 650-hectare 'bush block' as a conservation offset, together with the revegetation of approximately 600 hectares of existing cleared farmland to allow its incorporation back into the Bandalup Corridor.

At the completion of these revegetation activities and subsequent mine rehabilitation, the width of the Bandalup Corridor will actually be increased. Significantly, Ravensthorpe Nickel Operations (RNO), the management company 100 per cent owned by BHP Billiton, believes that the effective area for fauna habitat post mine closure will be greater than currently exists.

Case Study 15

Contributing to Recover Swift Parrot Populations

(http://www.bendigomining.com.au/documents/environment/ER_2005.pdf)

In early 2005 Bendigo Mining obtained approval under the Commonwealth Environment Protection and Biodiversity Conservation Act for the expansion of its Carshalton mine site. Early and positive consultation with the Commonwealth department responsible for the Act resulted in agreement on a number of ways we could assist in the recovery of the endangered Swift Parrot.

One of the projects suggested by the Commonwealth was the development of a long-term monitoring program to track the status of the species in the Goldfields Bioregion of Victoria. We have developed this program with guidance from independent specialists, members of the Swift Parrot Recovery Team and the Victorian Department of Sustainability and Environment.

Our investment in this program enables re-direction of resources previously used in this area to other Swift Parrot recovery works. We have also secured land with significant habitat for the Swift Parrot. By protecting and rehabilitating this land, it will continue to provide and improve over-wintering habitat for the birds on their migration path from Tasmania to their main feeding grounds in the Box-Ironbark Forests of Victoria and NSW.

These programs, and Bendigo Mining's commitment to high quality progressive rehabilitation, will ensure that the minerals operation has only positive impacts on the Swift Parrot.

Glossary of Acronyms

AACMA	Australian Acupuncture and Chinese Medicine Association
ABRS	Australian Bureau of Rural Sciences
ABS	Access and Benefit Sharing
ANHAT	Australian Natural Heritage Assessment Tool
ANZECC	Australian and New Zealand Environment Conservation Council
APEC	Asia Pacific Economic Cooperation
AVH	Australia's Virtual Herbarium
AWHAC	Australian World Heritage Advisory Committee
AWHIN	Australian World Heritage Indigenous Network
CAR	comprehensive, adequate and representative
CAWT	Coalition Against Wildlife Trafficking
CBD	Convention on Biological Diversity
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CDS	Catch Documentation Scheme
CERF	Commonwealth Environmental Research Fund
CHABG	Council of Heads of Australia's Botanic Gardens
CHAH	Council of Heads of Australia's Herbaria
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COAG	Council of Australian Governments
COP	Conference of the Parties
CPRS	Australia's 'Carbon Pollution Reduction Scheme'
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTI	Coral Triangle Initiative
DEH	Australian Government Department of the Environment and Heritage (now DEWHA)
DEST	Australian Government Department of Education, Science and Training
DEWHA	Australian Government Department of the Environment, Water, Heritage and the Arts
DEWR	Australian Government Department of the Environment and water resources (now DEWHA)
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPBC Act	*Environment Biodiversity Conservation Act 1999*
ERIN	Environmental Resources Information Network
FaHCSIA	Australian Government Department of Families, Housing, Community Services and Indigenous Affairs
FFA	Pacific Islands Forum Fisheries Agency
GBIF	Global Biodiversity Information Facility
GBO	Global Biodiversity Outlook
GBR	Great Barrier Reef
GBRMP	Great Barrier Reef Marine Park
GBRMPA	Great Barrier Reef Marine Park Authority
GSPC	Global Strategy for Plant Conservation
GSPC	Global Strategy for Plant Conservation
GTI	Global Taxonomy Initiative

GTI	Global Taxonomy Initiative
iBOL	International Barcode of Life
IBRA	Interim Biogeographic Regionalisation of Australi
ICC	Indigenous Coordination Centre
IMCRA 4	Integrated Marine and Coastal Regionalisation of Australia
IPA	Indigenous Protected Area
IPCC	Intergovernmental Panel on Climate Change
IUU	Illegal, Unregulated and Unreported
MABH	Maintaining Australia's Biodiversity Hotspots Program
MCA	Minerals Council of Australia
MCMPR	Ministerial Council on Mineral and Petroleum Resources
MEA	Multilateral Environment Agreement
MPA	Marine Protected Area
NBSAP	National Biodiversity Strategy and Action Plan
NES	National Environmental Significance
NGO	Non-Government Organisation
NHT	Natural Heritage Trust
NLP	National Landcare Program
NRM	Natural Resource Management
NRMMC	Natural Resource Management Ministerial Council
NRS	National Reserve System
NRSMPA	National Representative System of Marine Protected Areas
NSW	New South Wales
NTRGP	National Taxonomy Research Grant Program
NWI	National Water Initiative
NWQMS	National Water Quality Management Strategy
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
PIC	Pacific Island Country
QLD	Queensland
REDD	reduced emissions from deforestation and forest degradation
RERP	Rivers Environmental Restoration Program
RET	Australian Government Department of Resources, Energy and Tourism
RFA	Regional Forestry Agreement
RFMO	Regional Fisheries Management Organisation
RIFA	Red Imported Fire Ants
SEA	Strategic environmental assessment
SoE	State of the Environment
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environment Program
TSRA	Torres Strait Regional Authority
TSSC	Threatened Species Scientific Committee
UNFF	United Nations Forum on Forests
WTMP	Wildlife Trade Management Plans
WTO	Wildlife Trade Operations

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