Australian Government

Department of the Environment

Australia's Fifth National Report to the Convention on Biological Diversity

May 2014

BIO327.0414

Disclaimer

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the Australian Government or the Minister for the Environment.

BIO327.0414

CONTENTS

About this report

Australia has been a Contracting Party to the Convention on Biological Diversity (CBD) since 1993 and is committed to implementing its obligations under the CBD in accordance with its national priorities.

Australia's fifth national report has been prepared in accordance with Article 26 of the CBD, which states, *inter alia,* that each Contracting Party shall report on measures it has taken to implement the CBD and the effectiveness of these measures.

Australia's report has been prepared in line with the guidelines for the fifth national report that were agreed by the Conference of the Parties to the CBD in 2010. The fifth national report covers a five year period from January 2009 to December 2013.

The information provided by Parties in their fifth national reports will be used to inform a mid-term review of progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets. The fifth national reports will also contribute to the development of the fourth edition of the Global Biodiversity Outlook.

Executive Summary

Australia's fifth national report to the CBD consists of three parts: Part I provides a high-level update on the biodiversity status, trends, and threats and implications for human wellbeing as it relates to Australia's environment and populace; Part II describes Australia's national biodiversity strategy and action plan, their implementation, and our efforts to mainstream biodiversity; and Part III summarises Australia's progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 targets of the Millennium Development Goals (MDGs). Each part consists of a number of chapters.

Response to question 1 sets out the reasons why biodiversity is important in Australia.
The global importance of Australia's biodiversity is due to both its richness and its uniqueness. It is estimated that Australia is home to as many as 560 000 species, many of which are found nowhere else on Earth. As a result, Australia is classified as a 'mega-diverse' country with high biodiversity in both its terrestrial and marine environments. Australia is also home to many World Heritage sites of outstanding universal value such as the Great Barrier Reef (GBR), Kakadu National Park, Uluru - Kata Tjuta National Park and Shark Bay.

Australia's biodiversity is important nationally and globally for many reasons including for ecosystem services, tourism, agriculture, recreation, health and cultural values. Australia's World Heritage Areas generate significant economic value, and employment for tens of thousands of Australians. Australia's biodiversity also forms the basis of many of our primary production industries such as agriculture, forestry and fisheries.

The importance of biodiversity and ecosystem services is recognised in *Australia's Biodiversity Conservation Strategy 2010–2030* (ABCS), which is the overarching policy and guiding framework for national biodiversity conservation in Australia. The Australian Government also has in force the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) which enables a national scheme of environment and heritage protection and biodiversity conservation.

Response to question 2 provides an outline of the major changes that have taken place in the status and trends of diversity in Australia.
Recent reports on the state of Australia's environment have found that, in general, population size, geographic range and genetic diversity are decreasing in a wide range of species across all groups of plants, animals and other forms of life. Case studies include reports of a major decline in mammals in northern Australia, changes in species composition and loss of ecological integrity across a range of threatened ecological communities, and degradation in native vegetation.

In comparison to the marine waters of other nations, Australia's oceans are considered as being in good condition; however, there is substantial degradation in the east, south-east and south-west of the oceans surrounding the continent, and ecosystems near the coast, bays and estuaries in these regions are in poor to very poor condition.

The response provides case studies of Australian Government efforts to protect and conserve Australia's biodiversity including extension of terrestrial and marine protected areas, implementation of strategic assessments under the EPBC Act, and implementation of the Murray-Darling Basin Plan to return more water to the environment in the Murray-Darling Basin.

Response to question 3 summarises the threats to biodiversity in Australia.
The threats to and pressures on Australia's ecosystems are numerous and wide ranging and include: loss, fragmentation and degradation of habitat; climate change and climatic events; ocean change; invasive species and pathogens; grazing pressure; altered fire regimes; changes to the aquatic environment and water flows; urban development; and unsustainable use of natural resources.

Response to question 4 considers the impacts of the changes in biodiversity for ecosystem services and the socio-economic and cultural implications of these impacts.
Lack of scientific data and understanding means that it is difficult to interpret the relationship between the current state of biodiversity and the ecosystem services the environment provides. Despite these limitations, this report uses climate change, the Murray River and the GBR as case studies to outline the impacts of changes in biodiversity.

Response to question 5 outlines Australia's biodiversity targets.
The ABCS is Australia's overarching national biodiversity conservation strategy and contains ten national targets. The chapter cross-matches the targets in the ABCS with the corresponding Aichi Biodiversity Targets to which they contribute. In the three years since the ABCS was agreed by all Australian governments, good progress has been made towards some, but not all, of the ten targets.

Response to question 6 outlines how Australia's national biodiversity strategy and action plan has been updated to incorporate its biodiversity targets and to serve as an effective instrument to mainstream biodiversity.
Australia has revised the ABCS around three priorities for action, nine sub-priorities and ten national targets. The three priorities are to: engage all Australians; build ecosystem resilience in a changing climate; and get measurable results. The ABCS is scheduled for review in 2015. The 2015 review will consider whether the targets or other elements of the ABCS should be amended, and will also be an opportunity to consider where Australia can

improve alignment between the ABCS, the Aichi Biodiversity Targets and the Strategic Plan for Biodiversity 2011-2020.

Response to question 7 summarises some actions undertaken to implement the CBD in Australia.
Australia has undertaken a large number of actions to implement the CBD since submitting its fourth national report in 2009. Key activities include: revising the ABCS; expanding Australia's National Reserve System (NRS); development of the Murray-Darling Basin Plan and commencing delivery of Commonwealth environmental water; developing strategic assessments and an environmental offsets policy under the EPBC Act; establishing a national network of marine protected areas; and progressing environmental information and research projects. Australia invested in a range of biodiversity-relevant natural resource management (NRM) programmes including the new National Landcare Programme (which brings together the previous Caring for Our Country and Landcare programmes), the Biodiversity Fund and Reef Rescue (now supplemented by the development of the Reef 2050 Plan).

Response to question 8 describes the effectiveness of efforts to mainstream biodiversity into relevant sectoral and cross sectoral strategies, plans and programmes.
Mainstreaming biodiversity aims to integrate the conservation and sustainable use of biodiversity into decision-making and is a priority for action under the ABCS. Examples of government action to mainstream biodiversity include: Australian government measures to consider environmental impacts in its daily business; initiatives to integrate environmental considerations into Australia's international aid programme; and support for private sector consideration of the environment in its activities.

Response to question 9 describes the extent to which Australia's biodiversity strategy and action plan has been implemented.
Good progress has been made on a number of fronts implementing the ABCS. The extent to which the strategy has been implemented, and the degree to which Australia is on track to meet its targets, is scheduled to be reviewed in 2015.

Response to question 10 summarises the progress made by Australia towards implementation of the Strategic Plan for Biodiversity 2011-20 and its Aichi Biodiversity Targets.
Progress is being made towards implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets. While work is progressing on all targets, key areas where Australia has made significant progress include: Aichi Target 11 on protected areas; Aichi Target 13 on the genetic diversity of cultivated plants, farmed and domesticated animals and of wild relatives; Aichi Target 17 on updated national biodiversity strategy and action plan; and Aichi Target 19 on improving the knowledge, science base and technologies relating to biodiversity.

Response to question 11 notes Australia's contribution towards the achievement of the relevant 2015 targets of the Millennium Development Goals (MDGs).
The MDGs underpin Australian aid to developing countries. During this reporting period, Australia's aid program supported environmental activities in some 23 countries and four regions. The response to this question provides examples and case studies of activities

undertaken with Australian support which contribute to MDG 7: 'Ensure Environmental Sustainability'.

Australia has also made substantial contributions (AU$355 million) to the Global Environment Facility (GEF) since its inception. The work of the GEF contributes to MDG 7 through addressing issues such as land degradation, biodiversity, climate change, and promoting sustainable development pathways and livelihoods.

Response to question 12 outlines the lessons learnt from the implementation of the CBD in Australia.
Learning from past experiences is leading to more sophisticated responses to biodiversity conservation and sustainable use objectives in Australia. Lessons learnt include:

- Australia's focus on landscape-scale and ecosystem approaches to conservation and habitat protection, including by building connectivity of fragmented ecosystems, is proving to be a useful model to improve conservation outcomes for these ecosystems and for individual threatened species.
- It is important to empower the community through environmental initiatives that are simple, local and long-term and encourage widespread engagement in environmental protection.
- National leadership and implementation has been important in underpinning Australia's expansion of our NRS, which incorporates a diverse range of ecosystems.
- There is value in improving baseline data sets, particularly to help track and monitor progress against our national targets and help inform decision-making.
- Methodologies for national-scale measuring and accounting in relation to natural capital (including biodiversity) could be improved. Involvement in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is a way to exchange information on suitable methods at an international level.
- Mainstreaming biodiversity issues across government, business, scientific and education sectors requires continuing effort.

PART I: AN UPDATE ON BIODIVERSITY STATUS, TRENDS, AND THREATS AND IMPLICATIONS FOR HUMAN WELLBEING

Question 1: Why is biodiversity important for your country?

Australia's biodiversity is important for a range of reasons including for ecosystem services, agriculture, tourism, health, employment, recreation, cultural values, aesthetic beauty, intrinsic values and national identity. The importance of biodiversity and ecosystem services is recognised in the ABCS.

Intrinsic value and ecosystem services

Australia's biodiversity is particularly important due to its uniqueness and richness. It has developed largely in isolation over many millions of years, making Australia one of the most biologically diverse parts of the planet. Between seven and ten per cent of all plant and

animal species on Earth occur only in Australia. Australia is recognised as one of 17 countries that are mega-diverse. The group of mega-diverse countries occupy less than 10 per cent of the Earth's surface, but support more than 70 per cent of our planet's biodiversity (DSEWPaC, 2012). A 2009 assessment of Australia's plants and animals shows that a large percentage of our plants and animals are unique to Australia. Reptile endemism has jumped from 89 to 93 per cent, mammals from 83 to 87 and frogs from 93 to 94. Close to 92 per cent of our vascular plants, up from 90 per cent, are unique to Australia (Chapman, A.D., 2009).

Case study 1: Value of fungi for biodiversity

Fungi contribute greatly to Australia's biodiversity in terms of sheer numbers as well as their essential role in providing ecosystem services such as soil fertility, crop protection and litter decomposition. Ninety per cent of terrestrial plants have a mycorrhizal (symbiotic) relationship with one or more species of fungi without which they are less viable. The seeds of native orchids cannot germinate without a fungal partner. Fungi are also important for a range of pharmaceuticals (including antibiotics), edible foods, and yeasts. Australia has many times more fungi than vascular plants – estimates are as high as 250 000 species. The economic potential of fungi is significant. Fungi represent around nine per cent of Australia's biodiversity, yet are not well understood, with just 12,000 of an estimated 50,000 species so far described and fewer still studied for their ecological importance. Around 5 000 larger (macro) fungi such as mushrooms, puffballs, coral fungi, earthstars, and truffles occur in Australia. Australia has a high number of truffles – estimated between about 1 200-2400 species that are endemic and are mycorrhizal plant partners with only about 10-25 per cent of species known so far. Many fungi are principal foods for, for instance, rare and endangered species of Potoroos and Woylies and many invertebrates that, in turn, disperse fungal spores. About 83 genera and 300 species of truffles are currently known in Australia, compared to 50 known genera in Europe and 18 in Africa.

Australia's marine and coastal environments are exceptionally valuable in biodiversity terms. Our marine area is larger than the continent itself, and Australians therefore have a special responsibility for the conservation and management of our marine and coastal environments and our living marine resources. Australia's vast ocean area supports one of the greatest arrays of marine biodiversity on Earth with high levels of endemism. Australia's oceans contain more than 4 000 species of fish and tens of thousands of species of invertebrates, plants and microorganisms, many of which are of significant cultural importance to Australia's Indigenous people. The number of newly discovered marine species tends to increase with each scientific survey (DSEWPaC, 2012).

Similarly, Australia's wetlands and aquatic ecosystems are highly unique. There are 65 wetlands of international importance (Ramsar wetlands) in Australia that collectively cover more than 8.3 million hectares. Ramsar wetlands are listed for being representative, rare or unique, or important for conserving biological diversity. Wetlands provide a whole range of ecosystem services including protecting our shores from wave action, improving water quality, reducing the impacts of floods and other extreme weather events, filtering and moderating water flows, reducing turbidity and sedimentation, and removing excess nutrients and other pollutants. Wetlands also provide habitat for animals and plants and often support species that are found nowhere else.

Australia's ecosystems also have intrinsic value to the many Australians that enjoy the benefits of the natural environment through recreational activities, such as fishing, boating, diving, camping and hiking. A recent study by the Australian Bureau of Statistics (ABS) found that in 2011-2012, nearly three quarters of Australian adults (73 per cent) took part in some activity that involved contact with nature in the last 12 months (ABS, 2013a). The study found that the most popular of these activities was visiting a national park or botanic garden (52 per cent), followed by a nature walk or bush walk (42 per cent). Just under one third of Australian adults (31 per cent) visited a wildlife park or zoo, and one quarter took a camping or nature holiday (25 per cent) (ABS, 2013a).

Case study 2 outlines the south-west of Western Australia as an example of exceptional biodiversity and ecosystems in Australia.

Case study 2: South-west Western Australia

The south-west of Western Australia is geologically ancient and recognised as an international biodiversity hotspot due to its extraordinarily high number of globally unique (endemic) native species as well as the high level of biodiversity threats in the area. There are over 5 000 known plant species in the area and large numbers of these are globally unique. Key features of the area include vegetation assemblages that range from majestic karri and jarrah forests, granite outcrops with significant Aboriginal cultural importance, species-rich heath lands and the world's largest intact temperate woodlands. South-west Western Australia has a Mediterranean climate, with dry summers and wet winters.

While known for its diverse flora, the region also has many unique vertebrate fauna species with more than 70 per cent of all native frog species and freshwater fish species endemic to the area. It is also acknowledged globally as a significant bird area with 13 endemic bird species. The region contains numerous and diverse nationally important wetlands with eight being internationally recognised Ramsar wetlands. There are also a number of Indigenous communities who are actively managing their traditional country through a range of NRM and tourism initiatives.

Economic value

Australia's biodiversity supports the Australian economy through two primary means: by supporting a nature/culture-based tourism industry and other biodiversity-related industries, including primary production industries.

Nature/culture-based tourism provides significant benefits to Australia's economy and Australia's unique biodiversity is increasingly recognised by the tourism industry as a competitive advantage. In the year ending June 2013, domestic and international visitors undertaking at least one nature-based tourism activity[1] in Australia spent AU$30.4 billion — AU$14.2 billion for international visitors; AU$14.6 billion for domestic multi-day trip visitors and AU$1.6 billion for domestic day trip visitors[2]. The natural environment, including sites with an Indigenous cultural component, is a key motivator for international visitors to travel to

[1] Nature-based tourism activities include: visit national or state parks; visit wildlife parks, zoos or aquariums; visit botanical or other public gardens; bushwalking or rainforest walks; whale or dolphin watching; snorkelling; scuba diving.

[2] International spend excludes prepaid international airfares and packages; Domestic spend excludes motor vehicles.

Australia, with 56 per cent influenced to visit based on their intent to visit a natural area. Fifty-seven per cent of respondents in the Tourism Australia Consumer Demand Project (results as at August 2013) associated Australia with world class beauty and natural environment, the highest rank of all countries surveyed. Case study 3 outlines a partnership between Parks Australia and Tourism Australia to promote sustainable nature/culture-based tourism and conservation outcomes. A high level of nature based tourism includes an Indigenous cultural component, particularly in the National Landscape Programme.

Case study 3: National Landscapes – Conservation partnerships with the tourism industry

National Landscapes is a partnership between Parks Australia and Tourism Australia to promote sustainable nature/culture-based tourism and conservation outcomes. There are 16 National Landscapes including Australia's Red Centre, the Australian Alps, Australia's Green Cauldron, Great Ocean Road, Australia's Timeless North (Kakadu), Australia's Coastal Wilderness, the Greater Blue Mountains, the GBR, the Great South West Edge, Kangaroo Island, the Kimberley, Australia's Wet Tropics, Ningaloo Shark Bay, Sydney Harbour, Tasmania's Island Heritage and Flinders Ranges.

Australia's National Landscapes is overseen by a reference committee which includes representatives from peak tourism and conservation organisations, protected area, cultural heritage and Indigenous heritage experts and relevant Australian Government and state government agencies.

To be selected as a National Landscape, each area has shown that strong management arrangements are in place to ensure that tourism returns benefits to the regional community and does not threaten natural values. Each National Landscape is locally managed by a steering committee of stakeholders including protected area management agencies, local and state governments, regional tourism organisations, Indigenous representatives, tourism operators, non government organisations and community members.

National Landscapes seek to enhance the role of protected areas in the national and regional economies, build support for protecting our natural and cultural assets and enhance conservation outcomes through strategic planning and effective management. Australia's National Landscapes is growing in profile with (as at July 2013) a 50 per cent year on year growth in unique visitors to the National Landscapes website (http://www.australia.com/nationallandscapes.aspx).

Australia is home to 19 World Heritage sites of outstanding universal value which includes the GBR in Queensland, Kakadu National Park, Uluru - Kata Tjuta National Park in the Northern Territory, and Shark Bay in Western Australia to name a few. As well as protecting the heritage values for which they are listed, these sites can stimulate economic activity nationally and in the region, state or territory in which they are located. This economic activity comes from expenditures associated with management of the sites, expenditure of visitors to the sites and the expenditure of industry to present the sites. In 2010, the national economic value generated by 15 of Australia's World Heritage Areas (excluding the GBR) was in the order of AU$7.25 billion annually, along with approximately 83 000 jobs (ABS, 2010b).

The tourism value of the GBR World Heritage Area (GBRWHA) is of particular importance to the Australian economy. The GBRWHA is an outstanding natural icon and internationally

recognised for its biodiversity. It was one of Australia's first World Heritage properties and was inscribed on the World Heritage List in 1981 in recognition of its outstanding universal value. Case study 4 below provides an assessment of the economic value of the GBRWHA.

Case study 4: Economic value of the GBRWHA

The GBR is the world's largest coral reef ecosystem and contains a globally unique array of interconnected ecological communities, habitats and species. The integrity of these diverse ecosystems is managed by the Australian Government GBR Marine Park Authority (GBRMPA) in cooperation with the Queensland Government. The area is a multiple-use marine park and supports a range of uses and activities.

In March 2013, Deloitte Access Economics estimated that the total Australia-wide value-added economic contribution generated by the Reef in 2011-12 was AU$5.7 billion with employment of just below 69 000 jobs. These estimates are based on both the direct and indirect contribution of the activities considered. The activities considered in the study are tourism, recreation, commercial fishing, scientific research and reef management.

Table 1: Economic contribution of the GBR and catchment to Australia

	Direct expenditure (AU$m)	Value-added (AU$m)	Employment (full time jobs)
Tourism	**6 410.6**	**5 175.6**	**64 338**
Recreation	332.4	243.9	2,785
Commercial Fishing	192.5	160.3	975
Scientific research & management	106.1	98.0	881
Total	**7 041.5**	**5 677.8**	**68 978**

Source: Deloitte Access Economics

Over 90 per cent of the direct economic activity in the region comes from tourism. Recreation, which covers household recreational activity by those who live in the GBR catchment area, contributed just over AU$240 million in value-added and about 2 800 full time jobs. Recreational activity covers both trip-related expenditure for fishing, boating, sailing and visiting islands and household expenditure on recreational equipment.

Australia's biodiversity also supports our primary production industries, such as agriculture, forestry and fisheries. The services biodiversity provides to these industries include pollinating plants, contributing to soil health, recycling nutrients, trade of native plants and provision of game meat. Wetlands provide other key direct benefits such as providing water, native grasses and shrubs feed stock (particularly during drought), and woodlands provide shelter for stock. Biodiversity also supports the production of many other important human services, such as medicines, good air and water quality. Case study 5 below provides a snapshot of the economic value of the Murray-Darling Basin region.

Case study 5: The Murray-Darling Basin region

The Murray-Darling Basin is Australia's most iconic and largest river system and Australia's most important agricultural area. In 2011-12 the total agricultural area irrigated in the Basin was 1.4 million hectares, which represented 66 per cent of all irrigated land in Australia. In 2010-11, the Gross Value of Agricultural Production in the Murray-Darling Basin was $19.2 billion, which is 42 per cent of the total GVAP for Australia (ABS, 2012). As well as providing food for Australia, Murray-Darling Basin-grown produce is also exported overseas. The Murray-Darling Basin is ecologically diverse, supporting a wide range of nationally and internationally significant plants, animals and ecosystems. A 2012 CSIRO report assessed the Basin-wide value of enhanced habitat ecosystem services — arising from floodplain vegetation, waterbird breeding, native fish and the Coorong, Lower Lakes, and Murray Mouth — was potentially worth about AU$3 billion to AU$8 billion (present values using 2010 dollars) under the 2800 scenario relative to the baseline scenario (CSIRO, 2012).

Scientific value

Genetic resources from plants, animals and microorganisms are increasingly valuable in the development of specialty enzymes, or as a source of new genes, or small molecules. Australia's biodiversity offers huge potential for basic and applied scientific research. Investigation of the biochemical and genetic makeup of our native species can be used to produce products with social, economic and environmental value — for example, in agriculture and bioremediation and for alternative fuels and new pharmaceuticals.

Cultural and spiritual value to Indigenous Australians

Australia's biodiversity is of deep spiritual and cultural importance to Indigenous Australians. Indigenous Australians see themselves as an integral part of country and Indigenous traditions are intimately linked to the protection of Australia's biodiversity. Their understanding of Australia's biodiversity has developed over an immense time span and is often regionally and culturally specific, complex and highly structured. Indigenous Australians have incorporated this knowledge into traditional social structures which use plants, animals and natural phenomena to represent the special status and spiritual affiliations of individuals, families and other social groupings. Case study 6 below provides an example of an Indigenous Protected Area (IPA) and its value to its traditional owners.

Case study 6: Southern Tanami Indigenous Protected Area

In the heartland of Warlpiri country, the traditional owners have dedicated Australia's largest IPA. At 10.16 million hectares, the Southern Tanami IPA is larger than Tasmania and the largest protected area of Australian land.

The Southern Tanami is rich in cultural and natural values. Home to the Warlpiri speaking people, the IPA links central Australia's deserts to subtropical savannahs. It is a critical part of the proposed Trans-Australian Eco-link, an internationally significant wildlife corridor stretching more than 3 500 kilometres from Arnhem Land in northern Australia to the Great Australian Bight in southern Australia.

The Southern Tanami has several groups of traditional owners. Each area of land in the Southern Tanami has kirda, traditional owners and kurdungurlu, who are usually special custodians connected to land through female traditional owners, who have different but

complementary responsibilities to look after their ancestral country.

Traditional owners, with Central Land Council staff, have developed a management plan to guide the work of Warlpiri Rangers in maintaining the natural and cultural assets of this vast area. Warlpiri Rangers combine Aboriginal knowledge and contemporary science to look after country. For example, they learn from elders about patch burning to rejuvenate country and reduce wildfires, as well as working with scientists, helicopters and satellite imagery to burn remote areas and monitor their fire management. Other Warlpiri Ranger tasks include surveying wildlife, monitoring bilbies, controlling weeds, maintaining water places and controlling feral animals.

Traditional owners and custodians and Warlpiri Rangers work with community based organisations such as schools and youth programmes to teach land management practices including burning country and the sustainable harvesting of wildlife.

Question 2: What major changes have taken place in the status and trends of biodiversity in your country?

Threatened species and ecological communities

In general, declines in population size, geographic range and genetic diversity are being seen among a wide range of species across all groups of plants, animals and other forms of life in Australia (State of the Environment Committee, 2011).

Recent State of the Environment reports and previous national reports, including those submitted to the CBD, have expressed moderate to high levels of concern about the decline in many groups of fauna in Australia. These reports frequently acknowledge that data is inadequate to draw firm conclusions about which groups may be declining and by how much. Many of the concerns stem from known pressures and their effects on biota rather than reliable data on the distribution and abundance of the species themselves. The state and territory State of the Environment reports reviewed, together with the recent national assessment of Australia's terrestrial biodiversity, conclude that data on species of animals around Australia is very limited for most groups in most jurisdictions, although considerable data has been obtained from long term monitoring programmes of some threatened species, for example the Yellow-footed Rock Wallaby. In many cases, it is not possible to draw conclusions about trends in the state of animal species groups and sometimes it is not possible to draw confident conclusions about the state of the taxon itself (State of the Environment Committee, 2011).

<u>Examples of action undertaken to protect threatened species and ecological communities through recovery and threat abatement planning</u>

Despite these trends and data limitations, Australia continues to work hard to protect and conserve our unique threatened species and ecological communities. Threatened species (critically endangered, endangered and vulnerable) and ecological communities (critically endangered and endangered) are listed under Australia's national legislation, the EPBC Act, as 'matters of national environmental significance'. As such they are given protection under national environment law and actions likely to result in a detrimental significant impact upon them must be referred for assessment and approval. The intent of the approval process under the EPBC Act is to determine whether a proposed action is acceptable and to avoid

significant impact where possible or mitigate/reduce significant impacts, or offset adverse impacts when unavoidable. This regulatory protection is supported by compliance measures. No fungal species and few invertebrates are currently protected under the EPBC Act for lack of data.

Threatened species also receive protection under the EPBC Act through the protections afforded to other landscape-level matters of national environmental significance such as ecological communities, Ramsar wetlands, and Commonwealth marine areas. For example, there has been new protection for 23 threatened ecological communities in the past 5 years, including grasslands, woodlands, rainforests, wetlands and kelp forests. The addition of the GBR Marine Park as a separate EPBC Act protected matter in 2009 gives extra protection for its associated threatened species.

Further information on threat abatement planning and recovery plans under the EPBC Act is in response to question 7.

Case study 7: Native mammals in northern Australia

For EPBC-listed mammals, the highest proportions of threatened to total species occur throughout central Australia, and in Western Australia and in southern Australia more generally. Recent reports of major declines in mammals in northern Australia, where it had previously been assumed that impacts of humans were less, were unexpected and are raising concerns among ecologists (State of the Environment Committee, 2011).

Australia's State of the Environment Report 2011 states that since European settlement, the greatest loss of Australian biodiversity has been the spate of extinctions of endemic mammals. Historically, these losses occurred mostly in inland and temperate parts of the country, and largely between 1890 and 1950. A new wave of extinctions is now threatening Australian mammals in northern Australia. Many mammal species are in sharp decline across the north, even in extensive natural areas managed primarily for conservation. The main evidence of this decline comes from two sources: scientific monitoring programmes and more broadscale Indigenous knowledge.

The main drivers of the mammal decline in northern Australia include inappropriate fire regimes and predation by feral cats. Cane toads are also implicated, particularly in the recent catastrophic decline of the northern quoll. Some impacts are due to vegetation changes associated with the pastoral industry. Disease could also be a factor, but there is little evidence for or against it.

Based on current trends, many native mammals could become extinct in northern Australia in the next 10–20 years, and even the largest and most iconic national parks in northern Australia could lose native mammal species.

Source: Fitzsimons, Legge, Traill, & Woinarski, 2010

Native vegetation

Native vegetation condition varies greatly across the country and is very difficult to measure over large areas. However, according to recent reports including the *Sustainable Australia Report 2013*, the condition of much native vegetation is likely to be deteriorating, particularly in areas with intensive land-use pressures.

According to the *Sustainable Australia 2013* report, the extent of native vegetation is steady. An example provided in the report was for forests (one type of vegetation) where the annual rate of loss in mapped intensive-use areas over the decade to 2010 averaged 1.1 million hectares which was offset by forest expansion that averaged 1 million hectares annually. Between 2007 and 2010, the area of forest regrowth surpassed the area of deforestation, meaning that there was a small net gain of forest in Australia for the first time since the early 1990s (National Sustainability Council, 2013). However, the report noted that the regrowth vegetation and the environmental values of these areas are generally different from the vegetation that has been cleared. Steps have been taken to limit clearing of native vegetation in many regions of Australia, but it remains a significant pressure in some areas, and the legacy effects of past clearing mean that the impacts are not yet reducing (National Sustainability Council, 2013).

Examples of action undertaken to address pressure on native vegetation through strategic assessments

Status and trends in biodiversity conservation are measured at national, bioregional and landscape scales. Since the previous national report, the Australian Government has increasingly implemented regional and landscape-scale approaches to environmental impact assessment. This approach enhances our understanding of trends in biodiversity and enables a more informed response to those trends, including from cumulative impacts.

Strategic assessments conducted under the EPBC Act assess how biodiversity values can be best protected in the face of development pressures. Economic development policies, plans or programmes may be endorsed, and related impacts approved, subject to adhering to approved environmental plans.

The Victorian Government's programme Delivering Melbourne's Newest Sustainable Communities includes an initiative to create a new 15 000 hectare national park for listed native grasslands. This will increase the conservation of native grasslands endemic to the Victorian Volcanic Plains Bioregion and its associated biodiversity from the current two per cent to 20 per cent. Some, generally small, grasslands will be cleared as Melbourne expands, with biodiversity offsets being directed to the highest quality grasslands within a large and consolidated reserve. This approach offers efficiencies in ongoing management costs, certainty in conservation outcomes (protection of the best, as identified through regional studies) and creates opportunities for re-introducing locally extinct species. The reserve has been designed to include rare ecosystems that are likely to be listed as threatened and is large enough to offer prospects for adaption to climate change through incorporation of different topographies and rainfall gradients.

Protected areas

Australia is making significant progress towards Aichi Biodiversity Target 11 on protected areas. The *Sustainable Australia Report 2013* found that in general, many Australian ecosystems are well protected, although others have little or no special protection. A map showing underrepresented bioregions in Australia (regions with less than 10 per cent protection within the NRS system) can be found at: http://www.environment.gov.au/system/files/pages/3a086119-5ec2-4bf1-9889-136376c5bd25/files/underrepresentedcapad2012.pdf

Australia has recognised the value in conserving examples of our unique landscapes, plants and animals for future generations. Australia has invested in establishing an NRS, which is Australia's network of parks, reserves and protected areas. Its aim is to protect samples of the full range of native Australian ecosystems. The NRS includes a broad range of habitats from rainforests to savannahs through to alpine regions and deserts. A map showing the current status of protected areas in Australia, in terms of interim bioregionalisation of Australia, can be found at: http://www.environment.gov.au/system/files/pages/3a086119-5ec2-4bf1-9889-136376c5bd25/files/ibraregionscapad2012.pdf

Indigenous Australians play an important role in managing Australia's NRS system. Indigenous Protected Areas (IPAs) make up 35 per cent of the entire NRS system and are the largest private landholders to make such a contribution.

Further information on Australia's NRS is included in the response to question 7.

Table 2 below outlines the growth in protected areas coverage in Australia since submission of the fourth national report in 2009. The figures indicate that since the fourth national report in 2009, an additional 1 008 protected areas have been added to the NRS covering approximately an additional 5.52 per cent of Australia's land. As of December 2012, approximately 54 per cent of the terrestrial area protected in Australia is protected as International Union for Conservation of Nature (IUCN) Category I-IV protected area. The remaining 46 per cent is protected as IUCN Category V or VI areas, which allows for human use of the protected area (e.g. for ecotourism) and use of natural resources.

As of 30 June 2013, 36.2 per cent of Australia's marine environment covering over 3.2 million square kilometres was conserved in protected areas, exceeding the target of 10 per cent under Aichi Target 11 for coastal and marine waters and delivering on the World Summit on Sustainable Development ('Rio+10') commitment to establish representative networks of marine protected areas by 2012.

Table 2: Comparison of percentage of protected areas between national reports

Percentage of protected areas	Fourth national report (data from 2008/2009)	Fifth national report (data from 2013)
Percentage of land area covered	Approximately 11 per cent (9 000 areas)	16.25 per cent (10 008 areas)
Percentage of marine area covered	Approximately 10 per cent (over 200 areas in both state and Commonwealth waters)	36.2 per cent (over 300 areas in both state and Commonwealth waters)

Marine and coastal biodiversity

Australia has the third largest national marine territory in the world, standing at 13.86 million square kilometres. According to *Australia's State of the Environment 2011* report, in comparison to the marine waters of other nations, Australia's oceans are considered to be in good condition. Despite this, the report notes that there is substantial degradation in the east, south-east and south-west, and that ecosystems near the coast, bays and estuaries in these regions are in poor to very poor condition.

The majority of the impact occurred in the mid -19th and 20th centuries with more recent impacts principally arising from unregulated human activities in river catchments, urban and coastal developments, and fishing (State of the Environment Committee, 2011). For instance, with more than 80 per cent of Australia's population living in urban centres and within 50 kilometres of the coast, land use and population pressures have had substantial impacts on coastal ecosystems, including mangroves, estuaries and tidal marshes (State of the Environment Committee, 2011).

Examples of action undertaken to address pressure on marine and coastal biodiversity

In 2012, the Australian Government established 40 new Commonwealth marine reserves around Australia. These add more than 2.3 million square kilometres to Australia's marine reserve estate, resulting in a total area of 3.2 million square kilometres of ocean being managed primarily for biodiversity conservation, while also allowing for ecologically sustainable use in many areas.

The Australian Government has committed to undertaking a review of the Commonwealth marine reserves proclaimed in November 2012. The review will include an expert scientific panel to look at the science supporting the reserves and bioregional advisory panels to improve consultation with stakeholders. The review will not look at the external boundaries of the reserves, but will inform the development of new management plans for the reserves, which will set out how the reserves will be managed, including what activities are allowed in particular areas of the reserves. The marine reserves remain in place with transitional management arrangements in effect until new management plans are established.

Marine bioregional plans (MBPs) have been developed for four of Australia's marine regions - South-west, North-west, North and Temperate East. MBPs describe the marine environment and conservation values of each marine region, set out broad biodiversity conservation objectives, identify regional conservation priorities and outline strategies and actions to address these priorities. These MBPs inform decision-making under the EPBC Act about proposals that may have a significant impact on the marine environment.

Case study 8 below briefly describes the current state of the GBR and a number of actions that are underway to protect it.

Case study 8: The Great Barrier Reef

The GBR is one of the most diverse and remarkable ecosystems in the world. It is a World Heritage property, recognised internationally for its outstanding universal value. Containing a maze of reefs and islands, it extends approximately 2 000 kilometres along the Queensland coast. It is the world's largest coral reef ecosystem and is rich in biodiversity — from mangroves and seagrasses to coral reefs and open waters.

Australia's 2014 report on the State of Conservation of the GBRWHA concludes that the property's Outstanding Universal Value and integrity remain largely intact. In the northern third of the property, attributes generally remain in better condition as do habitats further offshore and in deeper water. Some of the region's biodiversity has improved. Almost all geomorphological evolutionary processes throughout the property remain intact.

Examples of action undertaken to protect the GBR

The reef is one of the best managed coral reef ecosystems in the world. Over the past three

decades or so, substantial progress in protecting biodiversity has been made by working with all levels of government, Traditional Owners, catchment and reef-based industries and the community to address the impacts of fishing, threats to vulnerable species and declines in water quality caused by land-based industries.

The GBR Marine Park Zoning Plan 2003 is one of the primary management tools for biodiversity protection by regulating activities within the Marine Park and providing a network of no-take zones which protect a minimum of 20 per cent of all 70 bioregions. The outcome of these efforts is improved protection for a broader range of habitats (not just coral reefs) and population recovery for some species of concern.

The first GBR Climate Change Action Plan 2007-2012 has guided the efforts of the GBRMPA and its partners to address climate change issues over the past five years. Implementation of the plan has produced significant outcomes for our understanding of climate change risks and our ability to help build the resilience of the reef in a changing climate.

The Reef 2050 Plan, announced in 2013, will provide a long term strategic approach to address key threats to the reef from marine and coastal activities. The Reef 2050 Plan, to be developed collaboratively by the Australian and Queensland Governments, will include a vision for the GBRWHA, supported by an outcomes and targets framework to protect the property's outstanding universal value, adaptive management actions and integrated monitoring and reporting arrangements.

- A major component of the Reef 2050 Plan will be the establishment of a Reef Trust with an initial contribution from the Australian Government of AU$40 million. The Trust will consolidate government and private funds to deliver improvements to the quality of water entering the reef, coastal habitat and species protection throughout the Great Barrier Reef and catchments, including crown-of-thorns starfish control and the development and implementation of a Turtle and Dugong Protection Plan. The Reef Trust will invest in innovative and cost-effective on-ground actions to address the highest priorities for protecting the reef. The Trust complements a further investment of AU$142 million from the Australian Government's Reef Programme for projects focused on improving the quality of water entering the GBR.

The Reef 2050 Plan will build on the Caring for our Country Reef Rescue programme, which provided AU$200 million between 2008 and 2013 for regionally delivered grants to landholders and communities to implement a wide range of on-ground actions to improve water quality entering the GBR lagoon. Projects funded through these grants contributed to improvements in water quality through activities such as fencing off riparian areas, improving management practices including grazing management, and pest and weed management. Additionally, the targeted control programme for crown-of-thorns starfish in partnership with the marine tourism industry has removed 250 000 starfish affecting reefs with high biodiversity and tourism values.

Other examples of actions include support to improve community skills and knowledge through workshops, field days and property management, and increased community (including Indigenous community) engagement. Reef Rescue also funded a programme of water quality monitoring, evaluation of trends, and research and development. This

contributed to the Reef Water Quality Protection Plan and Reef Rescue annual reporting and to maintaining the effectiveness and appropriateness of investments to improve water quality entering the Reef.

Another aspect of Reef Rescue 2008-2013 involved an AU$10 million commitment towards a Reef Rescue Land and Sea Country Indigenous Partnerships Program, which actively engaged Indigenous communities in managing and protecting the reef's marine resources and cultural diversity. The programme engaged traditional owners of the GBR to work on establishing Traditional Use of Marine Resources Agreements (TUMRAs) with the GBRMPA and strengthened communications between local communities, managers and reef stakeholders in building a better understanding of traditional owner issues about the management of the GBR Marine Park and GBRWHA. Between December 2008 and June 2013, the GBRMPA has expanded its TUMRA programme from four formal traditional owner management agreements (four TUMRAs) to eight agreements (seven TUMRAs and one Indigenous Land Use Agreement). Through TUMRAs, many Indigenous people are able to practice 'living maritime culture': providing traditional food for their families and educating younger generations about traditional and cultural rules, protocols and activities in sea country. There are six traditional owner management agreements which now cover 42 860 square kilometres of sea country and involve 14 traditional owner groups. This programme was closely coordinated with other Australian Government Indigenous partnership initiatives such as Working on Country (see case study 14 for information on Working on Country).

Inland waters biodiversity

Australia has a highly variable and unpredictable climate (both temporally and spatially). This climate, and the resulting hydrological regimes, have driven the evolution of Australia's inland waters biodiversity and shaped the unique character of these systems. Inland water biodiversity is of significant cultural and nutritional importance to Australia's Indigenous people. The current condition of freshwater habitats in Australia is the result of historic factors; particularly land use change and the associated land clearing, river regulation, changes to drainage patterns (including the draining of wetlands), water resource development and the intentional or accidental introduction of weeds and pest animals. Climate change is also having an impact. In the context of these existing long-term trends, since the fourth national report there has not been a significant change to overall inland waters biodiversity.

In southern Australia, and particularly the Murray-Darling Basin, inland waters biodiversity is considered to be in a degraded condition. The 2000-2010 millennium drought in southern Australia contributed to further degradation of these systems. However, above average rainfall across much of central and eastern Australia, including the Murray-Darling Basin, during 2010 and 2011 has had a favourable impact on many of Australia's wetlands with significant flooding occurring throughout the system. These flooding events, which were supplemented by environmental water, led to large-scale bird breeding events and some recovery in river and wetland condition. Notwithstanding these bird breeding events, the 2013 Eastern Australian Waterbird Survey trend analysis indicates continued long term (31 years) declines in waterbird abundance, and species richness (UNSW, 2013). Total abundance, breeding species diversity and breeding abundance declined considerably in 2013 compared to 2012.

In contrast to the rainfall events across central and eastern Australia, the south-west of Western Australia continues to experience well below average rainfall in recent years. The long-term drought in south-west Western Australia has led to a decline in river and wetland health due to low flows and high stream salinity. The condition of northern Australian and Tasmanian rivers and wetlands is generally good.

Whilst river and wetland salinisation is not a major issue nationally, there are areas where increased salinity is a serious concern, for example in south-west Western Australia and throughout the Murray-Darling Basin (particularly the Lower Lakes). This elevated salinity is caused by naturally occurring saline soils interacting with anthropogenic influences, especially land clearing. In recent years there have been fewer reports nationally of spreading land salinisation, this is likely to be attributable to changing balance between saline groundwater and dilution in flow due to the widespread drought in southern Australia (State of the Environment Committee, 2011).

Examples of action undertaken to address pressure on inland waters biodiversity

The Australian Government, in collaboration with state and territory governments, has undertaken several actions to address the pressures on biodiversity in inland waters.

The *Water Act 2007* (the Water Act), enables the Australian Government, with the Murray-Darling Basin states, to manage the water resources in the Basin in the national interest and to give effect to relevant international agreements, including the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention) and the CBD, and to promote the wise use of Basin water resources.

The Murray-Darling Basin Plan (the Basin Plan), a key element of the Water Act, provides a high level framework that sets standards to manage the Basin's water resources in a coordinated and sustainable way. Key elements of the Basin Plan include: long-term average sustainable diversion limits for the Basin's surface and groundwater resources; an environmental watering plan (which includes the protection of biodiversity dependent on Basin water resources); a water quality and salinity management plan; and strategies to identify and manage risks to the Basin's water resources.

Successive Australian Governments have supported the Basin Plan's focus on over-allocation of water resources by investing more than $13 billion in water security, modernising irrigation systems and securing environmental water. The secured environmental water becomes part of the Commonwealth environmental water holdings and is managed by the Commonwealth Environmental Water Holder so that flows are provided to rivers and wetlands to protect or restore the health of these systems, so as to give effect to relevant international agreements, including the CBD. More than 3 000 GL has been delivered to environmental assets, including Ramsar wetlands, since 2009 when the watering programme commenced. Although the watering programme is in an early stage, targeted short-term monitoring of environmental responses to date has detected encouraging changes. Commonwealth environmental water has provided a range of ecological benefits such as better health in river red gums and better habitat for birds, fish and frogs. A Long-Term Intervention Monitoring project is being established to focus on long-term (five year) monitoring and evaluation activities, commencing in 2014-15.

Collaboration between the Australian Government and state and territory governments is underpinned by an Intergovernmental Agreement on the National Implementation of the Basin Plan (the Agreement). The objective of the Agreement is to ensure that the water reforms in the Murray-Darling Basin are implemented in a cost-effective manner to support the national interest of improving river and wetland health, putting water use on a sustainable footing, enhancing irrigation productivity, providing water for critical human needs, and providing farmers and communities with more confidence to plan for a future with less water. The Agreement also provides for the consideration of projects that will allow more effective and efficient use of environmental water and for projects that will increase consumptive water use efficiency in return for securing additional water for environmental use.

Australia has 65 Ramsar wetlands and more than 900 nationally important wetlands. In 2012, the Australian Government designated Australia's 65th Ramsar site, Piccaninnie Ponds Karst Wetlands in South Australia. Historically, drainage and land clearance for agriculture significantly diminished the site's natural values. Following Ramsar listing and extensive site restoration efforts by the South Australian Government, it is now an impressive example of a natural karst system and supports numerous freshwater plants and animals, including some listed as nationally or internationally threatened.

Question 3: What are the main threats to biodiversity?

Australia's most recent *State of the Environment Report 2011* notes that the main pressures negatively affecting biodiversity have not changed greatly over the past three national State of the Environment reports. However climate change has more recently received greater recognition as a current and future driver of environmental change, and local climate became a more prominent pressure as the nation faced a decade of drought.

The report states that the most significant past and present pressures are clearing and fragmentation of native ecosystems, invasive species and pathogens, inappropriate fire regimes, grazing pressure and changed hydrology. The report highlights that the available evidence indicates that these pressures have been growing worse over the past decade. The three major interacting drivers affecting all these pressures have been (and will be) climate, human population growth and the demands placed on the environment to support human lifestyles. All three of these drivers will need to be addressed to reduce pressures on biodiversity to an appropriate level (State of the Environment Committee, 2011).

Climate change

Recent research undertaken by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) predicts that ecosystem change due to climate change will dramatically affect biodiversity across the continent, with potentially very significant impacts on biodiversity such as the loss of many species and emergence of new ecosystems (Dunlop, et al., 2012). There is already evidence of species shifting distributions due to climate change, but it is not possible to predict the full range of impacts and interactions at physiological, genetic, population and ecosystem levels. Current approaches to biodiversity conservation alone are unlikely to be sufficient for addressing climate change due to the scale and magnitude of expected change (Dunlop, et al., 2012).

Local and regional climates are changing throughout Australia, including changes to rainfall and temperature, and the frequency and intensity of storms, droughts and fires. These changes may occur too quickly to allow species to evolve, adapt or migrate and will serve to exacerbate the impacts on native vegetation from other threats (COAG Standing Council on Environment and Water, 2012).

As outlined in the *Assessment of Australia's Terrestrial Biodiversity 2008*, the threats to biodiversity associated with climate change include the direct impacts of higher concentrations of carbon dioxide on habitats, ecosystem functioning and populations; altered rainfall and temperature patterns; rising sea levels; increased sea temperatures and acidity; and more frequent extreme storms, floods and heatwaves.

The assessment states that many species are highly sensitive to changes in climate and weather-related patterns and events. These patterns and events can disrupt seasonal food supplies and other resources, life cycle events, development, mortality, breeding and fertility, such that entire reproductive strategies become less successful. Expected direct impacts on species populations include changes in species abundance; changes in distribution; and changes in genetics over the long term as species adapt (DEWHA, 2009).

Changing climate is also likely to favour invasive species in many areas and reduce the competitiveness of Australian flora and fauna in their existing ranges (DEWHA, 2009). The assessment found observations of changes in climate change-related native species and natural systems, including: the expansion of rainforest at the expense of savanna; the encroachment by snow gums into sub-alpine grasslands at higher elevations; saltwater intrusion into freshwater swamps; and changes in bird behaviour including arrival of migratory birds and reproductive changes (DEWHA, 2009).

Aquatic ecosystems are considered to be particularly vulnerable to the impacts of climate change. Important drivers of wetland structure and function such as changed rainfall patterns, river flow, groundwater level, sea level and temperature are all predicted to be altered by climate change. The overarching driver, however, is via changes in wetland hydrology, particularly the frequency and duration of inundation events. According to a 2013 assessment of wetland vulnerability undertaken by the former Victorian Department of Sustainability and Environment, changes in frequency and duration of wet phases are predicted to result in a shift in vegetation community composition and may also result in the loss of biodiversity, particularly if permanent wetlands dry out more frequently (Department of Sustainability and Environment, 2013).

Although climate change has "important and unique characteristics in terms of its consequences for biodiversity", it is also "another stressor that adds to and interacts with a range of existing stressors that have already significantly changes and diminished Australia's biodiversity" (Steffen, 2009).

Significant climate change impacts on biodiversity in Australia have already been observed. In March 2014, the Intergovernmental Panel on Climate Change (IPCC) Working Group II released a report on climate change risks facing Australia and the world, focusing on impacts and adaptation needs. The Working Group II Report (available from http://www.ipcc-wg2.gov/AR5/) found that Australia faces eight key risks during the 21st century, which include: significant change in community composition and structure of coral reef systems in

Australia; loss of montane ecosystems and some native species in Australia; increased damages to ecosystems and settlements, economic losses and risks to human life from wildfires in most of southern Australia; and increasing risks to coastal infrastructure and low-lying ecosystems from continuing sea-level rise. The report notes that natural ecosystems have limited capacity for adaptation -- some unique and threatened systems are at risk from climate change at recent temperatures and more are at risk of severe consequences at 2°C above recent temperatures, particularly Arctic sea ice and coral reefs. While some climate impacts will be unavoidable, others can be managed by a combination of adaptation and effective global mitigation.

Loss, fragmentation and degradation of habitat

Habitat loss, fragmentation and degradation directly reduces the extent and condition of native vegetation across Australia while also affecting the viability and survival of individual plant populations, as well as plant species and the wildlife species that rely on them.

Australia's *Native Vegetation Framework 2012* states that the highest levels of native vegetation clearing, degradation and fragmentation have occurred in the intensive land use zones (both urban and agricultural), which continue to face pressures on native vegetation extent and condition. In the southern states of Australia, land use change has resulted in patchy, fragmented remnants and small, isolated populations across much of the landscape.

To mitigate the degree and potential impact of these drivers, Australia is moving toward an integrated landscape-scale approach to conservation and NRM. Landscape-scale planning and management will help address risk, uncertainties and trade-offs between biodiversity conservation and other objectives for land use, and make it possible to manage strategically (State of the Environment Committee, 2011). This will enable a more sustainable approach to land use change, including the protection of valuable environmental areas over the long term, maintaining habitat connectivity at a national scale, and building resilience of both communities and ecosystems (DSEWPaC, 2012).

Invasive fauna and pathogens

Invasive species are a significant threat to the environment in Australia. Many of the most destructive invasive species were introduced some time ago and are well established. There is evidence that some pest species are increasing in abundance in many areas across their range. There are notable examples of species (e.g. cane toad, *Rhinella marina*) that continue to extend their range into new areas and threaten relatively intact biota (DEWHA, 2009). Seventy-three species of animals are listed as invasive pests in Australia including the cane toad, European wild rabbit, European red fox, feral cats and a range of other marine and terrestrial species. The highest concentration of these is along the eastern seaboard, coincident with human settlement. High numbers of feral goats, camels, rabbits and other invasive pest species also occur throughout the interior of Australia and far from human settlement.

The *Sustainable Australia Report 2013* found that many of these species are widespread, with significant populations, and are responsible for large amounts of land degradation as well as inhibiting ecosystem function and competing with native animal populations. Introduced plants and animals, pathogens and diseases threaten the survival of many of Australia's native plants through habitat destruction, disturbance to the balance of an

ecosystem and land degradation by promoting soil erosion, stream turbidity and modified fire behaviour. Invasive species also have social impacts (eg. loss of social amenity) and economic impacts such as loss of productivity in the agriculture industry. In its 'Measures of Australia's Progress' report, the ABS states that the annual cost in Australia, in terms of control and production loss estimates, of 11 types of feral animals is estimated at around AU$720 million based on 2004 data (ABS, 2010a).

The plant pathogen myrtle rust was first detected in Australia in April 2010 on the New South Wales central coast and has since spread to Queensland and Victoria. Myrtle rust causes disease in the Myrtaceae family of plants, such as the bottle brush (*Callistemon spp.*), tea tree (*Melaleuca spp.*) and eucalypts (*Eucalyptus spp.*). When severely infected, young plants and new growth may become stunted and in the worst case may die. It is not known how myrtle rust entered Australia. An eradication attempt was unsuccessful and it is expected that myrtle rust will continue to spread because it produces thousands of spores that are easily spread by wind, human activity and animals. There has been considerable investment by Australia, state and territory governments in mitigating its impact on the natural environment, including threatened and endangered species, and on industries that rely on myrtaceous species.

There has been good uptake in pest eradication in Australia using on-ground techniques. Projects have reduced the impact of invasive species including: control of rabbits in South Australia; eradication of rabbits and rodents on Macquarie Island, south-east of Tasmania; and controlled baiting programmes directed at feral pigs, foxes and wild dogs in the Paroo River and Bullo River catchments in Queensland. Another major programme in Queensland in 2014 aims to protect endangered turtle species from predation by feral pigs. In some areas along the Queensland coast, up to 90 per cent of turtle nests are lost to predation by feral pigs. The Australian Government is matching the Queensland Government's investment of $3.5 million over four years to cull the pigs.

The Australian Government also recognises the importance of mitigating against the risk of introduction of species and pathogens not already in Australia.

Invasive flora (weeds)

Weeds are among the most serious threats to Australia's natural environment and primary production industries. Nationally, invasive plants continue to invade the land with exotic species accounting for about 15 per cent of flora. About one-quarter of them are either serious environmental weeds or have the potential to be serious weeds. Invasive weeds displace native species, contribute significantly to land degradation, and reduce farm and managed forest productivity. Some of the direct effects of weeds on ecosystems are changes in structure, increased or decreased productivity, increased litter, different litter breakdown rates, and altered nutrient regimes, hydrological cycles and fire regimes. Indirect effects include deleterious associations with micro-organisms such as bacteria and mycorrhiza and flow-on effects for larger invertebrate and vertebrate animals.

Australia spends considerable resources each year in combating weed problems and in protecting ecosystems and primary production on private and public land – it is estimated that in 2006-07, Australian farmers spent more than AU$1.57 billion on the management of weed related issues (ABS, 2008). Weed related issues were the highest category of

spending by farmers (53 per cent) followed by pest management (25 per cent) and management of land and soil (22 per cent) (ABS, 2010a).

There is also a significant cost incurred through lost production which is not reflected in these figures. As outlined in Australia's fourth national report, previous analysis of the economic impact of weeds in Australia estimated the cost of weeds to Australia to be in excess of AU$4 billon per annum (Sinden, et al., 2004).

Grazing pressure

Approximately 53 per cent of Australia's total land area is used for agriculture (ABS, 2013b). Of the land used for agriculture, a significant proportion is used for livestock grazing. Grazing pressure is a long-standing and complex threat to biodiversity in Australia, and its management is critical to biodiversity conservation. Agricultural activities can be associated with direct removal of some species; changes in the relative proportions and mixtures of species in ecosystems such as grasslands, shrublands and woodlands; alteration to habitat in mid and lower storeys of forests and grasslands; altered fire regimes; and impacts on soil structure and water infiltration (DEWHA, 2009). Efforts are ongoing in Australia to monitor, evaluate, and reduce the impacts of agriculture on Australia's biodiversity. Monitoring and evaluation programmes have been established to assess the impact of grazing across the rangelands and bushland condition monitoring programmes have been established in agricultural areas. Case study 9 provides an example of work underway to rehabilitate degraded farmland.

Case study 9: Whole-of-paddock rehabilitation, New South Wales and Western Australia

Australian Government funding supported Greening Australia to work with farmers, catchment management authorities and NRM groups in central-western New South Wales and south-west Western Australia to deliver whole-of-paddock rehabilitation over three years.

Greening Australia engaged farmers to temporarily volunteer a paddock of at least 100 000 square metres to be planted with native trees and shrubs, with the aim of returning around 25 per cent of the paddock to deep-rooted perennial vegetation. The vegetated paddocks are then rested from production for five years and farmers receive stewardship payments to offset some of their production loss. Stock are permitted to be re-introduced after five years under a rotational grazing system after the plantings have established.

This whole-of-paddock rehabilitation project was a practical, cost-effective way of integrating conservation and production goals. Key benefits included increased biodiversity, carbon sequestration, return of ground cover and productive native perennial pastures and shrubs, and salinity and erosion control with improved grazing productivity of paddocks. These outcomes will have long-lasting impacts on the environment and agricultural production. Re-establishing connectivity and restoring landscape biodiversity will help mitigate the effects of climate change and help contain pests and diseases as well as providing shelter and shade for livestock and improving soil condition.

Altered fire regimes

The relationship between fire and Australian biodiversity is highly complex. Fire is a crucial component of the ecology and functioning of ecosystems. A long history of fire in the

landscape has shaped the composition and structure of natural communities. Native biota are adapted to a sequence of burning at specific frequencies and intensities — that is, a specific fire regime (DEWHA, 2009).

From the Pleistocene period to the present, Indigenous people have used fire in traditional foraging and land use. It is understood that this pattern of burning has added to the longer term natural processes shaping the environment through fire. Indigenous knowledge of fire is incorporated into land management practices, especially in northern and central Australia by Indigenous Working on Country rangers.

Australia's Native Vegetation Framework 2012 notes that changing fire regimes have varying effects on native vegetation, with fire affecting the species composition, vegetation coverage and fuel load. Native vegetation types differ markedly in response to fire, as a consequence of its frequency or infrequency, and can be impacted if fires are unseasonal or of undesirable intensity or extent. Fire management to protect human assets can conflict with desired outcomes for native vegetation.

Changed hydrology

Since European settlement, there have been significant changes in the hydrology of eastern and southern Australian landscapes. Clearing vegetation for agriculture in the 19th and 20th centuries affected the hydrology of the landscape, and caused a number of impacts including erosion and increased sedimentation.

Over time the regulation of rivers, capture of runoff in large reservoirs and farm dams and use of surface and ground water resources, particularly for irrigated agriculture, gradually depleted the natural flows in many river systems and radically altered natural flow and flooding regimes. Cold water released from large river storages impacted further by altering the chemistry and productivity of regulated rivers. Many of these changes have advantaged invasive and introduced species over native species in terms of access to habitat and resources.

In the Murray-Darling Basin, which drains one-seventh of the Australian continent, a century or more of water resource development has supported one of the most productive food and fibre regions in Australia. However the nature and scale of this development and associated river regulation has impacted significantly on the biodiversity of the Basin's rivers, wetlands and floodplain communities, with over-extraction of Basin water resources identified as the primary threat.

A recent assessment of the ecological health of the rivers in the Murray-Darling Basin found that modifications to all aspects of the flow regime, particularly on flow seasonality and flow variability, are widespread across the river system. It also found that the impacts of changes to high - and low flow events and overall flow volumes are also significant (MDBA, 2012). The case for intervention was therefore strong.

The Australian Government brought the Murray-Darling Basin Plan into legal effect in 2012. It establishes enforceable, sustainable limits on the diversion of surface and ground water resources. It includes objectives for the Basin as a whole and an Environmental Watering Plan. The Environmental Watering Plan requires the development of a Basin environmental watering strategy and the identification of Basin environmental watering priorities.

Implementation of the Basin Plan is supported by Australian Government water recovery programs.

Noting the strong linkages between water quality and biodiversity, the Murray-Darling Basin Plan also sets out a Water Quality and Salinity Management Plan that establishes a framework for action to protect and enhance water quality in the Basin for environmental, social, economic and cultural uses.

Urbanisation

Urbanisation can result in the direct loss of native vegetation, degradation and fragmentation of native vegetation and increase the impacts of many other threats to native vegetation, such as increased water extraction, pollution and waste. In some cases, it can simplify and alter the composition of ecosystems (State of the Environment Committee, 2011).

Nearly 90 per cent of Australians live in urban areas (cities or towns of more than 1 000 people). According to the 2011 Census, on average, there are 2.8 people per square kilometre in Australia, which is one of the lowest population densities in the world. However, since most of Australia's population is clustered in cities and towns, the majority of people live in areas where the population density is much higher than the average (ABS, 2013c). As noted in *Australia's State of the Environment Report 2011*, in general, areas of urban development coincide closely with many areas of highest species diversity and endemism in Australia and with areas of greatest alterations to habitat and the greatest numbers and proportions of threatened species. This coincidence occurs because people have settled in areas of fertile, productive soils, which tend to occur around the mouths of major rivers. As a result of urban development, biodiversity in those areas is reduced (State of the Environment Committee, 2011).

Unsustainable use of natural resources

The unsustainable use of natural resources (for example water resources or harvested species) impacts on the native vegetation that depends on those resources or results in the direct modification of the structure or composition of the native vegetation and habitats. The 2011 State of the Environment report notes that humans have both direct and indirect effects on biodiversity. Direct effects mainly involve taking species (e.g. taking animals and plants as food, harvesting plants for ornamental purposes, or removing plants or animals that have become pests). Indirect effects happen as a result of other activities associated with human existence, such as growing food, using industrial processes that either consume natural resources or introduce heat or chemicals into the environment, and clearing land for urban development, agriculture, mining or other activities.

Australia's population is projected to continue to grow over the coming decades (ABS, 2013d), which will add further pressure to the challenge of managing and using our natural resources in a sustainable way. . The agricultural sector in Australia will have a significant role to play in this regard, as this sector is responsible for managing approximately 53 per cent of the Australian landscape (ABS, 2013b).

Question 4: What are the impacts of the changes in biodiversity for ecosystem services and the socioeconomic and cultural implications of these impacts?

It is an ongoing challenge to fully assess the impacts of changes in biodiversity for ecosystem services in Australia. Australia's *State of the Environment Report 2011* found that interpreting the relationship between the current state of biodiversity and the ecosystem services the environment provides is complicated for two reasons. Firstly, understanding of the relationships between biodiversity and ecosystem functions is not yet good enough to predict in detail the effects of changes in biodiversity on benefits to humans. Secondly, understanding the needs that humans have for benefits from biodiversity is still too poor to be able to assess whether current or future states of biodiversity will be adequate to meet those needs (State of the Environment Committee, 2011).

However, it is apparent that there will be a variety of impacts as a result of declining biodiversity and ecosystems on human wellbeing and livelihoods in Australia. Three examples of the impacts of changes in biodiversity are provided below – climate change, the Murray River and the GBR.

Impacts of changes in biodiversity from climate change

Research on potential climate change adaptation strategies for terrestrial, freshwater and marine biodiversity has been undertaken from 2008–2013 through the National Climate Change Adaptation Research Facility. This facility was established by the Australian Government in 2008 to harness and coordinate the capabilities of Australia's researchers, to generate and communicate the knowledge decision-makers need for successful adaptation to climate change. Part of the facility's work was to produce National Adaptation Research Plans (NARPs) in 2010 for terrestrial biodiversity and marine biodiversity themes. In 2012, these NARPs were updated to reflect progress in knowledge under each research theme.

Impacts of the changes in biodiversity for the Murray River

Riparian river red gum forests along the river corridor play a key role in maintaining the health of the river ecosystem, and provide important habitat for native fauna and ensure river bank stability. River red gum forests throughout the Basin have been harvested for timber, burnt for firewood and cleared for farms and towns. More than 75 per cent of the remaining river red gums are thought to be suffering from various degrees of stress (Victorian Environmental Assessment Council, 2008). Loss of large tracts of the river red gum species along the riverine corridors of the Basin would have a major impact on the hydrology of the river system, as well as on vegetation communities and associated biodiversity. There would also be reduced benefits for tourism operators and tourists, and reduced benefits in terms of the derived value that individuals and communities place on forest conservation and healthier ecosystems.

A 2011 CSIRO study on the ecological and ecosystem services benefits likely to arise from recovering additional water for the environment in the Murray–Darling Basin found that an additional 2800 GL of water would enhance habitat ecosystem services.[3] Enhanced ecosystem services – arising from floodplain vegetation, waterbird breeding, native fish and

[3] The CSIRO project used the best available science in combination with new work to calculate the multiple benefits of recovering water for the environment using the current ecological condition as the baseline.

the Coorong, Lower Lakes, and Murray Mouth – was estimated to be worth between AU$3-8 billion. Other benefits include carbon sequestration, avoided damage and treatment costs associated with the supply of fresh water and tourism benefits. The Basin Plan sets sustainable diversion limits on surface and groundwater resources in the Murray-Darling Basin and identified that a reduction of 2750GL of surface water diversion was required to protect key ecosystems assets and functions in the Basin. Information on Australian Government action to address pressure on inland water biodiversity is in the response to question 2.

Impacts of the changes in biodiversity for the GBR

Observed and projected future changes in biodiversity on the GBR impact on species and habitats themselves, on some of the ecological processes and on those activities that rely upon a healthy ecosystem such as nature-based tourism, fishing and the cultural and traditional connections to country for traditional owners.

Changes in biodiversity will impact on the health and resilience of the GBR and the ability of the ecosystem to recover from disturbances whether natural or human induced. Future predictions of climate change dominate most aspects of the GBR's outlook over the next few decades. The extent and persistence of the damage to the ecosystem will depend to a large degree on the amount of change in the world's climate and on the resilience of the GBR ecosystem in the immediate future.

It is likely that potential impacts from climate change and severe weather events along with terrestrial runoff and poor water quality, including elevated levels of sediments, nutrients and pesticides will all continue to impact on the health and resilience of the reef's ecosystems. This will in turn continue to affect reef-based industries including tourism and fishing, and the social and cultural values of the reef for coastal communities.

The GBR and its natural resources are very important to the livelihoods of all the Indigenous communities that access it, with specific areas holding higher levels of cultural significance than the general cultural values held for GBR sea country as a whole. Loss of biodiversity, health and resilience of the reef will impact widely on the livelihoods and general wellbeing of these Indigenous communities.

The Australian Government has taken a coordinated approach to environmental management to address the threats of declining water quality and climate change on the GBR through programmes such as Reef Rescue and the Reef Water Quality Protection Plan. The Reef 2050 Plan, announced in 2013, will provide a long term strategic approach to address key threats to the reef from marine and coastal activities. Further details regarding these initiatives are provided under case study five.

PART II: THE NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN, ITS IMPLEMENTATION, AND THE MAINSTREAMING OF BIODIVERSITY

Question 5: What are the biodiversity targets set by your country?

Australia has developed a range of measurable targets that support the Aichi Biodiversity Targets of the Strategic Plan for Biodiversity 2011-2020. These targets are contained in the following three national strategies: Australia's Biodiversity Conservation Strategy 2010-2030

(ABCS); Australia's Native Vegetation Framework 2012 (NVF); and Australia's Strategy for the NRS 2009-2030 (NRS Strategy). Of these, the ABCS is Australia's overarching national biodiversity conservation strategy. The NVF and NRS Strategy support the ABCS and translate biodiversity conservation into more specific targets for Australia's terrestrial and aquatic native vegetation and for Australia's national system of terrestrial reserves.

Table 3 below lists the measurable targets in ABCS, and the corresponding Aichi Biodiversity Targets to which they contribute. The NVF targets provide a further contribution towards a number of Aichi Targets, notably Aichi Targets 1, 2, 3, 5, 9, 11, 18 and 19. The NRS targets contribute towards Aichi Targets 1, 11, 18 and 19.

Table 3: Australia's Biodiversity Conservation Strategy 2010-2030 (ABCS)	**Relevant Aichi Target(s)**
ABCS Target 1: By 2015, achieve a 25 per cent increase in the number of Australians and public and private organisations who participate in biodiversity conservation activities.	1, 2, 4, 17
ABCS Target 2: By 2015, achieve a 25 per cent increase in employment and participation of Indigenous peoples in biodiversity conservation.	2, 14, 18
ABCS Target 3: By 2015, achieve a doubling of the value of complementary markets for ecosystem services.	3
ABCS Target 4: By 2015, achieve a national increase of 600,000km^2 of native habitat managed primarily for biodiversity conservation across terrestrial, aquatic and marine environments.	5, 7, 11
ABCS Target 5: By 2015, 1,000km^2 of fragmented landscapes and aquatic systems are being restored to improve ecological connectivity.	5, 7, 11, 14, 15
ABCS Target 6: By 2015, four collaborative continental-scale linkages are established and managed to improve ecological connectivity.	5, 11, 14, 15
ABCS Target 7: By 2015, reduce by at least 10 per cent the impacts of invasive species on threatened species and ecological communities in terrestrial, aquatic and marine environments.	9, 10, 12
ABCS Target 8: By 2015, nationally agreed science and knowledge priorities for biodiversity conservation are guiding research activities.	18, 19
ABCS Target 9: By 2015, all jurisdictions will review relevant legislation, policies and programs to maximise alignment with Australia's Biodiversity Conservation Strategy.	2, 4, 17
ABCS Target 10: By 2015, establish a national long-term biodiversity monitoring and reporting system.	2, 19

In the four years since the commencement of the ABCS, good progress has been made towards some of its ten measurable time-bound targets. For example, ABCS Target 4 – *By 2015, achieve a national increase of 600,000 square kilometres of native habitat managed primarily for biodiversity conservation across terrestrial, aquatic and marine environments* – has already been fully met, well ahead of its timeline. Examples of actions by Australia which led to achievement of this target are included in the table under question ten. By contrast, ABCS Target 7 – *By 2015, reduce by at least 10 per cent the impacts of invasive species on*

threatened species and ecological communities in terrestrial, aquatic and marine environments – is proving more challenging, due to the absence of baseline data and suitable monitoring and measurement methodologies. Australia is due to review its progress towards ABCS targets and other biodiversity-relevant national targets in 2015.

Question 6: How has your national biodiversity strategy and action plan been updated to incorporate these targets and to serve as an effective instrument to mainstream biodiversity?

Australia's national biodiversity strategies

Following Australia's ratification of the CBD in 1993, Australian governments developed *The National Strategy for the Conservation of Australia's Biological Diversity 1996*. It was the first biodiversity strategy of its kind to be developed in Australia and provided national guidance on biodiversity conservation until 2009.

Two reviews of the strategy in 2001 and 2006 found that advances had been made in biodiversity conservation in Australia; however, it was difficult to measure performance against the qualitative objectives in the strategy. There was a recognised need to establish time-bound objectives and targets for biodiversity conservation across the nation.

Australia's revised national biodiversity strategy, the ABCS, has been structured around three priorities for action and nine subpriorities, which were chosen to reflect lessons learnt from the reviews of the 1996 strategy as well as the shifts in policy approach and scientific understanding. The three priorities are: engaging all Australians; building ecosystem resilience in a changing climate; and getting measurable results. As noted under question five, the NVF and NRS Strategy were enacted to support the ABCS and strengthen and coordinate our national biodiversity conservation effort.

The ABCS is contributing to the achievement of the Strategic Plan for Biodiversity 2011-2020 in a number of ways. For example, mainstreaming biodiversity is embedded under Target 1 of the Strategy and the ABCS serves to mainstream and integrate biodiversity considerations across all sectors in Australia — government, business and the community. A summary of the actions contained within the ABCS and their intended outcomes for each of Australia's national targets are outlined in Table 4 below. These show how the responsibility for actions and outcomes apply across sectors.

Table 4: Priorities, subpriorities, targets and associated actions, responsibility for implementation and projected outcomes from Australia's Biodiversity Conservation Strategy 2010-2030

Priority for action 1: Engaging all Australians

Subpriority 1.1 Mainstreaming biodiversity

- National Target 1. By 2015, achieve a 25 per cent increase in the number of Australians and public and private organisations who participate in biodiversity conservation activities.

Action	Responsibility	Outcomes
A1: Develop and implement information and communication programs to raise awareness of biodiversity and its values.	All governments, non-government organisations, businesses, public	1.1.1 An increase in public awareness of biodiversity 1.1.2 An increase in public participation in conservation activities 1.1.3 An increase in participation by the private and primary industries sector in biodiversity conservation 1.1.4 An increase in the cross-sectoral integration of biodiversity conservation in public and private sector planning and management
A2: Expand biodiversity coverage in school curricula.	All governments, education sector	
A3: Incorporate information and approaches to meeting biodiversity responsibilities into corporate planning and annual reporting guidelines.	All governments, businesses	

Subpriority 1.2 Increasing Indigenous engagement

- National Target 2. By 2015, achieve a 25 per cent increase in employment and participation of Indigenous peoples in biodiversity conservation.

Action	Responsibility	Outcome
A4: Extend opportunities for employing Indigenous peoples in biodiversity conservation, including through the IPAs program.	All governments in partnership with Indigenous peoples	1.2.1 An increase in the employment and participation of Indigenous peoples in biodiversity conservation activities 1.2.2 An increase in the use of Indigenous knowledge in biodiversity conservation decision making 1.2.3 An increase in the extent of land managed by Indigenous peoples for biodiversity conservation
A5: Support long-term, two-way knowledge transfer and capacity building to enhance the role of traditional ecological knowledge in biodiversity conservation.	All governments in partnership with Indigenous peoples	
A6: Support training programs that strengthen biodiversity outcomes in Indigenous land and sea management.	All governments in partnership with Indigenous peoples	

Subpriority 1.3 Enhancing strategic investments and partnerships

- National Target 3. By 2015, achieve a doubling of the value of complementary markets for ecosystem services.

Action	Responsibility	Outcome
A7: Develop and align, where appropriate, emerging markets for biodiversity with markets for other ecosystem services.	All governments, businesses	1.3.1 An increase in the use of markets and other incentives for managing biodiversity and ecosystem services 1.3.2 An increase in private expenditure on biodiversity conservation 1.3.3 An increase in public–private partnerships for biodiversity conservation
A8: Develop innovative mechanisms to encourage private investment and interest in biodiversity conservation.	All governments, businesses, non-government organisations	

Priority for action 2: Building ecosystem resilience in a changing climate

Subpriority 2.1 Protecting diversity

- National Target 4. By 2015, achieve a national increase of 600,000 km^2 of native habitat managed primarily for biodiversity conservation across terrestrial, aquatic and marine environments.

Action	Responsibility	Outcome
A9: Enhance and expand the NRS and the national system of Marine Protected Areas.	All governments, private landholders, Indigenous peoples	2.1.1 An increase in the number, extent and condition of ecosystems protected under secure conservation tenure 2.1.2 An increase in the extent of private land managed for biodiversity conservation 2.1.3 An improvement in the conservation status of listed threatened species and ecological communities 2.1.4 A net national increase in the extent and condition of native habitat across tenures
A10: Develop a national approach for off-reserve and multiple-use reserve conservation in priority areas.	All governments, private landholders, non-government organisations	
A11: Maintain and enhance *in situ* and *ex situ* conservation measures as part of an integrated approach to conserve species and genetic diversity.	All governments, science sector, Indigenous peoples, private landholders	

Subpriority 2.2 Maintaining and re-establishing ecosystem functions

- National Target 5. By 2015, 1,000 km^2 of fragmented landscapes and aquatic systems are being restored to improve ecological connectivity.
- National Target 6. By 2015, four collaborative continental-scale linkages are established and managed to improve ecological connectivity.

Action	Responsibility	Outcome
A12: Increase understanding and use of a whole-of-ecosystem approach in biodiversity management.	All governments, businesses, private landholders, science sector, non-government organisations	2.2.1 An increase in the connectivity of fragmented landscapes and seascapes 2.2.2 An improvement in the provision of environmental water allocations 2.2.3 An improvement in the use of ecological fire regimes to conserve biodiversity and protect the public
A13: Identify landscapes and seascapes in which habitat linkages are important for biodiversity conservation and secure these areas through mechanisms such as complementary land uses and partnerships between governments and private landholders.	All governments, businesses, private landholders, science sector	
A14: Identify and protect climate change refugia to strengthen opportunities for genetic and ecological adaptation.	All governments, science sector, private landholders	
A15: Improve the management of aquatic habitats including by reducing key threats to aquatic biodiversity.	All governments, businesses, private landholders and tourists, non-government organisations	
A16: Incorporate biodiversity conservation into land and fire management planning.	All governments, Indigenous peoples, businesses, private landholders, non-government organisations	

Subpriority 2.3 Reducing threats to biodiversity

- National Target 7. By 2015, reduce by at least 10 per cent the impacts of invasive species on threatened species and ecological communities in terrestrial, aquatic and marine environments.

Action	Responsibility	Outcome
A17: Develop tools to help guide and support priority setting for threat management at different scales.	All governments, businesses, science sector	2.3.1 A reduction in the impacts of priority threatening processes, including habitat loss and climate change

A18: Integrate biodiversity conservation into planning instruments including by implementing a decision-making hierarchy for biodiversity management: the first aim is to avoid loss; if that is not possible, then aim to minimise loss; if biodiversity loss is unavoidable, impacts should be managed to maintain ecosystem functions, including, where feasible, through the use of offsets.	All governments, businesses, private landholders	2.3.2 A reduction in the impacts of significant invasive species on biodiversity 2.3.3 An increase in the use of strategic and early interventions to manage threats to biodiversity including climate change
Priority for action 3: Getting measurable results		
Subpriority 3.1 Improving and sharing knowledge ➢ National Target 8. By 2015, nationally agreed science and knowledge priorities for biodiversity conservation are guiding research activities.		
Action	**Responsibility**	**Outcome**
A19: Complete assessments at national, state and regional levels to identify knowledge needs and gaps and to set research priorities for biodiversity conservation at all levels.	All governments, science sector, businesses, non-government organisations	3.1.1 An increase in the accessibility of science and knowledge for biodiversity conservation 3.1.2 An improvement in the alignment of research with biodiversity conservation priorities 3.1.3 An increase in the application of knowledge of biodiversity conservation by all sectors and communities
A20: Develop a national biodiversity account, in conjunction with broader national environmental accounting and reporting systems.	Australian Government to lead collaborative efforts	
A21: Undertake systematic time-series surveys through the Australian Bureau of Statistics to measure community awareness of the need for biodiversity conservation, associated behavioural change and engagement in biodiversity conservation.	Australian Government	
Subpriority 3.2 Delivering conservation initiatives efficiently ➢ National Target 9. By 2015, all jurisdictions will review relevant legislation, policies and programs to maximise alignment with Australia's Biodiversity Conservation Strategy.		
Action	**Responsibility**	**Outcome**
A22: Harmonise approaches to listing threatened species and ecological communities across jurisdictions.	All governments	3.2.1 An improvement in the alignment of sectoral, regional and jurisdictional biodiversity conservation approaches with Australia's Biodiversity Conservation Strategy 3.2.2 An improvement in the effectiveness and efficiency of biodiversity conservation programs and investments
A23: Implement and enhance biodiversity conservation models that apply a whole-of-ecosystem approach at landscape and seascape scales.	All governments, regional NRM bodies	
Subpriority 3.3 Implementing robust national monitoring, reporting and evaluation ➢ National Target 10. By 2015, establish a national long-term biodiversity monitoring and reporting system.		
Action	**Responsibility**	**Outcome**
A24: Develop in consultation with the private and primary industries sectors a nationally representative set of biodiversity indicators and monitoring protocols.	All governments, science sector and industry sectors	3.3.1 An increased representation of biodiversity and ecosystem services and goods within national accounts 3.3.2 An increased use of monitoring and reporting in the evaluation and improvement of biodiversity conservation projects, programs and strategies 3.3.3 An increase in the use of information from both the private and public sector in the adaptive management of biodiversity conservation
A25: Progressively align and integrate reporting products across governments for effective biodiversity planning.	Australian Government in collaboration with state and territory governments	
A26: Develop in consultation with community and industry stakeholders national guidelines for incorporating adaptive management into biodiversity conservation.	All governments, science sector, non-government organisations	

Question 7: What actions has your country taken to implement the CBD since the fourth report and what have been the outcomes of these actions?

Australia has undertaken a large number of actions to implement the CBD since submitting its fourth national report in 2009. Examples of these initiatives include the ABCS, the NRS, various activities to address inland water biodiversity including the development of the Murray-Darling Basin Plan and the delivery of Commonwealth environmental water (see Section 2), and activities to address the impacts of invasive species are cited elsewhere in this report. Some additional examples of Australian actions to implement the CBD since the last national report are outlined below.

Legislation and Policy

Since the submission of Australia's fourth national report, two additional matters of national environmental significance have been legislated under the EPBC Act, bringing the total to nine. The first addition was the GBR Marine Park, which was added as a matter of national environmental significance in 2009. Consequently, an activity will need to be referred for assessment and approval if it is to be undertaken in the GBR Marine Park and the action has, will have, or is likely to have a significant impact on the environment. The second addition is water resources in relation to coal seam gas and large coal mining developments, which was introduced as a matter of national environmental significance in 2013. This 'water trigger' allows the significant impacts of proposed coal seam gas and large coal mining developments on water resources to be comprehensively assessed. The Australian Government can then decide whether to approve these developments and, if approved, impose any conditions. The EPBC Act was subject to an independent review and administrative reforms are being progressed by the Australian Government to streamline environmental assessment processes.

Strategic assessments

Australia is well advanced in implementing strategic environmental assessments under the EPBC Act. Australia has successfully completed six strategic assessments; five in urban/peri-urban areas on the fringe of major cities (e.g. Sydney and Melbourne) and one on agricultural irrigation in Tasmania, and is currently undertaking another 10, including those associated with the GBR World Heritage Area and adjacent coastal zone by the Australian and Queensland governments. The GBR strategic assessments are in response to the decision of the UNESCO World Heritage Committee in 2011 to investigate the state of conservation of the GBR World Heritage Area. They are key elements of Australia's response to the concerns raised by the World Heritage Committee. Case study 10 below provides further details of the GBR strategic assessment.

Strategic assessments in Australia are largely undertaken with state or territory governments, and represent an assessment of the state's or territory's environmental and planning laws and policies within a particular region, and whether national environmental requirements have been met. Strategic assessments often involve industry participation, and can be done in partnership with industry, for example the Australian Government is undertaking a strategic assessment with BHP Billiton Limited in the Pilbara region of Western Australia.

The strategic assessments completed to date demonstrate they can deliver robust environmental, economic and social benefits, including by:

- proactively targeting areas which are under development pressure and anticipating multiple project-by-project developments, which allows for a landscape-scale approach to protecting biodiversity and addresses broad-scale cumulative impacts on multiple biodiversity matters.
- facilitating coordinated establishment and management of large landscape-scale environmental offsets (e.g. Melbourne, Victoria – a 15 000 hectare Western Grasslands Reserve created).
- providing for approval of broad-scale developments to stimulate local or regional economic activity (e.g. Melbourne strategic assessment allows well planned development for both housing and biodiversity for the next 40 years).

Case study 10: GBR comprehensive strategic assessment

The Australian and Queensland governments are committed to ensuring the GBR retains the Outstanding Universal Value and integrity for which it was declared a World Heritage Area. The two governments are undertaking a comprehensive strategic assessment of the GBR World Heritage Area (GBRWHA) and the adjacent coastal zone.

Strategic assessments, undertaken in accordance with the EPBC Act, enable a 'big-picture' approach to environment and heritage protection. The comprehensive strategic assessment will help identify, plan for and manage existing and emerging risks to ensure ongoing protection and management of the GBRWHA and adjacent coastal zone. There are two components to the comprehensive strategic assessment:

1. the Queensland Government is analysing legislation, policies and planning frameworks that apply in the coastal zone to ensure land based development addresses direct, indirect and cumulative impacts; and

2. the GBRMPA is leading the marine component which will ensure effective protected area management arrangements are in place for the GBRWHA.

Both components are evaluating the effectiveness of their respective legislative, policy and planning arrangements to protect matters of national environmental significance, including the Outstanding Universal Value of the GBRWHA. The GBRMPA and the Queensland Government are working closely on aspects where they have joint management responsibilities, for example shipping and island management.

The strategic assessment reports were released for public comment from 1 November 2013 to 31 January 2014. The GBRMPA and the Queensland Government are revising their reports to address comments received from the public comment process prior to submitting them to the Australian Government for a decision on endorsement. The outcomes of the strategic assessment are to be reported to the World Heritage Committee for its consideration at its 39th session in 2015.

The strategic assessment will enable the GBRMPA and the Queensland Government to make changes to their respective planning, management and institutional arrangements to better identify, plan for and manage existing and emerging risks, so the unique values of the GBRWHA are protected for future generations. The outcomes of these strategic assessments

will be drawn together under the Reef 2050 Plan.

Environmental Offsets

In October 2012, the Australian Government released an environmental offsets policy and offsets assessment guide. The policy provides upfront guidance on the role of environmental offsets in the environmental impact assessment process, and how consideration is given to the suitability of a proposed environmental offset for matters protected under the EPBC Act. The guide, which accompanies the offsets policy, gives effect to the policy's requirements through quantifying impacts and offsets for nationally threatened species and ecological communities.

The policy seeks to improve the environmental outcomes that result from offsets whilst also delivering greater clarity and certainty to industry. The policy requires offsets to deliver conservation outcomes that improve or maintain the viability of the aspect of the environment that is being impacted, such as a particular type of threatened species habitat or heritage place. The policy and guide also encourage greater avoidance and minimisation of impacts by project proponents through enabling developers to clearly anticipate future costs associated with delivering offsets.

Protection of threatened species and ecological communities

Listing key threatening processes under the EPBC Act plays an important role in raising public awareness about key threats to biodiversity. Broad-scale key threatening processes are also particularly useful in identifying important issues at the national level. This may lead to better focused approaches to addressing these threats and coordination across the national range.

There are 20 key threatening processes listed under the EPBC Act – three more since the fourth national report. A threatening process is defined as one that 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 three new key threatening processes listed under the EPBC Act since the fourth national report are:

- Invasion of northern Australia by Gamba Grass and other introduced grasses - Effective from 16-Sep-2009
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants - Effective from 08-Jan-2010
- Novel biota and their impact on biodiversity - Effective: 26-Feb-2013.

Part 13 of the EPBC Act provides for the making or adoption, and the implementation, of threat abatement plans to address listed key threatening processes. Threat abatement plans establish a national framework to guide and coordinate Australia's response to key threatening processes registered under the EPBC Act. Threat abatement plans provide for the research, management, and any other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities. Implementing the plan should assist the long term survival in the wild of affected native species or ecological communities. Key threatening processes and threat abatement plans can also assist in identifying and prioritising projects/actions for funding. There are 14 threat abatement plans, of which four have been approved since the beginning of 2009:

- Threat abatement plan for the impacts of marine debris on vertebrate marine life (2009)
- Threat abatement plan to reduce the impacts of exotic rodents on biodiversity on Australian offshore islands of less than 100 000 hectares (2009)
- Threat abatement plan for the biological effects, including lethal toxic ingestion, caused by cane toads (2011)
- Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses (2012).
- Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi* (2014).

Recovery plans for threatened species and ecological communities

Recovery plans developed under the EPBC Act set out the research and management actions necessary to stop the decline of, and support the recovery of, listed threatened species or threatened ecological communities. There are 492 recovery plans in place covering 759 threatened species and 24 ecological communities. A further 115 recovery plans are currently in preparation. IPA Plans of Management, although not recovery plans, also address recovery of threatened species and ecological communities and work is undertaken and progress is reported on periodically to the Australian Government.

Not all threatened species and/or ecological communities are recommended for a national recovery plan when they are listed. Since the 2007 EPBC Act amendments, all threatened species and ecological communities not covered by a recovery plan (or with one in preparation) have in place a conservation advice. These advices outline priority research and conservation actions and are made available at the time of listing. Recovery plans and conservation advices are taken into account in EPBC Act project approval decisions.

More strategic approaches to recovery plan development are being developed to allow better integration of recovery and threat abatement planning with regional and other planning initiatives. There is increasing emphasis on regional, multi-species and ecological community recovery plans. Since 2009 six regional recovery plans have been adopted under the EPBC Act covering 125 nationally listed species in total. Such regional land/seascape approaches will not always be appropriate for the recovery needs of some species and individual recovery plans will continue to be developed for particular species as appropriate.

Recovery plans are binding on the Australian Government and the Government is responsible for implementing the plans to the extent to which they apply in Commonwealth areas. While the EPBC Act places no direct obligations on states and territories to implement recovery and threat abatement plans, the plans provide a prioritised framework to guide investment and effort by governments, researchers, land managers and other stakeholders. In addition, approval by a Commonwealth agency of an action that will have a significant impact on listed threatened species or ecological communities must not be inconsistent with a recovery plan.

Recovery plan implementation is a long term process and it may be many years before any significant and long-lasting improvements are observed. Australia has a relatively short history in developing and implementing recovery plans and most programmes are in the relatively early stages of implementation. Initial recovery efforts are often directed to establishing

baseline knowledge of the species, and implementing critical actions to respond to rapid and uncontrollable declines or intervening to slow an existing decline to stabilise the species. Australia's experience to date in recovery plan implementation is that it is likely to have slowed the decline and averted the extinction of many species.

The Australian Seed Bank Partnership (the Partnership)

The Partnership is an alliance of fourteen of Australia's leading botanic gardens, state environment agencies, academic institutions and non-government organisations. The Partnership, launched in 2009, focuses on a national programme of work around *ex situ* plant conservation that supports the Australian Government's priorities to protect and improve the environment for future generations, especially through the protection of nationally threatened species and ecological communities. The *ex situ* conservation work being undertaken by Australia's conservation seed banks presents an important opportunity for improving the results of *in situ* conservation through refining germination and cultivation protocols and identifying appropriate storage techniques for native seeds to ensure higher rates of success in re-introduction programmes and advance the effective conservation of target species and plant communities. The Partnership is working to increase direct efforts in provenance focussed native seed collecting to increase genetic representation in *ex situ* collections, to support long term conservation and restoration activities. Australia's conservation seed banks currently hold collections of more than 8200 plant species.

Managing access to genetic resources

The Australian Government has responsibility for managing Australia's native genetic resources, including regulating, under Part 8A of the Environment Protection and Biodiversity Conservation Regulations 2000, access to resources in Commonwealth areas and benefit sharing arrangements. The Australian Government manages the regulatory and policy framework for access to native genetic resources in Commonwealth areas and sharing the benefits arising from their use. The purpose of the framework is to facilitate access to genetic resources and provide legal certainty for researchers and innovators; while also ensuring sustainable use of biological resources and obtaining tangible benefits for Australia and the conservation of our biodiversity.

The Australian Government works across all levels of government to support a nationally consistent regulatory approach for access to, and use of, Australia's native genetic and biochemical resources, and promote best practice in managing access to genetic resources. Since 2009, Australia has held a series of three national forums related to access and benefit sharing issues including biodiscovery, traditional knowledge and implementation of the Nagoya Protocol. The series provided a forum for information exchange and discussion between all levels of government, industry, Indigenous communities and researchers engaged in the exploration of biodiversity for new properties and applications.

Australia is a Contracting Party to the International Treaty on Plant Genetic Resources for Food and Agriculture (Treaty) and supports access to plant genetic resources through the Treaty's multilateral system of access and benefit-sharing. Access to Australian grains and pastures germplasm collections is facilitated through the consolidation of these resources into a national genetic resources centre comprised of the Australian Grains Genebank (officially opened in March 2014) and an Australian Pastures Genebank, which is under development.

The genetic resources in these collections are available to domestic and overseas users through material transfer agreements developed under the Treaty.

Guidance to support implementation of the Ramsar Convention

To further Australia's implementation of the Ramsar Convention, the Australian Government, in collaboration with the state and territory governments, is developing *National Guidelines for Ramsar Wetlands – Implementing the Ramsar Convention in Australia*. The national guidelines currently provide guidance on wetland mapping, describing the ecological character of Ramsar sites, notifying change in ecological character, and nominating new Ramsar sites. The guidelines aim to facilitate improved management of Ramsar sites, in line with Australia's commitments under the Ramsar Convention and requirements under the EPBC Act.

The latest module in the guidelines series, *Australian Ramsar site nomination guidelines*, was published in 2012. These guidelines are intended to facilitate more effective, efficient, and timely Ramsar site nominations, and to provide greater transparency and certainty to site managers, governments and the community about the nomination process. The guidelines describe the practical requirements for proposing a Ramsar site nomination including the minimum information required to support a nomination.

Australia's National Reserve System (NRS)

Australia's NRS is a key element that supports implementation of the CBD, including helping Australia progress towards meeting Aichi Biodiversity Target 11 on protected areas. It is made up of Commonwealth, state and territory reserves, Indigenous Protected Areas and protected areas run by non-profit conservation organisations, through to ecosystems protected by farmers on their private working properties. Over 2008-13 the Australian Government committed AU$180 million to implement the NRS, which now includes more than 10 000 protected areas covering 16.52 per cent of the country - over 12.7 million hectares.

The NRS Strategy establishes aspirational national targets to complement Australia's efforts to meet obligations under the CBD and establish a well-managed, comprehensive, adequate and representative NRS in the Australian context. In achieving these targets, the NRS plays an important role in protecting habitat for threatened species and ecosystems, as well as internationally significant World Heritage and Ramsar sites. It also creates large protected areas within recognised biodiversity corridors, supporting species migration through the landscape and building flexibility for species to respond to future climate change.

The creation of a comprehensive, adequate and representative NRS also complements other measures to achieve conservation and the sustainable use of the landscape. The overarching objective of the NRS is to protect a comprehensive range of ecosystems and other important environmental values within each of Australia's bioregions. The Australian Government's NRM investments over 2008–2013 prioritised an increase in reservation in under-represented bioregions that had less than 10 per cent of their region protected in reserves.

Indigenous Protected Areas (IPAs)

The IPA programme supports Indigenous landowners to develop and dedicate IPAs on their land and sea estates as part of the NRS. The Australian Government provides funding support to the Indigenous groups managing IPAs to implement a range of environmental and cultural

heritage conservation activities. The IPA programme has been in place since 1997. Between July 2009 and June 2013, 28 IPAs were dedicated. There are now 62 IPAs covering over 48 million hectares of land and sea and constituting around 35 per cent of Australia's NRS. Many of the IPAs also access funding for the employment of Indigenous Rangers to implement their management plans through the Australian Government's Working on Country programme and other NRM programmes.

National Wildlife Corridors Plan (the Plan)

The Plan was completed in 2013 to promote guidance on linking national parks and reserves and well-managed private land. This initiative sought to build the resilience of Australia's environment to the impacts of climate change by working with the 54 regional NRM groups, and local communities, to develop a national plan for wildlife corridors. The Plan provides guidance for collaborative, whole-of-landscape approaches to conserving Australia's native plants, animals and other organisms.

Marine Bioregional Plans (MBPs)

Marine Bioregional Plans have been developed for four of Australia's marine regions – South-west, North-west, North and Temperate East. The MBPs will help improve the way decisions are made under the EPBC Act, particularly in relation to the protection of marine biodiversity and the sustainable use of our oceans and their resources by our marine-based industries. The MBPs describe the marine environment and conservation values (protected species, protected places and key ecological features) of the respective marine region; identify and characterise the pressures affecting these conservation values; set out broad objectives for its biodiversity; identify regional priorities and outlines strategies to address them according to a risk-based assessment of conservation priorities; and provide advice to decision-makers and people planning to undertake activities in the marine region in relation to some of the region's conservation values.

Implementation of Australia's MBPs is supported through the Conservation Values Atlas, which incorporates a range of national data on Australia's marine environment as well as specific information on the location and area of important marine habitats, ecological features, known breeding and feeding areas for protected species and other conservation values in the marine regions.

National Environmental Research Program (NERP)

Australia's capacity to understand, manage and conserve our unique biodiversity has been boosted by the establishment of the NERP. The NERP funds environmental research under five multi-institutional, multi-disciplinary research hubs to support decision making. Funding is allocated for biodiversity research and delivery of information that the Australian Government needs to better inform environmental management, policy and decision making, both in the short term and for the future. This includes understanding how ecosystems function, monitoring their health, maintaining and building their resilience, using them sustainably and exploring how to better use markets to protect biodiversity. The five Hubs are the: Environmental Decisions Hub; Landscapes and Policy Hub; Marine Biodiversity Hub; Northern Australia Hub; and Tropical Ecosystems Hub.

The NERP followed on from the Commonwealth Environment Research Facilities (CERF) initiative which was funded from 2005-06. The Australian Government invested AU$100 million in the CERF to support environmental research with a strong public good focus.

Case Study 11: Bush Blitz

Bush Blitz is an innovative partnership between the Australian Government, BHP Billiton Limited Sustainable Communities and the Earthwatch Institute (Australia) to discover and document biodiversity across Australia's national system of conservation reserves.

Bush Blitz commenced in 2009 and is scheduled to conclude in 2017. With a total budget of AU$22 million over eight years, the project is a significant investment in Australia's biodiversity discovery and taxonomic research.

The first four year phase of the project has recently been completed. While the project is still only mid-way through its implementation, it has already undertaken snapshot biodiversity surveys on more than 70 conservation reserves covering over three million hectares. To date, Bush Blitz scientists have discovered over 700 new and undescribed species and added more than 24 000 new species records, covering almost 9 900 species, to our knowledge of biodiversity within Australia's national system of conservation reserves. Significantly more new discoveries are expected over the remainder of the project.

National Plan for Environmental Information Initiative 2010-2014 (NPEI)

In 2010, the Australian Government announced the NPEI which aims to improve the quality and coverage of Australia's environmental information and build our capacity to monitor, detect and predict change in the environment and maintain this capacity over the long-term.

The Intergovernmental Agreement on Biosecurity (IGAB)

The IGAB came into effect in January 2012. It is an agreement between the Commonwealth and the state and territory governments (with the exception of Tasmania). The IGAB was developed to improve Australia's biosecurity system by identifying the roles and responsibilities of governments and outlines the priority areas for collaboration to minimise the impact of pests and disease on Australia's economy, environment and the community. In addition to the IGAB, Australia has in place the National Environmental Biosecurity Response Agreement which sets out emergency response arrangements, including cost-sharing arrangements, for responding to biosecurity incidents that primarily impact the environment and/or social amenity and where the response is for the public good.

Implementing the Nagoya Protocol

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization was adopted at the Tenth Meeting of the Conference of the Parties to the CBD in 2010, and Australia signed the Nagoya Protocol on 20 January 2012.

In consultation with key stakeholders, including regional and other international partners in the first Oceania Biodiscovery Forum held in November 2012, an implementation model for the Nagoya Protocol was developed to enable an informed decision by the Australian government on its ratification.

Case study 12: Atlas of Living Australia

The Atlas of Living Australia (ALA) (www.ala.org.au) is a national, collaborative infrastructure project that is using world-leading information management technology to bring together knowledge of Australian biodiversity with a suite of tools for NRM. The ALA mobilises and integrates the country's biodiversity information - particularly trusted information from Australian Museums, Herbaria and other biological collections - providing easy, online access to a vast repository of information about Australia's plants and animals.

The ALA integrates and provides access to spatially-explicit biodiversity data, including multiple types of biological data (collection records, survey observations, checklists, and range maps) with a very wide range of remotely derived environmental layers (terrain, soils, climate, vegetation, land cover etc).

The ALA has currently aggregated almost 42 million records, and in the last two years, over 1.2 billion records have been obtained through 90 000 download events from the ALA. The main reasons cited for data downloads are to support a variety of types of research, with a growing appreciation of the value of the ALA in this regard (e.g. Booth et al, 2012).

Government also makes use of ALA aggregated data to support a variety of projects. Additionally, users are taking advantage of other ALA resources, with over 10 million images viewed, and over 145 000 instances of people using mapping tools to view records on a map. The system also links to the international Barcode of Life Data Systems data set and allows quick access to genetic sequences of specimens held in Australian collections.

Natural Resource Management (NRM) grants programmes

The Australian Government has a long history of supporting land managers and community groups to undertake on-ground activities to achieve the conservation, sustainable use and restoration of Austalia's natural resources and environment. The Australian Government provides national leadership in strategic investment to achieve environmental outcomes through a range of NRM programmes, examples of which are set out below.

Natural Resource Management (NRM) Planning for Climate Change Fund

The Australian Government is supporting the delivery of regionally relevant information to assist in the consideration of climate change in natural resource management (NRM) planning. Climate projections for the whole of Australia are being delivered with a focus on aspects of climate of highest priority to regional NRM organisations. Research on climate change impacts and adaptation options is also being tailored to help NRM groups consider climate risk in regional NRM plans. This is supported by the provision of guidance on the effective use of that information in NRM planning processes and support for NRM organisations to update their existing plans. This will help maximise environmental benefits of management and restoration activities. For example, an informed choice of plant species may make newly revegetated areas more robust to increases in temperature and changes in rainfall.

Action on the Great Barrier Reef (GBR)

The Australian Government has committed to implement the Reef 2050 Plan to continue efforts to protect the GBR. The Reef 2050 Plan will provide a long term strategic approach to address key threats to the GBR including nutrient run off and crown of thorns starfish, as well

as species protection, particularly dugongs and turtles. The Reef 2050 Plan will include a AU$40 million Reef Trust which will combine both Commonwealth and private funds to focus on improving coastal habitat and water quality along the reef.

Further information on the Reef 2050 Plan is included under question 2.

Case study 13: Fitzroy region (Queensland)

The Fitzroy region was a high priority for the Reef Rescue programme. It has large areas of grazed rangelands and smaller areas of dry-land cropping, irrigated cotton and horticulture. It is estimated that agricultural development of the Fitzroy catchment has increased sediment loads to the GBR by a factor of three since European settlement, with some individual basins increased by as much as a factor of 10. In response, Reef Rescue invested in water quality improvement projects through the Fitzroy Basin Association.

In grazing areas, sediment reduction was achieved through groundcover improvement projects, streambank protection and gully rehabilitation. Potential Reef Rescue projects were assessed on the basis of water quality cost/benefit, including the use of a 'sediment calculator' to estimate the reduction of sediment as a result of proposed grazing management projects.

Land managers have accessed support including farm planning, training in forage management and assistance to rehabilitate degraded land. On-ground works include re-planting of scalded areas, gully remediation, fencing to land type, fencing for cell grazing or riparian protection and provision of off-stream watering points.

In 2010-11, 96 graziers completed on-ground projects over an area of 400 000 hectares to reduce sediment run-off to the reef.

Reef Rescue water quality grants and extension delivery in the grains, cotton and horticulture industries were delivered directly by industry using three industry farm management systems. These management systems include a self-assessment tool that enables farmers to identify priority areas for improvement and compare their operations to industry standards for soil, nutrient, pesticide and irrigation management.

Biodiversity Fund

The Biodiversity Fund ran from 2011-2014 to provide investment to improve the resilience of Australia's landscape to climate change, enhance the environmental outcomes of Carbon Farming Initiative projects and help landholders to protect carbon and biodiversity values on their land.

Round One (2011-2012) of the Biodiversity Fund saw the Australian Government approve AU$271 million worth of grants. A total of 317 projects were selected to revegetate, rehabilitate and restore over 18 million hectares of the Australian landscape. Round One of the Biodiversity Fund was deliberately broad in its approach and was successful in maximising participation around the country. Round Two (2013-2014) took a more targeted approach to target areas that are nationally important environments rich in biodiversity, but which are facing increasing pressures.

Caring for our Country

Investment of $AU2 billion under the Caring for our Country programme from 2008–2013 supported regional NRM groups, local, state and territory governments, Indigenous groups, industry bodies, land managers, farmers, Landcare groups and communities to undertake projects to improve biodiversity and sustainable farm practices.

Case study 14: Working on Country

Under the programme, Indigenous rangers assist in conserving threatened species, marine systems and cultural places and address environmental threats caused by feral animals, invasive weeds, marine debris and wild fire. Partnership with Indigenous groups also facilitates recording of traditional ecological knowledge (TEK) and integration of TEK with best-practice land management and biodiversity conservation. In 2011-12, there were 38 new projects undertaken in partnership and a further 20 Indigenous-managed projects.

An external review by consulting firm Walter Turnbull and independent research undertaken by Urbis Pty Ltd found that Working on Country is a successful and well-managed programme that is highly regarded by Indigenous communities across Australia. The programme provides meaningful employment opportunities - Indigenous Rangers are now recognised by the Australian Bureau of Statistics as an Indigenous profession - that enable Indigenous people to manage their country and maintain culture. An economic study by Allen Consulting Group found the true cost of the programme to be significantly lower (up to 23 per cent) than the budget cost due to reduced welfare and increased tax revenue. Ranger employment brings economic benefits both to individuals through improved and regular income, economic security, and skills development, and to their communities, as wealth is distributed through local business and amongst community members.

Job retention within the programme is remarkably high at 81 per cent over a 12 month period. The majority of Indigenous ranger groups participate in training activities and skill development, with around 76 per cent of groups engaged in Certificate level study in Conservation and Land Management. Many rangers also undertake informal training, for example in crocodile management, map reading and cultural training with traditional owners.

Health benefits reported by ranger groups include getting fit, reducing smoking and drinking and eating better food. Individual social benefits reported by rangers include increased pride, confidence and self-esteem, improved organisational and leadership skills, getting more involved with their community, and practical skills such as obtaining a drivers licence. Through their work, rangers also promote social inclusion within communities and bring broader community benefits, for example by supporting traditional owners to get back on country to carry out traditional responsibilities, access bush food, and share knowledge.

At the end of 2013, administrative responsibilities for this programme moved from the Australian Government Department of the Environment to the Department of Prime Minister and Cabinet.

The Environmental Stewardship Program

The Environmental Stewardship Program was initiated in 2007 and used a market-based approach to contract private land managers to manage matters of National Environmental Significance listed under the EPBC Act for up to 15 years. Funding is allocated through a

competitive reverse auction where applicants bid to provide a range of agreed land management actions for the high public value environmental asset (represented by matters of National Environmental Significance) on their land.

The programme was designed to reduce critical threats to biodiversity by enhancing the condition and resilience of habitats and landscapes through land management techniques, developed in consultation with science researchers and land managers. Since 2008, over 58 000 hectares of listed matters of National Environmental Significance have been managed for protection.

Australian Government Natural Resource Management programmes from 2013

The Australian Government's cleaner environment agenda is focused on safeguarding four pillars – Clean Air, Clean Land, Clean Water and Heritage Protection.

- **The Clean Land pillar** will help clean up and revegetate urban environments including creek and river banks, with the help of the Green Army and reforms to strengthen Landcare.

  The Green Army will build a standing environmental workforce, tapping into the knowledge of local communities and encouraging hands-on, grassroots action to meet local environmental challenges. Projects under the Green Army will include: weed eradication and fuel reduction in bush land reserves; protecting beaches from erosion; rehabilitating coastal foreshores, stabilising riverbanks and reducing weed density to improve water flow and quality.

  The Clean Land pillar also includes the Twenty Million Trees to 2020 Programme, beginning in 2014. The Twenty Million Trees Programme will help green Australia's urban and regional areas and create new green corridors, while making a contribution to reducing Australia's greenhouse gas emissions.

- **The Clean Air pillar** includes Australian Government aims to completing a National Clean Air Agreement with states and territories by 1 July 2016. Governments and key stakeholders including industry will work strategically together towards the common goals of reducing air pollution and managing emerging air quality issues through cooperative action at the national, state and local level. The Australian Government is also investing in the National Climate Change Adaptation Research Facility to equip decision makers with relevant information to adapt to the impacts of climate change, including information on enhancing biodiversity.

- **The Clean Water pillar** includes the Reef 2050 Plan which encompasses Reef Trust, discussed further under question 2.

- **The Heritage Protection pillar** is central to the Australian Government's cleaner environment agenda and is a fundamental pillar of our vision for Australia – a great society that protects and improves its environment for future generations.

Question 8: How effectively has biodiversity been mainstreamed into relevant sectoral and cross sectoral strategies, plans and programmes?

Mainstreaming biodiversity

Mainstreaming biodiversity is a key priority for action under the ABCS and aims to integrate biodiversity into decision-making so that it becomes everyone's business and is part of every relevant transaction, cost and decision. The 2015 review of the ABCS will help to focus national effort on how we can accelerate progress on mainstreaming biodiversity, recognising that mainstreaming indirectly underpins many of the ABCS targets. Recent past examples of government action to mainstream biodiversity include:

- The Australian Government Department of Defence considers environmental impacts including assessments of impacts on biodiversity values for estate management and development proposals. Defence has established policies and programmes to control invasive species and ensure that quarantine requirements are met for the return of material from overseas deployment. New users of Defence sites receive training on the importance of vegetation to biodiversity. Some Defence training areas have environmental advisory committees.

- The Australian Government Department of Finance considers environmental impacts, including biodiversity values, when undertaking property management, construction, acquisition, divestment and leasing activities. The Department of Finance continues to progress a programme of ecological assessments to identify biodiversity values and to prepare site Vegetation Management Plans to protect identified values.

- The Australian Government Department of Industry has the Leading Practice Sustainable Development Program for the Mining Industry (LPSD), a programme that promotes sustainable development and industry self-regulation through the adoption of leading practice principles. A LPSD Handbook series developed for the mining sector promotes leading practice in biodiversity management; namely by identifying any primary, secondary or cumulative impacts on biodiversity values; minimising and managing these impacts; restoring conservation values; and managing conservation values on a sustainable basis. The handbook also encourages establishing, maintaining and improving relationships with local Indigenous communities in corporate policy and decision-making processes.

- The Australian Government's Sustainable Regional Development Program integrated biodiversity conservation into the early stages of regional planning processes and land use decision-making by industry and government. Case study thirteen below provides further details about this programme.

- Australia is also mainstreaming biodiversity through strategic partnerships with the tourism industry. Case study 3 on National Landscapes provides an example of this relationship.

Case study 15: Sustainable Regional Development Program and lower Hunter strategic approaches

The Australian Government is investing, through the Sustainable Regional Development Program, AU$29.2 million over 2011-15 to promote sustainable development in high growth regions across Australia. The programme will facilitate a range of biodiversity conservation measures, including strategic environmental assessments under Australia's national environmental law - the EPBC Act.

The lower Hunter is Australia's sixth largest urban area and is expected to continue to grow. There are many significant environmental assets worth protecting in the region, including habitat for the Swift Parrot and Regent Honeyeater.

In the Lower Hunter, the programme has two main stages:

- In the first stage, the Australian and New South Wales Governments worked together to identify key knowledge gaps and scientific research to inform sustainability planning for the region. This work will complement and inform the NSW government's review of the NSW Lower Hunter regional growth plan and Lower Hunter regional conservation plan. Funding has been made available through the programme to undertake research and collect data to inform regional sustainability planning in the Lower Hunter region. These projects have now been completed and the focus is shifting to research integration; and
- The second stage is to undertake a strategic assessment of proposed urban development and related infrastructure corridors, as well as broad environmental, social and economic sustainability aspects within the region. Through endorsement and approval under the EPBC Act, the strategic assessment will streamline environmental regulation and provide greater certainty for business and local communities.

A grant of AU$400 000 has also been provided to Lake Macquarie City Council (one of five local authorities within the region) to assist with regional sustainability planning. Council is using the grant to prepare management plans for threatened plant species, undertake a series of regional workshops and community engagement, and implement regional sustainability planning at a local level.

The Hunter Regional Organisation of Councils also undertook a Coastal Adaptation Decision Pathways project, which was part-funded by the Australian Government. This project explored viable approaches for the councils to undertake to assist their communities to become better adapted in a changing climate.

Integration of environment into Australia's aid programme and poverty reduction strategies

Under Australia's EPBC Act, there is a requirement to assess any proposal put forward by a Commonwealth agency or employee of the Commonwealth that is likely to have significant impacts on the environment anywhere in the world. This includes projects under Australia's aid programme, which is legally obliged under the EPBC Act to ensure that through our international aid work we are not causing, or likely to cause, a significant negative impact on the environment. These potential impacts must be diligently assessed and managed. Beyond our legal obligations, Australia has a duty as a donor to apply best practice and ensure the integration of environment considerations into the aid programme.

In line with this, integration of environmental considerations into Australia's aid programme is guided by the *Environment Management Guide for Australia's Aid Program* (the Guide). This is a mandatory process of assessment and management of potential environmental impacts arising from Australia's aid activities and delivery strategies.

The Guide requires staff in Australia's aid programme to identify possible impacts as early as possible and put in place appropriate processes to avoid environmental harm or manage impacts if they are unavoidable. The Guide also ensures that Australia assesses and manages the positive impacts the aid programme may have on the environment, such as the sustainable use of natural resources to reduce poverty. The Guide also describes the legal responsibilities under the EPBC Act.

Integration of biodiversity into economic sectors and planning mechanisms

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

Developing the Australian environmental accounting capability

Other work is ongoing to integrate biodiversity into economic sectors and planning mechanisms. For example, in 2012, the ABS produced a publication "Completing the Picture – Environmental Accounting in Practice" to inform government decision-makers, policy analysts, scientists, industry and other groups on how environmental accounts, including biodiversity accounts, could be used and further developed in Australia. The ABS aims to produce *Australian Environmental-Economic Accounts* (AEEA) on a more regular basis. The AEEA are based on the international standard System of Environmental-Economic Accounts (SEEA) framework.

The Australian Government is also contributing to an environmental accounting capability through the Bureau of Meteorology that will produce ecosystem accounts that will provide information about the capacity of ecosystems to provide ecosystem services. The environmental accounts will present the current status as well as track changes for vegetation, biodiversity and ecosystems (and their capacity to provide services). This is a key step in integrating environmental and economic accounts, and will help to embed biodiversity considerations in decision making across multiple sectors.

Australian Business and Biodiversity Initiative (ABBI)

To support private sector engagement with the protection of Australia's biodiversity, an alliance of organisations and individuals from business, government and civil society called the Australian Business and Biodiversity Initiative (ABBI) has been formed under the Global Partnership for Business and Biodiversity. ABBI members are committed to exploring and promoting the integration of biodiversity conservation and the sustainable use of ecosystem services into business policies and practices in Australia. Their aim is to raise awareness and improve understanding of the ways in which the degradation and loss of biodiversity and ecosystem services is a critical risk and opportunity for Australian businesses. ABBI also aims to support the development and uptake of practical solutions that enable businesses to integrate consideration of biodiversity and ecosystem services into business decision-making and ultimately improve the health and resilience of both our environment and economy.

Integration of environmental considerations by the private sector

Another signal of progress made by the private sector in integration of environmental considerations into their business activities is the recent increase in the number of top Australian companies undertaking Corporate Responsibility Reporting. A recent survey by KPMG found that over three quarters of the top 100 Australian companies by revenue now report on corporate responsibility (82 per cent) compared to 57 per cent in 2011 (KPMG, 2013). The report suggests that these high rates are indicative of a shift in the private sector to view corporate responsibility reporting as standard business practice.

Cooperation and synergies across conventions

Coordination and cooperation among conventions in Australia at the national level takes place in a number of ways. The focal points/administrative authorities for the biodiversity-related conventions and the United Nations Convention to Combat Desertification (UNCCD) are all located within the same Ministry. This means that Australia's engagement with these conventions is overseen by the same Minister. Being situated together facilitates communication, information sharing and engagement across focal areas on issues of mutual interest. National reports to the various conventions are always conducted in consultation with other focal areas. In particular, consultation across focal points on strategic plans under development and those being revised under the various conventions takes place, this helps to strengthen and improve understanding of different priorities and obligations under other conventions.

Australia has put in place Commonwealth environmental legislation such as the EPBC Act and the Water Act 2007 which gives effect to a number of international agreements. For example, the framework established under the EPBC Act is, to a large extent, guided by Australia's international environmental obligations. It gives effect to, among others, the CBD, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention), the Ramsar Convention, and the Convention on the Conservation of Migratory Species of Wild Animals (CMS). The EPBC Act regulates the movement of internationally recognised endangered species in line with Australia's obligations under CITES. It also regulates the export of Australia's native wildlife and the import of live exotic species. It contains provisions to protect our world and national heritage. It also contains provisions to protect migratory species in line with the CMS, and provides the legal framework to protect Australia's Ramsar wetlands. In the case of the Water Act, this includes giving effect to the CBD, the UNCCD, the Ramsar Convention and the CMS. As the EPBC Act and Water Act give effect to a broad range of biodiversity-related conventions, there are increased opportunities for cooperation and coordination of environmental activities to be undertaken under these frameworks.

Australian Government project to streamline reporting to the biodiversity-related conventions

From 2007 to 2010, the Australian Government, in collaboration with the Secretariat of the Pacific Regional Environment Programme (SPREP), undertook a project that aimed to streamline reporting by Pacific Island countries to the biodiversity-related conventions. The project resulted in the development and trial of a consolidated reporting template for Pacific Island countries to the following biodiversity-related conventions: the CBD; CITES; CMS; Ramsar Convention; and the World Heritage Convention.

This project involved cooperation and coordination across focal points at the national level. The Convention Secretariats were consulted on the project and provided formal comments on the new template in 2009-2010. In general, the Secretariats of the biodiversity-related conventions were supportive of the concept. While the template has not been formally endorsed for use by the biodiversity convention governing bodies, it provides a valuable case study of a regional approach to streamline reporting and could facilitate reporting by countries in other regions with similar staffing and resource constraints.

Consideration of biodiversity in international cooperation

Australia engages actively in bilateral, regional and international discussions on biodiversity through a range of fora. Australia is Party to a suite of international agreements which support the management and wise use of biodiversity, including the Ramsar Convention; CITES; CMS; and the World Heritage Convention. Australia remains an active member and participant in many other fora that discuss biodiversity-related issues, including the United Nations Environment Programme and the IPBES.

System of Environmental-Economic Accounts (SEEA)

Australia participated strongly in the recent round of revisions of the SEEA, which is now an international standard and is being implemented in many countries around the world, including Australia. The SEEA includes a focus on biodiversity and ecosystem accounting.

World Indigenous Network (WIN)

The WIN was launched by the Australian Government in 2012 at the United Nations Conference on Sustainable Development (Rio +20). Australia hosted the first WIN conference in Darwin in May 2013. Approximately 1200 Indigenous people from around the world gathered to discuss land and sea management issues. The network brings togetherIndigenous and local community land and sea managers to share their knowledge and practices in managing ecosystems, protecting the environment and supporting sustainable livelihoods. The hosting arrangements for the WIN have now been transferred to the Equator Initiative under the United Nations Development Programme.

International Union for the Conservation of Nature (IUCN) World Parks Congress

Australia will host the 6th IUCN World Parks Congress (WPC) in Sydney, NSW in November 2014. A key objective of the WPC is to ‘mainstream’ protected areas – and therefore biodiversity – into the development agenda.

Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF)

Regionally, Australia supports biodiversity conservation through initiatives such as the CTI-CFF. Under this Initiative, Australia is working with partner governments and non-government organisations to conserve the globally significant biodiversity of the region, whilst also enhancing sustainable livelihoods and food security. Support is focused on:

- Helping to grow the Initiative into an increasingly effective regional forum for the six countries to work together to manage shared ecosystems and resources, and learn from each other.

- Enhancing regional, national and local skills and governance needed to effectively plan, manage and sustainably use marine and coastal resources.
- Implementing marine planning and management and marine livelihood development strategies in selected focus sites.

Support to the Secretariat of the Pacific Regional Environment Programme (SPREP)

Australia is committed to engagement on environment issues in the Pacific. In 2013, Australia signed a multiyear funding agreement with the SPREP for AU$10.5 million over three years (2013-15).

The Australian Government's Public Sector Linkages Program funded a secondment of an Australian Government officer as an Institutional Capacity Support Advisor for SPREP (2009-2010) to assist SPREP undertake a corporate reform process. The outcomes of this process included a new organisational structure and a Strategic Plan (2011-2015), both of which gave increased priority to environmental monitoring and governance, and biodiversity and ecosystem management. SPREP is also a key regional partner in the Pacific Oceanscape Initiative and, through the Government Partnerships for Development (GPFD) program, the Australian Government Department of the Environment will be funded for the 'Enhancing Pacific Ocean Governance' activity, which will provide enhanced support to the Commission and to the Oceanscape Framework through a secondment to the Pacific Islands Forum Secretariat (PIFS). The activity will support the establishment of maritime boundaries, build regional capacity to support marine spatial planning, build regional understanding of challenges and opportunities, and support the integration of development outcomes into Pacific Island Countries and Territories' policy, planning and practice. Australia's involvement through processes such as this provides opportunities to help strengthen biodiversity conservation and protection across the Pacific.

Question 9: How fully has your national biodiversity strategy and action plan been implemented?

Australia's Biodiversity Conservation Strategy 2010-2030

Australia's national biodiversity strategy – *Australia's Biodiversity Conservation Strategy 2010-2030* (ABCS) – is designed to provide a roadmap for all groups involved in conserving Australia's biodiversity, including Australia's state and territory governments and the Australian Government as well as NRM regional bodies, non-government organisations, the private sector, research and education communities, local government, Indigenous peoples and the general community.

The ABCS has not yet been fully implemented. The extent to which it has been implemented, and the degree to which implementation to date has Australia on track to meet the ABCS's time-bound measurable targets, will be reviewed in 2015.

Australia's planned approach to the further implementation of ABCS is indicated at Question 6 above. Further examples of how Australia is contributing to achievement of various ABCS targets are set out under Question 10. Information regarding the mainstreaming of biodiversity is provided under Question 8.

PART III: PROGRESS TOWARDS THE 2020 AICHI BIODIVERSITY TARGETS AND CONTRIBUTIONS TO THE RELEVANT 2015 TARGETS OF THE MILLENNIUM DEVELOPMENT GOALS

Question 10: What progress has been made by your country towards the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets?

Table five below is a selection of actions that Australia has undertaken to implement the Aichi Biodiversity Targets as well as our corresponding national targets under Australia's Biodiversity Conservation Strategy 2010-2030. This list is not exhaustive – further examples of actions Australia has undertaken during this reporting period are included in the main body of the report. Some examples are also applicable to a number of targets, however, to avoid duplication each action has only been listed once. Indicators of progress have been provided, as has a preliminary assessment of progress towards each Aichi Biodiversity Target. While work is progressing in Australia that is of relevance to all of the Aichi Biodiversity Targets, areas where Australia has made significant progress are:

- Aichi Target 11 on protected areas
- Aichi Target 13 on the genetic diversity of cultivated plants, farmed and domesticated animals and of wild relatives
- Aichi Target 17 on updated national biodiversity strategy and action plans
- Aichi Target 19 on improving the knowledge, science base and technologies relating to biodiversity.

Table five: Summary of progress made towards the implementation of the Aichi Biodiversity Targets	
Aichi Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. **ABCS Target 1:** By 2015, achieve a 25 per cent increase in the number of Australians and public and private organisations who participate in biodiversity conservation activities.	
Examples of Action	**Indicators of progress**
• In 2011-12, a *Community Engagement with Nature Conservation* survey was undertaken across Australia by the Australian Bureau of Statistics with the aim of measuring Australians' engagement with the natural environment and participation in nature conservation activities. The aim of this survey is to provide baseline data for measuring community awareness of the need for biodiversity conservation, associated behavioural change and engagement in biodiversity conservation.	• In 2011-12, an estimated 8.1 million Australian adults (47 per cent) had participated in nature conservation activities at home or on the farm in the last 12 months. 43 per cent had planted or cared for Australian native trees or plants, and almost one in five (19 per cent) had cared for Australian native wildlife. People living outside capital cities were more likely to have undertaken these activities than those living in capital cities (54 per cent and 43 per cent respectively).
• Landcare is a community-based approach that has played a major role in raising awareness, influencing farming and land management practices and delivering environmental outcomes across Australian landscapes. Program funding is being provided to Regional NRM organisations to encourage sustainable production of food, promote innovation in Australian agriculture and fishing practices, reduce the impact of weeds and pests on agriculture, improve the management of agriculture and fisheries and the natural resource base and build a skilled and capable Landcare community.	• Landcare has a voluntary network of more than 6 000 groups across Australia. There are also many farmers and landholders who undertake work but are not affiliated with any particular Landcare group.
• The Australian Environmental Stewardship Program has offered funding rounds through which eligible private land managers applied for grants to support a range of agreed management activities to protect, rehabilitate and improve particular ecological communities. Eligible land managers included farmers, Indigenous communities, and other managers of private freehold and leasehold land.	• Under the Australian Environmental Stewardship Program, successful land managers were contracted to manage targeted matters of national environmental significance on their land and have received funding for activities that are additional to their normal legislative responsibilities, for up to 15 years. Under this programme, private land managers have entered into agreements to manage up to 58 000 hectares of nationally threatened ecological communities.
• The Australian Sustainable Schools Initiative (AuSSI) established a partnership of the Australian Government and the states and territories to support schools and their communities to become sustainable. AuSSI engages participants in a whole-of-school approach, to explore through real-life learning experiences, improvements in a school's management of resources and facilities including biodiversity, landscape design, products and materials.	• As of 2013, AuSSI is now operating in 30 per cent of Australian schools (over 3 000 schools).

• The Reef Guardian Program is a hands-on, community-based programme to raise the profile of stewardship activities relating to biodiversity and sustainable use of the GBR. The Program includes schools, local councils, farmers and fishers. In addition, the marine tourism industry is involved in the High Standard Tourism Program which encourages best practice sustainable tourism operations in the GBR.	• The Reef Guardian Schools initiative currently has 293 schools, over 114 900 students and 7 280 teachers involved in building the Reef's resilience.
• The Australian Government produces a range of publications, fact sheets, web pages, reports, databases, posters etc that are made available to the general public on a broad range of biodiversity issues.	• In 2012–13 the Department of the Environment responded to 16 783 enquiries for information from the Australian community of which over 45 per cent were biodiversity-related.
Aichi Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems. **ABCS Target 10:** By 2015, establish a national long-term biodiversity monitoring and reporting system.	
Examples of Action	**Indicators of progress**
• Strategic assessments conducted under Australia's national environmental law - the *Environment Protection and Biodiversity Conservation Act 199*9 (EPBC Act) - assess how biodiversity values can be best protected in the face of development pressures. Economic development policies, plans or programs may be endorsed, and related impacts approved, subject to adhering to approved environmental plans.	• Australia has successfully completed six strategic assessments; five in urban/peri-urban areas on the fringe of major cities (e.g. Sydney and Melbourne) and one on agricultural irrigation in Tasmania, and is currently undertaking another 10.
• Integration of environmental considerations into Australia's aid program is guided by the *Environment Management Guide for Australia's Aid Program*. This is a mandatory process of assessment and management of potential environmental impacts arising from Australia's aid activities and delivery strategies.	• Biodiversity considerations are integrated into the aid program to identify possible impacts as early as possible and so appropriate processes can be put in place to avoid environmental harm or manage impacts if they are unavoidable.
• The establishment of marine reserves through the Marine Bioregional Planning Program has served to integrate biodiversity values into planning processes. The plans will help improve understanding of the marine environment and support better informed decision-making about future development and conservation activities. These plans provide an underpinning for ecosystem based management of the marine environment by identifying biodiversity values, assessing current and projected pressures on those values, and providing strategies and guidance to manage such pressures consistently with ecologically sustainable development objectives. Marine ecosystem health indicators have been developed. Approaches to monitoring remain	• MBPs have been developed for four of Australia's marine regions - South-west, North-west, North and Temperate East.

a work in progress.	
• The Australian Government is developing an environmental accounting capability through the Australian Bureau of Statistics and the Bureau of Meteorology which will build environmental and ecosystem accounting capability including to identify the capacity of ecosystems to provide services.	• Over the last 2 years, new forms of environmental accounts are emerging that are beginning to address biodiversity. Progress includes the publications of the "Completing the Picture" environmental accounts by the Australian Bureau of Statistics and the adoption of the System of Environmental-Economic Accounts (SEEA) by the Australian Government.
• In Australia, State of the Environment reporting occurs at both the national and state/territory level. Some regional-scale reporting also occurs in many areas throughout Australia. Under the EPBC Act, the Minister for the Environment is required to table a report in Parliament every five years on the State of the Environment.	• Four State of the Australian Environment reports have been released to date (1996, 2001, 2006 and 2011). They have been well received by the public and appear to have been effective in fostering environmental policy debates.
• Under the GBR Marine Park Act, the GBRMPA prepares a report every five years assessing the condition, trend, factors influencing, management effectiveness and overall outlook for the GBR Region, which the Minister for the Environment is required to table in Parliament.	• The first GBR Outlook Report was tabled in 2009, and its approach has since been used a model for a range of environmental reporting documents in Australia and overseas. It has been a key influence on the ongoing management of the GBR. The second report is due in 2014.
• The Monitoring, Evaluation, Reporting and Improvement Tool (MERIT) has been developed for tracking the progress and impact of Australian Government natural resource management investments. MERIT allows natural resource managers to record and upload data about their projects on a continual basis and to submit reports online. Developed in collaboration with the Atlas of Living Australia, MERIT will enhance reporting by allowing simpler yet more complete project records and showing direct links between project activities and contributions to Australia's biodiversity conservation work.	• The system was launched in December 2012 and currently has over 750 projects of varying sizes and complexities collecting information across over 1200 sites for a range of environmental variables. Data collected depends on the nature of the NRM work being undertaken by the funding recipient. Information provided in the standardised format allows it to be easily interrogated and analysed by departmental staff using the programme level outputs dashboard.
Aichi Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the CBD and other relevant international obligations, taking into account national socio-economic conditions. **ABCS Target 3:** By 2015, achieve a doubling of the value of complementary markets for ecosystem services.	
Examples of Action	**Indicators of progress**
• The Environmental Offsets Policy establishes a framework for the delivery of offsets	• The Environmental Offsets Policy ensures that environmental impacts are appropriately compensated and creates an incentive for developers to avoid

as part of the assessment and approval process under the EPBC Act.	these impacts.
• Conservation covenant concessions (tax concessions) are available to land owners who enter into conservation covenants to protect areas of high conservation value in Australia. Covenant Scheme Providers can apply to have their covenant scheme approved for the purposes of the Income Tax Act 1997.	• Landowners entering covenants through approved programs may be eligible for tax concessions, creating positive incentives for conservation.
• The Victorian Government's BushTender program is an auction approach to protecting and improving native vegetation on private land. Landholders competitively tender for agreements to better manage their native vegetation. Successful bids are those that offer the best value for money. Successful landholders receive payments for environmental services (PES) for their management actions under agreements signed with the Victorian Government.	• Since 2001, around 35,251 hectares of native vegetation in Victoria has been managed and protected through the BushTender program. Payment for environmental services (PES) through BushTender is currently committed at AU$17.5million.
• The New South Wales Government's BioBanking program is a market-based scheme that provides a streamlined biodiversity assessment process for development, a rigorous and credible offsetting scheme as well as an opportunity for rural landowners to generate income by managing land for conservation. BioBanking enables 'biodiversity credits' to be generated by landowners who commit to enhance and protect biodiversity values on their land through a biobanking agreement. These credits can then be sold, generating funds for the management of the site. Credits can be used to counterbalance (or offset) the impacts on biodiversity values that are likely to occur as a result of development. The credits can also be sold to those seeking to invest in conservation outcomes, including philanthropic organisations and government.	• Under the BioBanking Scheme, as of 23 March 2012, nine biobanking agreements have been approved, conserving over 450 hectares of native vegetation and threatened species in perpetuity. A total of 1,272 ecosystem credits have been retired and over AU$2.4 million have been deposited into the BioBanking Trust Fund. Credit prices have ranged from AU$2,500 to AU$9,500 per credit. Over AU$530 000 in management payments have been paid out to landowners from the BioBanking Trust Fund. • Support for indigenous people's sustainable use of natural resources; eg, TUMRAs and ILUAs.
Aichi Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Since 1992, Australia has incorporated the principles of ecologically sustainable development into a number of key environmental legislation, policies and programmes.	• The principles of ecologically sustainable development are embedded into relevant environment and resource management legislation in Australia including the EPBC Act, the Water Act and the Fisheries Management Act.

• The National Water Initiative, agreed in 2004 by all Australian Governments, sets out a range of commitments to ensure water resources are used sustainably.	• Reviews of the National Water Initiative have found that the Initiative has delivered significant, tangible benefits for Australia. Legislation, water plans and environmental management systems implemented are improving Australia's capacity to maintain environmental assets and ecosystem functions and to support economic activity.
• The National Waste Policy, agreed by all Australian Environment Ministers in 2009, sets out Australia's waste management and resource recovery direction to 2020. The policy aims to avoid the generation of waste and ensure that waste treatment and reuse is undertaken in an environmentally sound manner. A National Waste Policy Implementation Plan was adopted in 2010 and is progressing priority strategies.	• Reviews of the National Waste Policy have indicated that a range of legislation and programs to deal with particular waste sectors have been successfully introduced across Australia.
• The *Water Act 2007* established the Murray–Darling Basin Authority and charged it with preparing a strategic plan to ensure the sustainable use of the Murray–Darling Basin's water resources. The Basin Plan was made in November 2012 and provides for the integrated management of the water resources of the Basin in a way that promotes the objects of the Water Act.	• The Basin Plan sets long-term average environmentally sustainable diversion limits for the Basin's surface and groundwater resources. Water managed by the Commonwealth Environmental Water Holder, for the purpose of protecting or restoring environmental assets, is contributing to meeting these limits.
Aichi Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced. **ABCS Target 4:** By 2015, achieve a national increase of 600 000 square kilometres of native habitat managed primarily for biodiversity conservation across terrestrial, aquatic and marine environments.	
Examples of Action	**Indicators of progress**
• Over 2008-13 the Australian Government committed AU$180 million to build the NRS, which is Australia's network of parks, reserves and protected areas.	• Since the fourth national report was prepared over 2008-2009, the area of native habitat in the NRS managed primarily for biodiversity conservation across terrestrial, and inland aquatic environments in Australia has increased by 424 552 square kilometres.
• In 2012, the Australian Government established 40 new Commonwealth marine reserves around Australia. These add more than 2.3 million square kilometres to Australia's marine protected areas estate, resulting in a total area of 3.2 million square kilometres of ocean being managed primarily for biodiversity conservation. • The Australian Government has committed to undertaking a review of the	• As of 30 June 2013, 36.2 per cent of Australia's marine environment (over 3.2 million square kilometres) is conserved in protected areas. Australia currently has the largest representative network of marine protected areas in the world.

Commonwealth marine reserves proclaimed in November 2012.	
• Expansion of Australia's IPAs has made a strong contribution to this target.	• An example of the importance of the expansion of Australia's IPAs is the dedication of the Birriliburu IPA in Western Australia in 2013 which means that Australia now has a continuous wildlife corridor of more than 24 million hectares, taking in seven IPAs and two nature reserves, stretching from South Australia's APY (Anangu Pitjantjatjara Yankunytjatjara) Lands to the Ngaanyatjarra Lands and on through the Western Deserts.
• Australia has a comprehensive framework designed to achieve the conservation and sustainable management of its forests. This framework includes: Regional Forest Agreements (RFAs), which are 20 year agreements underpinning regional approaches to balance conservation and production from native forests; Australia's Sustainable Forest Management Framework of Criteria and Indicators 2008, which is an internationally recognised framework for sustainable forest management applied to Australia's forests; State and territory frameworks, which are jurisdictional legislation and codes of practice are applied to ensure environmentally responsible forestry practices; and forest certification, where independent third party forest certification to credible forest management standards applies to most of Australia's production forests.	• The annual rate of loss of forests in Australia (in mapped intensive-use areas) over the decade to 2010 averaged 1.1 million hectares which was offset by forest expansion that averaged 1 million hectares annually. Between 2007 and 2010, the area of forest regrowth surpassed the area of deforestation, meaning that there was a small net gain of forest in Australia for the first time since the early 1990s (State of the Environment Committee, 2011). • The comprehensive, adequate and representative reserve system established in Regional Forest Agreement regions resulted in the placement into conservation the following: 104 399 hectares in Western Australia (10 per cent increase); 754 312 hectares in Victoria (36 per cent increase); 1 836 044 hectares (85 per cent increase) in New South Wales; and 630 400 hectares (27 per cent increase) in Tasmania.
Aichi Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Australia has a number of policies in place for sustainable fisheries management, including the Commonwealth Fisheries Harvest Strategy Policy and the Commonwealth Policy on Fisheries Bycatch (bycatch policy). All fisheries managed by the Australian Government under the Harvest Strategy Policy require that key commercial fisheries stocks are managed to targets above maximum sustainable yield and overfishing is avoided. Rebuilding strategies' are in place for all overfished stocks	• Australian fisheries are considered well managed by global standards. It has been estimated that only 15 per cent of Australia fisheries are classified as overfished, with an improving trend, compared to 30 per cent globally (FAO 2010, Smith and Webb 2011, Woodhams et al. 2011 in Borthwick 2012).

and the number of stocks subject to overfishing continues to decline. The purpose of the bycatch policy is to ensure that direct and indirect impacts on marine systems are taken into account and managed accordingly. This is done through mechanisms that reduce bycatch, improve mitigation measures for protected species and minimise impacts of fishing on the marine environment.	
• Under the EPBC Act, there are a number of provisions relating to the impact of commercial fisheries on biodiversity. Assessments and decisions are made about commercial fisheries in relation to impacts on matters of national environmental significance, impacts on species protected under the EPBC Act and export of products derived from fisheries. Assessments are based on the *Australian Government Guidelines for the ecologically sustainable management of fisheries - 2nd Edition*. These assessments cover both Commonwealth and state/territory managed fisheries.	• As above.
Aichi Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• On farm practice change under NRM programs, including the National Landcare Programme, is being monitored using the biennial Australian Bureau of Statistics' (ABS) Agricultural Resource Management Survey (ARMS).	• Estimates from the ARMS data indicate that more than half of the agricultural businesses reporting native vegetation, wetlands and rivers and creeks on farms were protecting these resources for conservation purposes.
• Government agencies and industries are working with farmers to encourage regular soil testing and appropriate levels of liming to address soil acidification. • Land-management practices have also improved significantly during the past few decades, due to better grazing practices, adoption of conservation tillage, enforcement of forestry codes and soil conservation measures in engineering (e.g. relating to road construction and urban development) (State of the Environment 2011 Committee, 2011).	• There are increases in the percentages of farmers in the broadacre cropping, dairy, horticulture and beef cattle/sheep industries taking action to protect their soil from wind and water erosion, to help build soil carbon and protect native vegetation on their farm for conservation. • For broadacre cropping industries — the data indicate an improvement in ground cover management through better tillage and residue management practices. • For the grazing industries (beef cattle/sheep dairy) more farmers reported active monitoring of ground cover levels. Further work is needed to encourage farmers to manage to targets of 50 to 70 per cent ground cover to reduce

	erosion risk whilst increasing carbon storage. • Ground cover management practices have been adopted by many in the horticulture, industry, however no trend data are available for this practice.
• The Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia's national science agency) has launched a new National Research Flagship focusing research onto agricultural sustainability.	• The Flagship will look at ways of increasing agricultural productivity whilst maintaining environmental health. An important goal is to build global solutions for food security and greenhouse gas management.
• See response on sustainable fisheries management under Aichi Target 6.	• Australia has established a reputation as a supplier of safe, high quality seafood which is produced using environmentally sustainable practices.
• See response on forests under Aichi Target 5.	• Australia has a comprehensive framework designed to achieve the conservation and sustainable management of its forests.
Aichi Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Australia has the National Water Quality Management Strategy (NWQMS) which is a national approach supported by all Australian governments to improve water quality and reduce pollution. The NWQMS includes a range of guiding documents to support the assessment and management of water quality to protect the environment and for purposes such as drinking, agriculture and recreation.	• The Tasmanian River Catchment Water Quality Initiative was funded by the Australian and Tasmanian governments to maintain water quality in Tasmanian waterways. The initiative built on existing river catchment auditing and monitoring work to provide information in response to community concerns about pesticide use and the potential impact of pesticide pollution on the environment, human health and industry. • River Murray Water Quality Monitoring Program periodically assesses and reports on water quality, to understand the variability and to determine trends, which in turn will guide management actions along the River Murray and the lower reaches of its tributaries and storages.
• Australia's National Pollutant Inventory (NPI) provides the community, industry and government with free information about substance emissions in Australia. The desired environmental outcomes of the NPI are to maintain and improve air and water quality; minimise environmental impacts associated with hazardous waste, and improve the	• The NPI has emission estimates for 93 toxic substances and the source and location of these emissions.

sustainable use of resources.	
• Australia's Reef Rescue Program (2008-13) was launched as a coordinated approach to environmental management to address the threats of declining water quality and climate change to the GBR World Heritage Area. The Program aimed to improve the quality of water entering the GBR Lagoon, by helping land managers across the reef catchment adopt improved agricultural and urban management practices, with a particular focus on reducing the discharge of nutrients, sediments and pesticides in the reef lagoon.	• Reef Rescue provided a significant level of support, AU$200 million, during the first phase of the program (2008 – 2013). During this period, more than 3 400 individual land managers received water quality grants for on-farm projects. More than 2 300 farmers undertook projects to improve fertiliser, pesticide and soil management on over 1 million hectares of land. Additionally, almost 1 100 pastoralists improved groundcover management on over 7 million hectares of land. • Further activities to help improve the quality of water entering the GBR are funded under the Australian Government's Reef Programme 2013-18, including water quality grants to land managers. More recently, additional reef protection activities will be implemented under the new AU$40 million Reef Trust
Aichi Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment. **ABCS Target 7:** By 2015, reduce by at least 10 per cent the impacts of invasive species on threatened species and ecological communities in terrestrial, aquatic and marine environments.	
Examples of Action	**Indicators of progress**
• Australia has a biosecurity system in place to protect our environment and agricultural sector and has undertaken a large number of projects to address invasive alien species.	• The pest eradication program on Macquarie Island has made major progress. It is possible that rats and mice have already been eradicated, as there have been no confirmed sightings since the last bait drop in July 2011. Rabbit numbers have been reduced from approximately 100 000 to probably fewer than 10. • Projects have been funded to address impacts of *Chytridiomycosis,* which is an infectious disease that affects amphibians worldwide. These include projects to develop a Disease Strategy Manual; Hygiene Protocols; a Rapid Field Test to Detect the Chytrid Fungus; and guidelines for captive breeding programs. • Two projects have been funded to address impacts of *Phytophthora cinnamomi,* a soil pathogen that attacks the roots and collar of susceptible plants: the collection of seeds, through the Australian Seed Bank Partnership,

	of selected nationally listed Australian native plants at risk from *Phytophthora cinnamomi* for the purpose of *ex situ* conservation; and research into how the disease caused by *Phytophthora cinnamomi* is expressed and influenced by climate change throughout Australia. • Ongoing development of an effective and humane broad-scale toxic bait to help control feral cats and reduce their impact on native wildlife. • Work is underway to address impacts of Yellow Crazy Ants on Christmas Island, where the crazy ant control program is informed by the results of a rigorous biennial island-wide survey and expert advice from the Crazy Ant Scientific Advisory Panel. Latrobe University is working with Parks Australia to develop a way to control the honey-dew producing scale insects which provide the ant's major food source. If scales insects can be controlled this may reduce crazy ant populations. In 2013, the Wet Tropics Management Authority was funded $2 million over five years, from the Caring For Our Country programme, to eradicate a large infestation of Yellow Crazy Ants, of up to 400ha in the Edmonton area. • The Myrtle Rust Transition to Management Group has established programmes to provide information and tools to enable industries and communities to mitigate impacts of disease in urban, primary production and natural environments. This was funded through a AU$1.5 million investment by the Australian Government.
• An initiative to address Weeds of National Significance was launched to coordinate national action to address the top 32 problem weeds in Australia.	• Over 2010-2011, community groups and individuals in Australia undertook 186 projects on more than 520 000 hectares of land affected by Weeds of National Significance to reduce their impact on biodiversity and production assets.
• Australian and state/territory governments, along with marine industries and marine scientists are implementing Australia's National System for the Prevention and Management of Marine Pest Incursions (the National System).	• The National System for the Prevention and Management of Marine Pest Incursions aims to prevent new marine pests arriving, guide responses when a new pest does arrive and minimise the spread and impact of pests already established in Australia.
• CSIRO's Biosecurity Flagship is focused on helping to protect Australia from biosecurity threats and risks posed by serious exotic and endemic pests and diseases.	• Research is underway to address Australia's major biosecurity challenges and involves the detailed study of invasive organisms, pests and diseases, risk

	analysis, predictive modelling and new treatment strategies.
• The Invasive Animals Cooperative Research Centre concentrates on developing smarter tools to prevent and detect new invasions, advanced and tactical tools to strengthen integrated management strategies of carp and other pest fish, and new tools and integrated management strategies for major pests including foxes, wild dogs, feral pigs, rats and mice, cane toads, feral cats and rabbits	• Finalise scientific evaluation of two biocontrol agents: Australia's first carp biocontrol agent and a new strain to boost the performance of rabbit calicivirus or RHD • Release new products currently in the regulatory pipeline, such as new wild dog, fox and feral pig baits and delivery systems • Build on its work through new innovative research • Enable better uptake of its work by institutions and communities through targeted research into effective community engagement • Enable an orderly transition to a new and sustainable national organisation.
Aichi Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning. **ABCS Target:** No directly corresponding target under the ABCS. Targets exist under the Reef Water Quality Protection Plan for the GBR.	
Examples of Action	**Indicators of progress**
• See response on Reef Rescue under Aichi Target 8.	• See response on Reef Rescue under Aichi Target 8.
• The Reef Water Quality Protection Plan is a collaborative program of coordinated projects and partnerships designed to improve the quality of water in the GBR though improved land management in reef catchments. The plan is a joint commitment of the Australian and Queensland Governments. The Reef Plan contains targets to improve water quality and land management practices and identifies actions to improve the quality of water entering the reef.	• Progress (as at 2011) towards the Australian and Queensland government's Reef Water Quality Protection Plan 2009 targets was encouraging, particularly the on-ground management practice changes which are reducing pollutant loads entering the reef. For example, 34 per cent of sugarcane growers, 17 per cent of graziers and 25 per cent of horticulture producers adopted improved management practices by June 2011. The estimated annual average sediment load reduced by six per cent with good to very good progress across all regions. The total nitrogen load reduced by seven per cent; dissolved nitrogen, the key pollutant of concern, reduced by 13 per cent. The pesticide load reduced by 15 per cent, with a 31 per cent reduction in the Mackay Whitsunday region.

• The Reef 2050 Plan (encompassing the Reef Trust), announced in 2013, will provide a long term strategic approach to address key threats to the GBR including nutrient run off and crown-of-thorns starfish.	• The Reef 2050 Plan is currently under development.
• The eReefs project is a collaboration between the GBR Foundation (GBRF), the Bureau of Meteorology (BoM), the CSIRO, the Australian Institute of Marine Science (AIMS) and the Queensland Government with funding support from BHP Billiton Limited, the Department of Environment's Reef Programme and the Science and Industry Endowment Fund. It will deliver a suite of visual marine monitoring and modelling tools to the broadest audience enabling timely and accurate access to sea surface temperatures and other water quality information. This information is essential for researchers and marine managers to better understand impacts, such as coral bleaching events or sediment plumes as a result of flooding, and work together to mitigate their impacts on the reef.	• the eReefs Water Quality Dashboard was officially launched on 12 March 2014. The tools available on the Dashboard include sea surface temperature, chlorophyll levels, sediments and light for the entire GBR. Additional toolsets and functionalities are still being developed to further enhance the eReefs projects ability to deliver essential information to researchers, reef managers and other stakeholders.
• The GBR Marine Park is a multiple-use area. The GBR Marine Park Zoning Plan 2003 provides for a range of ecologically sustainable recreational, commercial and research opportunities and for the continuation of traditional activities.	• The GBR Marine Park Zoning Plan 2003 provides protection of representative areas of the GBR Marine Park ensuring protection of the full range of biodiversity and ecosystem processes including inter-reefal habitats targeted for bottom fishing such as trawling.
Aichi Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes. **ABCS Target 5:** By 2015, 1,000 square kilometres of fragmented landscapes and aquatic systems are being restored to improve ecological connectivity. **ABCS Target 6:** By 2015, four collaborative continental-scale linkages are established and managed to improve ecological connectivity. Refer also ABCS Target 4 above.	
Examples of Action	**Indicators of progress**
• Over 2008-13, the Australian Government committed AU$180 million to build the NRS, which is Australia's network of protected areas. This now includes more than 10 000 protected areas covering 16.52 per cent of the country – over 1.27 million square kilometres.	• As of 30 June 2013, 16.52 per cent of Australia's terrestrial areas and inland waters are conserved under the NRS.

• See response on marine parks under Aichi Target 5.	• See response on marine parks under Aichi Target 5.
• The Australian Government launched the National Wildlife Corridors Plan to guide efforts to link national parks and reserves with well-managed private land.	• The Plan supports the conservation of biodiversity by informing the retention, restoration and management of ecological connections across the Australian landscape.
Aichi Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Recovery plans developed under the EPBC Act set out the research and management actions necessary to stop the decline of, and support the recovery of, listed threatened species or threatened ecological communities. They provide a planned and logical framework for key interest groups and responsible government agencies to coordinate their work to improve the plight of threatened species and/or ecological communities. The aim of a recovery plan is to maximise the long term survival in the wild of a threatened species or ecological community. Recovery plans state what must be done to protect and restore important populations of threatened species and habitat, as well as how to manage and reduce threatening processes.	• There are 492 recovery plans in place covering 759 threatened species and 24 ecological communities. A further 115 recovery plans are currently in preparation. Since the fourth national report in 2009, six regional recovery plans have been adopted under the EPBC Act covering 125 nationally listed species in total.
• The EPBC Act also provides for the making or adoption, and the implementation, of Threat Abatement Plans (TAPs) that establish a national framework to guide and coordinate Australia's response to key threatening processes to biodiversity registered under the EPBC Act. Threat abatement plans provide for the research, management, and any other actions necessary to reduce the impact of a listed key threatening process on native species and ecological communities. Implementing the plan should assist the long term survival in the wild of affected native species or ecological communities.	• There are 14 threat abatement plans in place, of which five have been approved by the Minister since the beginning of 2009.
Aichi Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity. **ABCS Target:** No directly corresponding target under the ABCS.	

Examples of Action	Indicators of progress
• Australia has nine conservation seed banks. These institutions are collaborating through the Australian Seed Bank Partnership to build provenance focussed native seed collections to increase genetic representation in *ex situ* conservation for future use.	• Australia's conservation seed banks hold around 38 400 accessions (individual seed collections, normally stored in a single packet) of more than 8 200 species. These conservation seed banks include collections of 1 046 threatened species. • Australia made its first deposit of seeds to the Global Seed Vault in Norway in 2011 as insurance against any loss to the Australian collection. Australia made a second deposit of seeds in February 2014 to coincide with the 6th anniversary of the vault.
• The Australian Seed Bank Partnership's 1 000 Species Project is one of the major contributions to the Partnership's work to build a safety net for Australia's native plants. In collaboration with partners across Australia, this project is working to expand the number of native plants secured in Australia's conservation seed banks.	• The focus is on collecting and storing seed from 1 000 currently unrepresented species that are threatened with extinction, endemic (unique to Australia) or have economic significance.
• Australia is in the process of consolidating its state-operated seed banks into a National Genetic Resources Centre (NGRC). The NGRC will consist of two nodes, one for grains — the Australian Grains Genebank — and the other for pasture/forage species — the Australian Pastures Genebank.	• The Australian Grains Genebank officially opened in Horsham, Victoria, on 28 March 2014. It is now fully operational and holds more than 180 000 samples from Australia and around the world in new and improved facilities. Agreement on the establishment of the Australian Pastures Genebank, to be located at existing facilities in Adelaide, South Australia, is close to being formalised. Samples from Australia's grains and pastures germplasm collections were included in Australia's second deposit to the Svalbard Global Seed Vault in Norway in February 2014. The deposit comprised over 10 000 seed samples from Australian collections which include indigenous tropical crop wild relatives, oats, brassica and related oilseed species, and lupins. • The Australian Seed Bank Partnership and the Australian Grains Genebank have recently commenced work to increase representation of 40 priority species of Australian wild crop relatives, and the associated genetic diversity, in genebanks for future use.
Aichi Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and wellbeing, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	

ABCS Target: No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Australia has developed the Murray-Darling Basin Plan (the Basin Plan). The Basin Plan is the key instrument under the *Water Act 2007* (the Water Act) that will safeguard and restore the water dependent ecosystems of the Murray-Darling Basin (the Basin).	• The Basin Plan will be implemented over the next seven years to allow time for Basin states, communities and the Australian Government to work together to manage the changes required. All Basin states have now signed an Inter-Governmental Agreement regarding Basin Plan implementation and cooperative Australian and state government planning has commenced. • Although the watering program is in an early stage, monitoring of environmental responses to environmental watering has detected encouraging changes. Commonwealth environmental water has provided a range of ecological benefits, such as better health in river red gums and better habitat for birds, fish and frogs.
• The Australian Government is committed to the collaborative management of water and related natural resources in the Lake Eyre Basin (LEB); consistent with the terms of the Lake Eyre Basin Intergovernmental Agreement (the Agreement). The Agreement, which has legislative backing in each jurisdiction, commits the Australian, Queensland, South Australian and Northern Territory governments "to avoid or eliminate so far as reasonably practicable adverse cross-border impacts" on water and related natural resources. Through the Agreement, governments have adopted policies to maintain the ecological integrity and natural function of in-stream and floodplain ecosystems of the Lake Eyre Basin and ensure that other activities do not threaten these environmental values.	• There are a number of activities that are required under the Agreement, such as to report on the condition of the watercourses and catchments within the LEB Agreement Area at least every 10 years; and to support the LEB biennial conference to provide an opportunity for the community, scientists and industries who live, work and raise families in the Basin to come together to exchange knowledge and views about the future of this unique and important part of Australia.
• In 1999, the Australian Government, Queensland, South Australia, New South Wales and the Northern Territory committed to the 15 year joint Great Artesian Basin Sustainability Initiative (GABSI) program to promote the sustainable management of the GAB by capping uncontrolled bores and piping open bore drains to reduce system water loss and recover groundwater pressure.	• To June 2013 this initiative has controlled 650 free flowing artesian bores and decommissioning 19 179 km of open bore drains. Water savings are estimated at 201 044 ML per annum.
• Between July 2009 and June 2013, 28 IPAs were declared. Support is provided to Indigenous landowners to develop and implement plans of management for the conservation of these areas as part of the NRS.	• The total of IPAs declared in Australia is 60, covering just over 48 million hectares which equates to around 36 per cent of our NRS.

• Australia has in place the National Landscapes program to promote sustainable nature-based tourism and conservation outcomes. The program is overseen by a Reference Committee which includes representatives from peak tourism and conservation organisations, protected area and cultural heritage experts and governments.	• There are 16 National Landscapes in Australia.
• See response on the Reef 2050 Plan under Aichi Target 10.	• See response on the Reef 2050 Plan under Aichi Target 10.
• See response on strategic assessments under Aichi Target 2.	• See response on strategic assessments under Aichi Target 2.
Aichi Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification. **ABCS Target:** Refer ABCS targets 4, 5 and 6.	
Examples of Action	**Indicators of progress**
• The Australian Government has announced that Twenty Million Trees will be planted by 2020 in a programme that will commence mid-2014.	• The Twenty Million Trees Fund will help green our urban and regional areas and create new green corridors, while making a contribution to meeting Australia's target of reducing greenhouse gas emissions.
• The Biodiversity Fund supported a range of projects which addressed appropriate management and conservation of connected landscapes.	• The Fund supported projects that enhanced the condition of biodiverse native vegetation within, and adjacent to key assets and sensitive areas, on both private and public lands. The Biodiversity Fund also supported projects to reduce Australia's carbon pollution and improve the resilience of ecosystems to the impacts of climate change through: support for revegetation, including in areas of high conservation value; management and protection of existing biodiverse carbon stores, including publicly owned native forests and land under conservation covenants or subject to land clearing restrictions; and, support for actions to manage threats, including the spread of invasive species across connected landscapes.
• The Regional Natural Resource Management Planning for Climate Change Fund was established to help regional communities plan for climate change impacts on the land and identify priority areas for carbon abatement, green corridors and environmental restoration in the landscape. This information will support regional NRM organisations in planning for carbon abatement, manage the impacts of climate change, and	• A number of projects have been funded under this fund to deliver relevant information on climate change, its impacts and potential adaptation responses, and provide guidance on how to use that information in NRM planning.

prioritise environmental restoration activities.	
• The CSIRO Climate Adaptation Flagship undertakes research to enable Australia to adapt more effectively to the impacts of climate change and variability and informing national planning, regulation and investment decisions.	• Two key projects are examining likely impacts of climate change across the whole of Australia's marine and terrestrial environments as well as identifying appropriate adaptation options.
Aichi Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Australia's Environment Protection and Biodiversity Conservation Regulations 2000 regulate access to resources in Commonwealth areas and benefit sharing arrangements.	• Between January 2009 and December 2013, 175 permits have been issued under the access and benefit-sharing provisions of the Environment Protection and Biodiversity Conservation Regulations 2000.
• Australia signed the Nagoya Protocol in January 2012 and the Government has consulted with a wide range of stakeholders, including research institutes and universities, bio-based industry, the Commonwealth, State and territory governments, Indigenous peoples and the wider community. Based on this consultation, an implementation proposal is now being developed for consideration by Government. This will guide the development and passage of legislation that will be necessary for Australia to ratify the Protocol.	• Australia is undertaking the necessary steps towards ratification of the Nagoya Protocol.
Aichi Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan. **ABCS Target 9:** By 2015, all jurisdictions will review relevant legislation, policies and programs to maximise alignment with Australia's Biodiversity Conservation Strategy (ABCS).	
Examples of Action	**Indicators of progress**
• Australia has revised its national biodiversity strategy and action plan - *Australia's Biodiversity Conservation Strategy 2010–2030* (ABCS) - which was released in October 2010. Two other strategies sit under it to support its objectives - Australia's *Strategy for the NRS 2009–2030* (NRS Strategy) released in May 2009; and *Australia's Native Vegetation Framework* (NVF) released in December 2012.	• The revised Strategy contains 10 time-bound and measurable targets. The Strategy will be reviewed in 2015. The 2015 review will consider whether the targets or other elements of the ABCS should be amended, and will also be an opportunity to consider where Australian can improve alignment between the ABCS, the Aichi Targets and the Strategic Plan for Biodiversity 2011-2020.

• A formal review of progress in implementing the ABCS, including the national targets is scheduled to be undertaken by all relevant Environment Ministers in 2015. The review is also expected to consider whether the targets or other elements of the ABCS should be amended	• Plans are underway to conduct the review of the ABCS by 2015.
Aichi Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the CBD with the full and effective participation of indigenous and local communities, at all relevant levels.	
Examples of Action	**Indicators of progress**
• The Australian Government's Working on Country programme provides funding support for the employment of Indigenous rangers to undertake land/sea management activities utilising both traditional ecological knowledge and contemporary land management techniques. Support is given for activities involving transfer and recording of Indigenous Ecological Knowledge, employment of cultural advisers, trips back to country, and junior ranger programs.	• Under the Working on Country programme, more than 680 Indigenous rangers are employed in around 95 ranger teams across Australia to deliver environmental outcomes. It is expected that around 730 rangers will be trained and employed through Working on Country by June 2015.
• The Australian Government's IPAs programme provides support to Indigenous landowners to develop and implement plans of management for the conservation of IPAs as part of NRS.	• Between July 2009 and June 2013, 28 IPAs were declared. This brings the total of IPAs declared in Australia to 60, covering just over 48 million hectares which equates to around 36 per cent of our NRS.
• The Indigenous Advisory Committee (IAC) is a statutory committee appointed under the EPBC Act to advise the Minister and Department on policy and implementation matters pertaining to Indigenous land and sea management. The IAC may advise the Department on matters relating to the recognition of and support for furthering the transfer of Indigenous Ecological Knowledge. • The Australian Government has supported a member of the IAC to attend CBD and Nagoya Protocol critical meetings.	• The IAC has undertaken a range of work, including developing protocols with the Threatened Species Scientific Committee to guide engagement between the two committees. The protocols ensure that Indigenous interests and perspectives are incorporated into the research, listing and recovery planning processes for threatened species and ecological communities. The IAC has also provided policy advice to the Australian Government regarding the turtle and dugong Indigenous management package in Queensland.
• The Reef Rescue Indigenous Land and Sea Country Partnerships Program was launched to strengthen communications between local communities, reef managers and reef stakeholders and build a better understanding of Traditional Owner use of the GBR Marine Park. This program builds community capacity and connection with the	• At the end of June 2013, 7 formal Traditional Owner management agreements (6 TUMRA/1 Indigenous Land Use Agreement (ILUA)) were in place and now cover 46,271 square kilometers of sea country and involve 16 Traditional Owner groups. An additional two new TUMRAs are in the final stages of

environment by focusing on Traditional Owner skills, knowledge and engagement in the maintenance of ecosystem services, including ecological and cultural values. The Australian Government has been working with Traditional Owners on the development and implementation of Traditional Use of Marine Resource Agreements (TUMRA). TUMRA's describe how Traditional Owners work between themselves and with government to manage their sea country, including traditional use activities.	accreditation assessment and should be in place in early 2014.
• The Australian Government launched the World Indigenous Network (WIN) in 2012 and hosted its inaugural conference in 2013. This has been an important contribution to improving global engagement and discussion on the traditional knowledge, innovations and practices of indigenous and local communities.	• More than 1,200 people from 50 countries attended the WIN Conference.
Aichi Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied. **ABCS Target 8:** By 2015, nationally agreed science and knowledge priorities for biodiversity conservation are guiding research activities.	
Examples of Action	**Indicators of progress**
• The Australian Government has dedicated around AU$20 million per year over the period 2011 to 2015 for research into key environmental issues through the National Environmental Research Program (NERP).	• The NERP involved the establishment of five multi-institutional, multidisciplinary research hubs to undertake four-year research programmes to improve our capacity to understand, manage and conserve Australia's unique biodiversity.
• NPEI aims to improve the quality and coverage of Australia's environmental information and build our capacity to monitor and account for change in the environment and maintain this capacity over the long-term.	• In June 2012, a *Statement of Australian Government Requirements for Environmental Information was released. The Statement* identifies policy, research and operational activities across nine broad areas of interest of the Australian Government that are dependent upon environmental information. Activities for the first phase of work include developing and improving coastal information (eReefs); biodiversity information (biodiversity profiling); environmental accounts and National Environmental Information Infrastructure.
• The ALA is helping to provide better knowledge of Australian biodiversity and a suite of tools for NRM. It mobilises and integrates biodiversity information, from sources such as biological collections, from sources such as biological collections, via an easily accessible, online repository of information about Australia's plants and animals.	• The creation of the ALA infrastructure is in itself a significant achievement towards Australia's understanding of biodiversity. Analysis so far show good uptake of use of the ALA - in the last two years, over 650 million records have been obtained through 24 000 download events from the Atlas.

• The Global Taxonomy Initiative (GTI) is implemented through a wide range of cross-cutting activities, which also contributes to the Aichi Biodiversity Targets. It is implemented through a wide range of entities, including governments, non-government organisations, taxonomists and the institutions they represent - for example, through: the Council of Heads of Australasian Herbaria (CHAH), the Council of Heads of Australian Faunal Collections (CHAFC), the Council of Heads of Australian Entomological Collections (CHAEC), the Council of Heads of Australian Collections of Microorganisms (CHACM),and the Council of Australian Biological Collections (CABC).	• Outcomes are multidisciplinary and cross-sectoral, and include, amongst others: on-line checklists of species names through the Australian Faunal Directory (AFD) (http://www.environment.gov.au/topics/science-and-research/abrs/databases-and-online-resources/australian-faunal-directory) and the Australian Plant Name Index (APNI) (http://www.anbg.gov.au/apni/)
• Bush Blitz is an unprecedented continent-wide species discovery initiative to discover and document biodiversity within Australia's national system of conservation reserves, increase our knowledge and understanding of the taxonomy and distribution of Australia's biodiversity, and better inform management decisions.	• As at 17 January 2014, Bush Blitz scientists have discovered over 700 new and undescribed species and added more than 24 000 new species records, covering almost 9 900 species. Significantly more new discoveries are expected over the remainder of the project which continues until 2017.
• The Long Term Ecological Research Network (LTERN) integrates key established plot networks across Australia for long term monitoring of impacts of disturbance on Australian ecosystems.	• LTERN includes 12 plot networks across Australia that have been actively monitored for several years and in some cases decades.
Aichi Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties. **ABCS Target:** No directly corresponding target under the ABCS.	
Examples of Action	**Indicators of progress**
• Australia funds a range of activities both domestically and internationally that support implementation of the Strategic Plan for Biodiversity 2011-2020.	• Examples of these activities are provided throughout this report.
• Australia is considering its approach towards the implementation of the CBD's Strategy for Resource Mobilization.	• Work is progressing on Australia's approach to implementation of the CBD's Strategy for Resource Mobilization. Australia has established a baseline for international resource flows to developing countries for biodiversity, consistent with Decision XI/4, as set out in Australia's preliminary report to the CBD on implementation of the Resource Mobilisation Strategy.

Question 11: What has been the contribution of actions to implement the CBD towards the achievement of the relevant 2015 targets of the Millennium Development Goals in your country?

Australia is one of 189 countries that committed to the Millennium Development Goals (MDGs) in 2000 to reduce global poverty and since this time has helped many developing countries make progress towards them. The MDGs underpin Australian aid to developing countries.

Australia has contributed to MDG 7: 'Ensure Environmental Sustainability' in a range of ways. Some examples of activities we have undertaken are listed below. Note that this report will only look at targets 7A and 7B under MDG 7:

- Target 7.A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
- Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

Australia's development assistance is delivered through a mix of bilateral, regional and global programmes. Australia has been supporting its partners to integrate sustainability into country policies and programmes, addressing areas such as climate change, food security, forest conservation and NRM and has taken steps to ensure environmental sustainability is integrated effectively into all country level activities (AusAID, 2012).

The potential environmental impact of all activities is considered across the aid programme, to ensure that through Australia's work, it is not causing, or likely to cause, a significant negative impact on the environment. Under Australia's EPBC Act, there is a requirement to assess any proposal put forward by a Commonwealth agency or employee of the Commonwealth that is likely to have significant impacts on the environment anywhere in the world. This includes projects under Australia's aid program, which is legally obliged under the EPBC Act to ensure that through our international aid work we are not causing, or likely to cause, a significant negative impact on the environment. This requirement helps to integrate environmental considerations into Australia's aid programme.

Australia's aid programme is also guided by an Environment Management Guide which outlines how the aid programme considers the environment of people living in poverty in implementing its programmes and draws on best practice from around the world. Further information on integration of the environment into Australia's aid programme and poverty reduction strategies is in the response to question 8.

In May 2012, Australia co-hosted the *Development Cooperation Symposium* in partnership with the United Nations Department of Economic and Social Affairs. The Symposium brought together development cooperation partners to address the challenges of coherence in international development assistance to achieving sustainable development and the MDGs. The Symposium laid down foundations for discussions regarding the post-2015 UN development agenda, Target 7.B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss

During this reporting period, Australia's aid program supported environmental activities in some 23 countries and four regions. Activities include rehabilitation of mangroves in Vietnam,

planting seedlings in Indonesia, support for ecosystem-based management of Pacific fisheries (see Case Study 16), marine biodiversity conservation through the CTI-CFF, and assistance to developing countries on environmentally sustainable NRM.

For example:

- The Mining for Development Initiative - In October 2011, Australia announced the Mining for Development Initiative to support developing countries to maximise the economic benefits from their extractives sector in a socially and environmentally sustainable way. Australia has invested $105 million in Mining for Development over the previous three years. Some of the key results include establishing the International Mining for Development Centre and enabling citizens to hold their governments to account for mining revenue through our leading support to the Extractive Industries Transparency Initiative.

- The Australian Mekong Water Resources Program - This programme has provided funding to promote regional cooperation to achieve sustainable development through better use and management of the Mekong region's water resources. The programme currently focuses on strengthening institutions including the Mekong River Commission, building reliable knowledge and supporting more informed decisions. This work contributes to the improved management of the national and transboundary water resources which underpin livelihoods, fisheries and farming for tens of millions of people in the Greater Mekong Subregion.

- Papua New Guinea-Australia Forest Carbon Partnership - Under this partnership, Australia has assisted the Papua New Guinea Government in developing its capacity to design monitoring, reporting and verification systems for forest emissions. The partnership has also supported demonstration projects, assisting communities to sustainably manage their natural resources including forests.

- Climate Change and Coastal Ecosystems Program - In Vietnam, Australia has helped improve the resilience of coastal environments to climate change through rehabilitation of over 40 hectares of mangroves, increased the biodiversity of wetlands with improved water management policies, and supported new livelihood opportunities for communities that rely on these ecosystems.

- Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP) Program – In Samoa, Tuvalu, Kiribati and Vanuatu, the Australian Government funded the Action Against Climate Change (A2C2) project to empower young people to develop innovative media content about climate change and sustainability. The project partnered teachers, climate change experts and media professionals with young Pacific Islanders to raise awareness about pressing environmental issues through a range of media, including newspapers, radio, television and online.

Support to the Global Environment Facility (GEF)

Australia also helps support the achievement of Target 7.B. through our contributions to the GEF. As of March 2012, Australia had allocated AU$355 million to the GEF since 1991, including AU$105 million to the fifth replenishment (2010-14). Australia is currently considering its level of contribution to the sixth replenishment of the GEF (2014-2018). The GEF has

supported activities in more than 165 countries and has demonstrated a range of outcomes from its projects that contribute directly to the goals and targets of the CBD.

Question 12: What lessons have been learned from the implementation of the CBD in your country?

All the governments of Australia have continued to invest considerably in the development and implementation of biodiversity conservation and sustainable use policies and programmes. We are learning from past experiences and from this, our responses to biodiversity conservation and sustainable use are growing more sophisticated.

Key activities at the national level include releasing three national strategies; expanding Australia's NRS; and investing in a range of biodiversity-relevant NRM programmes.

Lessons learnt include:

- Australia's focus on landscape-scale and ecosystem approaches to conservation and habitat protection, including by building connectivity of fragmented ecosystems, are proving to be a useful model to improve conservation outcomes.
- The importance of empowering the community through environmental initiatives that are simple, local and long-term and encourage widespread engagement in environmental protection.
- National leadership and implementation has been important in underpinning Australia's expansion of our NRS of protected areas, which incorporates a diverse range of ecosystems.
- There is value in improving baseline data sets, particularly to help track and monitor progress against our national targets and help inform decision-making.
- Methodologies for national-scale measuring and accounting in relation to natural capital (including biodiversity) could be improved. Involvement in IPBES is a way to exchange information on suitable methods at an international level.
- Mainstreaming biodiversity issues across government, business, scientific and education sectors requires continuing effort.

APPENDICES

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

A. Reporting Party

Contracting Party	Australia
NATIONAL FOCAL POINT	
Full name of the institution	Australian Government Department of the Environment
Name and title of contact officer	Ms Maureen Quodling
Mailing address	GPO Box 787 Canberra ACT AUSTRALIA 2601
Telephone	+61 2 6274 2443
Fax	+61 2 6274 1542
E-mail	Maureen.Quodling@environment.gov.au
SUBMISSION	
Signature of officer responsible for submitting national report	M Quodling
Date of submission	9/5/14

B. Stakeholders involved in the preparation of this report

Name of Stakeholder (Agency/Company)	Stakeholder type (Government, NGO, business, industry group etc)
Australian Government Department of the Environment	Government
Attorney-General's Department	Government
Australian Government Department of Agriculture	Government
Australian Government Department of Defence	Government
Australian Government Department of Education	Government
Australian Government Department of Finance	Government
Australian Government Department of Foreign Affairs and Trade (DFAT)	Government
Australian Government Department of Health	Government

Australian Government Department of Immigration and Border Protection	Government
Australian Government Department of Industry	Government
Australian Government Department of Infrastructure and Regional Development	Government
Australian Government Department of the Prime Minister and Cabinet (PM&C)	Government
Australian Government Treasury	Government
Australian Antarctic Division	Government
Australian Bureau of Statistics (ABS)	Government
Australian National Botanic Gardens (ANBG)	Government
Bureau of Meteorology (BoM)	Government
Centre for Australian National Biodiversity Research and Australian National Herbarium	Government
CSIRO - Commonwealth Scientific and Industrial Research Organisation	Government
Director of National Parks (DNP)	Government
Geoscience Australia	Government
Great Barrier Reef Marine Park Authority	Government
IP Australia	Government
Murray-Darling Basin Authority (MDBA)	Government
National Water Commission (NWC)	Government

C. Information sources used as a basis for the report

Information source	Weblink
Australia's Biodiversity Conservation Strategy 2010–2030	http://www.environment.gov.au/biodiversity/strategy/index.html
Australia's Fourth National Report to the Convention on Biological Diversity	http://www.environment.gov.au/resource/australias-fourth-national-report-convention-biological-diversity
Australia's Strategy for the National Reserve System 2009–2030	http://www.environment.gov.au/parks/publications/nrs/nrsstrat.html
Australia's Native Vegetation Framework (2012)	http://www.environment.gov.au/land/vegetation/nvf/index.html

Australia's State of the Environment Report 2011	http://www.environment.gov.au/topics/science-and-research/state-environment-reporting/soe-2011
Australia's State of the Environment Report 2006	http://www.environment.gov.au/topics/science-and-research/state-environment-reporting/soe-2006
Sustainable Australia Report 2013	http://www.environment.gov.au/resource/sustainable-australia-report-2013-conversations-future
Reef Rescue	http://www.nrm.gov.au/about/key-investments/reef-rescue.html
Australian Government Caring for Our Country Achievements Report	http://www.nrm.gov.au/about/caring/achievements-report/index.html
Australian Government Caring for Our Country Report Card	http://www.nrm.gov.au/about/caring/report-card/index.html
Working on Country	http://www.environment.gov.au/indigenous/workingoncountry/index.html
National Reserve System	http://www.environment.gov.au/parks/nrs/index.html
Indigenous Protected Areas	http://www.environment.gov.au/indigenous/ipa/
Climate Change 2014: Impacts, Adaptation, and Vulnerability IPCC Working Group II Contribution to the AR5	http://www.ipcc-wg2.gov/AR5/

Appendix II - Further sources of information

- Australian Bureau of Statistics 2008, *Natural Resource Management on Australian Farms 2006-07,* cat. no. 4620.0, ABS, Canberra. Available at http://www.abs.gov.au/ausstats/abs@.nsf/mf/4627.0
- Australian Bureau of Statistics 2010a, *Measures of Australia's Progress, 2010*, cat. no. 1370, ABS, Canberra. Available at http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1370.0~2010~Main%20Features~Home%20page%20(1).
- Australian Bureau of Statistics 2010b, *Australian Bureau of Statistics 2009-10 Year Book Australia*, cat. no. 1301, ABS, Canberra. Available at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1301.0main%20features12009-10.
- Australian Bureau of Statistics 2012, *Gross Value of Agricultural Production, 2010-11*, cat. no. 4610, ABS, Canberra. Available at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4610.0.55.008Main+Features52010-11.
- Australian Bureau of Statistics 2013a, *Community Engagement with Nature Conservation, Australia, 2011-12,* cat. no. 4602, ABS, Canberra. Available at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4602.0.00.002Main+Features12011-12.

- Australian Bureau of Statistics 2013b, *Agricultural Commodities, Australia, 2011-12*, cat. no. 7121, ABS, Canberra. Available at http://www.abs.gov.au/ausstats/abs@.nsf/mf/7121.0.

- Australian Bureau of Statistics 2013c, *Australian Social Trends, April 2013*, cat. no. 4102, ABS, Canberra. Available at http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features30April+2013.

- Australian Bureau of Statistics 2013d, *Population Projections*, cat. no. 3222, ABS, Canberra. Available at http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/3222.0

- Australian Aid for International Development (AusAID) 2012, *AusAID Annual Report 2011-12*, AusAID, Canberra. Available at http://aid.dfat.gov.au/anrep/rep12/cover.html.

- Barson , M., Mewett, J. and Paplinska, J. 2012, *Trends in on farm biodiversity management in Australia's agricultural industries*, Caring for our Country Sustainable Practices Fact Sheet 5, Department of Agriculture, Fisheries and Forestry, Canberra. Available at http://nrmonline.nrm.gov.au/downloads/mql:2865/PDF.

- Borthwick, D. 2012, *Review of Commonwealth Fisheries: Legislation, Policy and Management*, Independent review for the Australian Government Minister for Agriculture, Fisheries and Forestry, Department of Agriculture, Forestry and Fisheries, Canberra. Available at http://www.daff.gov.au/fisheries/review-of-fisheries-management-act-1991-and-fisheries-administration-act-1991.

- Brander, L. & Schuyt, K. 2010, *Benefits Transfer: the Economic Value of the World's Wetlands*, The Economics of Ecosystems and Biodiversity (TEEB). Retrieved 29 November 2013 from: http://www.teebweb.org/wp-content/uploads/2013/01/The-economic-value-of-the-worlds-wetlands.pdf

- Carr, A. 2011, *Asian Honeybee: Potential Environmental Impacts*, Report for Australia's Department of Sustainability, Environment, Water, Population and Communities, Commonwealth of Australia, Canberra. Available at http://www.environment.gov.au/resource/asian-honey-bee-possible-environmental-impacts.

- Chapman, A.D. 2009, *Numbers of Living Species in Australia and the World (2nd Edition)*, Report for the Australian Biological Resources Study, Australian Biodiversity Information Services, Toowoomba, Australia. Available at http://www.environment.gov.au/system/files/pages/2ee3f4a1-f130-465b-9c7a-79373680a067/files/nlsaw-2nd-complete.pdf.

- COAG Standing Council on Environment and Water 2012, *Australia's Native Vegetation Framework*, Standing Council on Environment and Water, Canberra. Available at http://www.environment.gov.au/land/vegetation/nvf/index.html.

- Commonwealth Scientific and Industrial Research Organisation (CSIRO) 2012, *Assessment of the ecological and economic benefits of environmental water in the Murray–Darling Basin*, CSIRO Water for a Healthy Country National Research Flagship, Australia. Available at http://www.mdba.gov.au/kid/files/2017-Assessment_Ecological_Economic_Benefits.pdf.

- Department of Environment, Water, Heritage and the Arts (DEWHA) 2009, *Assessment of Australia's Terrestrial Biodiversity 2008*, Report prepared by the Biodiversity Assessment Working Group of the National Land and Water Resources Audit for the Australian Government, DEWHA, Canberra. Available at

http://www.environment.gov.au/system/files/resources/e9f0d376-78eb-45cc-9359-797c6b0f72ff/files/terrestrial-assessment.pdf.

- Department of Environment, Water, Heritage and the Arts (DEWHA) 2010, *DEWHA Annual Report 2009-2010*, DEWHA, Canberra. Available at http://www.environment.gov.au/resource/department-environment-water-heritage-and-arts-annual-report-2009-10.

- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2010, *Australia's Biodiversity Conservation Strategy 2010-2030*, DSEWPaC, Canberra. Available at http://www.environment.gov.au/resource/australias-biodiversity-conservation-strategy-0.

- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2011, *Background Paper: Population Status and Threats to Albatrosses and Giant Petrels Listed as Threatened under the Environment Protection and Biodiversity Conservation Act 1999*, DSEWPaC, Hobart. Available at http://www.environment.gov.au/resource/background-paper-population-status-and-threats-albatrosses-and-giant-petrels-listed.

- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012, *One Land - Many stories: Prospectus of Investment*, DSEWPaC, Canberra. Available at http://www.nrm.gov.au/resources/publications/pubs/our-country.pdf.

- Department of Sustainability, Environment, Water, Population and Communities (DEWSPaC) and Queensland Government 2011, *Great Barrier Reef Report Card 2011: Reef Water Quality Protection Plan*, State of Queensland, Queensland. Available at http://www.reefplan.qld.gov.au/measuring-success/report-*cards/assets/report-card-2011.pdf.*

- Dunlop, M., Hilbert, D. W., Stafford Smith, M., Davies, R., James, C. D., Ferrier, S., et al. 2012, *Implications for policymakers: climate change, biodiversity conservation and the National Reserve System,* CSIRO Climate Adaptation Flagship, Canberra. Available at http://www.csiro.au/Organisation-Structure/Flagships/Climate-Adaptation-Flagship/adapt-national-reserve-system.aspx.

- Fitzsimons, J., Legge, S., Traill, B., & Woinarski, J. 2010, *Into oblivion? The disappearing mammals of Northern Australia,* The Nature Conservancy, Melbourne.

- Great Barrier Reef Marine Park Authority (GBRMPA) 2007, *Great Barrier Reef Climate Change Action Plan 2007*-2012, GBRMPA, Townsville. Available at http://www.gbrmpa.gov.au/__data/assets/pdf_file/0020/4493/climate-change-action-plan-2007-2012.pdf.

- Great Barrier Reef Marine Park Authority (GBRMPA) 2013, *Great Barrier Reef Biodiversity Conservation Strategy 2013*, GRMPA, Townsville. Available at http://www.gbrmpa.gov.au/about-the-reef/biodiversity/biodiversity-conservation-strategy-2013.

- Great Barrier Reef Marine Park Authority (GBRMPA) 2012, *Great Barrier Reef Climate Change Adaptation Strategy and Action Plan 2012-2017*, GRMPA, Townsville. Available at http://www.gbrmpa.gov.au/outlook-for-the-reef/climate-change/marine-park-management/climate-change-action-plan.

- Great Barrier Reef Marine Park Authority (GBRMPA) 2009, *Great Barrier Reef Outlook Report 2009*, GRMPA, Townsville. Available at http://www.gbrmpa.gov.au/outlook-for-the-reef/great-barrier-reef-outlook-report.

- Great Barrier Reef Marine Park Authority (GBRMPA) 2012, *Informing the outlook for Great Barrier Reef coastal ecosystems*, GRMPA, Townsville. Available at http://www.gbrmpa.gov.au/__data/assets/pdf_file/0006/28257/Informing-the-Outlook-for-Great-Barrier-Reef-coastal-ecosystems.pdf.

- KPMG 2013, *The KPMG Corporate Responsibility Reporting Survey 2013.* KPMG International, Netherlands. Available at http://www.kpmg.com/au/en/issuesandinsights/articlespublications/pages/corporate-responsibility-reporting-survey-2013.aspx.

- Murray-Darling Basin Authority (MDBA) 2012, *Sustainable Rivers Audit 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008-2010)*, MDBA, Canberra. Available at http://www.mdba.gov.au/sites/default/files/SRA2-SUMMARY-FINAL.pdf.

- National Sustainability Council 2013, *Sustainable Australia Report 2013, Conversations with the future*, DSEWPaC, Canberra. Available at http://www.environment.gov.au/system/files/resources/e55f5f00-b5ed-4a77-b977-da3764da72e3/files/sustainable-report-full.pdf.

- Sobtzick, S., Hagihara, R., Grech, A. and Marsh, H. 2012, *Aerial survey of the urban coast of Queensland to evaluate the response of the dugong population to the widespread effects of the extreme weather events of the summer of 2010-11*, Final report to the Australian Marine Mammal Centre and the National Environmental Research Program, James Cook University, Townsville.

- Steffen, W., Burbidge A.A., Hughes, L., Kitching R, Lindenmayer, D., Musgrave, W., Stafford Smith M. and Werner, P.A. 2009, *Australia's biodiversity and climate change: a strategic assessment of the vulnerability of Australia's biodiversity to climate change*, Report to the Natural Resource Management Ministerial Council, CSIRO Publishing, Victoria. Available at http://www.climatechange.gov.au/sites/climatechange/files/documents/04_2013/biodiversity-vulnerability-assessment.pdf.

- University of New South Wales (UNSW), *Eastern Australian Waterbird Survey*. Available at http://www.ecosystem.unsw.edu.au/content/rivers-and-wetlands/waterbirds/eastern-australian-waterbird-survey.

- Victorian Environmental Assessment Council 2008, *River Red Gum Forest Investigation Information Sheet*, State Government of Victoria, East Melbourne.

- Victorian Department of Sustainability and Environment 2013, *Indicative Assessment of Climate Change Vulnerability for Wetlands in Victoria*, Department of Sustainability and Environment, East Melbourne. Available at http://www.depi.vic.gov.au/__data/assets/pdf_file/0016/242710/Wetland-vulnerability-to-climate-change-Victoria.pdf.

- Wall, D., & Nielsen, U. N. 2012, *Biodiversity and Ecosystem Services: Is It the Same Below Ground?*, Nature Education Knowledge 3(12):8.

Appendix III - National implementation of the thematic programmes of work and plans under the CBD or decisions of the Conference of the Parties related to cross-cutting issues

For the Fifth National Report, Australia has used the Global Plant Conservation Strategy to highlight how this Strategy is contributing to goals, targets and activities suggested in the thematic programmes of work and plans or decisions related to cross-cutting issues under the CBD.

Matrix for review of implementation of cross-cutting issue of Global Plant Conservation Strategy

Relevant COP decisions, programmes of work, work plans, guidelines and suggested activities	National Implementation and contributions	Outcomes achieved	Future priorities
Conference of Parties (COP) Decision X/17 endorsed the updated Global Strategy for Plant Conservation 2011-2020. The vision for the updated strategy is: “Without plants there is no life. The functioning of the planet and our survival depends on plants. This strategy seeks to halt the continuing loss of plant diversity.” COP Decision X/17, paragraph 2, "Emphasizes that the outcome-oriented global targets for 2011–2020 should be viewed as a flexible framework within which national and/or regional targets may be developed, according to national priorities and capacities, and taking into account differences in plant	The GSPC is implemented through a wide range of actors and cross-cutting activities; contributing also to the Aichi Biodiversity Targets.	Examples are provided in the table for the five **GSPC 2011-2020 Objectives.**	Promotion of multidisciplinary and cross-sectoral interactions amongst organisations, supporting GSPC objectives. Examples are provided in the table.

diversity between countries"			
	GSPC 2011-2020 **Objective I: Plant diversity is well understood, documented and recognized (GSPC Targets 1,2,3; with linkages to Aichi Target 19)**	Outcomes include: • on-line checklists of species names through the **Australian Plant Name Index (APNI)** http://www.anbg.gov.au/apni/ • data published via the **Global Biodiversity Information Facility (GBIF)** http://www.gbif.org/country/AU and via the suite of information tools and resources of the '**Atlas of Living Australia' (ALA)** facility http://www.ala.org.au/ • **Bush Blitz** – detailed elsewhere in this report.	**The World Flora Online (WFO**) is an international collaborative effort involving leading botanical institutions to develop a comprehensive, authoritative and accessible online resource for the world's approximately 400,000 known plant species. The Australian Government, through the Australian National Botanic Gardens and the Australian Biological Resources Study is a signatory to the Memorandum of Understanding between botanical institutions to build the WFO.
	GSPC 2011-2020 **Objective II: Plant diversity is urgently and effectively conserved (GSPC Targets 4,5,6,7,8,9,10; with linkages to Aichi Targets 5,11,7,12,9)**	Outcomes include: • **Australia's NVF** is a national framework to guide the ecologically sustainable management of Australia's native vegetation • The **NRS** is Australia's network of protected areas, conserving our natural landscapes and native plants and animals. • **The Council of Heads of Australasian Herbaria** comprises those responsible for the major Australian and New Zealand Herbaria with the aim of promoting all matters of interest to herbaria in Australasia and to increase cooperation and understanding between herbaria. • Australia's **conservation seed banks** currently hold collections of more than 8200 native species, which include seed collections of 591 (47.3%) of nationally listed threatened species (under the EPBC Act). • The Australian Government invested $1.5 million from 2011 to 2013 to progress a transition from eradication of **myrtle rust** to management of the disease. This investment provided scientific information and tools to enable industries and communities to mitigate the impacts of the	• **The Australian Seed Bank Partnership and the Australian Grains Genebank** are collaborating to increase representation of 40 priority species of Australian crop wild relatives, and the associated genetic diversity, in genebanks for future use (2014-2016). The Australian Seed Bank Partnership will continue to build genetically diverse *ex situ* collections of native flora to support species recovery and restoration programmes.

		disease in urban, primary production and natural environments**.**	
	GSPC 2011-2020 **Objective III: Plant diversity is used in a sustainable and equitable manner (GSPC Targets 11, 12,13; with linkages to Aichi Targets 4,6,18)**	Outcomes include the **National Landscapes Partnership** and **Working on Country**. These initiatives are detailed elsewhere in this report.	• **The Australian Seed Bank Partnership** is working to share information through the Atlas of Living Australia on methods for germinating and re-establishing native flora to support the restoration industry.
	GSPC 2011-2020 **Objective IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted** (GSPC Target 14) (Linkages to Aichi Target 1)	Outcomes include: • Australia's eight capital city **botanic gardens** and 150 regional botanic gardens attract an estimated 13 million visits per year. • The **Australian School Curriculum**: Science has three interrelated strands: *Science Understanding, Science as a Human Endeavour* and *Science Inquiry Skills*. The content of the *Science Understanding* strand will inform students' understanding of contemporary issues, such as biodiversity, climate change, use of resources, and the origins of the universe. • The NGO, **Australian Network for Plant Conservation** (ANPC) undertakes education and training with a range of stakeholders.	Promotion of multidisciplinary and cross-sectoral interactions amongst organisations, supporting GSPC objectives
	GSPC 2011-2020 **Objective V: The capacities and public engagement necessary to implement the Strategy have been developed (GSPC Targets 15, 16; with linkages to Aichi Targets 20,17)**	Outcomes include the **ABCS**, the **Australian Seed Bank Partnership** and the **ALA**. These examples are detailed elsewhere in this report.	Promotion of multidisciplinary and cross-sectoral interactions amongst organisations, supporting GSPC objectives

Appendix IV - Glossary of Acronyms

ALA	Atlas of Living Australia
Basin Plan	Murray-Darling Basin Plan
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEH	Department of the Environment and Heritage
DEST	Department of the Environment, Sport and Territories
DEWHA	Department of the Environment, Water, Heritage and the Arts
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GEF	Global Environment Facility
GBR	Great Barrier Reef
GBRMPA	Great Barrier Reef Marine Park Authority
GBRWHA	Great Barrier Reef World Heritage Area
IPA	Indigenous Protected Area
IPCC	Intergovernmental Panel on Climate Change
MBP	Marine Bioregional Plans
MDGs	Millennium Development Goals
NRM	Natural Resource Management

NRS	National Reserve System
Ramsar Convention	The Convention on Wetlands Of International Importance especially as Waterfowl Habitat
SPREP	Secretariat to the Pacific Regional Environment Programme
UNCCD	United Nations Convention to Combat Desertification
World Heritage Convention	The Convention Concerning the Protection of the World Cultural and Natural Heritage
Water Act	*Water Act 2007*